AD A041964

DSR-2

Discrete Semiconductor Reliability

TRANSISTOR / DIODE DATA

DDC
RECEIVED
JUL 25 1977
A

1977

Reliability Analysis Center
ROME AIR DEVELOPMENT CENTER

DDC FILE COPY

THE RELIABILITY ANALYSIS CENTER IS A DOD INFORMATION ANALYSIS CENTER

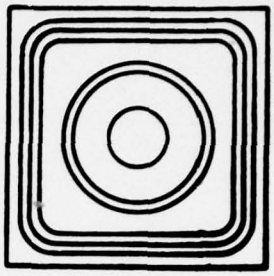
THE INFORMATION AND DATA CONTAINED HEREIN HAVE BEEN COMPILED FROM GOVERNMENT AND NONGOVERNMENT TECHNICAL REPORTS AND FROM MATERIAL SUPPLIED BY VARIOUS MANUFACTURERS AND ARE INTENDED TO BE USED FOR REFERENCE PURPOSES. NEITHER THE UNITED STATES GOVERNMENT NOR IIT RESEARCH INSTITUTE WARRANT THE ACCURACY OF THIS INFORMATION AND DATA. THE USER IS FURTHER CAUTIONED THAT THE DATA CONTAINED HEREIN MAY NOT BE USED IN LIEU OF OTHER CONTRACTUALLY CITED REFERENCES AND SPECIFICATIONS.

PUBLICATION OF THIS INFORMATION IS NOT AN EXPRESSION OF THE OPINION OF THE UNITED STATES GOVERNMENT OR OF IIT RESEARCH INSTITUTE AS TO THE QUALITY OR DURABILITY OF ANY PRODUCT MENTIONED HEREIN AND ANY USE FOR ADVERTISING OR PROMOTIONAL PURPOSES OF THIS INFORMATION IN CONJUNCTION WITH THE NAME OF THE UNITED STATES GOVERNMENT OR IIT RESEARCH INSTITUTE WITHOUT WRITTEN PERMISSION IS EXPRESSLY PROHIBITED.

The Reliability Analysis Center is a DoD Information Analysis Center,

operated by IIT Research Institute

under contract to the Rome Air Development Center, AFSC



The Reliability Analysis Center (RAC) is a service for the dissemination of reliability information concerning integrated circuits, hybrid devices, discrete devices (transistors, diodes) and selected non-electronic parts employed in military, space and commercial applications.

The RAC analyzes and disseminates information that is generated during all phases of device fabrication, testing, equipment assembly and operation. RAC data files are continually updated through information collected by R&D, testing laboratories, device and equipment manufacturers, government agencies and field installations.

REQUESTS FOR TECHNICAL ASSISTANCE AND INFORMATION ON AVAILABLE RAC SERVICES AND PUBLICATIONS MAY BE DIRECTED TO:

Lee Mirth
Reliability Analysis Center
Rome Air Development Center (RBRAC)
Griffiss Air Force Base, NY 13441
Telephone: 315/330-4151
Autovon: 587-4151

ALL OTHER REQUESTS SHOULD BE DIRECTED TO:

Rome Air Development Center
RBRD/Anthony J. Feduccia
Griffiss Air Force Base, NY 13441
Telephone: 315/330-4920
Autovon: 587-4920

(9) Annual / Rept.

RELIABILITY ANALYSIS CENTER

A DoD Information Analysis Center

(14) RAC-DSR-2

(6)

DISCRETE SEMICONDUCTOR RELIABILITY

TRANSISTOR/DIODE DATA

(11) 1977 (12) 301 p.

Prepared by:

(10)
Roy C. Walker
David B. Nicholls
Reliability Analysis Center
(IIT Research Institute)

(15) F30602-76-C-0172

Under Contract to:
Rome Air Development Center
Griffiss Air Force Base, New York 13441

Catalog No. DSR-2

Approved for Public Release, Distribution Unlimite

PRECEDING PAGE NOT FILMED
BLANK

408944

B

PREFACE

This is the second of a series of annual data publications dealing with discrete semiconductor reliability. Other available RAC databooks treat the reliability experience of hybrid, digital, linear, interface, memory and microprocessor microcircuit devices.

Each document contains analyzed reliability information in addition to the detailed presentation of field and test conditions. This information is meant to supplement the data and guidelines available in various military publications such as MIL-HDBK-217B. The user is cautioned that the data contained herein is not intended to be used in lieu of other contractually cited references, but can be used as a measure of confidence in achievement of reliability goals.

Carol Proctor of the RAC staff put together the software and provided direction in the computerization of the discrete semiconductor reliability data which provided the Reliability Data Tabulation contain herein. The Rome Air Development Center's computer facilities and the extensive cooperation of the Information Sciences Division (RADC/IS) were a necessary part in this effort.

ACCESSION for
NTIS White Section
DDC Buff Section
UNANNOUNCED
JUSTIFICATION
BY
DISTRIBUTION/AVAILABILITY CODES
Dist. AVAIL. and/or SPECIAL
A 21

PRECEDING PAGE NOT FILMED
BLANK

TABLE OF CONTENTS

		Page
INTRODUCTION		1
SECTION 1: SUMMARIZED FAILURE RATES FOR DISCRETE SEMICONDUCTORS		3
Section 1.1	**Failure Rates by Data Source**	5
Table 1.1-1	AI-0001 Receiver-Transmitter Burn-In Data	8
Table 1.1-2	AI-0001 Receiver-Transmitter Rel Demo Data	10
Table 1.1-3	AI-0002 Radio Communication Rel Demo Data	12
Table 1.1-4	AI-0002 Radio Communication Post Rel Demo 25°C Data	14
Table 1.1-5	AI-0002 Radio Communication Post Rel Demo 55°C Data	16
Table 1.1-6	AI-0003 Radio Communications Rel Demo Data	18
Table 1.1-7	AI-0004 Data Processing System In-House Checkout Data	19
Table 1.1-8	AI-0004 Data Processing System Field Data	21
Table 1.1-9	AI-0005 Inertial Navigation Set Burn-In (4 Cycles Failure Free) Data	22
Table 1.1-10	AI-0005 Inertial Navigation Set Rel Demo Data	24
Table 1.1-11	AI-0006 Altitude Indicator Rel Demo Data	26
Table 1.1-12	AI-0007 Signal Data Recorder Rel Demo Data	27
Table 1.1-13	AI-0008 Air Data Computer Rel Demo Data	28
Table 1.1-14	AI-0010 Indicator Group Rel Demo Data	29
Table 1.1-15	AI-0011 Interference Blanker Set Rel Demo Data	30
Table 1.1-16	AI-0012 Search Radar Set Burn-In Data	31
Table 1.1-17	AI-0013 Radar Set Rel Demo Data	32
Table 1.1-18	AI-0014 Data Processing Group Rel Demo Data	34
Table 1.1-19	AI-0015 Central Computer Rel Demo Data	36
Table 1.1-20	AI-0016 LORAN Navigation Set Rel Demo Data	37
Table 1.1-21	AI-0017 Countermeasures Set Rel Demo Data	38
Table 1.1-22	AU-0001 Phased Array Antenna Reliability Evaluation Data	39
Table 1.1-23	AU-0002 Electronic Air Inlet Controller Rel Demo Data	39
Table 1.1-24	GF-0001 Communications Central Rel Demo Data	40
Table 1.1-25	GF-0002 Air Control Center Rel Demo Data	42
Table 1.1-26	GF-0003 UHF Transceiver Rel Demo Data	44
Table 1.1-27	GF-0003 UHF Transceiver Field Checkout Data	46
Table 1.1-28	GF-0004 Group Data Modem Rel Demo Data	47
Table 1.1-29	GF-0005 Multiplexer Set Rel Demo Data	48
Table 1.1-30	NS-0001 Radio Direction Finder In-House Checkout Data	49
Table 1.1-31	NS-0001 Radio Direction Finder Quality Conformance 50°C Data	50
Table 1.1-32	NS-0001 Radio Direction Finder Rel Demo Data	51
Table 1.1-33	NS-0001 Radio Direction Finder Field Data	52

PRECEDING PAGE NOT FILMED
BLANK

Table of Contents (cont'd)

		Page
Table 1.1-34	NS-0002 Communications Circuit Configuration Monitor Reliability Evaluation Data	53
Table 1.1-35	SF-0001 Space Program In-House Checkout Data	54
Table 1.1-36	SF-0001 Space Program Field Checkout and Flight Data	55
Section 1.2:	**Failure Rates by Part Type**	**57**
Table 1.2-1	Diode (100&300) Failure Rate Summary	58
Table 1.2-2	Small Signal Diode (110) Failure Rate Summary	60
Table 1.2-3	Switching Diode (111) Failure Rate Summary	61
Table 1.2-4	General Purpose Diode (112) Failure Rate Summary	62
Table 1.2-5	Rectifier (120) Failure Rate Summary	63
Table 1.2-6	Low Power Rectifier (121) Failure Rate Summary	65
Table 1.2-7	High Power Rectifier (123) Failure Rate Summary	66
Table 1.2-8	Fast Recovery Rectifier (124) Failure Rate Summary	67
Table 1.2-9	Bridge Rectifier, Full Wave (126) Failure Rate Summary	68
Table 1.2-10	Bridge Rectifier, 3-Phase (127) Failure Rate Summary	68
Table 1.2-11	Zener Diode (130) Failure Rate Summary	69
Table 1.2-12	Voltage Regulator Diode (131) Failure Rate Summary	71
Table 1.2-13	Voltage Reference Diode (132) Failure Rate Summary	72
Table 1.2-14	Transient Suppressor Diode (141) Failure Rate Summary	73
Table 1.2-15	Microwave Diode (300) Failure Rate Summary	74
Table 1.2-16	Schottky Barrier Diode (303) Failure Rate Summary	75
Table 1.2-17	PIN Diode (304) Failure Rate Summary	76
Table 1.2-18	Varactor Diode (309) Failure Rate Summary	77
Table 1.2-19	Transistor (200) Failure Rate Summary	78
Table 1.2-20	Low Power Transistor (210) Failure Rate Summary	80
Table 1.2-21	Low Power, NPN Transistor (211) Failure Rate Summary	82
Table 1.2-22	Low Power, PNP Transistor (212) Failure Rate Summary	84
Table 1.2-23	Power Transistor (220) Failure Rate Summary	86
Table 1.2-24	Power, NPN Transistor (221) Failure Rate Summary	87
Table 1.2-25	Power, PNP Transistor (222) Failure Rate Summary	88
Table 1.2-26	Field Effect Transistor (230) Failure Rate Summary	89
Table 1.2-27	JFET, N-Channel (231) Failure Rate Summary	90
Table 1.2-28	RF Transistor (250) Failure Rate Summary	91
Table 1.2-29	RF, NPN Transistor (251) Failure Rate Summary	92
Table 1.2-30	Multiple Transistor (260) Failure Rate Summary	93
Table 1.2-31	Differential Amp., NPN (261) Failure Rate Summary	94
Table 1.2-32	Differential Amp., PNP (262) Failure Rate Summary	95
Table 1.2-33	Complementary NPN/PNP Transistor (263) Failure Rate Summary	95
Table 1.2-34	Darlington Transistor (270) Failure Rate Summary	96
Table 1.2-35	Darlington, NPN Transistor (271) Failure Rate Summary	96
Table 1.2-36	Chopper Transistor (280) Failure Rate Summary	97
Table 1.2-37	Chopper, PNP Transistor (282) Failure Rate Summary	97
Table 1.2-38	Thyristor, SCR (520) Failure Rate Summary	98
Table 1.2-39	Optoelectronic Display (640) Failure Rate Summary	99
Table 1.2-40	LED Display (641) Failure Rate Summary	99

Table of Contents (cont'd)

		Page
Section 1.3:	**Failure Rate Comparison by Part Type**	**101**
Table 1.3-1	Maximum Likelihood, $\hat{\lambda}$, Summary (Generic Level One)	102
Table 1.3-2	Upper 80% Confidence Limit Summary (Generic Level One)	103
Table 1.3-3	Maximum Likelihood, $\hat{\lambda}$, Summary (Generic Level Two)	104
Table 1.3-4	Upper 80% Confidence Limit Summary (Generic Level Two)	105
Table 1.3-5	Maximum Likelihood, $\hat{\lambda}$, Summary (Generic Level Three)	106
Table 1.3-6	Upper 80% Confidence Limit Summary (Generic Level Three)	107
Section 1.4:	**Predicted versus Experienced Failure Rates**	**109**
Table 1.4-1	Silicon, NPN Transistor Parts Count Predicted Failure Rate vs. Experienced	111
Table 1.4-2	Silicon, PNP Transistor Parts Count Predicted Failure Rate vs. Experienced	112
Table 1.4-3	Field Effect Transistor Parts Count Predicted Failure Rate vs. Experienced	113
Table 1.4-4	General Purpose, Silicon, Diodes Parts Count Predicted Failure Rate vs. Experienced	114
Table 1.4-5	Zener and Avalanche Diodes Parts Count Predicted Failure Rate vs. Experienced	115
Table 1.4-6	Thyristor Parts Count Predicted Failure Rate vs. Experienced	116
SECTION 2:	**DISCRETE SEMICONDUCTOR RELIABILITY DATA TABULATION BY PART NUMBER**	**119**
Tabulation Usage Guide		**121**
SECTION 3:	**FAILURE ANALYSIS DATA**	**203**
Section 3.1	**Failure Event Tabulation**	**205**
Section 3.2	**Failure Classification Summary**	**219**
Table 3.2-1	Diode Failure Indicators	220
Table 3.2-2	Diode Constituent Failure Modes	221
Table 3.2-3	Transistor Failure Indicators	222
Table 3.2-4	Transistor Constituent Failure Modes	224
APPENDIX A:	**DATA SOURCES**	**229**
General		**229**
Table A-1	**Data Source Summary**	**230**
AI-0001	Receiver-Transmitter	235
AI-0002	Radio Communications	237
AI-0003	Radio Communications	239
AI-0004	Data Processing System	241

Table of Contents (cont'd)

		Page
Table A-2:	**Comparison - AI-0004 and JANTX Screening**	**244**
AI-0005	Inertial Navigation Set	245
AI-0006	Altitude Indicator	248
AI-0007	Signal Data Recorder	249
AI-0008	Air Data Computer	252
AI-0010	Indicator Group	253
AI-0011	Interference Blanker Set	255
AI-0012	Search Radar Set	256
AI-0013	Radar Set	257
AI-0014	Data Processing Group	260
AI-0015	Central Computer	261
AI-0016	LORAN Navigation Set	262
AI-0017	Countermeasures Set	264
AU-0001	Phased Array Radar	266
AU-0002	Electronic Air Inlet Controller	267
GF-0001	Communications Central	269
GF-0002	Air Control Center	270
GF-0003	UHF Transceiver	272
GF-0004	Group Data Modem	274
GF-0005	Multiplexer Set	275
NS-0001	Radio Direction Finder	277
NS-0002	Communications Circuit Configuration Monitor	279
SF-0001	Space Program	280
Table A-3	**SF-0001 Space Program Diode Screening**	**282**
Table A-4	**SF-0001 Space Program Transistor Screening**	**283**
APPENDIX B:	**GLOSSARY OF SYMBOLS AND ABBREVIATIONS**	**285**
APPENDIX C:	**MANUFACTURERS ABBREVIATIONS**	**289**
APPENDIX D:	**DEVICE TYPE CODES**	**293**
General		**295**
Table D-1	**Device Type Code**	**297**
Figure D-1	**Diode Generic Structure**	**301**
Figure D-2	***Transistor* Generic Structure**	**302**
Figure D-3	**Thyristor Generic Structure**	**303**
Figure D-4	**Optoelectronic Generic Structure**	**304**

INTRODUCTION

This second edition of Discrete Semiconductor Reliability, Transistor and Diode Data contains failure rates and failure analysis data from actual field use conditions, in-house checkout and reliability tests performed at the equipment-level.

Readers interested in general failure rate information may want to turn immediately to Section 1.3 or for slightly more detailed failure rate information, Section 1.2. On the other hand, readers interested in data on a specific part number should turn to Section 2. Those studying the data in detail will appreciate the breakout of failure rate data by data source in Section 1.1.

MIL-HDBK-217B Parts Count Predicted failure rates versus experienced failure rate data are located in Section 1.4. The comparisons of Section 1.4 have been annotated where appropriate.

Failure Analysis Data is found in Section 3. The pertinent available details of the failures reported in Sections 1 and 2 appear in Section 3.1 and failure mode summaries may be found in Section 3.2.

To enhance the effective application of the data and gain additional insight, details of the data sources are presented in Appendix A. By using an equipment code designator it has been possible to give additional backup data which otherwise would be considered proprietary.

This data book is organized similar to other recent RAC publications, in that failure rate summaries appear first in Section 1, the individual part data entries with a usage guide in Section 2, and the failure analysis data in Section 3. Lastly, glossaries are provided to define symbols and abbreviations (Appendix B), manufacturer code designations (Appendix C), and the device type code (Appendix D).

DISCRETE SEMICONDUCTOR RELIABILITY

TRANSISTOR/DIODE DATA

Section 1

SUMMARIZED FAILURE RATES

FOR

DISCRETE SEMICONDUCTORS

1.1 - Failure Rates by Data Source

1.2 - Failure Rates by Part Type

1.3 - Failure Rate Comparison by Part Type

1.4 - Predicted versus Experienced Failure Rates

PRECEDING PAGE NOT FILMED
BLANK

Section 1.1

FAILURE RATES BY DATA SOURCE

(Tables 1.1-1 to 1.1-36)

In contrast to integrated circuits, discrete semiconductors may be used with large variations in the applied electrical stress levels. Tables 1.1-1 to 1.1-36 show the summarized reliability experience by equipment where common design disciplines and similar application restraints can be assumed.

The data in Tables 1.1-1 to 1.1-36 are from twenty-six different electronic equipments. Each equipment has been designated with a code. The designations and descriptions are as follows:

Equipment Code Designator	Description
AI-0001	Receiver-Transmitter
AI-0002	Radio Communications
AI-0003	Radio Communications
AI-0004	*Data Processing System*
AI-0005	Inertial Navigation Set
AI-0006	Altitude Indicator
AI-0007	Signal Data Recorder
AI-0008	Air Data Computer
AI-0010	Indicator Group
AI-0011	Interference Blanker Set
AI-0012	Search Radar Set
AI-0013	Radar Set
AI-0014	Data Processing Group
AI-0015	Central Computer
AI-0016	LORAN Navigation Set
AI-0017	Countermeasure Set
AU-0001	Phased Array Antenna
AU-0002	Electronic Air Inlet Controller
GF-0001	Communications Central
GF-0002	Air Control Center
GF-0003	UHF Transceiver
GF-0004	Group Data Modem
GF-0005	Multiplexer Set
NS-0001	Radio Direction Finder
NS-0002	Communications Circuit Configuration Monitor
SF-0001	Space Program

PRECEDING PAGE NOT FILMED
BLANK

The letters at the front of the designation represent the MIL-HDBK-217B environment factor (Π_E) symbol in which the equipment is designed to operate. For example "AI" stands for airborne, inhabited, "GF" stands for ground, fixed and "SF" stands for space, flight. Appendix A identifies in detail the environmental conditions and/or test conditions for the data, the general quality grade of the discrete semiconductors used, and when available, the derating goals and electrical stress distribution.

The equipment parts list and associated part descriptions were utilized to compile the summarized tables. The part type categories were chosen with the failure rate grouping of MIL-HDBK-217B and the categories of MIL-STD-701 in mind. The categories have been structured to three generic levels. Reference Appendix D for the Device Type Codes and associated categories. The criteria in MIL-STD-701 which identifies power transistors as devices whose power rating is equal to or greater than 5 watts, without a heat sink at 25°C ambient, was used to distinguish between low power and high power transistors, with the additional criteria that any device that is bolted down is a power transistor. Devices considered RF transistors were those that would appear in Table XXV of MIL-STD-701, which includes the 2N918, 2N2857 and 2N3866. When E.I.A.-registered equivalent part numbers were not given, the part description was examined to identify the part type category. In some cases, the only description was "diode" or "transistor" which resulted in the "Type Unknown" category.

For each part type category the data was simply merged to reflect reliability experience. The 60% confidence intervals (20% to 80%) were computed using the Chi-square distribution with 2r and 2(r+1) degrees of freedom for the lower and upper limits, respectively.

The 60% confidence interval and $\hat{\lambda}$ were not computed for summarized data which did not meet the following criteria:

Failures	Part Hours
0	$\geq$ 500,000
1	$\geq$ 250,000
$\geq$ 2	$\geq$ 125,000

For two equipments, AI-0004 and SF-0001, field data and the electrical stress distribution by part type were available. It was therefore possible to calculate a weighted average failure rate prediction using the MIL-HDBK-217B models. These data appear in Tables 1.1-8 and 1.1-36 and enable a comparison between experienced and predicted failure rates.

Weighted average failure rate prediction: An average failure rate based on weighting the terms of the failure rate equations according to the data. For example, the zener calculation for Table 1.1-8 involved weighted averages for both the base failure rate and the application factor. The environment factor and quality factor are fixed at 25 and 1 respectively. Using the data in Appendix A for AI-0004, the power stress weighting of the base failure rate is:

$$(.6)(.0039) + (.2)(.0044) + (.2)(.0068) = .0046$$

The application factor is weighted by the number of hours accumulated for reference diodes (34%) and the number of hours for voltage regulator diodes (66%) as follows:

$$(.34)(1.5) + .66(1.0) = 1.17$$

The weighted average failure rate prediction for AI-0004 zener field data is then calculated:

$$(.0046)(25)(1.17)(1) = .1345 \text{ or } .13 \text{ fpmh}$$

In the remarks column of the tables the failure event numbers are shown. The failure event number is simply the equipment designation followed by a failure number. For example: AI-0001/F #001 should be interpreted as a failure event on AI-0001 given the failure number one. (Note: The numbers were assigned randomly by RAC and do not signify a sequence). Knowing the failure event number, the detailed failure description is found in Section 3 where the failure event entries are listed in alphanumeric order. The failures which are shown in parentheses and whose failure event numbers have asterisks, are events which most likely were not caused by the part. The failure analysis report was inconclusive as to cause of failure. Discrete semiconductor failures which were conclusively identified as caused by other than the part, are not necessarily shown.

TABLE 1.1-1 .AI-0001 RECEIVER-TRANSMITTER BURN-IN DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	1	604,234	1.7	.37	5.0	
SMALL SIGNAL	0	285,840	---	---	---	
Switching	0	285,840	---	---	---	
RECTIFIERS	0	193,736	---	---	---	
Low Power	0	32,554	---	---	---	
High Voltage	0	6,352	---	---	---	
High Power	0	41,288	---	---	---	
Fast Recovery	0	11,910	---	---	---	
Bridge, Full Wave	0	34,936	---	---	---	Chip hours
Bridge, 3Ø	0	38,112	---	---	---	Chip hours
Unknown	0	28,584	---	---	---	
ZENERS	1	104,808	---	---	---	
Regulator	1	70,666	---	---	---	AI-0001/F#019
Reference	0	27,790	---	---	---	
Avalanche	0	3,970	---	---	---	
Unknown	0	2,382	---	---	---	
SUPPRESSORS	0	13,498	---	---	---	
Transient Suppressor	0	13,498	---	---	---	
MICROWAVE	0	4,764	---	---	---	
Schottky Barrier	0	2,382	---	---	---	
Varactor	0	2,382	---	---	---	
UNKNOWN	0	1,588	---	---	---	
ALL TRANSISTORS	0	280,282	---	---	---	
LOW POWER	0	211,998	---	---	---	
NPN	0	157,212	---	---	---	
PNP	0	54,786	---	---	---	
POWER	0	14,292	---	---	---	
NPN	0	14,292	---	---	---	
FIELD EFFECT	0	1,588	---	---	---	
JFET, P-Channel	0	1,588	---	---	---	
RF TRANSISTORS	0	30,966	---	---	---	
NPN	0	11,910	---	---	---	
PNP	0	19,056	---	---	---	

TABLE 1.1-1 .AI-0001 RECEIVER-TRANSMITTER BURN-IN DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failures Description)
MULTIPLE TRANSISTORS	0	17,468	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	11,116	---	---	---	Chip Hours
Quad	0	6,352	---	---	---	Chip Hours
DARLINGTON	0	7,146	---	---	---	PART HOURS
UNKNOWN	0	3,176	---	---	---	

TABLE 1.1-2 .AI-0001 RECEIVER-TRANSMITTER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description
ALL DIODES	5+(1)	14,243,637	.35	.22	.56	
SMALL SIGNAL	2+(1)	6,720,312	.30	.12	.64	
Switching	2+(1)	6,720,312	.30	.12	.64	AI-0001/F#001, 008*, 011
RECTIFIERS	2	4,566,948	.44	.18	.94	
Low Power	0	767,397	---	---	2.1	
High Voltage	0	149,736	---	---	---	
High Power	0	973,284	---	---	1.6	
Fast Recovery	1	280,755	3.6	.79	11	AI-0001/F#006
Bridge, Full Wave	0	823,548	---	---	2.0	Chip Hours
Bridge, 3Ø	1	898,416	1.1	.25	3.3	Chip Hours; AI-0001/F#002
Unknown	0	673,812	---	---	2.4	
ZENERS	0	2,488,452	---	---	.65	
Regulator	0	1,683,621	---	---	.95	
Reference	0	655,095	---	---	2.5	
Avalanche	0	93,585	---	---	---	
Unknown	0	56,151	---	---	---	
SUPPRESSORS	1	318,189	3.1	.70	9.4	
Transient Suppressor	1	318,189	3.1	.70	9.4	AI-0001/F#012
MICROWAVE	0	112,302	---	---	---	
Schottky Barrier	0	56,151	---	---	---	
Varactor	0	56,151	---	---	---	
UNKNOWN	0	37,434	---	---	---	
ALL TRANSISTORS	8+(4)	6,466,455	1.2	.86	1.7	
LOW POWER	6+(2)	5,355,417	1.1	.73	1.7	
NPN	5+(1)	3,723,774	1.3	.83	2.1	AI-0001/F#007,009*, 010,013,014,018
PNP	1+(1)	1,631,643	.61	.14	1.8	AI-001/F#003, 017*
POWER	2+(2)	230,058	8.5	3.5	18	
NPN	2+(2)	230,058	8.5	3.5	18	AI-0001/F#004,* 005* , 015,016
FIELD EFFECT	0	37,434	---	---	---	
JFET, P-Channel	0	37,434	---	---	---	
RF TRANSISTORS	0	302,571	---	---	---	
NPN	0	267,120	---	---	---	
PNP	0	21,816	---	---	---	
Unknown	0	13,635	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT. FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-2 .AI-0001 RECEIVER-TRANSMITTER REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description
MULTIPLE TRANSISTORS	0	368,886	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	226,422	---	---	---	Chip Hours
Quad	0	142,464	---	---	---	Chip Hours
DARLINGTON	0	168,453	---	---	---	PART HOURS
UNKNOWN	0	3,636	---	---	---	

TABLE 1.1-3 .AI-0002 RADIO COMMUNICATION REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	4+(3)	7,675,814	.52	.30	.88	
SMALL SIGNAL	0	3,279,588	---	---	.49	
Switching	0	3,279,588	---	---	.49	
RECTIFIERS	0	1,155,231	---	---	1.4	
Low Power	0	163,524	---	---	---	
Fast Recovery	0	764,435	---	---	2.1	
Unknown	0	227,272	---	---	---	
ZENERS	1+(2)	1,577,851	.63	.14	1.9	
Voltage Regulator	1+(1)	1,067,122	.94	.21	2.8	AI-002/F#007, 009*
Reference	(1)	81,892	---	---	---	AI-0002/F#011*
Current Regulator	0	155,777	---	---	---	
Unknown	0	273,060	---	---	---	
SPECIAL FUNCTION	0	292,174	---	---	---	
Noise Generating	0	292,174	---	---	---	
MICROWAVE	3+(1)	1,370,970	2.2	1.1	4.0	
Back (Tunnel Rectifier)	0	22,475	---	---	---	
Schottky Barrier	1	786,622	1.3	.28	3.8	AI-0002/F#003
Quad, Schottky Barrier	2+(1)	449,498	4.4	1.8	9.5	Chip Hours, AI-0002/F#001*, 005,006
PIN	0	89,900	---	---	---	
Varactor	0	22,475	---	---	---	
ALL TRANSISTORS	2+(2)	3,799,958	.53	.22	1.1	
LOW POWER	1+(1)	1.704,349	.59	.13	1.8	
NPN	0	1,125,340	---	---	1.4	
PNP	1+(1)	579,009	1.7	.38	5.2	AI-0002/F#004*, 010
FIELD EFFECT	0	651,773	---	---	2.5	
N-Channel	0	539,398	---	---	3.0	
P-Channel	0	112,375	---	---	---	
UNIJUNCTION	0	18,182	---	---	---	
RF TRANSISTOR	1	202,274	---	---	---	
NPN	1	202,274	---	---	---	AI-0002/F#012
MULTIPLE TRANSISTORS	0	495,698	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	356,548	---	---	---	Chip Hours
Diff. Amp., PNP	0	44,950	---	---	---	Chip Hours
Quad	0	94,200	---	---	---	Chip Hours

*NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-3 AI-0002 RADIO COMMUNICATION REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description
MISCELLANEOUS	(1)	682,732	---	---	2.4	
NPN	(1)	668,265	---	---	2.4	AI-0002/F#002*
PNP	0	14,467	---	---	---	
UNKNOWN	0	44,950	---	---	---	
ALL THYRISTORS	(1)	44,950	---	---	---	
SCR	(1)	44,950	---	---	---	AI-0002/F#008*

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT. FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-4 .AI-0002 RADIO COMMUNICATION POST REL DEMO 25°C DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	755,936	---	---	2.1	
SMALL SIGNAL	0	319,135	---	---	---	
Switching	0	319,135	---	---	---	
RECTIFIERS	0	136,071	---	---	---	
Low Power	0	16,678	---	---	---	
Fast Recovery	0	96,707	---	---	---	
Unknown	0	22,686	---	---	---	
ZENERS	0	155,058	---	---	---	
Voltage Regulator	0	97,835	---	---	---	
Reference	0	7,422	---	---	---	
Current Regulator	0	20,272	---	---	---	
Unknown	0	29,529	---	---	---	
SPECIAL FUNCTION	0	26,953	---	---	---	
Noise Generating	0	26,953	---	---	---	
MICROWAVE	0	126,470	---	---	---	
Back (Tunnel Rectifier)	0	2,073	---	---	---	
Schottky Barrier	0	72,566	---	---	---	
Quad, Schottky Barrier	0	41,466	---	---	---	Chip Hours
PIN	0	8,292	---	---	---	
Varactor	0	2,073	---	---	---	
ALL TRANSISTORS	0	418,683	---	---	---	
LOW POWER	0	201,515	---	---	---	
NPN	0	143,159	---	---	---	
PNP	0	58,356	---	---	---	
FIELD EFFECT	0	60,123	---	---	---	
N-Channel	0	49,758	---	---	---	
P-Channel	0	10,365	---	---	---	
UNIJUNCTION	0	2,073	---	---	---	
RF TRANSISTORS	0	18,659	---	---	---	
NPN	0	18,659	---	---	---	

TABLE 1.1-4 .AI-0002 RADIO COMMUNICATION POST REL DEMO 25°C DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
MULTIPLE TRANSISTORS	0	56,535	---	---	---	CHIP HOURS
Diff Amp, NPN	0	42,819	---	---	---	Chip Hours
Diff Amp, PNP	0	4,146	---	---	---	Chip Hours
Quad	0	9,570	---	---	---	Chip Hours
MISCELLANEOUS	0	75,632	---	---	---	
NPN	0	74,430	---	---	---	
PNP	0	1,202	---	---	---	
UNKNOWN	0	4,146	---	---	---	
ALL THYRISTORS	0	4,148	---	---	---	
SCR	0	4,148	---	---	---	

TABLE 1.1-5 .AI-0002 RADIO COMMUNICATION POST REL DEMO 55°C DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failures Description)
ALL DIODES	0	936,994	---	---	1.7	
SMALL SIGNAL	0	401,086	---	---	---	
Switching	0	401,086	---	---	---	
RECTIFIERS	0	146,424	---	---	---	
Low Power	0	18,881	---	---	---	
Fast Recovery	0	99,702	---	---	---	
Unknown	0	27,841	---	---	---	
ZENERS	0	190,236	---	---	---	
Voltage Regulator	0	128,339	---	---	---	
Reference	0	9,870	---	---	---	
Current Regulator	0	18,840	---	---	---	
Unknown	0	33,187	---	---	---	
SPECIAL FUNCTION	0	35,003	---	---	---	
Noise Generating	0	35,003	---	---	---	
MICROWAVE	0	164,245	---	---	---	
Back (Tunnel Rectifier)	0	2,693	---	---	---	
Schottky Barrier	0	94,239	---	---	---	
Quad, Schottky Barrier	0	53,850	---	---	---	
PIN	0	10,770	---	---	---	
Varactor	0	2,693	---	---	---	
ALL TRANSISTORS	0	472,070	---	---	3.4	
LOW POWER	0	209,120	---	---	---	
NPN	0	136,419	---	---	---	
PNP	0	72,701	---	---	---	
FIELD EFFECT	0	78,084	---	---	---	
N-Channel	0	64,621	---	---	---	
P-Channel	0	13,463	---	---	---	
UNIJUNCTION	0	2,693	---	---	---	
RF TRANSISTORS	0	24,233	---	---	---	
NPN	0	24,233	---	---	---	

TABLE 1.1-5 .AI-0002 RADIO COMMUNICATION POST REL DEMO 55°C DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
MULTIPLE TRANSISTORS	0	62,895	---	---	---	CHIP HOURS
Diff Amp, NPN	0	43,064	---	---	---	Chip Hours
Diff Amp, PNP	0	5,385	---	---	---	Chip Hours
Quad	0	14,446	---	---	---	Chip Hours
MISCELLANEOUS	0	89,660	---	---	---	
NPN	0	87,868	---	---	---	
PNP	0	1,792	---	---	---	
UNKNOWN	0	5,385	---	---	---	
ALL THYRISTORS	0	5,384	---	---	---	
SCR	0	5,384	---	---	---	

TABLE 1.1-6 .AI-0003 RADIO COMMUNICATIONS REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description
ALL DIODES	1	1,196,000	.84	.19	2.5	
SMALL SIGNAL	0	836,000	---	---	1.9	
Switching	0	808,000	---	---	2.0	
Unknown	0	28,000	---	---	---	
RECTIFIERS	0	164,000	---	---	---	
Low Power	0	88,000	---	---	---	
High Power	0	4,000	---	---	---	
Fast Recovery	0	48,000	---	---	---	
Unknown	0	24,000	---	---	---	
ZENERS	1	64,000	---	---	---	
Regulator	1	44,000	---	---	---	AI-0003/F#002
Unknown	0	20,000	---	---	---	
SUPPRESSORS	0	4,000	---	---	---	
Transient Suppressor	0	4,000	---	---	---	
MICROWAVE	0	128,000	---	---	---	
Schottky Barrier	0	20,000	---	---	---	
PIN	0	56,000	---	---	---	
Varactor	0	48,000	---	---	---	
Step-Recovery	0	4,000	---	---	---	
ALL TRANSISTORS	5	544,000	9.2	5.7	14	
LOW POWER	1	360,000	2.8	.62	8.3	
NPN	1	276,000	3.6	.81	11	AI-0003/F#003
PNP	0	84,000	---	---	---	
POWER	2	48,000	---	---	---	
NPN	0	24,000	---	---	---	
PNP	2	24,000	---	---	---	AI-003/F#004, 006
FIELD EFFECT	0	44,000	---	---	---	
JFET, N-Channel	0	44,000	---	---	---	
RF TRANSISTOR	2	28,000	---	---	---	
NPN	2	28,000	---	---	---	AI-0003/F#001, 005
MISCELLANEOUS	0	56,000	---	---	---	
NPN	0	32,000	---	---	---	
PNP	0	24,000	---	---	---	
UNKNOWN	0	8,000	---	---	---	
ALL THYRISTORS	0	4,000	---	---	---	
SCR	0	4,000	---	---	---	

TABLE 1.1-7 .AI-0004 DATA PROCESSING SYSTEM IN-HOUSE CHECKOUT DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	2	4,567,242	.44	.18	.94	
SMALL SIGNAL	0	3,429,311	---	---	.47	
Switching	0	3,429,311	---	---	.47	
RECTIFIERS	0	819,633	---	---	2.0	
Low Power	0	29,354	---	---	---	
Fast Recovery	0	712,539	---	---	2.3	
Bridge, Full Wave	0	31,096	---	---	---	Chip Hours
Bridge, 3Ø	0	46,644	---	---	---	Chip Hours
ZENERS	2	318,298	6.3	2.6	13	
Regulator	1	236,521	---	---	---	AI-0004/F#002
Reference	1	81,777	---	---	---	AI-0004/F#003
ALL TRANSISTORS	(1)	1,807,381	---	---	.89	
LOW POWER	0	312,334	---	---	---	
NPN	0	252,634	---	---	---	
PNP	0	59,700	---	---	---	
POWER	0	267,108	---	---	---	
NPN	0	163,525	---	---	---	
PNP	0	103,583	---	---	---	
RF TRANSISTORS	0	148,004	---	---	---	CHIP HOURS
NPN (Dual)	0	148,004	---	---	---	Chip Hours
MULTIPLE TRANSISTORS	(1)	1,079,935	---	---	1.5	CHIP HOURS
Diff. Amp., NPN	(1)	775,686	---	---	2.1	Chip Hours, AI-0004/F#001*
Diff. Amp., PNP	0	104,077	---	---	---	Chip Hours
Complementary NPN/PNP	0	200,172	---	---	---	Chip Hours
ALL THYRISTORS	0	73,988	---	---	---	
SCR	0	73,988	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-8 .AI-0004 DATA PROCESSING SYSTEM FIELD DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	PREDICTED WEIGHTED AVERAGE $\bar{\lambda}$ (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	2	108,743,388	.018	.0076	.039	---	
SMALL SIGNAL	1	84,225,648	.011	.0026	.035	.060	
Switching	1	84,225,648	.011	.0026	.035	.036	AI-0004/F#012
RECTIFIERS	1	19,469,970	.051	.011	.15	.27	
Fast Recovery	1	19,469,970	.051	.011	.15	.27	AI-0004/F#011
ZENERS	0	5,047,770	---	---	.32	.13	
Regulators	0	3,317,106	---	---	.49	.12	
Reference	0	1,730,664	---	---	.93	.17	
ALL TRANSISTORS	25	31,584,618	.79	.66	.96	---	
LOW POWER	5	4,470,882	1.1	.69	1.8	.019	
NPN	5	3,317,106	1.5	.93	2.4	.015	AI-0004/F#004, 006
PNP	0	1,153,776	---	---	1.4	.034	
POWER	17	7,355,322	2.3	1.8	2.9	.10	
NPN	0	4,326,660	---	---	.37	.090	
PNP	17	3,028,662	5.6	4.4	7.1	.11	AI-004/F#008,009,010
RF TRANSISTORS	0	3,461,328	---	---	.46	---	CHIP HOURS
NPN (Dual)	0	3,461,328	---	---	.46	---	Chip Hours
MULTIPLE TRANSISTORS	3	16,297,086	.18	.094	.34	---	CHIP HOURS
Diff. Amp., NPN	1	11,537,760	.087	.019	.26	---	Chip Hours, AI-0004/F#007
Complimentary, NPN/PNP	2	4,759,326	.42	.17	.90	---	Chip Hours, AI-0004/F#005
ALL THYRISTORS	0	2,163,330	---	---	.74	.84	
SCR	0	2,163,330	---	---	.74	.84	

PRECEDING PAGE NOT FILMED
BLANK

TABLE 1.1-9 .AI-0005 INERTIAL NAVIGATION SET BURN-IN (FOUR CYCLES FAILURE FREE) DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	3	1,174,873	2.5	1.3	4.7	
SMALL SIGNAL	1	774,847	1.3	.29	3.9	
Switching	1	759,353	1.3	.29	3.9	AI-0005/F#014
General Purpose	0	15,494	---	---	---	
RECTIFIERS	0	247,592	---	---	---	
Low Power	0	173,682	---	---	---	
High Power	0	13,615	---	---	---	
Fast Recovery	0	40,845	---	---	---	
Unknown	0	19,450	---	---	---	Chip Hours
ZENERS	2	151,303	13	5.4	28	
Regulator	2	120,533	---	---	---	AI-0005/F#016, 017
Reference	0	30,770	---	---	---	
UNKNOWN	0	1,131	---	---	---	
ALL TRANSISTORS	5+(9)	1,157,805	4.3	2.7	6.8	
LOW POWER	1	916,890	1.1	.24	3.3	
NPN	1	744,602	1.3	.30	4.0	AI-0005/F#018
PNP	0	172,288	---	---	---	
Unknown	0	6,786	---	---	---	
POWER	2+(9)	132,190	15	6.2	32	
NPN	0	77,374	---	---	---	
PNP	1	29,175	---	---	---	AI-0005/F#013
Unknown	1+(9)	25,641	---	---	---	AI-0005/F#001, 002*-010*
FIELD EFFECT	1	17,122	---	---	---	
MOSFET	1	11,310	---	---	---	AI-0005/F#011
JFET, P-Channel	0	5,812	---	---	---	
UNIJUNCTION	0	1,131	---	---	---	
MULTIPLE TRANSISTORS	1	48,942	---	---	---	CHIP HOURS
Diff. Amp., NPN	1	48,942	---	---	---	Chip Hours; AI-0005/F#015
CHOPPER	0	24,882	---	---	---	
NPN	0	4,524	---	---	---	
PNP	0	20,358	---	---	---	
MISCELLANEOUS	0	7,917	---	---	---	
NPN	0	4,524	---	---	---	
PNP	0	3,393	---	---	---	
UNKNOWN	0	1,945	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-9 .AI-0005 INERTIAL NAVIGATION SET BURN-IN (FOUR CYCLES FAILURE FREE) DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL THYRISTORS	1	8,414	---	---	---	
SCR	1	8,414	---	---	---	AI-0005/F#012

TABLE 1.1-10 .AI-0005 INERTIAL NAVIGATION SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	3	3,746,257	.80	.41	1.5	
SMALL SIGNAL	0	2,239,843	---	---	.71	
Switching	0	2,189,507	---	---	.73	
General Purpose	0	50,336	---	---	---	
RECTIFIERS	0	915,917	---	---	1.7	
Low Power	0	635,781	---	---	2.5	
High Power	0	51,604	---	---	---	
Fast Recovery	0	154,812	---	---	---	
Unknown	0	73,720	---	---	---	Chip Hours
ZENERS	3	586,423	5.1	2.6	9.4	
Regulator	2	473,567	4.2	1.7	9.0	AI-0005/F#022, 024
Reference	1	112,856	---	---	---	AI-0005/F#023
UNKNOWN	0	4,074	---	---	---	
ALL TRANSISTORS	3	2,496,511	1.2	.61	2.2	
LOW POWER	1	1,625,697	.62	.14	1.8	
NPN	0	1,093,211	---	---	1.5	
PNP	1	508,042	2.0	.44	5.9	AI-0005/F#026
Unknown	0	24,444	---	---	---	
POWER	2	499,874	4.0	1.6	8.6	
NPN	1	282,748	3.5	.79	10	AI-0005/F#025
PNP	1	129,772	---	---	---	AI-0005/F#021
Unknown	0	87,354	---	---	---	
FIELD EFFECT	0	56,272	---	---	---	
MOSFET	0	40,740	---	---	---	
JFET, P-Channel	0	15,532	---	---	---	
UNIJUNCTION	0	4,074	---	---	---	
MULTIPLE TRANSISTORS	0	185,076	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	185,076	---	---	---	Chip Hours
CHOPPER	0	89,628	---	---	---	
NPN	0	16,296	---	---	---	
PNP	0	73,332	---	---	---	
MISCELLANEOUS	0	28,518	---	---	---	
NPN	0	16,296	---	---	---	
PNP	0	12,222	---	---	---	
UNKNOWN	0	7,372	---	---	---	

TABLE 1.1-10 .AI-0005 INERTIAL NAVIGATION SET REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL THYRISTORS	1+(1)	31,040	---	---	---	
SCR	1+(1)	31,040	---	---	---	AI-0005/F#019, 020*

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-11 .AI-0006 ALTITUDE INDICATOR REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	61,120	---	---	---	
RECTIFIERS	0	34,380	---	---	---	
Low Power	0	7,640	---	---	---	
Fast Recovery	0	26,740	---	---	---	
ZENERS	0	26,740	---	---	---	
Regulator	0	26,740	---	---	---	
ALL TRANSISTORS	0	80,220	---	---	---	
LOW POWER	0	72,580	---	---	---	
NPN	0	34,380	---	---	---	
PNP	0	38,200	---	---	---	
FIELD EFFECT	0	7,640	---	---	---	
JFET, N-Channel	0	7,640	---	---	---	

TABLE 1.1-12 .AI-0007 SIGNAL DATA RECORDER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	350,456	---	---	---	
SMALL SIGNAL	0	249,268	---	---	---	
Switching	0	217,184	---	---	---	
General Purpose	0	32,084	---	---	---	
RECTIFIERS	0	71,572	---	---	---	
High Power	0	71,572	---	---	---	
ZENERS	0	24,680	---	---	---	
Regulator	0	9,872	---	---	---	
Reference	0	14,808	---	---	---	
SUPPRESSORS	0	4,936	---	---	---	
Transient Suppressor	0	4,936	---	---	---	
ALL TRANSISTORS	1	343,054	2.9	.65	8.7	
LOW POWER	0	172,760	---	---	---	
NPN	0	118,464	---	---	---	
PNP	0	54,296	---	---	---	
POWER	0	4,938	---	---	---	
NPN	0	4,938	---	---	---	
CHOPPER	1	130,804	---	---	---	
NPN	1	44,424	---	---	---	AI-0007/F#001
PNP	0	86,380	---	---	---	
MISCELLANEOUS	0	27,148	---	---	---	
NPN	0	7,404	---	---	---	
PNP	0	19,744	---	---	---	
UNKNOWN	0	7,404	---	---	---	

TABLE 1.1-13 .AI-0008 AIR DATA COMPUTER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	334,235	---	---	---	
SMALL SIGNAL	0	124,630	---	---	---	
Switching	0	124,630	---	---	---	
RECTIFIERS	0	101,970	---	---	---	
Low Power	0	50,985	---	---	---	
Fast Recovery	0	50,985	---	---	---	
ZENERS	0	107,635	---	---	---	
Regulator	0	101,970	---	---	---	
Reference	0	5,665	---	---	---	
ALL TRANSISTORS	2	220,935	9.1	3.7	19	
LOW POWER	1	203,940	---	---	---	
NPN	1	107,635	---	---	---	AI-0008/F#001
PNP	0	96,305	---	---	---	
POWER	1	16,995	---	---	---	
NPN	1	16,995	---	---	---	AI-0008/F#002

TABLE 1.1-14 .AI-0010 INDICATOR GROUP REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	719,497	---	---	2.2	
SMALL SIGNAL	0	376,700	---	---	---	
Switching	0	376,700	---	---	---	
RECTIFIERS	0	150,680	---	---	---	
Low Power	0	11,301	---	---	---	
Fast Recovery	0	139,379	---	---	---	
ZENERS	0	131,845	---	---	---	
Regulator	0	120,544	---	---	---	
Reference	0	11,301	---	---	---	
MICROWAVE	0	41,437	---	---	---	
Schottky Barrier	0	41,437	---	---	---	
UNKNOWN	0	18,835	---	---	---	
ALL TRANSISTORS	3+(2)	674,293	4.4	2.3	8.2	
LOW POWER	3+(2)	354,098	8.5	4.3	15	
NPN	3	180,816	16	8.5	31	AI-0010/F#002, 003, 005
PNP	(2)	173,282	---	---	---	AI-0010/F#001*, 004*
POWER	0	67,806	---	---	---	
NPN	0	45,204	---	---	---	
PNP	0	11,301	---	---	---	
Unknown	0	11,301	---	---	---	
FIELD EFFECT	0	26,369	---	---	---	
JFET, N-Channel	0	26,369	---	---	---	
CHOPPER	0	45,204	---	---	---	
PNP	0	45,204	---	---	---	
UNKNOWN	0	180,816	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-15 .AI-0011 INTERFERENCE BLANKER SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOUR	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	448,849	---	---	---	
SMALL SIGNAL	0	238,904	---	---	---	
Switching	0	238,904	---	---	---	
RECTIFIERS	0	188,228	---	---	---	
Low Power	0	21,719	---	---	---	
High Power	0	166,509	---	---	---	
ZENERS	0	21,719	---	---	---	
Regulator	0	21,719	---	---	---	
ALL TRANSISTORS	2	521,244	3.8	1.6	8.2	
LOW POWER	0	463,328	---	---	---	
NPN	0	289,580	---	---	---	
PNP	0	173,748	---	---	---	
POWER	2	57,916	---	---	---	
NPN	2	57,916	---	---	---	AI-0011/F#001, 002
ALL THYRISTORS	0	7,240	---	---	---	
SCR	0	7,240	---	---	---	

TABLE 1.1-16 .AI-0012 SEARCH RADAR SET BURN-IN DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	2+(1)	1,934,685	1.0	.43	2.2	
RECTIFIERS	(1)	75,217	---	---	---	
Low Power	(1)	37,837	---	---	---	AI-0012/F#003*
Fast Recovery	0	5,340	---	---	---	
Unknown	0	32,040	---	---	---	
ZENERS	0	69,420	---	---	---	
Regulator	0	58,740	---	---	---	
Unknown	0	10,680	---	---	---	
UNKNOWN	2	1,790,048	---	---	---	AI-0012/F#002, 009
ALL TRANSISTORS	4+(4)	1,649,848	2.4	1.4	4.1	
LOW POWER	(1)	800,954	---	---	2.0	
NPN	(1)	590,033	---	---	2.7	AI-0012/F#006*
PNP	0	210,921	---	---	---	
FIELD EFFECT	1	10,678	---	---	---	AI-0012/F#005
CHOPPER	0	53,400	---	---	---	
NPN	0	53,400	---	---	---	
UNKNOWN	3+(3)	784,816	3.8	1.9	7.0	AI-0012/F#001,* 002*,007,008,010

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT. FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-17 .AI-0013 RADAR SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	147,150	---	---	---	
SMALL SIGNAL	0	34,350	---	---	---	
Switching	0	33,750	---	---	---	
General Purpose	0	600	---	---	---	
RECTIFIERS	0	55,500	---	---	---	
Low Power	0	15,900	---	---	---	
Power	0	1,800	---	---	---	
Fast Recovery	0	30,000	---	---	---	
Unknown	0	7,800	---	---	---	
ZENERS	0	58,500	---	---	---	
Regulator	0	13,500	---	---	---	
Reference	0	45,000	---	---	---	
SUPPRESSORS	0	900	---	---	---	
Transient Suppressor	0	300	---	---	---	
Unknown	0	600	---	---	---	
MICROWAVE	0	11,100	---	---	---	
Schottky Barrier	0	7,950	---	---	---	
PIN	0	150	---	---	---	
Point Contact	0	150	---	---	---	
Bulk Semiconductor	0	1,950	---	---	---	
Varactor	0	750	---	---	---	
Step Recovery	0	150	---	---	---	
UNKNOWN	0	27,300	---	---	---	
ALL TRANSISTORS	0	93,800	---	---	---	
LOW POWER	0	16,800	---	---	---	
NPN	0	11,250	---	---	---	
PNP	0	5,550	---	---	---	
POWER	0	3,600	---	---	---	
NPN	0	3,000	---	---	---	
PNP	0	600	---	---	---	
FIELD EFFECT	0	300	---	---	---	
JFET, N-Channel	0	300	---	---	---	
RF TRANSISTORS	0	9,450	---	---	---	
NPN	0	150	---	---	---	
PNP	0	600	---	---	---	
Unknown	0	8,700	---	---	---	

TABLE 1.1-17 .AI-0013 RADAR SET REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDCNECE INTERVAL LOWER (fpmh)	60% CONFIDCNECE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
MULTIPLE TRANSISTORS	0	45,200	---	---	---	CHIP HOURS
Diff. Amp., PNP	0	1,200	---	---	---	Chip Hours
Quad	0	44,000	---	---	---	Chip Hours
CHOPPER	0	3,600	---	---	---	
NPN	0	1,800	---	---	---	
PNP	0	1,800	---	---	---	
UNKNOWN	0	14,700	---	---	---	
ALL THYRISTORS	0	1,500	---	---	---	
SCR	0	1,500	---	---	---	
ALL OPTOELECTRONICS	0	150	---	---	---	
UNKNOWN	0	150	---	---	---	

TABLE 1.1-18 .AI-0014 DATA PROCESSING GROUP REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failures Description)
ALL DIODES	0	500,199	---	---	3.2	
SMALL SIGNAL	0	195,943	---	---	---	
Switching	0	195,943	---	---	---	
RECTIFIERS	0	156,111	---	---	---	
Low Power	0	5,515	---	---	---	
Fast Recovery	0	118,730	---	---	---	
Bridge, Full Wave	0	19,610	---	---	---	Chip Hours
Unknown	0	12,256	---	---	---	Chip Hours
ZENERS	0	52,701	---	---	---	
Regulator	0	23,746	---	---	---	
Reference	0	25,891	---	---	---	
Unknown	0	3,064	---	---	---	
ARRAY	0	90,082	---	---	---	
MICROWAVE	0	5,362	---	---	---	
Schottky Barrier	0	3,983	---	---	---	
PIN	0	1,379	---	---	---	
ALL TRANSISTORS	0	276,986	---	---	---	
LOW POWER	0	114,288	---	---	---	
NPN	0	78,592	---	---	---	
PNP	0	35,696	---	---	---	
POWER	0	15,933	---	---	---	
NPN	0	15,933	---	---	---	
FIELD EFFECT	0	30,334	---	---	---	
MULTIPLE TRANSISTORS	0	60,054	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	13,482	---	---	---	Chip Hours
Diff. Amp., PNP	0	7,966	---	---	---	Chip Hours
Quad	0	38,606	---	---	---	Chip Hours
DARLINGTON	0	919	---	---	---	PART HOURS
CHOPPER	0	3,064	---	---	---	
PNP	0	3,064	---	---	---	
MISCELLANEOUS	0	9,039	---	---	---	
NPN	0	9,039	---	---	---	

TABLE 1.1-18 .AI-0014 DATA PROCESSING GROUP REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL OPTOELECTRONICS	2	3,677	---	---	---	
EMITTERS	2	3,677	---	---	---	
LED	2	3,677	---	---	---	AI-0014/F#001, 002

TABLE 1.1-19 .AI-0015 CENTRAL COMPUTER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	295,320	---	---	---	
SMALL SIGNAL	0	38,520	---	---	---	
Switching	0	38,520	---	---	---	
RECTIFIERS	0	132,680	---	---	---	
Fast Recovery	0	124,120	---	---	---	
Unknown	0	8,560	---	---	---	
ZENERS	0	124,120	---	---	---	
Voltage Regulator	0	55,640	---	---	---	
Reference	0	34,240	---	---	---	
Current Regulator	0	34,240	---	---	---	
ALL TRANSISTORS	6+(1)	445,120	13	8.8	20	
LOW POWER	0	158,360	---	---	---	
NPN	0	107,000	---	---	---	
PNP	0	51,360	---	---	---	
POWER	(1)	59,920	---	---	---	
NPN	(1)	25,680	---	---	---	AI-0015/F#004*
PNP	0	34,240	---	---	---	
MULTIPLE TRANSISTORS	0	196,880	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	154,080	---	---	---	Chip Hours
Diff. Amp., PNP	0	25,680	---	---	---	Chip Hours
Quad	0	17,120	---	---	---	Chip Hours
DARLINGTON	6	12,840	---	---	---	PART HOURS
NPN	3	4,280	---	---	---	Part Hours; AI-0015/F#002,003,006
PNP-In/NPN-Out	3	8,560	---	---	---	Part Hours; AI-0015/F#001,005,007
MISCELLANEOUS	0	8,560	---	---	---	
NPN	0	8,560	---	---	---	
UNKNOWN	0	8,560	---	---	---	

*NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT. FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-20 .AI-0016 LORAN NAVIGATION SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	1,948,744	---	---	.82	
SMALL SIGNAL	0	541,654	---	---	3.0	
Switching	0	541,654	---	---	3.0	
RECTIFIERS	0	810,968	---	---	2.0	
Low Power	0	420,614	---	---	---	
High Power	0	108,936	---	---	---	
Fast Recovery	0	263,262	---	---	---	
Unknown	0	18,156	---	---	---	
ZENERS	0	375,224	---	---	---	
Regulator	0	360,094	---	---	---	
Reference	0	15,130	---	---	---	
MICROWAVE	0	3,026	---	---	---	
Varactor	0	3,026	---	---	---	
UNKNOWN	0	226,950	---	---	---	
ALL TRANSISTORS	2	1,316,310	1.5	.63	3.3	
LOW POWER	0	1,016,736	---	---	1.6	
NPN	0	689,928	---	---	2.3	
PNP	0	326,808	---	---	---	
POWER	1	214,846	---	---	---	
NPN	1	130,118	---	---	---	AI-0016/F#001
PNP	0	84,728	---	---	---	
FIELD EFFECT	0	21,182	---	---	---	
JFET, N-Channel	0	21,182	---	---	---	
UNIJUNCTION	1	15,130	---	---	---	AI-0016/F#002
MULTIPLE TRANSISTORS	0	24,208	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	24,208	---	---	---	Chip Hours
ALL OPTOELECTRONICS	0	136,170	---	---	---	
DISPLAY	0	136,170	---	---	---	
Unknown	0	136,170	---	---	---	

TABLE 1.1-21 .AI-0017 COUNTERMEASURES SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	1,261,000	---	---	1.3	
SMALL SIGNAL	0	350,000	---	---	---	
Switching	0	350,000	---	---	---	
RECTIFIERS	0	574,000	---	---	2.8	
Low Power	0	349,000	---	---	---	
High Power	0	56,000	---	---	---	
Fast Recovery	0	169,000	---	---	---	
ZENERS	0	232,000	---	---	---	
Regulator	0	203,000	---	---	---	
Reference	0	29,000	---	---	---	
UNKNOWN	0	105,000	---	---	---	
ALL TRANSISTORS	2+(1)	740,000	2.7	1.1	5.8	
LOW POWER	1	418,000	2.4	.53	7.1	
NPN	1	290,000	3.4	.77	10	AI-0017/F#001
PNP	0	128,000	---	---	---	
POWER	(1)	33,000	---	---	---	
NPN	0	32,000	---	---	---	
PNP	(1)	1,000	---	---	---	AI-0017/F#003*
FIELD EFFECT	0	5,000	---	---	---	
JFET, N-Channel	0	5,000	---	---	---	
MULTIPLE TRANSISTORS	0	6,000	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	6,000	---	---	---	Chip Hours
DARLINGTON	0	34,000	---	---	---	PART HOURS
NPN	0	20,000	---	---	---	Part Hours
PNP	0	14,000	---	---	---	Part Hours
CHOPPER	0	1,000	---	---	---	
NPN	0	1,000	---	---	---	
MISCELLANEOUS	0	2,000	---	---	---	
NPN	0	2,000	---	---	---	
UNKNOWN	1	238,000	---	---	---	AI-0017/F#002
ALL THYRISTORS	0	11,000	---	---	---	
SCR	0	11,000	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT. FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-22 .AU-0001 PHASED ARRAY ANTENNA REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	11,448,000	---	---	.14	
RECTIFIERS	0	11,448,000	---	---	.14	
Low Power	0	11,448,000	---	---	.14	
ALL TRANSISTORS	9	11,448,000	.79	.56	1.1	
LOW POWER	9	11,448,000	.79	.56	1.1	
NPN	9	11,448,000	.79	.56	1.1	AI-0014/F#001

TABLE 1.1-23 .AU-0002 ELECTRONIC AIR INLET CONTROLLER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	1,761,845	---	---	.91	
SMALL SIGNAL	0	1,192,661	---	---	1.3	
Switching	0	1,096,071	---	---	1.5	
General Purpose	0	96,590	---	---	---	
RECTIFIERS	0	116,072	---	---	---	
High Power	0	87,054	---	---	---	
Fast Recovery	0	29,018	---	---	---	
ZENERS	0	453,112	---	---	---	
Regulator	0	409,585	---	---	---	
Reference	0	43,527	---	---	---	
ALL TRANSISTORS	1	1,199,260	.83	.18	2.5	
LOW POWER	1	711,139	1.4	.31	4.2	
NPN	1	435,468	2.3	.51	6.9	AU-0002/F#001
PNP	0	275,671	---	---	---	
POWER	0	87,054	---	---	---	
NPN	0	58,036	---	---	---	
PNP	0	29,018	---	---	---	
CHOPPER	0	401,067	---	---	---	
NPN	0	91,815	---	---	---	
PNP	0	309,252	---	---	---	

TABLE 1.1-24 .GF-0001 COMMUNICATIONS CENTRAL REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	9,141,745	---	---	.18	
SMALL SIGNAL	0	4,394,324	---	---	.37	
Switching	0	1,986,362	---	---	.81	
General Purpose	0	2,407,962	---	---	.67	
RECTIFIERS	0	2,026,192	---	---	.79	
Low Power	0	1,446,631	---	---	1.1	
High Power	0	129,797	---	---	---	
Fast Recovery	0	160,630	---	---	---	
Unknown	0	289,134	---	---	---	
ZENERS	0	1,951,651	---	---	.82	
Voltage Regulator	0	1,758,555	---	---	.91	
Reference	0	137,313	---	---	---	
Current Regulator	0	18,619	---	---	---	
Avalanche	0	25,117	---	---	---	
Unknown	0	12,047	---	---	---	
MICROWAVE	0	93,067	---	---	---	
UHF Mixer	0	6,376	---	---	---	
Schottky Barrier	0	6,376	---	---	---	
Varactor	0	80,315	---	---	---	
UNKNOWN	0	676,511	---	---	2.4	
ALL TRANSISTORS	1	5,150,440	.19	.043	.58	
LOW POWER	0	4,129,652	---	---	.39	
NPN	0	3,483,770	---	---	.46	
PNP	0	645,882	---	---	2.5	
POWER	1	503,283	2.0	.44	5.9	
NPN	1	352,580	2.8	.63	8.5	GF-0001/F#001
PNP	0	150,703	---	---	---	
FIELD EFFECT	0	90,658	---	---	---	
JFET, N-Channel	0	41,569	---	---	---	
JFET, P-Channel	0	45,901	---	---	---	
Unknown	0	3,188	---	---	---	
UNIJUNCTION	0	12,752	---	---	---	
RF TRANSISTORS	0	176,059	---	---	---	
NPN	0	176,059	---	---	---	
MULTIPLE TRANSISTOR	0	109,132	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	109,132	---	---	---	Chip Hours

TABLE 1.1-24 .GF-0001 COMMUNICATIONS CENTRAL REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
CHOPPER	0	26,395	---	---	---	
NPN	0	8,031	---	---	---	
PNP	0	18,364	---	---	---	
UNKNOWN	0	102,509	---	---	---	
ALL THYRISTORS	0	46,094	---	---	---	
SCR	0	46,094	---	---	---	

TABLE 1.1-25 .GF-0002 AIR CONTROL CENTER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	5,136,213	---	---	.31	
SMALL SIGNAL	0	1,737,469	---	---	.93	
Switching	0	1,552,188	---	---	1.0	
General Purpose	0	185,281	---	---	---	
RECTIFIERS	0	1,245,915	---	---	1.3	
Low Power	0	533,632	---	---	3.0	
High Power	0	89,654	---	---	---	
Fast Recovery	0	79,495	---	---	---	
Bridge, Full Wave	0	57,323	---	---	---	Chip Hours
Bridge, 3Ø	0	447,851	---	---	---	Chip Hours
Unknown	0	37,960	---	---	---	
ZENERS	0	559,926	---	---	2.9	
Regulator	0	373,329	---	---	---	
Reference	0	7,018	---	---	---	
Unknown	0	179,579	---	---	---	
MICROWAVE	0	18,272	---	---	---	
Schottky Barrier	0	18,272	---	---	---	
UNKNOWN	0	1,574,631	---	---	1.0	
ALL TRANSISTORS	2	1,836,676	1.1	.45	2.3	
LOW POWER	1	1,351,398	.74	.17	2.2	
NPN	0	1,023,559	---	---	1.6	
PNP	1	327,839	3.1	.68	9.1	GF-0002/F#003
POWER	1	146,390	---	---	---	
NPN	1	118,492	---	---	---	GF-0002/F#002
PNP	0	27,898	---	---	---	
FIELD EFFECT	0	12,927	---	---	---	
JFET, N-Channel	0	12,927	---	---	---	
UNIJUNCTION	0	18,555	---	---	---	
MULTIPLE TRANSISTORS	0	193,389	---	---	---	CHIP HOURS
Diff. Amp., NPN	0	193,389	---	---	---	Chip Hours
MISCELLANEOUS	0	114,017	---	---	---	
NPN	0	75,057	---	---	---	
PNP	0	38,960	---	---	---	

TABLE 1.1-25 .GF-0002 AIR CONTROL CENTER REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL THYRISTORS	(1)	414,780	---	---	---	
SCR	(1)	414,780	---	---	---	GF-002/F#001*
ALL OPTOELECTRONICS	0	100,170	---	---	---	
EMITTER	0	81,009	---	---	---	
LED	0	81,009	---	---	---	
SENSOR	0	8,620	---	---	---	
Photodiode	0	5,679	---	---	---	
Phototransistor	0	2,941	---	---	---	
PHOTOCOUPLER	0	10,541	---	---	---	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-26 .GF-0003 UHF TRANSCEIVER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	14,730,079	---	---	.11	
SMALL SIGNAL	0	6,453,858	---	---	.25	
Switching	0	6,421,075	---	---	.25	
Unknown	0	32,783	---	---	---	
RECTIFIERS	0	4,582,577	---	---	.35	
Low Power	0	67,192	---	---	---	
High Power	0	2,164,490	---	---	.74	
Fast Recovery	0	2,255,525	---	---	.71	
Unknown	0	95,370	---	---	---	
ZENERS	0	1,811,736	---	---	.89	
Regulator	0	1,692,254	---	---	.95	
Reference	0	58,251	---	---	---	
Unknown	0	61,231	---	---	---	
SUPPRESSORS	0	110,541	---	---	---	
Transient Suppressor	0	110,541	---	---	---	
MICROWAVE	0	1,463,856	---	---	1.1	
Schottky Barrier	0	718,517	---	---	2.2	
PIN	0	524,257	---	---	3.1	
Varactor	0	221,082	---	---	---	
UNKNOWN	0	307,511	---	---	---	
ALL TRANSISTORS	1+(3)	7,799,647	.13	.029	.38	
LOW POWER	1	4,890,087	.20	.046	.61	
NPN	1	3,611,550	.28	.061	.83	GF-0003/F#003
PNP	0	1,278,537	---	---	1.3	
POWER	(3)	1,106,765	---	---	1.5	
NPN	(3)	757,260	---	---	2.1	GF-0003/F#001*, 002*
PNP	0	349,505	---	---	---	
FIELD EFFECT	0	183,693	---	---	---	
JFET, N-Channel	0	183,693	---	---	---	
RF TRANSISTOR	0	1,039,574	---	---	1.5	
NPN	0	116,502	---	---	---	
PNP	0	116,502	---	---	---	
Unknown	0	806,570	---	---	2.0	
UNKNOWN	0	579,528	---	---	2.8	

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-26 .GF-0003 UHF TRANSCEIVER REL DEMO DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL THYRISTORS	0	116,502	---	---	---	
SCR	0	116,502	---	---	---	

TABLE 1.1-27 .GF-0003 UHF TRANSCEIVER FIELD CHECKOUT DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section for Failure Description)
ALL DIODES	0	44,107,605	---	---	.036	
SMALL SIGNAL	0	19,199,781	---	---	.083	
Switching	0	19,199,781	---	---	.083	
RECTIFIERS	0	13,837,680	---	---	.11	
Low Power	0	172,971	---	---	---	
High Power	0	6,745,869	---	---	.24	
Fast Recovery	0	6,918,840	---	---	.23	
ZENERS	0	5,362,101	---	---	.30	
Regulator	0	5,016,159	---	---	.32	
Reference	0	172,971	---	---	---	
Unknown	0	172,971	---	---	---	
SUPPRESSORS	0	345,942	---	---	---	
Transient Suppressor	0	345,942	---	---	---	
MICROWAVE	0	4,670,217	---	---	.34	
Schottky Barrier	0	2,248,623	---	---	.71	
PIN	0	1,556,739	---	---	1.0	
Varactor	0	864,855	---	---	1.9	
UNKNOWN	0	691,884	---	---	2.3	
ALL TRANSISTORS	0	23,178,114	---	---	.069	
LOW POWER	0	14,529,564	---	---	.11	
NPN	0	10,724,202	---	---	.15	
PNP	0	3,805,362	---	---	.42	
POWER	0	3,286,449	---	---	.4[illegible]	
NPN	0	2,248,623	---	---	.71	
PNP	0	1,037,826	---	---	1.6	
FIELD EFFECT	0	518,913	---	---	3.1	
JFET, N-Channel	0	518,913	---	---	3.1	
RF TRANSISTOR	0	3,113,478	---	---	.52	
NPN	0	345,942	---	---	---	
PNP	0	345,942	---	---	---	
Unknown	0	2,421,594	---	---	.66	
UNKNOWN	0	1,729,710	---	---	.93	
ALL THYRISTORS	0	172,971	---	---	---	
SCR	0	172,971	---	---	---	

TABLE 1.1-28 .GF-0004 GROUP DATA MODEM REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	1,183,792	---	---	1.3	
SMALL SIGNAL	0	666,733	---	---	2.4	
Switching	0	176,888	---	---	---	
General Purpose	0	489,845	---	---	---	
RECTIFIERS	0	131,532	---	---	---	
Low Power	0	45,356	---	---	---	
High Power	0	18,142	---	---	---	
Fast Recovery	0	68,034	---	---	---	
ZENERS	0	335,634	---	---	---	
Regulator	0	317,492	---	---	---	
Reference	0	18,142	---	---	---	
MICROWAVE	0	49,891	---	---	---	
Schottky Barrier	0	18,142	---	---	---	
Varactor	0	31,749	---	---	---	
ALL TRANSISTORS	0	1,015,975	---	---	1.6	
LOW POWER	0	966,083	---	---	1.7	
NPN	0	603,235	---	---	2.7	
PNP	0	362,848	---	---	---	
POWER	0	9,071	---	---	---	
NPN	0	9,071	---	---	---	
FIELD EFFECT	0	4,536	---	---	---	
JFET, N-Channel	0	4,536	---	---	---	
MULTIPLE TRANSISTORS	0	27,214	---	---	---	CHIP HOURS
Diff. Amp., PNP	0	27,214	---	---	---	Chip Hours
UNKNOWN	0	9,071	---	---	---	
ALL THYRISTORS	0	4,536	---	---	---	
SCR	0	4,536	---	---	---	

TABLE 1.1-29 .GF-0005 MULTIPLEXER SET REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	2,115,755	---	---	.76	
SMALL SIGNAL	0	1,225,973	---	---	1.3	
Switching	0	1,225,973	---	---	1.3	
RECTIFIERS	0	115,511	---	---	---	
Low Power	0	21,002	---	---	---	
Fast Recovery	0	73,507	---	---	---	
Unknown	0	21,002	---	---	---	
ZENERS	0	774,273	---	---	2.1	
Regulator	0	758,521	---	---	2.1	
Reference	0	15,752	---	---	---	
ALL TRANSISTORS	0	2,147,989	---	---	.75	
LOW POWER	0	1,823,283	---	---	.88	
NPN	0	1,282,291	---	---	1.2	
PNP	0	540,992	---	---	3.0	
FIELD EFFECT	0	72,037	---	---	---	
JFET, N-Channel	0	72,037	---	---	---	
MULTIPLE TRANSISTORS	0	161,348	---	---	---	CHIP HOURS
Diff. Amp., PNP	0	161,348	---	---	---	Chip Hours
CHOPPER	0	38,815	---	---	---	
NPN	0	25,877	---	---	---	
PNP	0	12,938	---	---	---	
UNKNOWN	0	52,505	---	---	---	
ALL OPTOELECTRONICS	0	15,752	---	---	---	
OPTO-ISOLATOR	0	5,251	---	---	---	
DISPLAY	0	10,501	---	---	---	
LED Display	0	10,501	---	---	---	

TABLE 1.1-30 .NS-0001 RADIO DIRECTION FINDER IN-HOUSE CHECKOUT DATA

PART TYPE	NUMBER OF FAILURES *	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	2	14,805,477	.14	.056	.29	
SMALL SIGNAL	0	7,725,366	---	---	.21	
Switching	0	7,725,366	---	---	.21	
RECTIFIERS	0	287,307	---	---	---	
Low Power	0	244,743	---	---	---	
High Power	0	42,564	---	---	---	
ZENERS	2	2,749,224	.73	.30	1.6	
Regulator	2	2,472,558	.81	.33	1.7	NS-0001/F#002, 006
Reference	0	276,666	---	---	---	
MICROWAVE	0	3,713,709	---	---	.43	
Schottky Barrier	0	3,319,992	---	---	.48	
Quad, Schottky Barrier	0	170,256	---	---	---	Chip Hours
Varactor	0	223,461	---	---	---	
UNKNOWN	0	329,871	---	---	---	
ALL TRANSISTORS	3	9,779,079	.31	.16	.56	
LOW POWER	2	5,075,757	.39	.16	.84	
NPN	2	4,862,937	.41	.17	.88	NS-0001/F#001, 007
PNP	0	212,820	---	---	---	
POWER	0	191,538	---	---	---	
NPN	0	191,538	---	---	---	
FIELD EFFECT	0	755,511	---	---	2.1	
JFET, N-Channel	0	702,306	---	---	2.3	
JFET, P-Channel	0	53,205	---	---	---	
RF TRANSISTORS	1	3,756,273	.27	.059	.78	
NPN	1	3,756,273	.27	.059	.78	NS-0001/F#004
ALL OPTOELECTRONICS	1+(1)	106,410	---	---	---	
DISPLAY	1+(1)	106,410	---	---	---	
LED Display	1+(1)	106,410	---	---	---	NS-0001/F#003, 005*

* NUMBERS IN PARENTHESES ARE FAILURES WHICH MAY NOT HAVE BEEN THE FAULT OF THE COMPONENT; FAILURE RATE CALCULATIONS DID NOT COUNT THESE FAILURES.

TABLE 1.1-31 .NS-0001 RADIO DIRECTION FINDER QUALITY CONFORMANCE 50°C DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	1,855,216	---	---	.87	
SMALL SIGNAL	0	964,128	---	---	1.7	
Switching	0	964,128	---	---	1.7	
RECTIFIERS	0	35,856	---	---	---	
Low Power	0	30,544	---	---	---	
High Power	0	5,312	---	---	---	
ZENERS	0	350,592	---	---	---	
Regulator	0	316,064	---	---	---	
Reference	0	34,528	---	---	---	
MICROWAVE	0	463,472	---	---	---	
Schottky Barrier	0	414,336	---	---	---	
Quad, Schottky Barrier	0	21,248	---	---	---	Chip Hours
Varactor	0	27,888	---	---	---	
UNKNOWN	0	41,168	---	---	---	
ALL TRANSISTORS	1	1,220,432	.82	.18	2.4	
LOW POWER	0	633,456	---	---	2.5	
NPN	0	606,896	---	---	2.7	
PNP	0	26,560	---	---	---	
POWER	0	23,904	---	---	---	
NPN	0	23,904	---	---	---	
FIELD EFFECT	0	94,288	---	---	---	
JFET, N-Channel	0	87,648	---	---	---	
JFET, P-Channel	0	6,640	---	---	---	
RF TRANSISTORS	1	468,784	2.1	.48	6.4	
NPN	1	468,784	2.1	.48	6.4	NS-0001/F#008
ALL OPTOELECTRONICS	0	13,280	---	---	---	
DISPLAY	0	13,280	---	---	---	
LED Display	0	13,280	---	---	---	

TABLE 1.1-32 .NS-0001 RADIO DIRECTION FINDER REL DEMO DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	11,342,745	---	---	.14	
SMALL SIGNAL	0	5,903,106	---	---	.27	
Switching	0	5,903,106	---	---	.27	
RECTIFIERS	0	219,537	---	---	---	
Low Power	0	187,013	---	---	---	
High Power	0	32,524	---	---	---	
ZENERS	0	2,130,322	---	---	.75	
Regulator	0	1,918,916	---	---	.84	
Reference	0	211,406	---	---	---	
MICROWAVE	0	2,837,719	---	---	.57	
Schottky Barrier	0	2,536,872	---	---	.63	
Quad, Schottky Barrier	0	130,096	---	---	---	Chip Hours
Varactor	0	170,751	---	---	---	
UNKNOWN	0	252,061	---	---	---	
ALL TRANSISTORS	0	7,472,390	---	---	.21	
LOW POWER	0	3,878,488	---	---	.41	
NPN	0	3,715,868	---	---	.43	
PNP	0	162,620	---	---	---	
POWER	0	146,358	---	---	---	
NPN	0	146,358	---	---	---	
FIELD EFFECT	0	577,301	---	---	2.8	
JFET, N-Channel	0	536,646	---	---	3.0	
JFET, P-Channel	0	40,655	---	---	---	
RF TRANSISTORS	0	2,870,243	---	---	.56	
NPN	0	2,870,243	---	---	.56	
ALL OPTOELECTRONICS	0	81,310	---	---	---	
DISPLAY	0	81,310	---	---	---	
LED Display	0	81,310	---	---	---	

TABLE 1.1-33 .NS-0001 RADIO DIRECTION FINDER FIELD DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	1	73,251,285	.014	.0030	.041	
SMALL SIGNAL	0	38,795,470	---	---	.041	
Switching	0	38,795,470	---	---	.041	
RECTIFIERS	0	1,411,695	---	---	1.1	
Low Power	0	1,202,555	---	---	1.3	
High Power	0	209,140	---	---	---	
ZENERS	0	13,803,240	---	---	.12	
Regulator	0	12,443,830	---	---	.13	
Reference	0	1,359,410	---	---	1.2	
MICROWAVE	1	17,620,045	.057	.013	.17	
Schottky Barrier	1	16,522,060	.061	.013	.18	NS-0001/F#009
Varactor	0	1,097,985	---	---	1.5	
UNKNOWN	0	1,620,835	---	---	.99	
ALL TRANSISTORS	2	47,736,205	.042	.017	.090	
LOW POWER	1	26,351,640	.040	.0085	.011	
NPN	1	25,305,940	.040	.0088	.012	NS-0001/F#013
PNP	0	1,045,700	---	---	1.5	
POWER	0	941,130	---	---	1.7	
NPN	0	941,130	---	---	1.7	
FIELD EFFECT	0	3,712,235	---	---	.43	
JFET, N-Channel	0	3,712,235	---	---	.43	
RF TRANSISTOR	1	16,731,200	.060	.013	.18	
NPN	1	16,731,200	.060	.013	.18	NS-0001/F#012
ALL OPTOELECTRONICS	0	522,850	---	---	3.1	
DISPLAY	0	522,850	---	---	3.1	
LED Display	0	522,850	---	---	3.1	

TABLE 1.1-34 .NS-0002 COMMUNICATIONS CIRCUIT CONFIGURATION MONITOR RELIABILITY EVALUATION DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	31,697,375	---	---	.051	
SMALL SIGNAL	0	31,599,937	---	---	.051	
General Purpose	0	31,599,937	---	---	.051	
RECTIFIERS	0	4,532	---	---	---	CHIP HOURS
Bridge, Full Wave	0	4,532	---	---	---	Chip hours
ZENERS	0	92,906	---	---	---	
Regulator	0	92,906	---	---	---	
ALL TRANSISTORS	0	1,767,480	---	---	.91	
LOW POWER	0	1,740,288	---	---	.92	
NPN	0	1,449,107	---	---	1.1	
PNP	0	291,181	---	---	---	
POWER	0	24,926	---	---	---	
PNP	0	24,926	---	---	---	
UNIJUNCTION	0	2,266	---	---	---	

TABLE 1.1-35 .SF-0001 SPACE PROGRAM IN-HOUSE CHECKOUT DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	3	292,449,517	.010	.0052	.019	
SMALL SIGNAL	3	138,837,157	.022	.011	.040	
Switching	3	138,837,157	.022	.011	.040	SF-0001/F#001,002,003
RECTIFIERS	0	8,244,758	---	---	.20	
Low Power	0	947,502	---	---	1.7	
High Power	0	505,810	---	---	3.2	
Fast Recovery	0	6,791,446	---	---	.24	
ZENERS	0	48,492,182	---	---	.033	
Regulator	0	48,362,150	---	---	.033	
Reference	0	130,032	---	---	---	
ARRAY	0	96,706,000	---	---	.017	CHIP HOURS
MICROWAVE	0	169,420	---	---	---	
Varactor	0	169,420	---	---	---	
ALL TRANSISTORS	1	86,174,864	.01	.0025	.035	
LOW POWER	1	54,149,842	.018	.0041	.055	
NPN	1	43,403,005	.023	.0051	.069	SF-0001/F#004
PNP	0	10,746,837	---	---	.15	
POWER	0	5,287,616	---	---	.30	
NPN	0	2,386,300	---	---	.67	
PNP	0	2,901,316	---	---	.55	
UNIJUNCTION	0	378,920	---	---	---	
MULTIPLE TRANSISTORS	0	19,988,008	---	---	.081	CHIP HOURS
Diff. Amp., NPN	0	10,114,374	---	---	.10	Chip Hours
Diff. Amp., PNP	0	9,873,634	---	---	.16	Chip Hours
DARLINGTON	0	6,370,478	---	---	.25	PART HOURS
NPN	0	6,370,478	---	---	.25	Part Hours
ALL THYRISTORS	0	104,926	---	---	---	
SCR	0	104,926	---	---	---	

TABLE 1.1-36 .SF-0001 SPACE PROGRAM FIELD DATA

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	PREDICTED WEIGHTED AVERAGE $\hat{\lambda}$ (fpmh)	REMARKS (See Section III for Failure Description)
ALL DIODES	0	142,602,892	---	---	.011	---	
SMALL SIGNAL	0	60,658,762	---	---	.026	.0008	
Switching	0	60,658,762	---	---	.026	.0005	
RECTIFIERS	0	4,169,560	---	---	.39	.00345	
Low Power	0	425,574	---	---	---	.00095	
High Power	0	146,210	---	---	---	.0122	
Fast Recovery	0	3,597,776	---	---	.45	.00343	
ZENERS	0	13,492,914	---	---	.12	.0021	
Regulator	0	13,477,602	---	---	.12	.0021	
Reference	0	15,312	---	---	---	.0031	
ARRAY	0	64,242,960	---	---	.025	.0005	
MICROWAVE	0	38,696	---	---	---	---	
Varactor	0	38,696	---	---	---	---	
ALL TRANSISTORS	0	38,803,219	---	---	.041	---	
LOW POWER	0	22,536,863	---	---	.071	.0004	
NPN	0	16,212,816	---	---	.099	.0004	
PNP	0	6,324,047	---	---	.25	.0007	
POWER	0	2,910,190	---	---	.55	.0032	
NPN	0	908,634	---	---	1.8	.0036	
PNP	0	2,001,560	---	---	.80	.0028	
UNIJUNCTION	0	217,654	---	---	---	.017	
MULTIPLE TRANSISTORS	0	11,409,200	---	---	.14	---	CHIP HOURS
Diff. Amp., NPN	0	5,881,046	---	---	.27	---	Chip Hours
Diff. Amp., PNP	0	5,528,154	---	---	.29	---	Chip Hours

TABLE 1.1-36 .SF-0001 SPACE PROGRAM FIELD DATA (cont'd)

PART TYPE	NUMBER OF FAILURES	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL LOWER (fpmh)	60% CONFIDENCE INTERVAL UPPER (fpmh)	PREDICTED WEIGHTED AVERAGE $\hat{\lambda}$ (fpmh)	REMARKS (See Section III for Failure Description)
DARLINGTON	0	1,732,744	---	---	.93	.0003	PART HOURS
NPN	0	1,732,744	---	---	.93	.0003	Part Hours
ALL THYRISTORS	0	67,490	---	---	---	.0038	
SCR	0	67,490	---	---	---	.0038	

Section 1.2

FAILURE RATES BY PART TYPE

(Tables 1.2-1 to 1.2-40)

Data in Tables 1.1-1 to 1.1-36 were utilized to summarize failure rates by part type. These data have been classified into environments and general quality grades. They are as follows:

Environments:	High Stress Test
	Low Stress Test
	Airborne, Inhabited
	Ground, Fixed
	Naval Sheltered
	Space, Flight
Quality Grades:	Space
	Military
	Commercial

The High Stress Test is characterized by thermal cycling, power cycling and vibration, while the Low Stress Test is characterized by steady state operation at a relatively benign temperature. The Space quality grade is as shown in Appendix A for SF-0001. The Military grade is characterized as having a combination of JAN and JTX parts or equivalent screening. The Commercial grade is characterized as off-the-shelf parts.

As in the previous tables the data was simply merged to reflect reliability experience. The 60% confidence intervals (20% and 80%) were computed using the Chi-square distribution and 2r and 2(r+1) degrees of freedom for the lower and upper limit respectively. The 60% confidence intervals and $\hat{\lambda}$ were not computed for summarized data that did not meet the following criteria:

Failures	Part Hours
0	$\geq$ 500,000
1	$\geq$ 250,000
$\geq$ 2	$\geq$ 125,000

NOTE: In examining Table 1.2-11 and the failure analysis data in Section III for zener failures, it appears that the failure rates experienced (especially for the high stress test) are biased high due to the open or open-intermittent failure indicator of the spring loaded, pressure contact construction. Metallurgically bonded diodes are believed to be more reliable according to Table 2.2.4-6 of MIL-HDBK-217B.

Table 1.2-1 DIODE (100 & 300) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	1	604,234	1.7	.37 - 5.0
		AI-0001 Rel Demo	5+(1)	14,243,637	.35	.22 - .56
		AI-0002 Rel Demo	4+(3)	7,675,814	.52	.30 - .88
		AI-0003 Rel Demo	1	1,196,000	.84	.19 - 2.5
		AI-0004 In-House Checkout	2	4,567,242	.44	.18 - .94
		AI-0005 Burn-In	3	1.174,873	2.5	1.3 - 4.7
		AI-0005 Rel Demo	3	3,746,257	.80	.41 - 1.5
		AI-0006 Rel Demo	0	61,120	---	---
		AI-0007 Rel Demo	0	350,456	---	---
		AI-0008 Rel Demo	0	334,235	---	---
		AI-0010 Rel Demo	0	719,497	---	---
		AI-0011 Rel Demo	0	448,849	---	--- - 2.2
		AI-0012 Burn-In	2+(1)	1,934,685	1.0	.43 - 2.2
		AI-0013 Rel Demo	0	147,150	---	---
		AI-0014 Rel Demo	0	500,199	---	--- - 3.2
		AI-0015 Rel Demo	0	295,320	---	---
		AI-0016 Rel Demo	0	1,948,744	---	--- - .82
		AI-0017 Rel Demo	0	1,261,000	---	--- - 1.3
		AU-0002 Rel Demo	0	1,761,845	---	--- - .91
		ALL ABOVE COMBINED	21+(5)	42,971,157	.49	.40 - .60
	Space	SF-0001 In-House Checkout	3	292,449,517	.010	.0052 - .019
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	755,936	---	--- - 2.1
		AI-0002 Post Rel Demo 55°C	0	936,994	---	--- - 1.7
		GF-0001 Rel Demo	0	9,141,745	---	--- - .18
		GF-0002 Rel Demo	0	5,136,213	---	--- - .31
		GF-0003 Rel Demo	0	14,730,079	---	--- - .11
		GF-0004 Rel Demo	0	1,183,792	---	--- - 1.3
		GF-0005 Rel Demo	0	2,115,755	---	--- - .76
		NS-0001 In-House Checkout	2	14,805,477	.14	.056 - .29
		NS-0001 Quality Conformance 50°C	0	1,855,216	---	--- - .87
		NS-0001 Rel Demo	0	11,342,745	---	--- - .14
		ALL ABOVE COMBINED	2	62,003,952	.032	.013 - .069
	Commercial	AU-0001 Rel Evaluation	0	11,448,000	---	--- - .14
		NS-0002 Rel Evaluation	0	31,697,375	---	--- - .051
		ALL ABOVE COMBINED	0	43,145,375	---	--- - .037

Table 1.2-1 DIODE (100 & 300) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	2	108,743,388	.018	.0076 - .039
Ground, Fixed	Military	GF-0003 Field Checkout	0	44,107,605	---	--- - .036
Naval, Sheltered	Military	NS-0001 Field	1	73,251,285	.014	.0030 - .041
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	142,602,892	---	--- - .011

Table 1.2-2 SMALL SIGNAL DIODE (110) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	1	285,840	---	---
		AI-0001 Rel Demo	2+(1)	6,720,312	.30	.12 - .64
		AI-0002 Rel Demo	0	3,279,588	---	--- - .49
		AI-0003 Rel Demo	0	836,000	---	--- - 1.9
		AI-0004 In-House Checkout	0	3,429,311	---	--- - .47
		AI-0005 Burn-In	1	774,847	1.3	.29 - 3.9
		AI-0005 Rel Demo	0	2,239,843	---	--- - .71
		AI-0007 Rel Demo	0	249,268	---	---
		AI-0008 Rel Demo	0	124,630	---	---
		AI-0010 Rel Demo	0	376,700	---	---
		AI-0011 Rel Demo	0	238,904	---	---
		AI-0013 Rel Demo	0	34,350	---	---
		AI-0014 Rel Demo	0	195,943	---	---
		AI-0015 Rel Demo	0	38,520	---	---
		AI-0016 Rel Demo	0	541,654	---	--- - 3.0
		AI-0017 Rel Demo	0	350,000	---	---
		AU-0002 Rel Demo	0	1,192,661	---	--- - 1.5
		ALL ABOVE COMBINED	4+(1)	20,908,371	.19	.11 - .32
	Space	SF-0001 In-House Checkout	3	138,837,157	.022	.011 - .040
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	319,135	---	---
		AI-0002 Post Rel Demo 55°C	0	401,086	---	---
		GF-0001 Rel Demo	0	4,394,324	---	--- - .37
		GF-0002 Rel Demo	0	1,737,469	---	--- - .93
		GF-0003 Rel Demo	0	6,453,858	---	--- - .25
		GF-0004 Rel Demo	0	666,733	---	--- - 2.4
		GF-0005 Rel Demo	0	1,225,973	---	--- - 1.3
		NS-0001 In-House Checkout	0	7,725,366	---	--- - .21
		NS-0001 Quality Conformance 50°C	0	964,128	---	--- - 1.7
		NS-0001 Rel Demo	0	5,903,106	---	--- - .27
		ALL ABOVE COMBINED	0	29,791,178	---	--- - .054
	Commercial	NS-0002 Rel Evaluation	0	31,599,937	---	--- - .051
Airborne, Inhabited	Military	AI-0004 Field	1	84,225,648	.012	.0026 - .035
Ground Fixed	Military	GF-0003 Field Checkout	0	19,199,781	---	--- - .084
Naval, Sheltered	Military	NS-0001 Field	0	38,795,470	---	--- - .041
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	60,658,762	---	--- - .026

Table 1.2-3 SWITCHING DIODE (111) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress	Military	AI-0001 Burn-In	0	285,840	---	---
		AI-0001 Rel Demo	2+(1)	6,720,312	.30	.12 - .64
		AI-0002 Rel Demo	0	3,279,588	---	--- - .49
		AI-0003 Rel Demo	0	808,000	---	--- - 2.0
		AI-0004 In-House Checkout	0	3,429,311	---	--- - .47
		AI-0005 Burn-In	1	759,353	1.3	.29 - 3.9
		AI-0005 Rel Demo	0	2,189,507	---	--- - .73
		AI-0007 Rel Demo	0	217,184	---	---
		AI-0008 Rel Demo	0	124,630	---	---
		AI-0010 Rel Demo	0	376,700	---	---
		AI-0011 Rel Demo	0	238,904	---	---
		AI-0013 Rel Demo	0	33,750	---	---
		AI-0014 Rel Demo	0	195,943	---	---
		AI-0015 Rel Demo	0	38,520	---	---
		AI-0016 Rel Demo	0	541,654	---	--- - 3.0
		AI-0017 Rel Demo	0	350,000	---	---
		ALL ABOVE COMBINED	3+(1)	20,685,267	.15	.074 - .27
	Space	SF-0001 In-House Checkout	3	138,837,157	.022	.011 - .040
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	319,135	---	---
		AI-0002 Post Rel Demo 55°C	0	401,086	---	---
		GF-0001 Rel Demo	0	1,986,362	---	--- - .81
		GF-0002 Rel Demo	0	1,552,188	---	--- - 1.0
		GF-0003 Rel Demo	0	6,421,075	---	--- - .25
		GF-0004 Rel Demo	0	196,888	---	---
		GF-0005 Rel Demo	0	1,225,973	---	--- - 1.3
		NS-0001 In-House Checkout	0	7,725,366	---	--- - .21
		NS-0001 Quality Conformance 50°C	0	964,128	---	--- - 1.7
		NS-0001 Rel Demo	0	5,903,106	---	--- - .27
		ALL ABOVE COMBINED	0	26,675,307	---	--- - .060
Airborne, Inhabited	Military	AI-0004 Field	1	84,225,648	.012	.0026 - .035
Ground, Fixed	Military	GF-0003 Field Checkout	0	19,199,781	---	--- - .084
Naval, Sheltered	Military	NS-0001 Field	0	38,795,470	---	--- - .041
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	60,658,762	---	--- - .026

Table 1.2-4 GENERAL PURPOSE DIODE (112) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0005 Burn-In	0	15,494	---	---
		AI-0005 Rel Demo	0	50,336	---	---
		AI-0007 Rel Demo	0	32,084	---	---
		AI-0013 Rel Demo	0	600	---	---
		AU-0002 Rel Demo	0	96,590	---	---
		ALL ABOVE COMBINED	0	195,104	---	---
Low Stress Test	Military	GF-0002 Rel Demo	0	185,281	---	---
		GF-0004 Rel Demo	0	489,845	---	---
		ALL ABOVE COMBINED	0	675,126	---	--- - 2.4
	Commercial	NS-0002 Rel Evaluation	0	31,599,937	---	--- - .051

Table 1.2-5 RECTIFIER (120) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	193,736	---	---
		AI-0001 Rel Demo	2	4,566,948	.44	.18 - .94
		AI-0002 Rel Demo	0	1,155,231	---	--- - 1.4
		AI-0003 Rel Demo	0	164,000	---	---
		AI-0004 In-House Checkout	0	819,633	---	--- - 2.0
		AI-0005 Burn-In	0	247,592	---	---
		AI-0005 Rel Demo	0	915,917	---	--- - 1.7
		AI-0006 Rel Demo	0	34,380	---	---
		AI-0007 Rel Demo	0	71,572	---	---
		AI-0008 Rel Demo	0	101,970	---	---
		AI-0010 Rel Demo	0	150,680	---	---
		AI-0011 Rel Demo	0	188,228	---	---
		AI-0012 Burn-In	(1)	75,217	---	---
		AI-0013 Rel Demo	0	55,500	---	---
		AI-0014 Rel Demo	0	156,111	---	---
		AI-0015 Rel Demo	0	132,680	---	---
		AI-0016 Rel Demo	0	810,968	---	--- - 2.0
		AI-0017 Rel Demo	0	574,000	---	--- - 2.8
		AU-0002 Rel Demo	0	116,072	---	---
		ALL ABOVE COMBINED	2+(1)	10,530,435	.19	.078 - .41
	Space	SF-0001 In-House Checkout	0	8,244,758	---	--- - .20
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	136,071	---	---
		AI-0002 Post Rel Demo 55°C	0	146,424	----	---
		GF-0001 Rel Demo	0	2,026,192	---	--- - .79
		GF-0002 Rel Demo	0	1,245,915	---	--- - 1.3
		GF-0003 Rel Demo	0	4,582,577	---	--- - .35
		GF-0004 Rel Demo	0	131,532	---	---
		GF-0005 Rel Demo	0	115,511	---	---
		NS-0001 In-House Checkout	0	287,307	---	---
		NS-0001 Quality Conformance 50°C	0	35,856	---	---
		NS-0001 Rel Demo	0	219,537	---	---
		ALL ABOVE COMBINED	0	8,926,922	---	--- - .18
	Commercial	AU-0001 Rel Evaluation	0	11,448,000	---	--- - .14
		NS-0002 Rel Evaluation	0	4,532	---	---
		ALL ABOVE COMBINED	0	11,452,532	---	--- - .14

Table 1.2-5 RECTIFIER (120) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	1	19,469,970	.051	.011 - .15
Ground, Fixed	Military	GF-0003 Field Checkout	0	13,837,680	---	--- - .11
Naval, Sheltered	Military	NS-0001 Field	0	1,411,695	---	--- - 1.1
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	4,169,560	---	--- - .39

Table 1.2-6 LOW POWER RECTIFIER (121) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	32,554	---	---
		AI-0001 Rel Demo	0	767,397	---	--- - 2.1
		AI-0002 Rel Demo	0	163,524	---	---
		AI-0003 Rel Demo	0	88,000	---	---
		AI-0004 In-House Checkout	0	29,354	---	---
		AI-0005 Burn-In	0	173,682	---	---
		AI-0005 Rel Demo	0	635,781	---	--- - 2.5
		AI-0006 Rel Demo	0	7,640	---	---
		AI-0008 Rel Demo	0	50,985	---	---
		AI-0010 Rel Demo	0	11,301	---	---
		AI-0011 Rel Demo	0	21,719	---	---
		AI-0012 Burn-In	(1)	37,837	---	---
		AI-0013 Rel Demo	0	15,900	---	---
		AI-0014 Rel Demo	0	5,515	---	---
		AI-0016 Rel Demo	0	420,614	---	---
		AI-0017 Rel Demo	0	349,000	---	---
		ALL ABOVE COMBINED	(1)	2,810,803	---	--- - .57
	Space	SF-0001 In-House Checkout	0	947,502	---	--- - 1.7
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	16,678	---	---
		AI-0002 Post Rel Demo 55°C	0	18,881	---	---
		GF-0001 Rel Demo	0	1,446,631	---	--- - 1.1
		GF-0002 Rel Demo	0	533,632	---	--- - 3.0
		GF-0003 Rel Demo	0	67,192	---	---
		GF-0004 Rel Demo	0	45,356	---	---
		GF-0005 Rel Demo	0	21,002	---	---
		NS-0001 In-House Checkout	0	244,743	---	---
		NS-0001 Quality Conformance 50°C	0	30,544	---	---
		NS-0001 Rel Demo	0	187,013	---	---
		ALL ABOVE COMBINED	0	2,611,672	---	--- - .62
	Commercial	AU-0001 Rel Evaluation	0	11,448,000	---	--- - .14
Ground, Fixed	Military	GF-0003 Field	0	172,971	---	---
Naval, Sheltered	Military	NS-0001 Field	0	1,202,555	---	--- - 1.3
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	425,574	---	---

Table 1.2-7 HIGH POWER RECTIFIER (123) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	41,288	---	---
		AI-0001 Rel Demo	0	973,284	---	--- - 1.6
		AI-0003 Rel Demo	0	4,000	---	---
		AI-0005 Burn-In	0	13,615	---	---
		AI-0005 Rel Demo	0	51,604	---	---
		AI-0007 Rel Demo	0	71,572	---	---
		AI-0011 Rel Demo	0	166,509	---	---
		AI-0013 Rel Demo	0	1,800	---	---
		AI-0016 Rel Demo	0	108,936	---	---
		AI-0017 Rel Demo	0	56,000	---	---
		AU-0002 Rel Demo	0	87,054	---	---
		ALL ABOVE COMBINED	0	1,575,662	---	--- - 1.0
	Space	SF-0001 In-House Checkout	0	505,810	---	--- - 3.2
Low Stress Test	Military	GF-0001 Rel Demo	0	129,797	---	---
		GF-0002 Rel Demo	0	89,654	---	---
		GF-0003 Rel Demo	0	2,164,490	---	--- - .74
		GF-0004 Rel Demo	0	18,142	---	---
		NS-0001 In-House Checkout	0	42,564	---	---
		NS-0001 Quality Conformance 50°C	0	5,312	---	---
		NS-0001 Rel Demo	0	32,524	---	---
		ALL ABOVE COMBINED	0	2,482,483	---	--- - .65
Ground, Fixed	Military	GF-0003 Field Checkout	0	6,745,869	---	--- - .24
Naval, Sheltered	Military	NS-0001 Field	0	209,140	---	---
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	146,210	---	---

Table 1.2-8 FAST RECOVERY RECTIFIER (124) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	11,910	---	---
		AI-0001 Rel Demo	1	280,755	3.6	.79 - 11
		AI-0002 Rel Demo	0	764,435	---	--- - 2.1
		AI-0003 Rel Demo	0	48,000	---	--- ---
		AI-0004 In-House Checkout	0	712,539	---	--- - 2.3
		AI-0005 Burn-In	0	40,845	---	---
		AI-0005 Rel Demo	0	154,812	---	---
		AI-0006 Rel Demo	0	26,740	---	---
		AI-0008 Rel Demo	0	50,985	---	---
		AI-0010 Rel Demo	0	139,379	---	---
		AI-0012 Burn-In	0	5,340	---	---
		AI-0013 Rel Demo	0	30,000	---	---
		AI-0014 Rel Demo	0	118,730	---	---
		AI-0015 Rel Demo	0	124,120	---	---
		AI-0016 Rel Demo	0	263,262	---	---
		AI-0017 Rel Demo	0	169,000	---	---
		AU-0002 Rel Demo	0	29,018	---	---
		ALL ABOVE COMBINED	1	2,969,870	.34	.075 - 2.0
	Space	SF-0001 In-House Checkout	0	6,791,446	---	--- - .24
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	96,707	---	---
		AI-0002 Post Rel Demo 55°C	0	99,702	---	---
		GF-0001 Rel Demo	0	160,630	---	---
		GF-0002 Rel Demo	0	79,495	---	---
		GF-0003 Rel Demo	0	2,255,525	---	--- - .71
		GF-0004 Rel Demo	0	68,034	---	---
		GF-0005 Rel Demo	0	73,507	---	---
		ALL ABOVE COMBINED	0	2,833,600	---	--- - .57
Airborne, Inhabited	Military	AI-0004 Field	1	19,469,970	.051	.011 - .15
Ground, Fixed	Military	GF-0003 Field Checkout	0	6,918,840	---	--- - .23
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	3,597,776	---	--- - .45

Table 1.2-9 BRIDGE RECTIFIER, FULL WAVE (126) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	34,936	---	---
		AI-0001 Rel Demo	0	823,548	---	--- - 2.0
		AI-0004 In-House Checkout	0	31,096	---	---
		AI-0014 Rel Demo	0	19,610	---	---
		ALL ABOVE COMBINED	0	909,190	---	--- - 1.8
Low Stress Test	Military	GF-0002 Rel Demo	0	57,323	---	---
	Commercial	NS-0002 Rel Evaluation	0	4,532	---	---

Table 1.2-10 BRIDGE RECTIFIER, 3-PHASE (127) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	38,112	---	---
		AI-0001 Rel Demo	1	898,416	1.1	.25 - 3.3
		AI-0004 In-House Checkout	0	46,644	---	---
		ALL ABOVE COMBINED	1	983,172	1.0	.23 - 3.0
Low Stress Test	Military	GF-0002 Rel Demo	0	447,851	---	---

Table 1.2-11 ZENER DIODE (130) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	1	104,808	---	---
		AI-0001 Rel Demo	0	2,488,452	---	--- - .65
		AI-0002 Rel Demo	1+(2)	1,577,851	.63	.14 - 1.9
		AI-0003 Rel Demo	1	64,000	---	---
		AI-0004 In-House Checkout	2	318,298	6.3	2.6 -13
		AI-0005 Burn-In	2	151,303	13	5.4 -28
		AI-0005 Rel Demo	3	586,423	5.1	2.6 - 9.4
		AI-0006 Rel Demo	0	26,740	---	---
		AI-0007 Rel Demo	0	24,680	---	---
		AI-0008 Rel Demo	0	107,625	---	---
		AI-0010 Rel Demo	0	131,845	---	---
		AI-0011 Rel Demo	0	21,719	---	---
		AI-0012 Burn-In	0	69,420	---	---
		AI-0013 Rel Demo	0	58,500	---	---
		AI-0014 Rel Demo	0	52,701	---	---
		AI-0015 Rel Demo	0	124,120	---	---
		AI-0016 Rel Demo	0	375,224	---	---
		AI-0017 Rel Demo	0	232,000	---	---
		AU-0002 Rel Demo	0	453,112	---	---
		ALL ABOVE COMBINED	10+(2)	6,968,831	1.4	1.0 - 2.0
	Space	SF-0001 In-House Checkout	0	48,492,182	---	--- - .033
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	155,058	---	---
		AI-0002 Post Rel Demo 55°C	0	190,236	---	---
		GF-0001 Rel Demo	0	1,951,651	---	--- - .82
		GF-0002 Rel Demo	0	559,926	---	--- - 2.9
		GF-0003 Rel Demo	0	1,811,736	---	--- - .89
		GF-0004 Rel Demo	0	335,634	---	---
		GF-0005 Rel Demo	0	774,273	---	--- - 2.1
		NS-0001 In-House Checkout	2	2,749,224	.73	.30 - 1.6
		NS-0001 Quality Conformance 50°C	0	350,592	---	---
		NS-0001 Rel Demo	0	2,130,322	---	--- - .75
		ALL ABOVE COMBINED	2	11,008,652	.18	.075 - .39
	Commercial	NS-0002 Rel Evaluation	0	92,906	---	---

Table 1.2-11 ZENER DIODE (130) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	0	5,047,770	---	--- - .32
Ground, Fixed	Military	GF-0003 Field Checkout	0	5,362,101	---	--- - .30
Naval, Sheltered	Military	NS-0001 Field	0	13,803,240	---	--- - .12
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	13,492,914	---	--- - .12

Table 1.2-12 VOLTAGE REGULATOR DIODE (131) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	1	70,666	---	---
		AI-0001 Rel Demo	0	1,683,621	---	--- - .95
		AI-0002 Rel Demo	1+(1)	1,067,122	.94	.21 - 2.8
		AI-0003 Rel Demo	1	44,000	---	---
		AI-0004 In-House Checkout	1	236,521	---	---
		AI-0005 Burn-In	2	120,533	---	---
		AI-0005 Rel Demo	2	473,567	4.2	1.7 - 9.0
		AI-0006 Rel Demo	0	26,740	---	---
		AI-0007 Rel Demo	0	9,872	---	---
		AI-0008 Rel Demo	0	101,970	---	---
		AI-0010 Rel Demo	0	120,544	---	---
		AI-0011 Rel Demo	0	21,719	---	---
		AI-0012 Burn-In	0	58,740	---	---
		AI-0013 Rel Demo	0	13,500	---	---
		AI-0014 Rel Demo	0	23,746	---	---
		AI-0015 Rel Demo	0	55,640	---	---
		AI-0016 Rel Demo	0	360,094	---	---
		AI-0017 Rel Demo	0	203,000	---	---
		AU-0002 Rel Demo	0	409,585	---	---
		ALL ABOVE COMBINED	8+(1)	5,101,180	1.6	1.1 - 2.2
	Space	SF-0001 In-House Checkout	0	48,362,150	---	--- - .033
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	97,835	---	---
		AI-0002 Post Rel Demo 55°C	0	128,339	---	---
		GF-0001 Rel Demo	0	1,758,555	---	--- - .91
		GF-0002 Rel Demo	0	373,329	---	---
		GF-0003 Rel Demo	0	1,692,254	---	--- - .95
		GF-0004 Rel Demo	0	317,492	---	---
		GF-0005 Rel Demo	0	758,521	---	--- - 2.1
		NS-0001 In-House Checkout	2	2,472,558	.81	.33 - 1.7
		NS-0001 Quality Conformance 50°C	0	316,064	---	---
		NS-0001 Rel Demo	0	1,918,916	---	--- - .84
		ALL ABOVE COMBINED	2	9,833,863	.20	.084 - .43
	Commercial	NS-0002 Rel Evaluation	0	92,906	---	---
Airborne, Inhabited	Military	AI-0004 Field	0	3,317,106	---	--- - .49
Ground, Fixed	Military	GF-0003 Field Checkout	0	5,016,159	---	--- - .32
Naval, Sheltered	Military	NS-0001 Field	0	12,443,830	---	--- - .13
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	13,477,602	---	--- - .12

Table 1.2-13 VOLTAGE REFERENCE DIODE (132) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	27,790	---	---
		AI-0001 Rel Demo	0	655,095	---	--- - 2.5
		AI-0002 Rel Demo	(1)	81,892	---	---
		AI-0004 In-House Checkout	1	81,777	---	---
		AI-0005 Burn-In	0	30,770	---	---
		AI-0005 Rel Demo	1	112,856	---	---
		AI-0007 Rel Demo	0	14,808	---	---
		AI-0008 Rel Demo	0	5,665	---	---
		AI-0010 Rel Demo	0	11,301	---	---
		AI-0013 Rel Demo	0	45,000	---	---
		AI-0014 Rel Demo	0	25,891	---	---
		AI-0015 Rel Demo	0	34,240	---	---
		AI-0016 Rel Demo	0	15,130	---	---
		AI-0017 Rel Demo	0	29,000	---	---
		AU-0002 Rel Demo	0	43,527	---	---
		ALL ABOVE COMBINED	2+(1)	1,214,742	1.6	.68 - 3.5
	Space	SF-0001 In-House Checkout	0	130,032	---	---
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	7,422	---	---
		AI-0002 Post Rel Demo 55°C	0	9,870	---	---
		GF-0001 Rel Demo	0	137,313	---	---
		GF-0002 Rel Demo	0	7,018	---	---
		GF-0003 Rel Demo	0	58,251	---	---
		GF-0004 Rel Demo	0	18,142	---	---
		GF-0005 Rel Demo	0	15,752	---	---
		NS-0001 In-House Checkout	0	276,666	---	---
		NS-0001 Quality Conformance 50°C	0	34,528	---	---
		NS-0001 Rel Demo	0	211,406	---	---
		ALL ABOVE COMBINED	0	776,368	---	--- - 2.1
Airborne, Inhabited	Military	AI-0004 Field	0	1,730,664	---	--- - .93
Ground, Fixed	Military	GF-0003 Field Checkout	0	172,971	---	---
Naval, Sheltered	Military	NS-0001 Field	0	1,359,410	---	--- - 1.2
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	15,312	---	---

Table 1.2-14 TRANSIENT SUPPRESSOR DIODE (141) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	13,498	---	---
		AI-0001 Rel Demo	1	318,189	3.1	.70 - 9.4
		AI-0003 Rel Demo	0	4,000	---	---
		AI-0007 Rel Demo	0	4,936	---	---
		AI-0013 Rel Demo	0	300	---	---
		ALL ABOVE COMBINED	1	340,923	2.9	.65 - 8.8
Low Stress Test	Military	GF-0003 Rel Demo	0	110,541	---	---
Ground, Fixed	Military	GF-0003 Field Checkout	0	345,942	---	---

Table 1.2-15 MICROWAVE DIODE (300) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	4,764	---	---
		AI-0001 Rel Demo	0	112,302	---	---
		AI-0002 Rel Demo	3+(1)	1,370,970	2.2	1.1 - 4.0
		AI-0003 Rel Demo	0	128,000	---	---
		AI-0010 Rel Demo	0	41,437	---	---
		AI-0013 Rel Demo	0	11,100	---	---
		AI-0014 Rel Demo	0	5,362	---	---
		AI-0016 Rel Demo	0	3,026	---	---
		ALL ABOVE COMBINED	3+(1)	1,676,961	1.8	.91 - 3.3
	Space	SF-0001 In-House Checkout	0	169,420	---	---
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	126,470	---	---
		AI-0002 Post Rel Demo 55°C	0	164,245	---	---
		GF-0001 Rel Demo	0	93,067	---	---
		GF-0002 Rel Demo	0	18,272	---	---
		GF-0003 Rel Demo	0	1,463,856	---	--- - 1.1
		GF-0004 Rel Demo	0	49,891	---	---
		NS-0001 In-House Checkout	0	3,713,709	---	--- - .43
		NS-0001 Quality Conformance 50°C	0	463,472	---	---
		NS-0001 Rel Demo	0	2,837,719	---	--- - .57
		ALL ABOVE COMBINED	0	8,930,701	---	--- - .18
Ground, Fixed	Military	GF-0003 Field Checkout	0	4,670,217	---	--- - .34
Naval, Sheltered	Military	NS-0001 Field	1	17,620,045	.057	.013 - .17
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	38,696	---	---

Table 1.2-16 SCHOTTKY BARRIER DIODE (303) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	2,382	---	---
		AI-0001 Rel Demo	0	56,151	---	---
		AI-0002 Rel Demo	3+(1)	1,236,160	2.4	1.2 - 4.5
		AI-0003 Rel Demo	0	20,000	---	---
		AI-0010 Rel Demo	0	41,437	---	---
		AI-0013 Rel Demo	0	7,950	---	---
		AI-0014 Rel Demo	0	3,983	---	---
		ALL ABOVE COMBINED	3+(1)	1,368,063	2.2	1.1 - 4.0
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	114,032	---	---
		AI-0002 Post Rel Demo 55°C	0	148,089	---	---
		GF-0001 Rel Demo	0	6,376	---	---
		GF-0002 Rel Demo	0	18,272	---	---
		GF-0003 Rel Demo	0	718,517	---	--- - 2.2
		GF-0004 Rel Demo	0	18,142	---	---
		NS-0001 In-House Checkout	0	3,490,248	---	--- - .46
		NS-0001 Quality Conformance 50°C	0	435,584	---	---
		NS-0001 Rel Demo	0	2,666,968	---	--- - .60
		ALL ABOVE COMBINED	0	7,616,228	---	--- - .21
Ground, Fixed	Military	GF-0003 Field Checkout	0	2,248,623	---	--- - .71
Naval, Sheltered	Military	NS-0001 Field	1	16,522,060	.061	.013 - .18

Table 1.2-17 PIN DIODE (304) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0002 Rel Demo	0	89,900	---	---
		AI-0003 Rel Demo	0	56,000	---	---
		AI-0013 Rel Demo	0	150	---	---
		AI-0014 Rel Demo	0	1,379	---	---
		ALL ABOVE COMBINED	0	147,429	---	---
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	8,292	---	---
		AI-0002 Post Rel Demo 55°C	0	10,770	---	---
		GF-0003 Rel Demo	0	524,257	---	--- - 3.1
		ALL ABOVE COMBINED	0	543,319	---	--- - 3.0
Ground, Fixed	Military	GF-0003 Field Checkout	0	1,556,739	---	--- - 1.0

Table 1.2-18 VARACTOR DIODE (309) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	2,382	---	---
		AI-0001 Rel Demo	0	56,151	---	---
		AI-0002 Rel Demo	0	22,475	---	---
		AI-0003 Rel Demo	0	48,000	---	---
		AI-0013 Rel Demo	0	750	---	---
		AI-0016 Rel Demo	0	3,026	---	---
		ALL ABOVE COMBINED	0	132,784	---	---
	Space	SF-0001 In-House Checkout	0	169,420	---	---
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	2,073	---	---
		AI-0002 Post Rel Demo 55°C	0	2,693	---	---
		GF-0001 Rel Demo	0	80,315	---	---
		GF-0003 Rel Demo	0	221,082	---	---
		GF-0004 Rel Demo	0	31,749	---	---
		NS-0001 In-House Checkout	0	223,461	---	---
		NS-0001 Quality Conformance 50°C	0	27,888	---	---
		NS-0001 Rel Demo	0	170,751	---	---
		ALL ABOVE COMBINED	0	760,012	---	--- - 2.1
Ground, Fixed	Military	GF-0003 Field Checkout	0	864,855	---	--- - 1.9
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	38,696	---	---

Table 1.2-19 TRANSISTOR (200) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	280,282	---	---
		AI-0001 Rel Demo	8+(4)	6,466,455	1.2	.86 - 1.7
		AI-0002 Rel Demo	2+(2)	3,799,958	.53	.22 - 1.1
		AI-0003 Rel Demo	5	544,000	9.2	5.7 -14.
		AI-0004 In-House Checkout	(1)	1,807,381	---	--- - .89
		AI-0005 Burn-In	5+(9)	1,157,805	4.3	2.7 - 6.8
		AI-0005 Rel Demo	3	2,496,511	1.2	.61 - 2.2
		AI-0006 Rel Demo	0	80,220	---	---
		AI-0007 Rel Demo	1	343,054	2.9	.65 - 8.7
		AI-0008 Rel Demo	2	220,935	9.1	3.7 -19.
		AI-0010 Rel Demo	3+(2)	674,293	4.4	2.3 - 8.2
		AI-0011 Rel Demo	2	521,244	3.8	1.6 - 8.2
		AI-0012 Burn-In	4+(4)	1,649,848	2.4	1.4 - 4.1
		AI-0013 Rel Demo	0	93,800	---	---
		AI-0014 Rel Demo	0	276,986	---	---
		AI-0015 Rel Demo	6+(1)	445,120	13.	8.8 -20.
		AI-0016 Rel Demo	2+(1)	740,000	2.7	1.1 - 5.8
		AU-0002 Rel Demo	1	1,199,260	.83	.18 - 2.5
		ALL ABOVE COMBINED	46+(24)	24,113,462	1.9	1.7 - 2.2
	Space	SF-0001 In-House Checkout	1	86,174,864	.012	.0026 - .035
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	418,683	---	---
		AI-0002 Post Rel Demo 55°C	0	472,070	---	---
		GF-0001 Rel Demo	1	5,150,440	.19	.043 - .58
		GF-0002 Rel Demo	2	1,836,676	1.1	.45 - 2.3
		GF-0003 Rel Demo	1+(3)	7,799,647	.13	.028 - .38
		GF-0004 Rel Demo	0	1,015,975	---	--- - 1.6
		GF-0005 Rel Demo	0	2,147,989	---	--- - .75
		NS-0001 In-House Checkout	3	9,779,079	.31	.16 - .56
		NS-0001 Quality Conformance 50°C	1	1,220,432	.82	.18 - 2.4
		NS-0001 Rel Demo	0	7,472,390	---	--- - .21
		ALL ABOVE COMBINED	8+(3)	37,313,381	.21	.15 - .30
	Commercial	AU-0001 Rel Evaluation	9	11,448,000	.79	.56 - 1.1
		NS-0002 Rel Evaluation	0	1,767,480	---	--- - .91
		ALL ABOVE COMBINED	9	13,215,480	.68	.49 - .95

Table 1.2-19 TRANSISTOR (200) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	25	31,584,618	.79	.66 - .96
Ground, Fixed	Military	GF-0003 Field Checkout	0	23,178,114	---	--- - .069
Naval, Sheltered	Military	NS-0001 Field	2	47,736,205	.042	.017 - .090
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	38,803,219	---	--- - .041

Table 1.2-20 LOW POWER TRANSISTOR (210) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	211,998	---	---
		AI-0001 Rel Demo	6+(2)	5,355,417	1.1	.73 - 1.7
		AI-0002 Rel Demo	1+(1)	1,704,349	.59	.13 - 1.8
		AI-0003 Rel Demo	1	360,000	2.8	.62 - 8.3
		AI-0004 In-House Checkout	0	312,334	---	---
		AI-0005 Burn-In	1	916,890	1.1	.24 - 3.3
		AI-0005 Rel Demo	1	1,625,697	.62	.14 - 1.8
		AI-0006 Rel Demo	0	72,580	---	---
		AI-0007 Rel Demo	0	172,760	---	---
		AI-0008 Rel Demo	1	203,940	---	---
		AI-0010 Rel Demo	3+(2)	354,098	8.5	4.3 -15.
		AI-0011 Rel Demo	0	463,328	---	---
		AI-0012 Burn-In	(1)	800,954	---	--- - 2.0
		AI-0013 Rel Demo	0	16,800	---	---
		AI-0014 Rel Demo	0	114,288	---	---
		AI-0015 Rel Demo	0	158,360	---	---
		AI-0016 Rel Demo	0	1,016,736	---	--- - 1.6
		AI-0017 Rel Demo	1	418,000	2.4	.53 - 7.1
		AU-0002 Rel Demo	1	711,139	1.4	.31 - 4.2
		ALL ABOVE COMBINED	16+(6)	14,989,668	1.1	.84 - 1.4
	Space	SF-0001 In-House Checkout	1	54,149,842	.018	.0041 - .055
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	201,515	---	---
		AI-0002 Post Rel Demo 55°C	0	209,120	---	---
		GF-0001 Rel Demo	0	4,129,652	---	--- - .39
		GF-0002 Rel Demo	1	1,351,398	.74	.17 - 2.2
		GF-0003 Rel Demo	1	4,890,087	.20	.046 - .61
		GF-0004 Rel Demo	0	966,083	---	--- - 1.7
		GF-0005 Rel Demo	0	1,823,283	---	--- - .88
		NS-0001 In-House Checkout	2	5,075,757	.39	.16 - .84
		NS-0001 Quality Conformance 50°C	0	633,456	---	--- - 2.5
		NS-0001 Rel Demo	0	3,878,488	---	--- - .41
		ALL ABOVE COMBINED	4	23,158,839	.17	.099 - .29
	Commercial	AU-0001 Rel Evaluation	9	11,448,000	.79	.56 - 1.1
		NS-0002 Rel Evaluation	0	1,740,288	---	--- - .92
		ALL ABOVE COMBINED	9	13,188,288	.68	.49 - .95

Table 1.2-20 LOW POWER TRANSISTOR (210) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	5	4,470,882	1.1	.69 - 1.8
Ground, Fixed	Military	GF-0003 Field Checkout	0	14,529,564	---	--- - .11
Naval, Sheltered	Military	NS-0001 Field	1	26,351,640	.038	.0085 - .11
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	22,536,863	---	--- - .071

Table 1.2-21 LOW POWER, NPN (211) TRANSISTOR FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	157,212	---	---
		AI-0001 Rel Demo	5+(1)	3,723,774	1.3	.83 - 2.1
		AI-0002 Rel Demo	0	1,125,340	---	--- - 1.4
		AI-0003 Rel Demo	1	276,000	3.6	.81 - 11.
		AI-0004 In-House Checkout	0	252,634	---	---
		AI-0005 Burn-In	1	744,602	1.3	.30 - 4.0
		AI-0005 Rel Demo	0	1,093,211	---	--- - 1.5
		AI-0006 Rel Demo	0	34,380	---	---
		AI-0007 Rel Demo	0	118,464	---	---
		AI-0008 Rel Demo	1	107,635	---	---
		AI-0010 Rel Demo	3	180,816	16.	8.5 - 31.
		AI-0011 Rel Demo	0	289,580	---	---
		AI-0012 Burn-In	(1)	590,033	---	--- - 2.7
		AI-0013 Rel Demo	0	11,250	---	---
		AI-0014 Rel Demo	0	78,592	---	---
		AI-0015 Rel Demo	0	107,000	---	---
		AI-0016 Rel Demo	0	689,928	---	--- - 2.3
		AI-0017 Rel Demo	1	290,000	3.4	.77 - 10.
		AU-0002 Rel Demo	1	435,468	2.3	.51 - 6.9
		ALL ABOVE COMBINED	13+(2)	10,305,919	1.3	.96 - 1.7
	Space	SF-0001 In-House Checkout	1	43,403,005	.023	.0051 - .069
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	143,159	---	---
		AI-0002 Post Rel Demo 55°C	0	136,419	---	---
		GF-0001 Rel Demo	0	3,483,770	---	--- - .46
		GF-0002 Rel Demo	0	1,023,559	---	--- - 1.6
		GF-0003 Rel Demo	1	3,611,550	.28	.062 - .83
		GF-0004 Rel Demo	0	603,235	---	--- - 2.7
		GF-0005 Rel Demo	0	1,282,291	---	--- - 1.2
		NS-0001 In-House Checkout	2	4,862,937	.41	.17 - .88
		NS-0001 Quality Conformance 50°C	0	606,896	---	--- - 2.7
		NS-0001 Rel Demo	0	3,715,868	---	--- - .43
		ALL ABOVE COMBINED	3	19,469,684	.15	.079 - .28
	Commercial	AU-0001 Rel Evaluation	9	11,448,000	.79	.56 - 1.1
		NS-0002 Rel Evaluation	0	1,449,107	---	--- - 1.1
		ALL ABOVE COMBINED	9	12,897,107	.70	.50 - .97

Table 1.2-21 LOW POWER,NPN (211) TRANSISTOR FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	5	3,317,106	1.5	.93 - 2.4
Ground, Fixed	Military	GF-0003 Field Checkout	0	10,724,202	---	--- - .15
Naval, Sheltered	Military	NS-0001 Field	1	25,305,940	.040	.088 - .12
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	16,212,816	---	--- - .099

Table 1.2-22 LOW POWER, PNP TRANSISTOR (212) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	54,786	---	---
		AI-0001 Rel Demo	1+(1)	1,631,643	.61	.14 - 1.8
		AI-0002 Rel Demo	1+(1)	579,009	1.7	.38 - 5.2
		AI-0003 Rel Demo	0	84,000	---	---
		AI-0004 In-House Checkout	0	59,700	---	---
		AI-0005 Burn-In	0	172,288	---	---
		AI-0005 Rel Demo	1	508,042	2.0	.44 - 5.9
		AI-0006 Rel Demo	0	38,200	---	---
		AI-0007 Rel Demo	0	54,296	---	---
		AI-0008 Rel Demo	0	96,305	---	---
		AI-0010 Rel Demo	(2)	173,282	---	---
		AI-0011 Rel Demo	0	173,748	---	---
		AI-0012 Burn-In	0	210,921	---	---
		AI-0013 Rel Demo	0	5,550	---	---
		AI-0014 Rel Demo	0	35,696	---	---
		AI-0015 Rel Demo	0	51,360	---	---
		AI-0016 Rel Demo	0	326,808	---	---
		AI-0017 Rel Demo	0	128,000	---	---
		AU-0002 Rel Demo	0	275,671	---	---
		ALL ABOVE COMBINED	3+(4)	4,659,305	.64	.33 - 1.2
	Space	SF-0001 In-House Checkout	0	10,746,837	---	--- - .15
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	58,356	---	---
		AI-0002 Post Rel Demo 55°C	0	72,701	---	---
		GF-0001 Rel Demo	0	645,882	---	--- - 2.5
		GF-0002 Rel Demo	1	327,839	3.1	.68 - 9.1
		GF-0003 Rel Demo	0	1,278,537	---	--- - 1.3
		GF-0004 Rel Demo	0	362,848	---	---
		GF-0005 Rel Demo	0	540,992	---	--- - 3.0
		NS-0001 In-House Checkout	0	212,820	---	---
		NS-0001 Quality Conformance 50°C	0	26,560	---	---
		NS-0001 Rel Demo	0	162,620	---	---
		ALL ABOVE COMBINED	1	3,689,155	.27	.060 - .81
	Commercial	NS-0002 Rel Evaluation	0	291,181	---	---

Table 1.2-22 LOW POWER, PNP TRANSISTOR (212) FAILURE RATE SUMMARY (cont'd)

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Airborne, Inhabited	Military	AI-0004 Field	0	1,153,776	---	--- - 1.4
Ground, Fixed	Military	GF-0003 Field Checkout	0	3,805,362	---	--- - .42
Naval, Sheltered	Military	NS-0001 Field	0	1,045,700	---	--- - 1.5
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	6,324,047	---	--- - .25

Table 1.2-23 POWER TRANSISTOR (220) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)	
High Stress Test	Military	AI-0001 Burn-In	0	14,292	---		---
		AI-0001 Rel Demo	2+(2)	230,058	8.5	3.5	-18.
		AI-0003 Rel Demo	2	48,000	---		---
		AI-0004 In-House Checkout	0	267,108	---		---
		AI-0005 Burn-In	2+(9)	132,190	15.	6.2	-32.
		AI-0005 Rel Demo	2	499,874	4.0	1.6	- 8.6
		AI-0007 Rel Demo	0	4,938	---		---
		AI-0008 Rel Demo	1	16,995	---		---
		AI-0010 Rel Demo	0	67,806	---		---
		AI-0011 Rel Demo	2	57,916	---		---
		AI-0013 Rel Demo	0	3,600	---		---
		AI-0014 Rel Demo	0	15,933	---		---
		AI-0015 Rel Demo	(1)	59,920	---		---
		AI-0016 Rel Demo	1	214,816	---		---
		AI-0017 Rel Demo	(1)	33,000	---		---
		AU-0002 Rel Demo	0	87,054	---		---
		ALL ABOVE COMBINED	12+(13)	1,753,500	6.8	5.2	- 9.1
	Space	SF-0001 In-House Checkout	0	5,287,616	---	---	- .30
Low Stress Test	Military	GF-0001 Rel Demo	1	503,283	2.0	.44	- 5.9
		GF-0002 Rel Demo	1	146,390	---		---
		GF-0003 Rel Demo	(3)	1,106,765	---	---	- 1.5
		GF-0004 Rel Demo	0	9,071	---		---
		NS-0001 In-House Checkout	0	191,538	---		---
		NS-0001 Quality Conformance 50°C	0	23,904	---		---
		NS-0001 Rel Demo	0	146,358	---		---
		ALL ABOVE COMBINED	2+(3)	2,127,309	.94	.39	- 2.0
	Commercial	NS-0002 Rel Evaluation	0	24,926	---		--
Airborne, Inhabited	Military	AI-0004 Field	17	7,355,322	2.3	1.8	- 2.9
Ground, Fixed	Military	GF-0003 Field Checkout	0	3,286,449	---	---	- .49
Naval, Sheltered	Military	NS-0001 Field	0	941,130	---	---	- 1.7
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	2,910,190	---	---	- .55

Table 1.2-24 POWER, NPN TRANSISTOR (221) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	14,292	---	---
		AI-0001 Rel Demo	2+(2)	230,058	8.5	3.5 - 18.
		AI-0003 Rel Demo	0	24,000	---	---
		AI-0004 In-House Checkout	0	163,525	---	---
		AI-0005 Burn-In	0	77,374	---	---
		AI-0005 Rel Demo	1	282,748	3.5	.79 - 10.
		AI-0007 Rel Demo	0	4,938	---	---
		AI-0008 Rel Demo	1	16,995	---	---
		AI-0010 Rel Demo	0	45,204	---	---
		AI-0011 Rel Demo	2	57,916	---	---
		AI-0013 Rel Demo	0	3,000	---	---
		AI-0014 Rel Demo	0	15,933	---	---
		AI-0015 Rel Demo	(1)	25,680	---	---
		AI-0016 Rel Demo	1	130,118	---	---
		AI-0017 Rel Demo	0	32,000	---	---
		AU-0002 Rel Demo	0	58,036	---	---
		ALL ABOVE COMBINED	7+(3)	1,181,817	5.9	4.0 - 8.7
	Space	SF-0001 In-House Checkout	0	2,386,300	---	--- - .67
Low Stress Test	Military	GF-0001 Rel Demo	1	352,580	2.8	.63 - 8.5
		GF-0002 Rel Demo	1	118,492	---	---
		GF-0003 Rel Demo	(3)	757,260	---	--- - 2.1
		GF-0004 Rel Demo	0	9,071	---	---
		NS-0001 In-House Checkout	0	191,538	---	---
		NS-0001 Quality Conformance 50°C	0	23,904	---	---
		NS-0001 Rel Demo	0	146,358	---	---
		ALL ABOVE COMBINED	2+(3)	1,599,203	1.3	.51 - 2.7
Airborne, Inhabited	Military	AI-0004 Field	0	4,326,660	---	--- - .37
Ground, Fixed	Military	GF-0003 Field Checkout	0	2,248,623	---	--- - .71
Naval, Sheltered	Military	NS-0001 Field	0	941,130	---	--- - 1.7
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	908,634	---	--- - 1.8

Table 1.2-25 POWER, PNP TRANSISTOR (222) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0003 Rel Demo	2	24,000	---	---
		AI-0004 In-House Checkout	0	103,583	---	---
		AI-0005 Burn-In	1	29.175	---	---
		AI-0005 Rel Demo	1	129,772	---	---
		AI-0010 Rel Demo	0	11,301	---	---
		AI-0013 Rel Demo	0	600	---	---
		AI-0015 Rel Demo	0	34,240	---	---
		AI-0016 Rel Demo	0	84,728	---	---
		AI-0017 Rel Demo	(1)	1,000	---	---
		AU-0002 Rel Demo	0	29,018	---	---
		ALL ABOVE COMBINED	4+(1)	447,417	8.9	5.1 - 15.
	Space	SF-0001 In-House Checkout	0	2,901,316	---	--- - .55
Low Stress Test	Military	GF-0001 Rel Demo	0	150,703	---	---
		GF-0002 Rel Demo	0	27,898	---	---
		GF-0003 Rel Demo	0	349,505	---	---
		ALL ABOVE COMBINED	0	528,106	---	--- - 3.0
	Commercial	NS-0002 Rel Evaluation	0	24,926	---	---
Airborne, Inhabited	Military	AI-0004 Field	17	3,028,662	5.6	4.4 - 7.1
Ground, Fixed	Military	GF-0003 Field Checkout	0	1,037,826	---	--- - 1.6
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	2,001,560	---	--- - .80

Table 1.2-26 FIELD EFFECT TRANSISTOR (230) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	1,588	---	---
		AI-0001 Rel Demo	0	37,434	---	---
		AI-0002 Rel Demo	0	651,773	---	--- - 2.5
		AI-0003 Rel Demo	0	44,000	---	---
		AI-0005 Burn-In	1	17,122	---	---
		AI-0005 Rel Demo	0	56,272	---	---
		AI-0006 Rel Demo	0	7,640	---	---
		AI-0010 Rel Demo	0	26,369	---	---
		AI-0012 Burn-In	1	10,678	---	---
		AI-0013 Rel Demo	0	300	---	---
		AI-0014 Rel Demo	0	30,334	---	---
		AI-0016 Rel Demo	0	21,182	---	---
		AI-0017 Rel Demo	0	5,000	---	---
		ALL ABOVE COMBINED	2	909,692	2.2	.91 - 4.7
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	60,123	---	---
		AI-0002 Post Rel Demo 55°C	0	78,084	---	---
		GF-0001 Rel Demo	0	90,658	---	---
		GF-0002 Rel Demo	0	12,927	---	---
		GF-0003 Rel Demo	0	183,693	---	---
		GF-0004 Rel Demo	0	4,536	---	---
		GF-0005 Rel Demo	0	72,037	---	---
		NS-0001 In-House Checkout	0	755,511	---	--- - 2.1
		NS-0001 Quality Conformance 50°C	0	94,288	---	---
		NS-0001 Rel Demo	0	577,301	---	--- - 2.8
		ALL ABOVE COMBINED	0	1,929,158	---	--- - .83
Ground, Fixed	Military	GF-0003 Field Checkout	0	518,913	---	--- - 3.1
Naval, Sheltered	Military	NS-0001 Field	0	3,712,235	---	--- - .43

Table 1.2-27 JFET, N-CHANNEL (231) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0003 Rel Demo	0	44,000	---	---
		AI-0006 Rel Demo	0	7,640	---	---
		AI-0010 Rel Demo	0	26,369	---	---
		AI-0013 Rel Demo	0	300	---	---
		AI-0016 Rel Demo	0	21,182	---	---
		AI-0017 Rel Demo	0	5,000	---	---
		ALL ABOVE COMBINED	0	104,491	---	---
Low Stress Test	Military	GF-0001 Rel Demo	0	41,569	---	---
		GF-0002 Rel Demo	0	12,927	---	---
		GF-0003 Rel Demo	0	183,693	---	---
		GF-0004 Rel Demo	0	4,536	---	---
		GF-0005 Rel Demo	0	72,037	---	---
		NS-0001 In-House Checkout	0	702,306	---	--- - 2.3
		NS-0001 Quality Conformance 50°C	0	87,648	---	---
		NS-0001 Rel Demo	0	536,646	---	--- - 3.0
		ALL ABOVE COMBINED	0	1,641,362	---	--- - .98
Ground, Fixed	Military	GF-0003 Field Checkout	0	518,913	---	--- - 3.1
Naval, Sheltered	Military	NS-0001 Field	0	3,712,235	---	--- - .43

Table 1.2-28 RF TRANSISTOR (250) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	30,966	---	---
		AI-0001 Rel Demo	0	302,571	---	---
		AI-0002 Rel Demo	1	202,274	---	---
		AI-0003 Rel Demo	2	28,000	---	---
		AI-0004 In-House Checkout	0	148,004	---	---
		AI-0013 Rel Demo	0	9,450	---	---
		ALL ABOVE COMBINED	3	721,265	4.1	2.1 - 7.6
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	18,659	---	---
		AI-0002 Post Rel Demo 55°C	0	24,233	---	---
		GF-0001 Rel Demo	0	176,059	---	---
		GF-0003 Rel Demo	0	1,039,574	---	--- - 1.5
		NS-0001 In-House Checkout	1	3,756,273	.27	.059 - .78
		NS-0001 Quality Conformance 50°C	1	468,784	2.1	.48 - 6.4
		NS-0001 Rel Demo	0	2,870,243	---	--- - .56
		ALL ABOVE COMBINED	2	8,353,825	.24	.099 - .51
Airborne, Inhabited	Military	AI-0004 Field	0	3,461,328	---	--- - .46
Ground, Fixed	Military	GF-0003 Field Checkout	0	3,113,478	---	--- - .52
Naval, Sheltered	Military	NS-0001 Field	1	16,731,200	.060	.013 - .18

Table 1.2-29 RF, NPN TRANSISTOR (251) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	11,910	---	---
		AI-0001 Rel Demo	0	267,120	---	---
		AI-0002 Rel Demo	1	202,274	---	---
		AI-0003 Rel Demo	2	28,000	---	---
		AI-0004 In-House Checkout	0	148,004	---	---
		AI-0013 Rel Demo	0	150	---	---
		ALL ABOVE COMBINED	3	657,458	4.6	2.3 - 8.4
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	18,659	---	---
		AI-0002 Post Rel Demo 55°C	0	24,233	---	---
		GF-0001 Rel Demo	0	176,059	---	---
		GF-0003 Rel Demo	0	116,502	---	---
		NS-0001 In-House Checkout	1	3,756,273	.27	.059 - .78
		NS-0001 Quality Conformance 50°C	1	468,784	2.1	.48 - 6.4
		NS-0001 Rel Demo	0	2,870,243	---	--- - .56
		ALL ABOVE COMBINED	2	7,430,753	.27	.11 - .58
Airborne, Inhabited	Military	AI-0004 Field	0	3,461,328	---	--- - .46
Ground, Fixed	Military	GF-0003 Field Checkout	0	345,942	---	---
Naval, Sheltered	Military	NS-0001 Field	1	16,731,200	.060	.013 - .18

Table 1.2-30 MULTIPLE TRANSISTOR (260) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	17,468	---	---
		AI-0001 Rel Demo	0	368,886	---	---
		AI-0002 Rel Demo	0	495,698	---	---
		AI-0004 In-House Checkout	(1)	1,079,935	---	--- - 1.5
		AI-0005 Burn-In	1	48,942	---	---
		AI-0005 Rel Demo	0	1185,076	---	---
		AI-0013 Rel Demo	0	45,200	---	---
		AI-0014 Rel Demo	0	60,054	---	---
		AI-0015 Rel Demo	0	196,880	---	---
		AI-0016 Rel Demo	0	24,208	---	---
		AI-0017 Rel Demo	0	6,000	---	---
		ALL ABOVE COMBINED	1+(1)	2,528,347	.39	.088 - 1.2
	Space	SF-0001 In-House Checkout	0	19,988,008	---	--- - .081
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	56,535	---	---
		AI-0002 Post Rel Demo 55°C	0	62,895	---	---
		GF-0001 Rel Demo	0	109,132	---	---
		GF-0002 Rel Demo	0	193,389	---	---
		GF-0004 Rel Demo	0	27,214	---	---
		GF-0005 Rel Demo	0	161,348	---	---
		ALL ABOVE COMBINED	0	610,513	---	--- - 2.6
Airborne, Inhabited	Military	AI-0004 Field	3	16,297,086	.18	.094 - .34
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	11,409,200	---	--- - .14

Table 1.2-31 DIFFERENTIAL AMP, NPN (261) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	11,116	---	---
		AI-0001 Rel Demo	0	226,422	---	---
		AI-0002 Rel Demo	0	356,548	---	---
		AI-0004 In-House Checkout	(1)	775,686	---	--- - 2.1
		AI-0005 Burn-In	1	48,942	---	---
		AI-0005 Rel Demo	0	185,076	---	---
		AI-0014 Rel Demo	0	13,482	---	---
		AI-0015 Rel Demo	0	154,080	---	---
		AI-0016 Rel Demo	0	24,208	---	---
		AI-0017 Rel Demo	0	6,000	---	---
		ALL ABOVE COMBINED	1+(1)	1,801,560	.56	.12 - 1.7
	Space	SF-0001 In-House Checkout	0	10,114,374	---	--- - .10
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	42,819	---	---
		AI-0002 Post Rel Demo 55°C	0	43,064	---	---
		GF-0001 Rel Demo	0	109,132	---	---
		GF-0002 Rel Demo	0	193,389	---	---
		ALL ABOVE COMBINED	0	388,404	---	---
Airborne, Inhabited	Military	AI-0004 Field	1	11,537,760	.087	.019 - .26
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	5,881,046	---	--- - .27

Table 1.2-32 DIFFERENTIAL AMP, PNP (262) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0002 Rel Demo	0	44,950	---	---
		AI-0004 In-House Checkout	0	104,077	---	---
		AI-0013 Rel Demo	0	1,200	---	---
		AI-0014 Rel Demo	0	7,966	---	---
		AI-0015 Rel Demo	0	25,680	---	---
		ALL ABOVE COMBINED	0	183,873	---	---
	Space	SF-0001 In-House Checkout	0	9,873,634	---	--- - .16
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	4,146	---	---
		AI-0002 Post Rel Demo 55°C	0	5,385	---	---
		GF-0004 Rel Demo	0	27,214	---	---
		GF-0005 Rel Demo	0	161,348	---	---
		ALL ABOVE COMBINED	0	198,093	---	---
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	5,528,154	---	--- - .29

Table 1.2-33 COMPLEMENTARY NPN/PNP TRANSISTOR (263/264) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0004 In-House Checkout	0	200,172	---	---
Airborne, Inhabited	Military	AI-0004 Field	2	4,759,326	.42	.17 - .90

Table 1.2-34 DARLINGTON TRANSISTOR (270) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0001 Burn-In	0	7,146	---	---
		AI-0001 Rel Demo	0	168,453	---	---
		AI-0014 Rel Demo	0	919	---	---
		AI-0015 Rel Demo	6	12,840	---	---
		AI-0017 Rel Demo	0	34,000	---	---
		ALL ABOVE COMBINED	6	223,358	27	17 - 41
	Space	SF-0001 In-House Checkout	0	6,370,478	---	--- - .25
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	1,732,744	---	--- - .93

Table 1.2-35 DARLINGTON, NPN TRANSISTOR (271) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0015 Rel Demo	3	4,280	---	---
		AI-0017 Rel Demo	0	20,000	---	---
		ALL ABOVE COMBINED	3	24,280	---	---
	Space	SF-0001 In-House Checkout	0	6,370,478	---	--- - .25
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	1,732,744	---	--- - .93

Table 1.2-36 CHOPPER TRANSISTOR (280) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0005 Burn-In	0	24,882	---	---
		AI-0005 Rel Demo	0	89,628	---	---
		AI-0007 Rel Demo	1	130,804	---	---
		AI-0010 Rel Demo	0	45,204	---	---
		AI-0012 Burn-In	0	53,400	---	---
		AI-0013 Rel Demo	0	3,600	---	---
		AI-0014 Rel Demo	0	3,064	---	---
		AI-0017 Rel Demo	0	1,000	---	---
		AU-0002 Rel Demo	0	401,067	---	---
		ALL ABOVE COMBINED	1	752,649	1.3	.30 - 4.0
Low Stress Test	Military	GF-0001 Rel Demo	0	26,395	---	---
		GF-0005 Rel Demo	0	38,815	---	---
		ALL ABOVE COMBINED	0	65,210	---	---

Table 1.2-37 CHOPPER, PNP TRANSISTOR (282) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0005 Burn-In	0	20,358	---	---
		AI-0005 Rel Demo	0	73,332	---	---
		AI-0007 Rel Demo	0	86,380	---	---
		AI-0010 Rel Demo	0	45,204	---	---
		AI-0013 Rel Demo	0	1,800	---	---
		AI-0014 Rel Demo	0	3,064	---	---
		AU-0002 Rel Demo	0	309,252	---	---
		ALL ABOVE COMBINED	0	539,390	---	--- - 3.0
Low Stress Test	Military	GF-0001 Rel Demo	0	18,364	---	---
		GF-0005 Rel Demo	0	12,938	---	---
		ALL ABOVE COMBINED	0	31,302	---	---

Table 1.2-38 THYRISTOR, SCR (520) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0002 Rel Demo	(1)	44,950	---	---
		AI-0003 Rel Demo	0	4,000	---	---
		AI-0004 In-House Checkout	0	73,988	---	---
		AI-0005 Burn-In	1	8,414	---	---
		AI-0005 Rel Demo	1+(1)	31,040	---	---
		AI-0011 Rel Demo	0	7,240	---	---
		AI-0013 Rel Demo	0	1,500	---	---
		AI-0017 Rel Demo	0	11,000	---	---
		ALL ABOVE COMBINED	2+(2)	182,132	11.	4.5 -23.
	Space	SF-0001 In-House Checkout	0	104,926	---	---
Low Stress Test	Military	AI-0002 Post Rel Demo 25°C	0	4,148	---	---
		AI-0002 Post Rel Demo 55°C	0	5,384	---	---
		GF-0001 Rel Demo	0	46,094	---	---
		GF-0002 Rel Demo	(1)	414,780	---	---
		GF-0003 Rel Demo	0	116,502	---	---
		GF-0004 Rel Demo	0	4,536	---	---
		ALL ABOVE COMBINED	(1)	591,444	---	--- - 2.7
Airborne, Inhabited	Military	AI-0004 Field	0	2,163,330	---	--- - .74
Ground, Fixed	Military	GF-0003 Field Checkout	0	172,971	---	---
Space, Flight	Space	SF-0001 Field Checkout & Flight	0	67,490	---	---

Table 1.2-39 OPTOELECTRONIC DISPLAY (640) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
High Stress Test	Military	AI-0016 Rel Demo	0	136,170	---	---
Low Stress Test	Military	GF-0005 Rel Demo	0	10,501	---	---
		NS-0001 In-House Checkout	1+(1)	106,410	---	---
		NS-0001 Quality Conformance 50°C	0	13,280	---	---
		NS-0001 Rel Demo	0	81,310	---	---
		ALL ABOVE COMBINED	1+(1)	211,501	4.7	1.1 - 14
Naval, Sheltered	Military	NS-0001 Field	0	522,850	---	--- - 3.1

Table 1.2-40 LED DISPLAY (641) FAILURE RATE SUMMARY

ENVIRONMENT	QUALITY GRADE	DATA SOURCE	NUMBER FAILED	TOTAL PART HOURS	$\hat{\lambda}$ (fpmh)	60% CONFIDENCE INTERVAL (fpmh)
Low Stress Test	Military	GF-0005 Rel Demo	0	10,501	---	---
		NS-0001 In-House Checkout	1+(1)	106,410	---	---
		NS-0001 Quality Conformance 50°C	0	13,280	---	---
		NS-0001 Rel Demo	0	81,310	---	---
		ALL ABOVE COMBINED	1+(1)	211,501	4.7	1.1 - 14
Naval, Sheltered	Military	NS-0001 Field	0	522,850	---	--- - 3.1

Section 1.3

FAILURE RATE COMPARISON BY PART TYPE

(Tables 1.3-1 to 1.3-6)

Summarized part type failure rates taken from Section 1.2 are included in Tables 1.3-1 to 1.3-6 for comparison purposes. These tables show failure rates summarized into three generic levels of part type categories. The generic levels are as illustrated in Appendix D figures D-1 thru D-4. In Tables 1.3-1, 1.3-3 and 1.3-5, the maximum likelihood ($\hat{\lambda}$) failure rate variations as a function of general quality grade and environmental stress, are shown. Tables 1.3-2, 1.3-4 and 1.3-6 show the upper 80% confidence limit part type failure rates with the zero failure data in parentheses.

Part type failure rates do not appear in these tables if the available data did not meet the following criteria:

Failures	Part Hour
0	$\geq$ 500,000
1	$\geq$ 250,000
$\geq$ 2	$\geq$ 125,000

PRECEDING PAGE NOT FILMED
BLANK

Table 1.3-1 MAXIMUM LIKELIHOOD, $\hat{\lambda}$, SUMMARY (GENERIC LEVEL ONE)

(f_{pmh})	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE, FLIGHT & CHECKOUT	HIGH STRESS TEST
10								
7.0								
5.0								
3.0								
2.0								
1.5					Transistors			
1.0								
.70				Transistors				
.50	Transistors							
.30					Diodes			
.20			Transistors					
.15								
.10								
.070								
.050								
.030			Diodes			Transistors		
.020								
.015				Diodes				
.010						Diodes		Transistors Diodes

Table 1.3-2 UPPER 80% CONFIDENCE LIMIT SUMMARY (GENERIC LEVEL ONE)

(fpmh)	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE, FLIGHT & CHECKOUT	HIGH STRESS TEST
10								
7.0								
5.0								
3.0								
2.0					Transistors			
1.5								
1.0	Transistors			Transistors				
.70					Diodes			
.50								
.30			Transistors					
.20								
.15								
.10						Transistors		
.070		(Transistors)	Diodes					
.050								
.030	(Diodes)	(Diodes)		Diodes		Diodes	(Transistors)	Transistors
.020								
.015								Diodes
.010							(Diodes)	

Table 1.3-3 MAXIMUM LIKELIHOOD, $\hat{\lambda}$, SUMMARY (GENERIC LEVEL TWO)

(fpmh)	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE FLIGHT & CHECKOUT	HIGH STRESS TEST
10.					Darlington(27)			
7.0								
5.0					Pwr Transistor			
3.0					RF Transistor			
2.0				Pwr Transistor	Suppressor Diode FET			
1.5					µwave Diode			
1.0				L.P. Transistor	Chop Trans/Z Diode L.P. Transistor			
0.70			Pwr Transistor					
0.50	LP Transistor							
0.30					Mult. Transistor			
0.20			RF Transistor					
0.15			Zener Diode L.P. Transistor	Mult. Transistor	SSDiode/Rectifier			
0.10								
.070								
.050				Rectifier		RF Transistor µwave Diode		
.030						L.P. Transistor		
.020								Small Signal Diode
.015								L.P. Transistor
.010				Small Signal Diode				

Table 1.3-4 UPPER 80% CONFIDENCE LIMIT SUMMARY (GENERIC LEVEL TWO)

(fpmh)	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE, FLIGHT & CHECKOUT	HIGH STRESS TEST
10					Darlington (41) Thyristor (23)			
7.0					Pwr Transistor RF Transistor			
5.0								
3.0		(FET)			FET; Chop Trans μwave Diode			
2.0			(Thyristor) (Multi Transistor) Pwr Transistor	Pwr Transistor	Zener Diode			
1.5				L.P. Transistor		(Pwr Transistor)		
1.0	LP Transistor		(FET)	(Thyristor)	L.P. Transistor Multi Transistor	(Rectifier)	(Darlington)	
.70								
.50		(RF Transistor)	RF Transistor				(Pwr Transistor)	
.30		(Pwr Transistor) (μwave Diode) (Zener Diode)	Zener Diode L.P. Transistor	(RF Trans);Mult Trans (Zener Diode)	Rectifier Small Signal Diode	(FET)	(Rectifier)	(Pwr Transistor) (Darlington) (Rectifier)
.20			(μwave Diode) (Rectifier)			RF Transistor μwave Diode		
.15	(Rectifier)			Rectifier		(Zener Diode) L.P. Transistor	(Multi Transistor) (Zener Diode)	
.10		(Rect)(LP Trans) (Small Signal Diode)						(Multi Transistor)
.070							(L.P. Transistor)	
.050	(SS Diode)		(SS Diode)					L.P. Transistor
.030				Small Signal Diode		Small Signal Diode		Small Signal Diode (Zener Diode)
.020							(SS Diode)	
.015								
.010								

Table 1.3-5 MAXIMUM LIKELIHOOD, $\hat{\lambda}$, SUMMARY (GENERIC LEVEL THREE)

(fpmh)	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE, FLIGHT & CHECKOUT	HIGH STRESS TEST
10								
7.0					Pwr PNP			
5.0				Pwr PNP	Pwr NPN			
3.0					RF NPN			
2.0					Trans Suppressor Schottky Bar Diode			
1.5					V Reg D;V Ref D			
1.0			Pwr NPN	L.P. NPN	L.P. NPN			
.70	L.P. NPN				Bridge, 3Ø			
.50					L.P. PNP Diff Amp NPN			
.30				Comp NPN/PNP				
.20			L.P. PNP;RF NPN Volt. Reg. Diode		Fast Rec Rectifier			
.15			L.P. NPN					
.10					Switching Diode			
.070				Diff Amp NPN				
.050						Schottky Bar Diode RF NPN		
.030				Fast Rec Rect		L.P. NPN		
.020								L.P. NPN Switching Diode
.015								
.010				Switching Diode				

Table 1.3-6 UPPER 80% CONFIDENCE LIMIT SUMMARY (GENERIC LEVEL THREE)

(fpmh)	COMMERCIAL QUALITY	MILITARY QUALITY					SPACE QUALITY	
	LOW STRESS TEST	GROUND FIXED	LOW STRESS TEST	AIRBORNE INHABITED	HIGH STRESS TEST	NAVAL SHELTERED	SPACE, FLIGHT & CHECKOUT	HIGH STRESS TEST
10					Pwr PNP (T5)			
7.0				Pwr PNP	Trans Sup D;Pwr NPN RF NPN			
5.0								
3.0		(JFET)	(PIN D);(Pwr PNP) (GP D);Pwr NPN (Varactor);(V Ref D)		Schottky Bar D V Ref D (Bridge,3Ø);(ChopPNP)			(HP Rectifier)
2.0		(Varactor) (Pwr PNP)		L.P. NPN	V Reg D Fast Rec Rect (Bridge FW) LPNPN;Diff Amp NPN	(Pwr NPN)	(Pwr NPN)	(LP Rectifier)
1.5				L.P. PNP	LP PNP	(LP Rect) (LP PNP)		
1.0	L.P. NPN	(PIN Diode) (SchBarD);(Pwr NPN)	L.P. PNP;(JFET)	(V Ref D);Comp NPN/PNP	(HP Rect)	(V Ref D)	(PwrPNP);(Darling NPN)	
.70			(LPRect);(HP Rect) (FastRecRect);RFNPN		(LP Rect)			(Pwr NPN) (Pwr PNP)
.50		(LP PNP) (V Reg D)	V Reg D	(V Reg D);RF NPN (Pwr NPN)			(Fast Rec Rect)	
.30		(HP Rect);(Fast Rec Rect)	LP NPN (Schottky Bar D)	Diff Amp NPN	Sw Diode		(Diff Amp PNP) (LP PNP);(DA NPN)	(Darlington NPN) (Fast Rec Rect)
.20					(Diff Amp PNP)	Schottky Bar D;(RF NPN)		(LP PNP)
.15	(LP Rect)	(LP NPN)		Fast Rec Rect		(V Reg D) LP NPN	(V Reg D) (LP NPN)	(Diff Amp NPN)
.10		(Sw Diode)						
.070	(GP Diode)		(Sw Diode)					LP NPN
.050				Sw Diode		(Sw Diode)(JFET)		Sw Diode (V Reg D)
.030							(Sw Diode)	
.020								
.015								
.010								

Section 1.4

PREDICTED VERSUS EXPERIENCED FAILURE RATES

MIL-HDBK-217B (Section 3.0, "Parts Count Reliability Prediction") discrete semiconductor generic failure rates were used in making comparison with experienced failure rates. The part type categories previously summarized in Section 1.2 were merged into the generic part type categories of MIL-HDBK-217B Table 3-5 as follows:

TRANSISTORS, SI, NPN:

Table 1.2 - 21	Low Power, NPN Transistor
Table 1.2 - 24	NPN, Power Transistor
Table 1.2 - 29	NPN, RF Transistor
Table 1.2 - 31	NPN, Differential Amp
Table 1.2 - 35	NPN, Darlington Transistor

TRANSISTORS, SI, PNP:

Table 1.2 - 22	Low Power, PNP Transistor
Table 1.2 - 25	PNP, Power Transistor
Table 1.2 - 32	PNP, Differential Amp
Table 1.2 - 37	PNP, Chopper Transistor

FIELD EFFECT TRANSISTOR (FET):

Table 1.2 - 26	Field Effect Transistor

DIODES, SI, GENERAL PURPOSE:

Table 1.2 - 2	Small Signal Diode
Table 1.2 - 5	Rectifier
Table 1.2 - 14	Transient Suppressor Diode
Table 1.2 - 16	Schottky Barrier Diode
Table 1.2 - 17	PIN Diode

ZENER & AVALANCHE:

Table 1.2 - 11	Zener Diode

THYRISTOR:

Table 1.2 - 38	Thyristor, SCR

PRECEDING PAGE NOT FILMED
BLANK

The maximum likelihood ($\hat{\lambda}$) values are used for comparison. When zero failures are noted, the upper 80% confidence limit is shown and in this case a direct comparison to predicted is not intended, however, the data at least provides an upper bound on the failure rate.

Table 1.4-1 SILICON, NPN, TRANSISTOR PARTS COUNT PREDICTED FAILURE RATES VERSUS EXPERIENCED

ENVIRONMENT	PREDICTED (fpmh) JTXV	JTX	JAN	EXPERIENCED (fpmh) SPACE QUALITY	(fpmh) MILITARY QUALITY	(fpmh) COMMERCIAL QUALITY
SPACE, FLIGHT	.0028	.0056	.028	80% C.L. = 0.65 0/24,735,240	---	---
GROUND, FIXED	.018	.036	.18	---	80% C.L. - 0.12 0/13,318,767	---
LOW STRESS TEST				---	$\hat{\lambda}$ = 0.24 7/28,479,691	$\hat{\lambda}$ = 0.70 (1) 9/12,897,107
COMBINED GROUND, FIXED AND LOW STRESS TEST				---	$\hat{\lambda}$ = 0.17 7/41,798,458	$\hat{\lambda}$ = 0.70 (1) 9/12,897,107
AIRBORNE, INHABITED	.098	.20	.98	---	$\hat{\lambda}$ = 0.26 6/22,642,854	---
HIGH STRESS TEST				$\hat{\lambda}$ = .016 1/62,274,157	$\hat{\lambda}$ = 1.9 27/13.971,034	---
COMBINED AIRBORNE, INHABITED AND HIGH STRESS TEST				$\hat{\lambda}$ = .016 1/62,274,157	$\hat{\lambda}$ = 0.90 33/36,613,888	---
NAVAL SHELTERED	.11	.22	1.1		$\hat{\lambda}$ = .047 (2) 2/42,978,270	

Notes (1) and (2) see page 117

Table 1.4-2 SILICON, PNP, TRANSISTOR PARTS COUNT PREDICTED FAILURE RATE VERSUS EXPERIENCED

ENVIRONMENT	PREDICTED (fpmh) JTXV	JTX	JAN	EXPERIENCED (fpmh) SPACE QUALITY	(fpmh) MILITARY QUALITY	(fpmh) COMMERCIAL QUALITY
SPACE FLIGHT	.0042	.0084	.042	80% C.L. = .12 0/13,853,761	---	---
GROUND, FIXED	.029	.058	.29	---	80% C.L. = .33 0/4,843,188	---
LOW STRESS TEST				---	$\hat{\lambda}$ = .26 1/3,904,068	---
COMBINED GROUND, FIXED AND LOW STRESS TEST					$\hat{\lambda}$ = .11 1/8,747,256	
AIRBORNE, INHABITED	.16	.32	1.6	---	$\hat{\lambda}$ = 4.2 (3) 17/4,182,438	---
HIGH STRESS TEST				80% C.L. = .068 0/23,521,787	$\hat{\lambda}$ = 1.2 7/5,829,985	
COMBINED AIRBORNE, INHABITED AND HIGH STRESS TEST				80% C.L. = .068 0/23,521,787	$\hat{\lambda}$ = 2.4 24/10,012,423	
NAVAL, SHELTERED	.17	.34	1.7	---	80% C.L. = 1.5 0/1,045,700	---

Note (3) see page 117

Table 1.4-3 FIELD EFFECT TRANSISTOR PARTS COUNT PREDICTED FAILURE RATES VERSUS EXPERIENCED

	PREDICTED (fpmh)			EXPERIENCED (fpmh)	(fpmh)	(fpmh)
ENVIRONMENT	JTXV	JTX	JAN	SPACE QUALITY	MILITARY QUALITY	COMMERCIAL QUALITY
GROUND, FIXED	.052	.10	.52	---	80% C.L. = 3.1 0/518,913	---
LOW STRESS TEST				---	80% C.L. = 1.1 0/1,427,100	---
COMBINED GROUND FIXED AND LOW STRESS TEST				---	80% C.L. = .51 0/1,946,013	---
AIRBORNE, INHABITED	.81	1.6	2.7	---	---	---
HIGH STRESS TEST				---	$\hat{\lambda}$ = 2.2 2/909,692	---
NAVAL, SHELTERED	.29	.58	2.9	---	80% C.L. = .43 (2) 0/3,712,235	---

Note (2) see page 117

Table 1.4-4 GENERAL PURPOSE, SILICON DIODES PARTS COUNT PREDICTED FAILURE RATES VERSUS EXPERIENCED

	PREDICTED (fpmh)			EXPERIENCED (fpmh)	(fpmh)	(fpmh)
ENVIRONMENT	JTXV	JTX	JAN	SPACE QUALITY	MILITARY QUALITY	COMMERCIAL QUALITY
SPACE FLIGHT	.0017	.0034	.017	80% C.L. = .025 0/64,828,322	---	---
GROUND, FIXED	.012	.024	.24	---	80% C.L. = .043 0/37,188,765	
LOW STRESS TEST					80% C.L. = .034 0/46,988,188	80% C.L. = .037 0/43,052,469
COMBINED GROUND, FIXED AND LOW STRESS TEST					80% C.L. = .012 0/84,176,953	80% C.L. = .037 0/43,052,469
AIRBORNE, INHABITED	.068	.14	.68	---	$\hat{\lambda}$ = .019 2/103,695,618	---
HIGH STRESS TEST				$\hat{\lambda}$ = .020 3/147,081,915	$\hat{\lambda}$ = .30 10/33,294,591	---
COMBINED AIRBORNE INHABITED AND HIGH STRESS TEST				$\hat{\lambda}$ = .020 3/147,081,915	$\hat{\lambda}$ = .087 12/136,990,209	---
NAVAL SHELTERED	.075	.15	.75	---	$\hat{\lambda}$ = .018 (2) 1/56,729,225	---

Note (2) see page 117

Table 1.4-5 ZENER AND AVALANCHE DIODES PARTS COUNT PREDICTED FAILURE RATES VERSUS EXPERIENCED

ENVIRONMENT	PREDICTED (fpmh) JTXV	JTX	JAN	EXPERIENCED (fpmh) SPACE QUALITY	(fpmh) MILITARY QUALITY	(fpmh) COMMERCIAL QUALITY
SPACE, FLIGHT	.0027	.0054	.027	80% C.L. = .12 0/13,492,914	---	---
GROUND, FIXED	.016	.032	.32	---	80% C.L. = .30 0/5,362,101	---
LOW STRESS TEST				---	$\hat{\lambda}$ = .19 2/10,663,358	---
COMBINED GROUND, FIXED AND LOW STRESS TEST					$\hat{\lambda}$ = .12 2/16,025,459	
AIRBORNE, INHABITED	.085	.17	.85	---	80% C.L. = .32 0/5,047,770	---
HIGH STRESS TEST				80% C.L. = .033 0/48,492,182	$\hat{\lambda}$ = 1.5 10/6,515,719	
COMBINED AIRBORNE, INHABITED AND HIGH STRESS TEST				80% C.L. = .033 0/48,492,183	$\hat{\lambda}$ = .86 10/11,563,489	
NAVAL, SHELTERED	.091	.18	.91	---	80% C.L. = .12 0/13,803,240	---

Table 1.4-6 THYRISTOR PARTS COUNT PREDICTED FAILURE RATES VERSUS EXPERIENCED

ENVIRONMENT	PREDICTED (fpmh) JTXV	JTX	JAN	EXPERIENCED (fpmh) SPACE QUALITY	(fpmh) MILITARY QUALITY	(fpmh) COMMERCIAL QUALITY
GROUND, FIXED	.016	.032	.16	---	80% C.L. = 1.9 0/864,855	---
LOW STRESS TEST				---	80% C.L. - 2.8 0/581,192	---
COMBINED GROUND, FIXED AND LOW STRESS TEST					80% C.L. = 1.1 0/1,446,047	
AIRBORNE, INHABITED	.090	.18	.90	---	80% C.L. = .74 0/2,163,330	---
HIGH STRESS TEST				---	$\hat{\lambda}$ = 11 2/182,132	---
COMBINED AIRBORNE, INHABITED AND HIGH STRESS TEST					$\hat{\lambda}$ = .85 2/2,345,462	

NOTES TO TABLES 1.4-1 TO 1.4-6

NOTE 1: This data is primarily from AU-0001 where the classification of the data as low stress test is not exactly accurate since it includes 954,000 airborne uninhabited part hours. Assuming an acceleration factor of 8, the 954,000 part hours of Airborne-Uninhabited translates into 7,632,000 Ground, Fixed part hours and the corrected failure rate for Ground, Fixed environment becomes 0.50 fpmh (9 failures in 18,126,000 hours).

NOTE 2: This data indicates that the application environment of NS-0001 is more like Ground, Fixed rather than Naval, Sheltered. The Rel Demo test for NS-0001 was performed at level A-1 of MIL-STD-781B, which is primarily used for relatively-benign, ground fixed applications. There is an indication here that some equipment in a Naval environment may have environmental stresses similar to Ground, Fixed.

NOTE 3: This failure rate is higher than expected because most of the data is from PNP Power and is heavily influenced by one outlying entry, the 2N5003+ with 14-failures in 432,666 hours. The manufacturer of AI-0004 equipment estimated that only 30% of the field failures they reported were actually the parts fault. Correcting for this consideration gives $\hat{\lambda}$ = 1.2 fpmh instead of 4.2 fpmh.

DISCRETE SEMICONDUCTOR RELIABILITY

TRANSISTOR/DIODE DATA

Section 2

DISCRETE SEMICONDUCTOR RELIABILITY DATA

TABULATION BY PART NUMBER

PRECEDING PAGE NOT FILMED
BLANK

TABULATION USAGE GUIDE

The following describes the information contained in this Section by column heading:

Entry No. - Entry numbers are assigned for reference. Each part number with its associated quality designator or configuration is assigned an entry number. Dash numbers are used to reference the different data sources for that part number.

Part Number - Part numbers have been grouped and sorted into three categories. The first grouping is by E.I.A.-registered part number (1N-, 2N-, etc). The E.I.A.-registered numbers are listed numerically. The second grouping is by part manufacturer catalogue number which is in-turn listed alphanumerically. The third grouping is by special numbers or unknown part numbers. This last group has been sorted numerically by Device Type Code and the user special numbers have been suppressed. A plus sign "+" after the part number is used to indicate that additional screening was performed. For example: "JTX2N2222A+" means a JTX part was given additional screening beyond the JTX requirements. Where a part number appears in parentheses, the actual device SCD requires a deviation or a selection from the E.I.A.-registered or manufacturer catalogue mechanical and/or electrical specifications. The letter "J" is used for "JAN" in the part numbers.

The IN's go up to 1N5832 (entry no. 452). The 2N's start at 2N398+ (entry no. 453). Part manufacturer catalogue numbers start at entry number 800 and end at entry 856. The special and unknown part number group starts at entry number 857 and goes to entry number 1245.

Device Type Code - The number codes appearing in this column are defined in Appendix D.

Equipment Used On - This column identifies the equipment the part is used on. There are twenty-six different electronic equipments. Each equipment has been designated with a code. The designations and descriptions are as follows:

Equipment Code Designator	Description
AI-0001	Receiver-Transmitter
AI-0002	Radio Communications
AI-0003	Radio Communications
AI-0004	Data Processing System

PRECEDING PAGE NOT FILMED
BLANK

Equipment Code Designator	Description
AI-0005	Inertial Navigation Set
AI-0006	Altitude Indicator
AI-0007	Signal Data Recorder
AI-0008	Air Data Computer
AI-0010	Indicator Group
AI-0011	Interference Blanker Set
AI-0012	Search Radar Set
AI-0013	Radar Set
AI-0014	Data Processing Group
AI-0015	Central Computer
AI-0016	LORAN Navigation Set
AI-0017	Countermeasure Set
AU-0001	Phased Array Antenna
AU-0002	Electronic Air Inlet Controller
GF-0001	Communications Central
GF-0002	Air Control Center
GF-0003	UHF Transceiver
GF-0004	Group Data Modem
GF-0005	Multiplexer Set
NS-0001	Radio Direction Finder
NS-0002	Communications Circuit Configuration Monitor
SF-0001	Space Program

The letters at the front of the designation represent the MIL-HDBK-217B environment factor (Π_E) symbol in which the equipment is designed to operate. For example "AI" stands for Airborne, Inhabited, "GF" stands for Ground, Fixed and "SF" stands for Space, Flight. Appendix A identifies in detail the environmental conditions and/or test conditions for the data, the general quality grade of the discrete semiconductors used, and when available, the derating goals and electrical stress distribution.

Qty Per System - The quantity used per system, when available, is located in this column. "S/R" in this column means "see remarks". "N/R" means "not reported".

Data Type - This column identifies the environment and/or test conditions in which the data was generated. See Appendix A under the applicable equipment code for detailed conditions.

No. Fail - The number of failures appears in this column. The failures which are shown in parentheses are most likely not the cause of the part, but the failure analysis report was inconclusive.

In the Remarks column failure event numbers are given for each failure. The failure event number is simply the equipment designation followed by a failure number. For example: AI-0001/F # 001 should be interpreted as a failure

event on AI-0001 given the failure number one. (Note the numbers were assigned randomly by RAC and do not signify a sequence). Knowing the failure event number, the detailed failure description is found in Section III where the failure event numbers are listed in alphanumeric order. The failure event numbers of inconclusive failures are postscripted with an asterisk.

Part Hours - The total part hours appears in this column. Total part hours represents the system hours times the number of parts in the system. For example: AI-0003 Rel Demo consisted of 4,000 system hours. The JTX2N2222A was used 26 per system. Thus, the total part hours for the JTX2N2222A is 104,000 hours.

In the Remarks column for multi-chip devices such as dual transistors or quad diodes, the remarks "chip hours" will appear. This signifies that the hours in the Part Hour column **are really chip hours.** That is, the chip hours for a dual transistor equals twice the part hours. Darlington transistors are listed as part hours.

Remarks - This column is used for explanatory remarks, as needed, and gives the failure event number references (see No. Fail. description).

Examples Demonstrating Some Uses of this Data Tabulation

(1) Part Selection: If a schottky barrier diode is to be selected, one can go to the tabulation to identify parts for which some history of usage and data exists. If part numbers are not known, all one needs to do is scan the "Device Type Code" column for the number 303. If this is done, Entry No's 447, 448, 449, 452, 808, 809, 810 and 1208 thru 1215 should have been identified. Of these entries the JTX1N5711 has the most usage and data.

(2) Failure Rates: If the JTX1N5711 schottky barrier diode is used in equipment for which you are required to do a MIL-HDBK-217B prediction, the failure rate can not be determined from 217B, therefore alternate data sources are necessary. Entry Numbers 447-4 thru -8 can be merged for a parts count failure rate for a ground, fixed application. (NOTE: entry 447-5 comes from a very benign naval sheltered operation and therefore is considered ground, fixed. (Note 2 on page 117). The maximum likelihood estimate (number failures divided by hours) is .044 fpmh and the 80% confidence limit is .13 fpmh.

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1	(1N23WE)	306	AI-0013	1	Rel Demo, F	0	150	Vendor generic equivalent
2	1N82A+	300	GF-0001	4	Rel Demo, A	0	6,376	UHF mixer
3	1N198+	112	GF-0001	4	Rel Demo, A	0	6,376	Germanium
4	1N270+	112	GF-0001	S/R	Rel Demo, A	0	74,747	Qty=12, 14, 16, depends on conf; Germanium
5-1	J1N457	112	AI-0005	10	Burn-In, TCPC	0	11,310	
5-2			AI-0005	10	Rel Demo, TCVPC	0	40,740	
6	1N457+	112	GF-0001	S/R	Rel Demo, A	0	104,210	Qty=10, 24 or 35, depending on configuration
7	1N458+	112	GF-0001	S/R	Rel Demo, A	0	2,158,330	Qty=520 or 564, depending on configuration
8-1	JTX1N483B	112	AI-0007	13	Rel Demo, F	0	32,084	
8-2			GF-0002	405	Rel Demo	0	172,628	
8-3			GF-0004	108	Rel Demo, A-1	0	489,845	
9-1	JTX1N485B	112	AI-0013	4	Rel Demo, F	0	600	
9-2			AU-0002	S/R	Rel Demo, F	0	176,158	Qty=7 or 22, depending on configuration
10	1N485B+	112	GF-0001	16	Rel Demo, A	0	64,252	
11	1N486B	112	NS-0002	2789	Equip. Checkout	0	31,599,937	
12-1	1N643+	111	SF-0001	N/R	Space, Flight	0	30,368	
12-2			SF-0001	N/R	Equip. Checkout	0	124,684	
13-1	JTX1N645+	121	SF-0001	N/R	Equip. Checkout	0	50,420	
13-2			SF-0001	N/R	Space, Flight	0	1,260	
14-1	JTX1N645	121	AI-0002	1	Rel Demo, A	0	2,693	
14-2			AI-0002	1	Rel Demo, F	0	22,475	
14-3			AI-0002	1	Rel Demo, A	0	2,073	
14-4			AI-0003	3	Rel Demo, F	0	12,000	
14-5			AI-0005	76	Rel Demo, TCVPC	0	307,567	
14-6			AI-0005	76	Burn-In, TCPC	0	85,299	
14-7			AI-0006	2	Rel Demo, F	0	7,640	
14-8			AI-0008	9	Rel Demo, F	0	50,985	
14-9			AI-0010	2	Rel Demo, F	0	7,534	
14-10			AI-0011	3	Rel Demo, F	0	21,719	
14-11			AI-0016	138	Rel Demo, F	0	417,588	
14-12			AI-0017	33	Rel Demo, E	0	33,000	
14-13			GF-0002	3	Rel Demo	0	1,260	
14-14			GF-0004	10	Rel Demo, A-1	0	45,356	
14-15			SF-0001	N/R	Equip. Checkout	0	419,350	
14-16			SF-0001	N/R	Space, Flight	0	321,090	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
15-1	J1N645	121	AI-0005	17	Rel Demo, TCVPC	0	69,258	
15-2			AI-0005	17	Burn-In, TCPC	0	19,227	
15-3			GF-0002	132	Rel Demo	0	57,977	
16-1	1N645+	121	GF-0001	S/R	Rel Demo, A	0	989,779	Qty=46, 210, 265, depending on configuration
16-2			SF-0001	N/R	Equip. Checkout	0	103,680	
16-3			SF-0001	N/R	Space, Flight	0	12,120	
17-1	1N645	121	GF-0003	1	Rel Demo, A-1	0	58,251	
17-2			GF-0003	1	Ground, Fixed	0	172,971	
18-1	JTX1N647	121	AI-0003	2	Rel Demo, F	0	8,000	
18-2			AI-0005	4	Rel Demo, TCVPC	0	16,296	
18-3			AI-0005	4	Burn-In, TCPC	0	4,524	
19-1	J1N647	121	AI-0005	2	Rel Demo, TCVPC	0	8,148	
19-2			AI-0005	2	Burn-In, TCPC	0	2,262	
19-3			AI-0012	3	Burn-In, TCVPC	0	16,485	
20	1N647+	121	GF-0001	S/R	Rel Demo, A	0	38,502	Qty=8 or 12, depending on configuration
21	1N647	121	GF-0002	54	Rel Demo	0	24,466	
22-1	JTX1N649	121	AI-0001	31	Rel Demo, F	0	580,227	
22-2			AI-0001	31	Burn-In, TCVPC	0	24,614	
22-3			AI-0002	S/R	Rel Demo, F	0	93,000	Qty-2 or 8, depending on configuration
22-4			AI-0002	S/R	Rel Demo, A	0	10,787	Qty=2 or 8, depending on configuration
22-5			AI-0002	S/R	Rel Demo, A	0	9,376	Qty=2 or 8, depending on configuration
22-6			AI-0003	13	Rel Demo, F	0	52,000	
22-7			AI-0013	84	Rel Demo, F	0	12,600	
22-8			AI-0014	36	Rel Demo, E	0	5,515	
22-9			AI-0016	1	Rel Demo, F	0	3,026	
22-10			AI-0017	308	Rel Demo, E	0	308,000	
22-11			NS-0001	3	Naval, Sheltered	0	156,855	
22-12			NS-0001	3	Oper. Burn-In	0	31,923	
22-13			NS-0001	3	Rel Demo, A-1	0	24,393	
22-14			NS-0001	3	Burn-In W. Vibr	0	3,984	
23-1	J1N649	121	AI-0005	2	Rel Demo, TCVPC	0	8,148	
23-2			AI-0005	2	Burn-In, TCPC	0	2,262	
24	JTX1N649-1	121	GF-0002	22	Rel Demo	0	9,404	
25	JTX1N662	111	GF-0004	2	Rel Demo, A-1	0	9,071	
26	1N702+	131	GF-0001	4	Rel Demo, A	0	16,063	
27	JTX1N746	131	GF-0002	12	Rel Demo	0	5,041	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
28	1N746+	131	GF-0001	S/R	Rel Demo, A	0	6,121	Qty=1 or 2, depending on configuration
29-1	JTX1N746A+	131	SF-0001	N/R	Equip. Checkout	0	515,542	
29-2			SF-0001	N/R	Space, Flight	0	171,386	
30-1	JTX1N746A	131	AI-0001	6	Rel Demo, F	0	112,302	
30-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
30-3			AI-0002	2	Rel Demo, A	0	5,385	
30-4			AI-0002	2	Rel Demo,F	0	44,950	
30-5			AI-0002	2	Rel Demo, A	0	4,147	
30-6			AI-0003	2	Rel Demo, F	0	8,000	
30-7			AI-0004	N/R	Rel Demo, E	0	7,774	
30-8			AI-0005	2	Burn-In, TCPC	0	2,906	
30-9			AI-0005	2	Rel Demo, TCVPC	0	7,766	
30-10			AI-0010	2	Rel Demo, F	0	7,534	
30-11			AI-0013	5	Rel Demo, F	0	750	
30-12			AI-0016	2	Rel Demo, F	0	6,052	
30-13			AI-0017	10	Rel Demo, E	0	10,000	
30-14			GF-0002	13	Rel Demo	0	5,428	
30-15			GF-0004	20	Rel Demo, A-1	0	90,712	
30-16			GF-0005	57	Rel Demo, A-1	0	298,648	
30-17			NS-0001	32	Naval, Sheltered	0	1,673,120	
30-18			NS-0001	32	Rel Demo, A-1	0	260,192	
30-19			NS-0001	32	Oper. Burn-In	0	340,512	
30-20			NS-0001	32	Burn-In W. Vibr	0	42,496	
31-1	J1N746A	131	AI-0005	8	Burn-In, TCPC	0	16,736	
31-2			AI-0005	8	Rel Demo, TCVPC	0	38,384	
31-3			GF-0003	6	Ground,Fixed	0	1,037,826	
31-4			GF-0003	6	Rel Demo, A-1	0	349,505	
32	1N746A+	131	GF-0001	S/R	Rel Demo, A	0	61,273	Qty=4, 12, or 17, depending on configuration
33-1	JTX1N747A+	131	SF-0001	N/R	Equip. Checkout	0	587,082	
33-2			SF-0001	N/R	Space, Flight	0	221,700	
34-1	JTX1N747A	131	AI-0007	1	Rel Demo, F	0	2,468	
34-2			AI-0016	19	Rel Demo, F	0	57,494	
34-3			AI-0017	3	Rel Demo, E	0	3,000	
35-1	J1N747A	131	AI-0005	1	Burn-In, TCPC	0	2,092	
35-2			AI-0005	1	Rel Demo, TCVPC	0	4,798	
36	1N747A+	131	GF-0001	226	Rel Demo, A	0	907,560	
37-1	J1N748	131	AI-0005	1	Burn-In, TCPC	0	1,945	
37-2			AI-0005	1	Rel Demo, TCVPC	0	7,372	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
38-1	JTX1N748A	131	AI-0012	4	Burn-In, TCVPC	0	21,360	
38-2			AI-0017	7	Rel Demo, E	0	7,000	
38-3			NS-0001	8	Naval, Sheltered	0	418,280	
38-4			NS-0001	8	Oper. Burn-In	0	85,128	
38-5			NS-0001	8	Rel Demo, A-1	0	65,048	
38-6			NS-0001	8	Burn-In W. Vibr	0	10,624	
39-1	J1N748A	131	AI-0005	3	Rel Demo, TCVPC	0	13,670	
39-2			AI-0005	3	Burn-In, TCPC	0	5,315	
40	1N748A+	131	GF-0001	S/R	Rel Demo, A	0	4,466	Qty=1 or 2, depending on configuration
41-1	JTX1N749A	131	AI-0002	1	Rel Demo, A	0	2,073	
41-2			AI-0002	1	Rel Demo, F	0	22,475	
41-3			AI-0002	1	Rel Demo, A	0	2,693	
41-4			AI-0005	1	Rel Demo, TCVPC	0	3,883	
41-5			AI-0005	1	Burn-In, TCPC	0	1,453	
41-6			AI-0017	28	Rel Demo, E	0	28,000	
41-7			GF-0002	2	Rel Demo	0	955	
41-8			GF-0004	4	Rel Demo, A-1	0	18,142	
41-9			NS-0001	2	Naval, Sheltered	0	104,570	
41-10			NS-0001	2	Oper. Burn-In	0	21,282	
41-11			NS-0001	2	Rel Demo. A-1	0	16,262	
41-12			NS-0001	2	Burn-In W. Vibr	0	2,656	
42-1	J1N749A	131	AI-0005	4	Rel Demo, TCPVC	0	16,296	
42-2			AI-0005	4	Burn-In, TCPC	0	4,524	
43	1N749A+	131	GF-0001	2	Rel Demo, A	0	8,031	
44-1	JTX1N750A+	131	SF-0001	N/R	Space, Flight	0	198,992	
44-2			SF-0001	N/R	Equip. Checkout	0	479,766	
45-1	JTX1N750A	131	AI-0002	3	Rel Demo, F	0	67,425	
45-2			AI-0002	3	Rel Demo, A	0	8,078	
45-3			AI-0002	3	Rel Demo, A	0	6,220	
45-4			AI-0008	1	Rel Demo, F	0	5,665	
45-5			AI-0013	1	Rel Demo, F	0	150	
45-6			AI-0017	4	Rel Demo, E	0	4,000	
45-7			AU-0002	4	Rel Demo, F	0	58,036	
45-8			GF-0004	16	Rel Demo, A-1	0	72,570	
45-9			GF-0005	1	Rel Demo, A-1	0	5,251	
45-10			NS-0001	2	Naval, Sheltered	0	109,570	
45-11			NS-0001	2	Oper. Burn-In	0	21,282	
45-12			NS-0001	2	Rel Demo, A-1	0	16,262	
45-13			NS-0001	2	Burn-In W. Vibr	0	2,656	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
46-1	J1N750A	131	AI-0005	8	Rel Demo, TCVPC	0	31,446	
46-2			AI-0005	8	Burn-In, TCPC	0	10,980	
47-1	JTX1N751A+	131	SF-0001	N/R	Equip. Checkout	0	273,522	
47-2			SF-0001	N/R	Space, Flight	0	69,456	
48-1	JTX1N751A	131	AI-0001	12	Burn-In, TCVPC	0	9,528	
48-2			AI-0001	12	Rel Demo, F	0	224,604	
48-3			AI-0002	7	Rel Demo, A	0	14,513	
48-4			AI-0002	7	Rel Demo, F	0	157,324	
48-5			AI-0002	7	Rel Demo, A	0	18,848	
48-6			AI-0003	4	Rel Demo, F	0	16,000	
48-7			AI-0004	N/R	Rel Demo, E	0	5,831	
48-8			AI-0005	1	Rel Demo, TCVPC	0	3,883	
48-9			AI-0005	1	Burn-In, TCPC	0	1,453	
48-10			AI-0006	2	Rel Demo, F	0	7,640	
48-11			AI-0008	2	Rel Demo, F	0	11,330	
48-12			AI-0012	4	Burn-In, TCVPC	0	21,360	
48-13			AI-0013	15	Rel Demo, F	0	2,250	
48-14			AI-0016	8	Rel Demo, F	0	24,208	
48-15			GF-0002	52	Rel Demo	0	22,763	
48-16			GF-0004	6	Rel Demo, A-1	0	27,214	
48-17			GF-0005	2	Rel Demo, A-1	0	10,501	
48-18			NS-0001	29	Naval Sheltered	0	1,516,265	
48-19			NS-0001	29	Oper. Burn-In	0	308,589	
48-20			NS-0001	29	Rel Demo, A-1	0	235,799	
48-21			NS-0001	29	Burn-In W. Vibr	0	38,512	
49-1	J1N751A	131	AI-0005	8	Burn-In, TCPC	0	10,400	
49-2			AI-0005	8	Rel Demo, TCVPC	0	35,141	
49-3			GF-0003	2	Ground, Fixed	0	345,942	
49-4			GF-0003	S/R	Rel Demo, A-1	0	119,482	Qty=2 or 3, depending on configuration
50-1	1N751A+	131	GF-0001	S/R	Rel Demo, A	0	193,278	Qty=39 or 62, depending on configuration
50-2			SF-0001	N/R	Space, Flight	0	284,748	
50-3			SF-0001	N/R	Equip. Checkout	0	490,122	
51	1N751A	131	AI-0017	8	Rel Demo, E	0	8,000	
52-1	JTX1N752A+	131	SF-0001	N/R	Equip. Checkout	0	343,322	
52-2			SF-0001	N/R	Space, Flight	0	125,206	
53-1	JTX1N752A	131	AI-0001	4	Rel Demo, F	0	74,868	
53-2			AI-0001	4	Burn-In, TCVPC	0	3,176	
53-3			AI-0002	S/R	Rel Demo, A	0	15,255	Qty=5 or 6, depending on configuration
53-4			AI-0002	S/R	Rel Demo, F	0	126,842	Qty=5 or 6, depending on configuration
53-5			AI-0002	S/R	Rel Demo, A	0	11,569	Qty=5 or 6, depending on configuration
53-6			AI-0004	N/R	Rel Demo, E	0	3,887	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
53-7			AI-0010	2	Rel Demo, F	0	7,534	
53-8			AI-0011	1	Rel Demo, F	0	7,240	
53-9			AI-0016	5	Rel Demo, F	0	15,130	
53-10			AI-0017	32	Rel Demo, E	0	32,000	
53-11			AU-0002	S/R	Rel Demo, F	0	48,090	Qty=2 or 4, depending on configuration
53-12			GF-0002	44	Rel Demo	0	19,227	
53-13			GF-0005	6	Rel Demo, A-1	0	31,503	
53-14			NS-0001	16	Naval, Sheltered	0	836,560	
53-15			NS-0001	16	Oper. Burn-In	0	170,256	
53-16			NS-0001	16	Rel Demo, A-1	0	130,096	
53-17			NS-0001	16	Burn-In W. Vibr	0	21,248	
54-1	J1N752A	131	AI-0005	5	Rel Demo, TCVPC	0	18,913	
54-2			AI-0005	5	Burn-In, TCPC	0	5,956	
55-1	1N752A+	131	GF-0001	7	Rel Demo, A	0	11,159	
55-2			SF-0001	N/R	Equip. Checkout	0	1,473,697	
55-3			SF-0001	N/R	Space, Flight	0	574,817	
56	1N752A	131	NS-0002	76	Equip. Checkout	0	86,108	
57-1	JTX1N753A+	131	SF-0001	N/R	Space, Flight	0	111,889	
57-2			SF-0001	N/R	Equip. Checkout	0	203,273	
58-1	JTX1N753A	131	AI-0002	5	Rel Demo, A	0	13,463	
58-2			AI-0002	5	Rel Demo, A	0	10,367	
58-3			AI-0002	5	Rel Demo, F	0	112,375	
58-4			AI-0003	1	Rel Demo, F	0	4,000	
58-5			AI-0004	N/R	Rel Demo, E	0	11,038	
58-6			AI-0004	N/R	Airborne, Inhabited	0	288,444	
58-7			AI-0010	1	Rel Demo, F	0	3,767	
58-8			AI-0013	6	Rel Demo, F	0	900	
58-9			AI-0014	20	Rel Demo, E	0	3,064	
58-10			AI-0015	1	Rel Demo, F	0	4,280	
58-11			AI-0017	15	Rel Demo, E	0	15,000	
58-12			GF-0002	262	Rel Demo	0	111,217	
58-13			GF-0004	15	Rel Demo, A-1	0	68,034	
58-14			GF-0005	75	Rel Demo, A-1	0	381,115	
58-15			NS-0001	25	Naval, Sheltered	0	1,307,125	
58-16			NS-0001	25	Rel Demo, A-1	0	203,275	
58-17			NS-0001	25	Oper. Burn-In	0	266,025	
58-18			NS-0001	25	Burn-In W. Vibr	0	33,200	
59-1	J1N753A	131	AI-0005	19	Burn-In, TCPC	0	23,411	
59-2			AI-0005	19	Rel Demo, TCVPC	0	78,854	
59-3			GF-0002	7	Rel Demo	0	2,941	
59-4			GF-0003	1	Ground, Fixed	0	172,971	
59-5			GF-0003	1	Rel Demo, A-1	0	58,251	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
60-1	1N753A+	131	GF-0001	S/R	Rel Demo, A	0	42,083	Qty=4, 8 or 10, depending on configuration
60-2			SF-0001	N/R	Equip. Checkout	0	424,666	
60-3			SF-0001	N/R	Space, Flight	0	2,108,970	
61	1N753A	131	NS-0002	2	Equip. Checkout	0	2,266	
62-1	JTX1N754A	131	AI-0002	S/R	Rel Demo, A	0	7,422	Qty-3 or 4, depending on configuration
62-2			AI-0002	S/R	Rel Demo, A	0	9,870	Qty=3 or 4, depending on configuration
62-3			AI-0002	S/R	Rel Demo, F	0	81,892	Qty=3 or 4, depending on configuration
62-4			AI-0013	1	Rel Demo, F	0	150	
62-5			AI-0016	6	Rel Demo, F	0	18,156	
62-6			AI-0017	5	Rel Demo, E	0	5,000	
62-7			AU-0002	2	Rel Demo, F	0	29,018	
62-8			GF-0002	16	Rel Demo	0	7,018	
62-9			GF-0005	2	Rel Demo, A-1	0	10,501	
62-10			NS-0001	19	Naval, Sheltered	0	993,415	
62-11			NS-0001	19	Rel Demo, A-1	0	154,489	
62-12			NS-0001	19	Oper. Burn-In	0	202,179	
62-13			NS-0001	19	Burn-In W. Vibr	0	25,232	
63-1	J1N754A	131	AI-0005	3	Burn-In, TCPC	0	6,276	
63-2			AI-0005	3	Rel Demo, TCVPC	0	14,394	
64	1N754A+	131	GF-0001	S/R	Rel Demo, A	0	4,466	Qty=1 or 2, depending on configuration
65-1	1N754A	131	GF-0002	11	Rel Demo	0	4,702	
65-2			GF-0003	2	Rel Demo, A-1	0	5,961	
66-1	JTX1N755A	131	AI-0002	S/R	Rel Demo, A	0	3,276	Qty=1 or 2, depending on configuration
66-2			AI-0002	S/R	Rel Demo, F	0	36,942	Qty=1 or 2, depending on configuration
66-3			AI-0002	S/R	Rel Demo, A	0	4,485	Qty=1 or 2, depending on configuration
66-4			AI-0013	6	Rel Demo, F	0	900	
66-5			AI-0015	2	Rel Demo, F	0	8,560	
66-6			AI-0017	1	Rel Demo, E	0	1,000	
66-7			AU-0002	2	Rel Demo, F	0	29,018	
66-8			GF-0002	28	Rel Demo	0	12,498	
66-9			NS-0001	7	Burn-In, W. Vibr	0	9,296	
66-10			NS-0001	7	Rel Demo, A-1	0	56,917	
66-11			NS-0001	7	Oper. Burn-In	0	14,487	
66-12			NS-0001	7	Naval Sheltered	0	365,995	
67-1	1N755A	131	GF-0003	1	Ground Fixed	0	172,971	
67-2			GF-0003	1	Rel Demo, A-1	0	58,251	
68-1	JTX1N756A+	131	SF-0001	N/R	Equip. Checkout	0	204,878	
68-2			SF-0001	N/R	Space, Flight	0	87,334	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
69-1	JTX1N756A	131	AI-0001	3	Rel Demo, F	0	56,151	
69-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
69-3			AI-0003	1	Rel Demo, F	0	4,000	
69-4			AI-0013	1	Rel Demo, F	0	150	
69-5			AI-0014	20	Rel Demo, E	0	3,064	
69-6			AI-0015	2	Rel Demo, F	0	8,560	
69-7			AI-0016	1	Rel Demo, F	0	3,026	
69-8			AU-0002	1	Rel Demo, F	0	14,509	
69-9			GF-0002	5	Rel Demo	0	2,249	
69-10			NS-0001	4	Burn-In W. Vibr	0	5,312	
69-11			NS-0001	4	Oper. Burn-In	0	42,564	
69-12			NS-0001	4	Rel Demo, A-1	0	32,524	
69-13			NS-0001	4	Naval, Sheltered	0	209,140	
70-1	J1N756A	131	AI-0005	3	Burn-In, TCPC	0	3,393	
70-2			AI-0005	3	Rel Demo, TCVPC	0	12,222	
70-3			GF-0003	1	Ground,Fixed	0	172,971	
70-4			GF-0003	1	Rel Demo, A-1	0	58,251	
71	1N756A+	131	GF-0001	12	Rel Demo, A	0	48,189	
72	1N756A	131	NS-0002	4	Equip. Checkout	0	4,532	
73-1	JTX1N757A	131	AI-0001	3	Rel Demo, F	0	56,151	
73-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
73-3			AI-0002	S/R	Rel Demo, A	0	14,366	Qty-5 or 6, depending on configuration
73-4			AI-0002	S/R	Rel Demo, F	0	118,263	Qty=5 or 6, depending on configuration
73-5			AI-0002	S/R	Rel Demo, A	0	10,965	Qty=5 or 6, depending on configuration
73-6			AI-0010	5	Rel Demo, F	0	18,835	
73-7			AI-0013	1	Rel Demo, F	0	750	
73-8			AI-0014	20	Rel Demo, E	0	3,064	
73-9			AI-0015	1	Rel Demo, F	0	4,280	
73-10			GF-0002	3	Rel Demo	0	1,260	
73-11			NS-0001	2	Burn-In W. Vibr	0	2,656	
73-12			NS-0001	2	Oper. Burn-In	0	21,282	
73-13			NS-0001	2	Rel Demo, A-1	0	16,262	
73-14			NS-0001	2	Naval, Sheltered	0	104,570	
74	1N757A +	131	GF-0001	18	Rel Demo, A	0	72,284	
75	1N758+	131	GF-0001	6	Rel Demo, A	0	24,095	
76-1	JTX1N758A+	131	SF-0001	N/R	Space, Flight	0	223,054	
76-2			SF-0001	N/R	Equip. Checkout	0	411,080	
77-1	JTX1N758A	131	AI-0002	1	Rel Demo, A	0	2,074	
77-2			AI-0002	1	Rel Demo, A	0	2,692	
77-3			AI-0002	1	Rel Demo, F	(1)	22,475	AI-0002/F#009*
77-4			AI-0005	2	Burn-In, TCPC	0	2,906	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
77-5			AI-0005	2	Rel Demo, TCVPC	0	7,766	
77-6			AI-0011	1	Rel Demo, F	0	7,240	
77-7			AI-0013	5	Rel Demo, F	0	750	
77-8			AI-0016	57	Rel Demo, F	0	172,482	
77-9			AI-0017	15	Rel Demo, E	0	15,000	
77-10			AU-0002	1	Rel Demo, F	0	14,509	
77-11			GF-0002	46	Rel Demo	0	19,743	
78-1	J1N758A	131	AI-0005	1	Rel Demo, TCVPC	0	7,372	
78-2			AI-0005	1	Burn-In, TCPC	0	1,945	
79-1	1N758A+	131	GF-0001	S/R	Rel Demo, A	0	60,369	Qty=2, 14 or 15, depending on configuration
79-2			SF-0001	N/R	Equip. Checkout	0	1,379,161	
79-3			SF-0001	N/R	Space, Flight	0	761,207	
80-1	J1N759A	131	AI-0005	6	Burn-In, TCPC	0	9,522	
80-2			AI-0005	6	Rel Demo, TCVPC	0	29,190	
80-3			GF-0002	12	Rel Demo	0	5,271	
81	1N765+	131	GF-0001	2	Rel Demo, A	0	8,031	
82	1N805	112	GF-0002	18	Rel Demo	0	8,155	
83-1	1N816+	131	SF-0001	N/R	Space, Flight	0	1,822,080	
83-2			SF-0001	N/R	Equip. Checkout	0	7,481,040	
84-1	JTX1N821+	132	SF-0001	N/R	Space, Flight	0	252	
84-2			SF-0001	N/R	Equip. Checkout	0	10,084	
85-1	JTX1N821	132	AI-0004	N/R	Rel Demo, E	0	3,887	
85-2			AI-0007	4	Rel Demo, F	0	9,872	
86-1	J1N821	132	AI-0005	1	Rel Demo, TCVPC	0	7,372	
86-2			AI-0005	1	Burn-In, TCPC	0	1,945	
86-3			GF-0003	1	Rel Demo, A-1	0	2,980	
87-1	1N821+	132	AI-0004	N/R	Rel Demo, E	0	11,038	
87-2			AI-0004	N/R	Airborne, Inhabited	0	288,444	
87-3			SF-0001	N/R	Space, Flight	0	3,020	
87-4			SF-0001	N/R	Equip. Checkout	0	11,572	
88-1	J1N821A	132	GF-0003	1	Ground, Fixed	0	172,971	
88-2			GF-0003	1	Rel Demo, A-1	0	55,271	
89-1	JTX1N823	132	AI-0001	3	Burn-In, TCVPC	0	2,382	
89-2			AI-0001	3	Rel Demo, F	0	56,151	
89-3			AI-0007	1	Rel Demo, F	0	2,468	
89-4			AI-0013	2	Rel Demo, F	0	300	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
89-5			AI-0016	5	Rel Demo, F	0	15,130	
89-6			GF-0002	94	Rel Demo	0	40,219	
89-7			GF-0004	1	Rel Demo, A-1	0	4,536	
89-8			GF-0005	2	Rel Demo, A-1	0	10,501	
90-1	J1N823	132	AI-0005	1	Rel Demo, TCVPC	0	4,798	
90-2			AI-0005	1	Burn-In, TCPC	0	2,092	
91-1	JTX1N825	132	AI-0002	1	Rel Demo, F	0	22,475	
91-2			AI-0002	1	Rel Demo, A	0	2,692	
91-3			AI-0002	1	Rel Demo, A	0	2,073	
91-4			AI-0014	120	Rel Demo, E	0	18,384	
91-5			AI-0015	6	Rel Demo, F	0	25,680	
92	1N825A+	132	GF-0001	14	Rel Demo, A	0	56,220	
93-1	JTX1N827	132	AI-0001	2	Rel Demo, F	0	37,434	
93-2			AI-0001	2	Burn-In, TCVPC	0	1,588	
93-3			AI-0004	N/R	Rel Demo, E	0	7,774	
93-4			AI-0013	20	Rel Demo, F	0	3,000	
93-5			AI-0017	6	Rel Demo, E	0	6,000	
93-6			NS-0001	20	Naval, Sheltered	0	1,045,700	
93-7			NS-0001	20	Rel Demo, A-1	0	162,620	
93-8			NS-0001	20	Oper. Burn-In	0	212,820	
93-9			NS-0001	20	Burn-In W. Vibr	0	26,560	
94-1	J1N827	132	AI-0005	6	Rel Demo, TCVPC	0	44,232	
94-2			AI-0005	6	Burn-In, TCPC	0	11,670	
95-1	JTX1N829	132	AI-0004	N/R	Rel Demo, E	0	1,944	
95-2			AI-0007	1	Rel Demo, F	0	2,468	
95-3			AI-0010	3	Rel Demo, F	0	11,301	
95-4			AI-0017	3	Rel Demo, E	0	3,000	
96-1	J1N829	132	AI-0005	6	Burn-In, TCPC	0	11,670	
96-2			AI-0005	6	Rel Demo, TCVPC	1	44,232	AI-0005/F#023; Failure report calls out non-JAN no.
97	1N829A+	132	GF-0001	S/R	Rel Demo, A	0	12,243	Qty=2 or 4, depending on configuration
98-1	JTX1N914	111	AI-0004	N/R	Rel Demo, E	0	130,221	
98-2			AI-0005	142	Burn-In, TCPC	0	246,394	
98-3			AI-0005	142	Rel Demo, TCVPC	0	630,886	
98-4			AI-0016	155	Rel Demo, F	0	469,030	
98-5			GF-0002	413	Rel Demo	0	178,219	
99-1	J1N914	111	AI-0005	148	Rel Demo, TCVPC	0	754,409	
99-2			AI-0005	148	Burn-In, TCPC	1	209,789	AI-0005/F#014

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
100-1	1N914+	111	AI-0004	N/R	Airborne, Inhabited	0	1,297,998	
100-2			AI-0004	N/R	Rel Demo, E	0	44,393	
100-3			GF-0001	S/R	Rel Demo, A	0	434,227	Qty=32, 69, 117, depending on configuration
101	JTX1N916	111	GF-0002	1	Rel Demo	0	386	
102-1	JTX1N935B+	132	SF-0001	N/R	Equip. Checkout	0	14,512	
102-2			SF-0001	N/R	Space, Flight	0	252	
103-1	1N935B+	132	AI-0004	N/R	Rel Demo, E	0	11,038	
103-2			AI-0004	N/R	Airborne, Inhabited	0	288,444	
103-3			SF-0001	N/R	Space, Flight	0	3,460	
103-4			SF-0001	N/R	Equip. Checkout	0	28,548	
104-1	JTX1N936B	132	AI-0002	S/R	Rel Demo, A	0	872	Qty=0 or 1, depending on configuration
104-2			AI-0002	S/R	Rel Demo, F	0	8,008	Qty=0 or 1, depending on configuration
104-3			AI-0002	S/R	Rel Demo, A	0	900	Qty=0 or 1, depending on configuration
105-1	JTX1N937B	132	AI-0017	5	Rel Demo, E	0	5,000	
105-2			GF-0001	S/R	Rel Demo, A	0	20,784	Qty=2 or 10, depending on configuration
105-3			GF-0004	1	Rel Demo, A-1	0	4,536	
106	1N938A+	132	GF-0001	S/R	Rel Demo, A	0	20,784	Qty=2 or 10, depending on configuration
107	(JTX1N938B)+	132	AI-0013	2	Rel Demo, F	0	300	Vendor generic equivalent
108-1	JTX1N938B	132	AI-0001	6	Burn-In, TCVPC	0	4,764	
108-2			AI-0001	6	Rel Demo, F	0	112,302	
108-3			AI-0004	N/R	Rel Demo, E	0	1,944	
108-4			AI-0014	8	Rel Demo, E	0	1,226	
108-5			AU-0002	2	Rel Demo, F	0	29,018	
108-6			NS-0001	6	Naval Sheltered	0	313,710	
108-7			NS-0001	6	Oper. Burn-In	0	63,846	
108-8			NS-0001	6	Rel Demo, A-1	0	48,786	
108-9			NS-0001	6	Burn-In W. Vibr	0	7,968	
109-1	J1N938B	132	AI-0005	3	Rel Demo, TCVPC	0	12,222	
109-2			AI-0005	3	Burn-In, TCPC	0	3,393	
110-1	(1N938B)+	132	AI-0001	3	Rel Demo, F	0	56,151	
110-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
111-1	JTX1N939B	132	AI-0001	12	Rel Demo, F	0	224,604	
111-2			AI-0001	12	Burn-In, TCVPC	0	9,528	
111-3			AI-0017	13	Rel Demo, E	0	13,000	
111-4			AU-0002	1	Rel Demo, F	0	14,509	
111-5			GF-0002	6	Rel Demo	0	2,521	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
112-1	JTX1N941B	132	AI-0008	1	Rel Demo, F	0	5,665	
112-2			GF-0002	10	Rel Demo	0	4,498	
113-1	JTX1N943B+	132	SF-0001	N/R	Equip. Checkout	0	65,316	
113-2			SF-0001	N/R	Space, Flight	0	8,328	
114-1	JTX1N943B	132	AI-0002	S/R	Rel Demo, A	0	6,278	Qty=1 or 3, depending on configuration
114-2			AI-0002	S/R	Rel Demo, A	0	4,477	Qty=1 or 3, depending on configuration
114-3			AI-0002	S/R	Rel Demo, F	(1)	51,409	AI-0002 / F#011*; Qty=1 or 3, depending on configuration
114-4			AI-0013	5	Rel Demo, F	0	750	
114-5			AI-0014	20	Rel Demo, E	0	3,064	
114-6			AI-0015	1	Rel Demo, F	0	4,280	
114-7			GF-0004	2	Rel Demo, A-1	0	9,071	
115	1N944A+	132	GF-0001	4	Rel Demo, A	0	16,063	
116-1	JTX1N944B	132	AI-0001	6	Rel Demo, F	0	112,302	
116-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
117-1	JTX1N962B	131	AI-0017	5	Rel Demo, E	0	5,000	
117-2			NS-0001	16	Naval, Sheltered	0	836,560	
117-3			NS-0001	16	Rel Demo, A-1	0	130,096	
117-4			NS-0001	16	Oper. Burn-In	0	170,256	
117-5			NS-0001	16	Burn-In W. Vibr	0	21,248	
118-1	1N962B+	131	SF-0001	N/R	Equip. Checkout	0	161,770	
118-2			SF-0001	N/R	Space, Flight	0	103,258	
119	1N963A+	131	GF-0001	2	Rel Demo, A	0	3,188	
120-1	JTX1N963B	131	AI-0001	1	Rel Demo, F	0	18,717	
120-2			AI-0001	1	Burn-In, TCVPC	0	794	
120-3			AI-0002	2	Rel Demo, F	0	44,950	
120-4			AI-0002	2	Rel Demo, A	0	4,146	
120-5			AI-0002	2	Rel Demo, A	0	5,385	
120-6			AI-0010	1	Rel Demo, F	0	3,767	
120-7			AI-0013	7	Rel Demo, F	0	1,050	
120-8			AI-0016	2	Rel Demo, F	0	6,052	
120-9			AI-0017	4	Rel Demo, E	0	4,000	
120-10			AU-0002	S/R	Rel Demo, F	0	90,797	Qty=1 or 9, depending on configuration
120-11			NS-0001	10	Burn-In, W. Vibr	0	13,280	
120-12			NS-0001	10	Rel Demo, A-1	0	81,310	
120-13			NS-0001	10	Oper. Burn-In	0	106,410	
120-14			NS-0001	10	Naval, Sheltered	0	522,850	
121-1	J1N963B	131	AI-0005	2	Burn-In, TCPC	0	2,262	
121-2			AI-0005	2	Rel Demo, TCVPC	0	8,148	
121-3			GF-0003	8	Ground Fixed	0	1,383,768	
121-4			GF-0003	8	Rel Demo, A-1	0	466,006	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
122-1	JTX1N964B	131	AI-0001	3	Burn-In, TCVPC	0	2,382	
122-2			AI-0001	3	Rel Demo, F	0	56,151	
122-3			AI-0002	S/R	Rel Demo, A	0	3,585	Qty=0 or 2, depending on configuration
122-4			AI-0002	S/R	Rel Demo, F	0	28,934	Qty=0 or 2, depending on configuration
122-5			AI-0002	S/R	Rel Demo, A	0	2,404	Qty=0 or 2, depending on configuration
122-6			AI-0017	9	Rel Demo, E	0	9,000	
123-1	1N964B+	131	SF-0001	N/R	Equip. Checkout	0	62,342	
123-2			SF-0001	N/R	Space, Flight	0	15,184	
124-1	JTX1N965B+	131	SF-0001	N/R	Space, Flight	0	72	
124-2			SF-0001	N/R	Equip. Checkout	0	2,142	
125-1	JTX1N965B	131	AI-0001	S/R	Rel Demo, F	0	130,110	Qty=6 or 7, depending on configuration
125-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
125-3			AI-0006	2	Rel Demo, F	0	7,640	
125-4			AI-0013	10	Rel Demo, F	0	1,500	
125-5			AI-0016	2	Rel Demo, F	0	6,052	
125-6			AI-0017	1	Rel Demo, E	0	1,000	
125-7			GF-0002	7	Rel Demo	0	3,204	
125-8			NS-0001	1	Burn-In W Vibr	0	1,328	
125-9			NS-0001	1	Naval, Sheltered	0	52,285	
125-10			NS-0001	1	Oper. Burn-In	0	10,641	
125-11			NS-0001	1	Rel Demo, A-1	0	8,131	
126	J1N965B	131	GF-0002	24	Rel Demo	0	10,541	
127	1N965B+	131	GF-0001	S/R	Rel Demo, A	0	17,658	Qty=4 or 5, depending on configuration
128-1	JTX1N966B+	131	SF-0001	N/R	Equip. Checkout	0	302,758	
128-2			SF-0001	N/R	Space, Flight	0	154,420	
129-1	JTX1N966B	131	AI-0002	S/R	Rel Demo, A	0	872	Qty=0 or 1, depending on configuration
129-2			AI-0002	S/R	Rel Demo, A	0	900	Qty=0 or 1, depending on configuration
129-3			AI-0002	S/R	Rel Demo, F	0	8,008	Qty=0 or 1, depending on configuration
129-4			AI-0013	1	Rel Demo, F	0	150	
129-5			GF-0002	6	Rel Demo	0	2,521	
130-1	1N966B+	131	SF-0001	N/R	Space, Flight	0	86,930	
130-2			SF-0001	N/R	Equip. Checkout	0	188,632	
131-1	JTX1N967B	131	AI-0001	3	Burn-In, TCVPC	0	2,382	
131-2			AI-0001	3	Rel Demo, F	0	56,151	
131-3			AI-0002	1	Rel Demo, A	0	2,693	
131-4			AI-0002	1	Rel Demo, F	0	22,475	
131-5			AI-0002	1	Rel Demo, A	0	2,073	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
132-1	JTX1N968B	131	AI-0001	2	Burn-In, TCVPC	0	1,588	
132-2			AI-0001	2	Rel Demo, F	0	37,434	
132-3			AI-0006	1	Rel Demo, F	0	3,820	
132-4			GF-0002	6	Rel Demo	0	2,521	
132-5			GF-0004	5	Rel Demo, A-1	0	22,678	
133-1	J1N968B	131	GF-0003	1	Ground, Fixed	0	172,971	
133-2			GF-0003	1	Rel Demo, A-1	0	58,251	
134-1	JTX1N969B	131	GF-0002	2	Rel Demo	0	955	
134-2			GF-0004	1	Rel Demo, A-1	0	4,536	
135-1	JTX1N970B	131	AI-0001	3	Rel Demo, F	0	56,151	
135-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
135-3			AI-0002	1	Rel Demo, F	1	22,475	AI-0002/F#007
135-4			AI-0002	1	Rel Demo, A	0	2,073	
135-5			AI-0002	1	Rel Demo, A	0	2,693	
135-6			AI-0011	1	Rel Demo, F	0	7,240	
135-7			AI-0012	2	Burn-In, TCVPC	0	10,680	
135-8			AU-0002	2	Rel Demo, F	0	29,018	
136	1N970B+	131	GF-0001	4	Rel Demo, A	0	6,376	
137	JTX1N971B	131	GF-0002	3	Rel Demo	0	1,260	
138	1N971B+	131	GF-0001	S/R	Rel Demo, A	0	9,309	Qty=1 or 2, depending on configuration
139-1	J1N972A	131	GF-0003	1	Rel Demo, A-1	0	55,271	
139-2			GF-0003	1	Ground, Fixed	0	172,971	
140-1	JTX1N972B	131	AI-0001	6	Burn-In, TCVPC	0	4,764	
140-2			AI-0001	6	Rel Demo, F	0	112,302	
141	J1N972B	131	GF-0003	1	Rel Demo, A-1	0	2,980	
142-1	JTX1N973B	131	AI-0002	S/R	Rel Demo, A	0	3,275	Qty=1 or 2, depending on configuration
142-2			AI-0002	S/R	Rel Demo, F	0	36,942	Qty=1 or 2, depending on configuration
142-3			AI-0002	S/R	Rel Demo, A	0	4,485	Qty=1 or 2, depending on configuration
142-4			AI-0013	1	Rel Demo, F	0	150	
143-1	J1N973B	131	GF-0003	1	Rel Demo, A-1	0	58,251	
143-2			GF-0003	1	Ground, Fixed	0	172,971	
144	1N973B+	131	GF-0001	2	Rel Demo, A	0	3,188	
145	JTX1N974B	131	AI-0003	1	Rel Demo, F	0	4,000	
146	1N975B+	131	GF-0001	2	Rel Demo, A	0	3,188	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
147-1	JTX1N977B	131	AI-0002	1	Rel Demo, F	0	22,475	
147-2			AI-0002	1	Rel Demo, A	0	2,692	
147-3			AI-0002	1	Rel Demo, A	0	2,074	
148	1N977B+	131	GF-0001	2	Rel Demo, A	0	3,188	
149	JTX1N978B	131	GF-0004	1	Rel Demo, A-1	0	4,536	
150-1	JTX1N979B	131	AI-0013	1	Rel Demo, F	0	150	
150-2			AI-0014	25	Rel Demo, E	0	3,830	
150-3			AI-0015	3	Rel Demo, F	0	12,840	
151-1	JTX1N980B	131	AI-0008	2	Rel Demo, F	0	11,330	
151-2			AI-0017	1	Rel Demo, E	0	1,000	
152	JTX1N981B	131	GF-0002	6	Rel Demo	0	2,521	
153	1N981B+	131	GF-0001	4	Rel Demo, A	0	16,063	
154	JTX1N982B	131	GF-0002	12	Rel Demo	0	5,041	
155	1N982B	131	GF-0003	1	Rel Demo, A-1	0	2,980	
156	JTX1N992B	131	GF-0002	6	Rel Demo	0	2,521	
157-1	JTX1N996B	131	AI-0002	2	Rel Demo, A	0	4,146	
157-2			AI-0002	2	Rel Demo, F	0	44,950	
157-3			AI-0002	2	Rel Demo, A	0	5,385	
158	1N1183A+	123	GF-0001	4	Rel Demo,A	0	9,687	
159	JTX1N1184	123	GF-0002	15	Rel Demo	0	6,545	
160-1	J1N1184A	123	AI-0005	1	Rel Demo, TCVPC	0	7,372	
160-2			AI-0005	1	Burn-In, TCPC	0	1,945	
161-1	1N1186	123	GF-0003	3	Rel Demo, A-1	0	174,752	
161-2			GF-0003	3	Ground,Fixed	0	518,913	
162-1	1N1186A+	123	SF-0001	N/R	Space, Flight	0	67,490	
162-2			SF-0001	N/R	Equip. Checkout	0	105,526	
163	JTX1N1188A	120	GF-0005	4	Rel Demo, A-1	0	21,002	
164	1N1200+	123	GF-0001	S/R	Rel Demo, A	0	24,996	Qty=2, 4 or 8, depending on configuration

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
165-1	JTX1N1202A+	123	SF-0001	N/R	Equip. Checkout	0	270,732	
165-2			SF-0001	N/R	Space, Flight	0	64,992	
166	JTX1N1202A	123	AI-0007	4	Rel Demo, F	0	9,872	
167-1	J1N1202A	123	AI-0005	6	Rel Demo, TCVPC	0	44,232	
167-2			AI-0005	6	Burn-In, TCPC	0	11,670	
168	JTX1N1202RA	123	AI-0017	7	Rel Demo, E	0	7,000	
169-1	JTX1N1204A	123	GF-0004	4	Rel Demo, A-1	0	18,142	
169-2			NS-0001	2	Naval, Sheltered	0	104,570	
169-3			NS-0001	2	Rel Demo, A-1	0	16,262	
169-4			NS-0001	2	Oper. Burn-In	0	21,282	
169-5			NS-0001	2	Burn-In W. Vibr	0	2,656	
170-1	JTX1N1204RA	123	NS-0001	2	Burn-In W. Vibr	0	2,656	
170-2			NS-0001	2	Oper. Burn-In	0	21,282	
170-3			NS-0001	2	Rel Demo, A-1	0	16,262	
170-4			NS-0001	2	Naval, Sheltered	0	104,570	
171	1N1341B	120	GF-0002	84	Rel Demo	0	37,960	
172	1N2621A+	132	GF-0001	2	Rel Demo, A	0	3,188	
173	JTX1N2970	131	GF-0002	3	Rel Demo	0	1,260	
174-1	JTX1N2970B	131	AI-0004	N/R	Rel Demo, E	0	14,798	
174-2			AI-0004	N/R	Airborne, Inhabited	0	432,666	
175	JTX1N2971B	131	AI-0004	N/R	Rel Demo, E	0	15,549	
176-1	JTX1N2975B+	131	SF-0001	N/R	Equip. Checkout	0	124,684	
176-2			SF-0001	N/R	Space, Flight	0	30,368	
177	J1N2976A	131	GF-0003	1	Rel Demo, A-1	0	2,980	
178-1	JTX1N2976B	131	AI-0004	N/R	Rel Demo, E	0	14,798	
178-2			AI-0004	N/R	Airborne, Inhabited	0	432,666	
179-1	J1N2976B	131	GF-0003	1	Rel Demo, A-1	0	55,271	
179-2			GF-0003	1	Ground, Fixed	0	172,971	
180	1N2976B+	131	GF-0001	2	Rel Demo, A	0	3,188	
181-1	JTX1N2980B	131	AI-0004	N/R	Airborne, Inhabited	0	432,666	
181-2			AI-0004	N/R	Rel Demo, E	0	14,798	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
182-1	JTX1N2982B	131	AI-0004	N/R	Airborne, Inhabited	0	865,332	
182-2			AI-0004	N/R	Rel Demo, E	0	29,995	
182-3								
183-1	JTX1N2984B+	131	SF-0001	N/R	Space, Flight	0	15,184	
183-2			SF-0001	N/R	Equip. Checkout	0	62,342	
184	1N2992B+	131	GF-0001	2	Rel Demo, A	0	4,843	
185	JTX1N3005B	131	AI-0013	1	Rel Demo, F	0	150	
186	1N3005B+	131	GF-0001	2	Rel Demo, A	0	4,843	
187	(1N3005B)+	131	AI-0013	3	Rel Demo, F	0	450	Vendor generic equivalent
188	JTX1N3011B	131	AI-0013	1	Rel Demo, F	0	150	
189	1N3011B+	131	GF-0001	2	Rel Demo, A	0	8,031	
190-1	JTX1N3016B	131	AI-0006	1	Rel Demo, F	0	3,820	
190-2			AI-0007	1	Rel Demo, F	0	2,468	
190-3			AI-0016	5	Rel Demo, F	0	15,130	
191-1	JTX1N3018B	131	AI-0017	1	Rel Demo, E	0	1,000	
191-2			GF-0002	24	Rel Demo	0	10,082	
192	JTX1N3019B	131	AI-0017	1	Rel Demo, E	0	1,000	
193-1	J1N3019B	131	AI-0005	1	Rel Demo, TCVPC	0	3,883	
193-2			AI-0005	1	Burn-In, TCPC	0	1,453	
194-1	JTX1N3020B	131	AI-0004	N/R	Rel Demo, E	0	3,887	
194-2			NS-0001	17	Naval, Sheltered	0	888,845	
194-3			NS-0001	9	Rel Demo, A-1	0	73,179	
194-4			NS-0001	9	Burn-In W. Vibr	0	11,952	
194-5			NS-0001	9	Oper. Burn-In	0	95,769	
195-1	J1N3020B	131	AI-0005	3	Burn-In, TCPC	0	4,359	
195-2			AI-0005	3	Rel Demo, TCVPC	0	11,649	
196	1N3020B+	131	GF-0001	8	Rel Demo, A	0	12,753	
197-1	JTX1N3022B	131	AI-0013	1	Rel Demo, F	0	150	
197-2			AI-0017	2	Rel Demo, E	0	2,000	
198	1N3022B+	131	GF-0001	2	Rel Demo, A	0	3,188	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
199-1	JTX1N3023B	131	AI-0003	1	Rel Demo, F	1	4,000	AI-0003/F#002
199-2			GF-0002	16	Rel Demo	0	7,046	
200	1N3023B+	131	GF-0001	2	Rel Demo, A	0	4,843	
201	1N3024B+	131	GF-0001	S/R	Rel Demo, A	0	13,641	Qty=3 or 4, depending on configuration
202-1	JTX1N3025B	131	AI-0002	1	Rel Demo, A	0	2,693	
202-2			AI-0002	1	Rel Demo, F	0	22,475	
202-3			AI-0002	1	Rel Demo, A	0	2,073	
203	JTX1N3026B	131	AI-0013	1	Rel Demo, F	0	150	
204	JTX1N3027B	131	GF-0002	5	Rel Demo	0	2,249	
205	JTX1N3030B	131	AI-0013	1	Rel Demo, F	0	150	
206-1	JTX1N3031B	131	AI-0001	3	Burn-In, TCVPC	1	2,382	AI-0001/F#019
206-2			AI-0001	3	Rel Demo, F	0	56,151	
207-1	JTX1N3032B	131	NS-0001	8	Burn-In, W. Vibr	0	10,624	
207-2			NS-0001	8	Rel Demo, A-1	0	65,048	
207-3			NS-0001	8	Oper. Burn-In	0	85,128	
208	1N3032B+	131	GF-0001	4	Rel Demo, A	0	6,376	
209	1N3034B+	131	GF-0001	2	Rel Demo, A	0	3,188	
210	JTX1N3036B	131	AI-0017	2	Rel Demo, E	0	2,000	
211	1N3036B+	131	GF-0001	S/R	Rel Demo, A	0	6,121	Qty=1 or 2, depending on configuration
212	JTX1N3038B	131	AI-0008	2	Rel Demo, F	0	11,330	
213	JTX1N3039B	131	GF-0002	24	Rel Demo	0	10,082	
214	1N3041A+	131	GF-0001	12	Rel Demo, A	0	48,189	
215	JTX1N3043B	131	AI-0016	2	Rel Demo, F	0	6,052	
216	JTX1N3046B	131	AI-0017	4	Rel Demo, E	0	4,000	
217	JTX1N3048B	131	AI-0017	2	Rel Demo, E	0	2,000	
218-1	JTX1N3064	111	AI-0011	33	Rel Demo, F	0	238,904	
218-2			AI-0015	4	Rel Demo, F	0	17,120	
219	1N3064+	111	GF-0001	S/R	Rel Demo, A	0	444,043	Qty=28, 89, 110 depending on configuration

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
220-1	JTX1N3070	111	AI-0001	12	Rel Demo, F	0	224,604	
220-2			AI-0001	12	Burn-In, TCVPC	0	9,528	
220-3			AI-0017	1	Rel Demo, E	0	1,000	
220-4			GF-0002	68	Rel Demo	0	29,215	
221	1N3070+	111	GF-0001	S/R	Rel Demo, A	0	52,023	Qty=3 or 12, depending on configuration
222-1	1N3154+	132	AI-0004	N/R	Airborne, Inhabited	0	1,153,776	
222-2			AI-0004	N/R	Rel Demo, E	1	44,152	AI-0004/F#002
223-1	JTX1N3157	132	AI-0014	21	Rel Demo, E	0	3,217	
223-2			AI-0015	1	Rel Demo, F	0	4,280	
223-3			AI-0017	2	Rel Demo, E	0	2,000	
224-1	1N3189+	121	GF-0001	S/R	Rel Demo, A	0	6,572	Qty=1 or 2, depending on configuration
224-2			SF-0001	N/R	Space, Flight	0	91,104	
224-3			SF-0001	N/R	Equip. Checkout	0	374,052	
225	1N3305+	131	GF-0001	2	Rel Demo, A	0	4,843	
226	JTX1N3305B	131	AI-0013	3	Rel Demo, F	0	450	
227	1N3319+	131	GF-0001	S/R	Rel Demo, A	0	6,121	Qty=1 or 2, depending on configuration
228	1N3327B+	131	GF-0001	1	Rel Demo, A	0	1,278	
229	JTX1N3340B	131	AI-0017	6	Rel Demo, E	0	6,000	
230	JTX1N3347B	131	AI-0013	2	Rel Demo, F	0	300	
231-1	JTX1N3595	111	AI-0013	19	Rel Demo, F	0	2,850	
231-2			AI-0016	4	Rel Demo, F	0	12,104	
231-3			AI-0017	124	Rel Demo, E	0	124,000	
232-1	J1N3595	111	AI-0001	3	Rel Demo, F	0	56,151	
232-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
232-3			AU-0002	2	Rel Demo, F	0	29,018	
233	1N3595+	111	GF-0001	S/R	Rel Demo, A	0	12,243	Qty=2 or 4, depending on configuration
234-1	1N3595	111	AI-0002	11	Rel Demo, A	0	22,806	
234-2			AI-0002	11	Rel Demo, A	0	29,618	
234-3			AI-0002	11	Rel Demo, F	0	247,224	
235-1	JTX1N3600	111	AI-0013	128	Rel Demo, F	0	19,200	
235-2			GF-0002	33	Rel Demo	0	13,863	
236-1	J1N3600	111	AI-0005	2	Rel Demo, TCVPC	0	8,148	
236-2			AI-0005	2	Burn-In, TCPC	0	2,262	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
237-1	1N3600+	111	GF-0001	S/R	Rel Demo, A	0	69,801	Qty=15 or 21, depending on configuration
237-2			SF-0001	N/R	Space, Flight	0	2,767,303	
237-3			SF-0001	N/R	Equip. Checkout	0	5,899,958	
238	1N3608+	111	GF-0001	210	Rel Demo, A	0	843,308	
239-1	JTX1N3611	121	AI-0001	10	Rel Demo, F	0	187,170	
239-2			AI-0001	10	Burn-In, TCVPC	0	7,940	
239-3			AI-0003	3	Rel Demo, F	0	12,000	
239-4			AI-0010	1	Rel Demo, F	0	3,767	
239-5			GF-0002	983	Rel Demo	0	415,318	
240-1	J1N3611	121	AI-0005	4	Burn-In, TCPC	0	4,524	
240-2			AI-0005	4	Rel Demo, TCVPC	0	16,296	
240-3			AU-0001	1	Equip. Checkout	0	11,448,000	
240-4			GF-0002	48	Rel Demo	0	21,082	
241	J1N3612	121	AI-0012	8	Burn-In, TCVPC	(1)	21,352	AI-0012/F#003*
242-1	(1N3644)+	127	AI-0001	3	Rel Demo, F	0	336,906	Chip hours
242-2			AI-0001	3	Burn-In, TCVPC	0	14,292	Chip hours
243	JTX1N3646	122	GF-0002	10	Rel Demo	0	4,498	
244-1	J1N3647	122	AI-0001	2	Burn-In, TCVPC	0	1,588	
244-2			AI-0001	2	Rel Demo, F	0	37,434	
245-1	(1N3647)+	127	AI-0001	5	Burn-In, TCVPC	0	23,820	Chip hours
245-2			AI-0001	5	Rel Demo, F	1	561,510	AI-0001/F#002; Chip hours
246-1	JTX1N3821A	131	AI-0007	1	Rel Demo, F	0	2,468	
246-2			AI-0008	1	Rel Demo, F	0	5,665	
246-3			AI-0010	1	Rel Demo, F	0	3,767	
247-1	J1N3821A	131	AI-0005	1	Rel Demo, TCVPC	0	3,883	
247-2			AI-0005	1	Burn-In, TCPC	0	1,453	
248	JTX1N3822A	131	AI-0017	1	Rel Demo, E	0	1,000	
249-1	JTX1N3825A+	131	SF-0001	N/R	Space, Flight	0	57,120	
249-2			SF-0001	N/R	Equip. Checkout	0	52,204	
250	JTX1N3826	131	GF-0002	6	Rel Demo	0	2,521	
251-1	JTX1N3826A	131	AI-0004	N/R	Airborne, Inhabited	0	432,666	
251-2			AI-0004	N/R	Rel Demo, E	0	14,798	
251-3			AI-0013	2	Rel Demo, F	0	300	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
252-1	J1N3826A	131	AI-0005	2	Rel Demo, TCVPC	0	14,744	
252-2			AI-0005	2	Burn-In, TCPC	0	3,890	
252-3			GF-0003	2	Rel Demo, A-1	0	116,502	
252-4			GF-0003	2	Ground Fixed	0	345,942	
253	(JTX1N3827A)+	131	AI-0013	1	Rel Demo, F	0	150	Vendor generic equivalent
254-1	JTX1N3827A	131	AI-0004	N/R	Rel Demo, E	1	14,798	AI-0004/F#003
254-2			AI-0004	N/R	Airborne, Inhabited	0	432,666	
255-1	J1N3827A	131	AI-0005	2	Burn-In, TCPC	2	3,890	AI-0005/F#016, 017
255-2			AI-0005	2	Rel Demo, TCVPC	2	14,744	AI-0005/F#022, 024; Failure report calls out JTX
256-1	JTX1N3828A	131	AI-0010	2	Rel Demo, F	0	7,534	
256-2			AI-0013	2	Rel Demo, F	0	300	
256-3			NS-0001	4	Naval, Sheltered	0	209,140	
256-4			NS-0001	4	Rel Demo, A-1	0	32,524	
256-5			NS-0001	4	Burn-In W. Vibr	0	5,312	
256-6			NS-0001	4	Oper. Burn-In	1	42,564	NS-0001/F#006
257	1N3828A	131	GF-0002	9	Rel Demo	0	4,078	
258	J1N3880	124	AI-0012	1	Burn-In, TCVPC	0	5,340	
259	1N3880+	124	GF-0001	12	Rel Demo, A	0	48,189	
260-1	J1N3889	124	AI-0005	4	Rel Demo, TCVPC	0	29,488	
260-2			AI-0005	4	Burn-In, TCPC	0	7,780	
261	1N3889	124	AI-0017	6	Rel Demo, E	0	6,000	
262-1	JTX1N3890+	124	SF-0001	N/R	Equip. Checkout	0	860,704	
262-2			SF-0001	N/R	Space, Flight	0	417,626	
263-1	JTX1N3890	124	AI-0004	N/R	Rel Demo, E	0	355,142	
263-2			AI-0004	N/R	Airborne, Inhabited	0	10,383,984	
263-3			AI-0010	8	Rel Demo, F	0	30,136	
263-4			AI-0014	16	Rel Demo, E	0	2,451	
263-5			AU-0002	2	Rel Demo, F	0	29,018	
263-6			GF-0002	4	Rel Demo	0	1,910	
264-1	JTX1N3891+	124	SF-0001	N/R	Equip. Checkout	0	124,684	
264-2			SF-0001	N/R	Space, Flight	0	30,368	
265-1	JTX1N3891	124	AI-0004	N/R	Rel Demo, E	0	177,571	
265-2			AI-0004	N/R	Airborne, Inhabited	0	5,191,992	
265-3			AI-0014	20	Rel Demo, E	0	3,064	
266	JTX1N3891R	124	AI-0008	1	Rel Demo, F	0	5,665	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL.	PART HOURS	REMARKS
267-1	JTX1N3893	124	AI-0004	N/R	Rel Demo, E	0	11,662	
267-2			AI-0013	1	Rel Demo, F	0	150	
267-3			GF-0002	16	Rel Demo	0	7,046	
267-4			GF-0004	1	Rel Demo, A-1	0	4,536	
268	JTX1N3893R	124	AI-0016	1	Rel Demo, F	0	3,026	
269	JTX1N3909	124	GF-0005	4	Rel Demo, A-1	0	21,002	
270-1	1N3909+	124	AI-0004	N/R	Rel Demo, E	0	59,942	
270-2			AI-0004	N/R	Airborne, Inhabited	0	1,297,998	
270-3			SF-0001	N/R	Equip. Checkout	0	527,630	
270-4			SF-0001	N/R	Space, Flight	0	337,450	
271-1	(1N3909R)+	124	AI-0001	1	Burn-In, TCVPC	0	794	
271-2			AI-0001	1	Rel Demo, F	1	18,717	AI-0001/F#006
272-1	JTX1N3910	111	GF-0002	4	Rel Demo	0	1,910	
272-2			GF-0004	2	Rel Demo, A-1	0	9,071	
272-3			GF-0005	2	Rel Demo, A-1	0	10,501	
273-1	1N3912	124	GF-0003	2	Rel Demo, A-1	0	116,502	
273-2			GF-0003	2	Ground,Fixed	0	345,942	
274-1	1N3913R	124	AI-0002	S/R	Rel Demo, A	0	3,585	Qty=0 or 2, depending on configuration
274-2			AI-0002	S/R	Rel Demo, F	0	28,934	Qty=0 or 2, depending on configuration
274-3			AI-0002	S/R	Rel Demo, A	0	2,404	Qty=0 or 2, depending on configuration
275	1N3994A+	131	AI-0004	N/R	Rel Demo, E	0	71,988	
276	JTX1N3997A	131	AU-0002	1	Rel Demo, F	0	14,509	
277	1N3997RA+	131	GF-0001	8	Rel Demo, A	0	32,126	
278	1N4002+	121	GF-0001	S/R	Rel Demo, A	0	140,891	Qty=20 or 58, depending on configuration
279	1N4003+	121	GF-0001	S/R	Rel Demo, A	0	38,502	Qty=8 or 12, depending on configuration
280	1N4003	121	GF-0003	1	Rel Demo, A-1	0	2,980	
281	1N4004+	121	GF-0001	40	Rel Demo, A	0	63,764	
282	1N4005+	121	GF-0001	S/R	Rel Demo, A	0	25,749	Qty=4 or 8, depending on configuration
283	1N4007+	123	GF-0001	S/R	Rel Demo, A	0	40,427	Qty=4, 8 or 10, depending on configuration
284	1N4050A	123	AI-0003	1	Rel Demo, F	0	4,000	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
285	1N4098A	131	AI-0003	1	Rel Demo, F	0	4,000	
286	JTZ1N4099	131	AI-0017	1	Rel Demo, E	0	1,000	
287-1	JTX1N4126	131	NS-0001	16	Naval, Sheltered	0	836,560	
287-2			NS-0001	16	Rel Demo, A-1	0	130,096	
287-3			NS-0001	16	Burn-In W. Vibr	0	21,248	
287-4			NS-0001	16	Oper. Burn-In	1	170,256	NS-0001/F#002
288-1	J1N4128	131	GF-0003	1	Ground Fixed	0	172,971	
288-2			GF-0003	1	Rel Demo, A-1	0	55,271	
289-1	JTX1N4148	111	AI-0001	S/R	Rel Demo, F	2+(1)	6,439,557	AI-0001/F#001,008*,011; Qty=344 or 345, depending on configuration
289-2			AI-0001	345	Burn-In, TCVPC	0	273,930	
289-3			AI-0002	S/R	Rel Demo, F	0	2,032,364	Qty=124, 130, 139, 145, depending on configuration
289-4			AI-0002	S/R	Rel Demo, A	0	296,329	Qty=124, 130, 139, 145, depending on configuration
289-5			AI-0002	S/R	Rel Demo, A	0	371,468	Qty=124, 130, 139, 145, depending on configuration
289-6			AI-0007	88	Rel Demo, F	0	217,184	
289-7			AI-0008	22	Rel Demo, F	0	124,630	
289-8			AI-0010	100	Rel Demo, F	0	376,700	
289-9			AI-0014	897	Rel Demo, E	0	137,420	
289-10			AI-0015	5	Rel Demo, F	0	21,400	
289-11			AI-0016	20	Rel Demo, F	0	60,520	
289-12			AI-0017	183	Rel Demo, E	0	183,000	
289-13			AU-0002	S/R	Rel Demo, F	0	999,891	Qty=63 or 72, depending on configuration
289-14			GF-0002	202	Rel Demo	0	88,728	
289-15			GF-0004	35	Rel Demo, A-1	0	158,746	
289-16			NS-0001	402	Naval, Sheltered	0	21,018,570	
289-17			NS-0001	386	Oper. Burn-In	0	4,107,426	
289-18			NS-0001	386	Rel Demo, A-1	0	3,138,566	
289-19			NS-0001	386	Burn-In W. Vibr	0	512,608	
290-1	J1N4148	111	AI-0003	54	Rel Demo, F	0	216,000	
290-2			GF-0002	2834	Rel Demo	0	1,203,361	
291-1	1N4148+	111	AI-0004	N/R	Airborne, Inhabited	1	75,572,328	AI-0004/F#012
291-2			AI-0004	N/R	Rel Demo, E	0	3,003,138	
291-3			SF-0001	N/R	Equip. Checkout	0	73,260,964	
291-4			SF-0001	N/R	Space, Flight	0	17,883,810	
292	JTX1N4150	111	AU-0002	2	Rel Demo, F	0	29,018	
293	J1N4150	111	GF-0002	56	Rel Demo	0	24,174	
294-1	JTX1N4153	111	AI-0004	N/R	Rel Demo, E	0	251,559	
294-2			AI-0004	N/R	Airborne, Inhabited	0	7,355,322	
294-3			AI-0013	1	Rel Demo, F	0	150	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
294-4			AI-0017	42	Rel Demo, E	0	42,000	
294-5			AU-0002	4	Rel Demo, F	0	58,036	
294-6			GF-0005	234	Rel Demo, A-1	0	1,215,472	
294-7			NS-0001	339	Naval, Sheltered	0	17,724,615	
294-8			NS-0001	339	Burn-In, W. Vibr	0	450,192	
294-9			NS-0001	339	Oper. Burn-In	0	3,607,299	
294-10			NS-0001	339	Rel Demo, A-1	0	2,756,409	
295	(1N4153)+	111	AI-0013	74	Rel Demo, F	0	11,100	Vendor generic equivalent
296-1	JTX1N4245	121	AI-0002	S/R	Rel Demo, F	0	48,049	Qty=0 or 6, depending on configuration
296-2			AI-0002	S/R	Rel Demo, A	0	5,401	Qty=0 or 6, depending on configuration
296-3			AI-0002	S/R	Rel Demo, A	0	5,229	Qty=0 or 6, depending on configuration
296-4			AI-0005	1	Rel Demo, TCVPC	0	3,652	
296-5			AI-0005	1	Burn-In, TCPC	0	1,124	
296-6			AI-0017	8	Rel Demo, E	0	8,000	
296-7			GF-0002	9	Rel Demo	0	4,125	
297-1	J1N4245	121	AI-0005	11	Burn-In, TCPC	0	21,395	
297-2			AI-0005	11	Rel Demo, TCVPC	0	81,092	
298	1N4245+	121	GF-0001	S/R	Rel Demo, A	0	42,767	Qty=14 or 16, depending on configuration
299-1	1N4245	121	AI-0005	16	Rel Demo, TCVPC	0	117,952	
299-2			AI-0005	16	Burn-In, TCPC	0	31,120	
299-3			GF-0003	2	Rel Demo, A-1	0	5,961	
300-1	JTX1N4246	121	AI-0013	22	Rel Demo, F	0	3,300	
300-2			NS-0001	20	Naval, Sheltered	0	1,045,700	
300-3			NS-0001	20	Rel Demo, A-1	0	162,620	
300-4			NS-0001	20	Oper. Burn-In	0	212,820	
300-5			NS-0001	20	Burn-In W. Vibr	0	26,560	
301	1N4246+	121	GF-0001	S/R	Rel Demo, A	0	53,302	Qty=4 or 12, depending on configuration
302	JTX1N4247	121	GF-0005	4	Rel Demo, A-1	0	21,002	
303-1	1N4247	121	AI-0005	1	Rel Demo, TCVPC	0	7,372	
303-2			AI-0005	1	Burn-In, TCPC	0	1,945	
304	JTX1N4249	121	AI-0003	1	Rel Demo, F	0	4,000	
305	1N4249+	123	GF-0001	4	Rel Demo, A	0	6,376	
306	JTX1N4307	111	AI-0013	1	Rel Demo, F	0	150	
307	1N4331+	131	GF-0001	2	Rel Demo, A	0	3,188	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
308-1	JTX1N4370A	131	AI-0002	1	Rel Demo, F	0	22,475	
308-2			AI-0002	1	Rel Demo, A	0	2,693	
308-3			AI-0002	1	Rel Demo, A	0	2,073	
308-4			GF-0005	4	Rel Demo, A-1	0	21,002	
309-1	J1N4370A	131	AI-0005	7	Burn-In, TCPC	0	13,615	
309-2			AI-0005	7	Rel Demo, TCVPC	0	51,604	
310	1N4370A+	131	GF-0001	5	Rel Demo, A	0	7,971	
311	JTX1N4371A	131	AI-0006	1	Rel Demo, F	0	3,820	
312	JTX1N4372A	131	AI-0016	1	Rel Demo, F	0	3,026	
313	JTX1N4454	111	AI-0003	149	Rel Demo, F	0	592,000	
314-1	J1N4454	111	GF-0003	S/R	Rel Demo, A-1	0	6,421,075	Qty=96 or 111, depending on configuration
314-2			GF-0003	111	Ground, Fixed	0	79,199,781	
315	1N4454+	111	GF-0001	76	Rel Demo, A	0	121,152	
316-1	JTX1N4461	131	AI-0010	8	Rel Demo, F	0	30,136	
316-2			AI-0016	3	Rel Demo, F	0	9,078	
317	JTX1N4463	131	AI-0010	3	Rel Demo, F	0	11,301	
318-1	JTX1N4464	131	AI-0008	1	Rel Demo, F	0	5,665	
318-2			AI-0010	5	Rel Demo, F	0	18,835	
319-1	JTX1N4465	131	AI-0010	1	Rel Demo, F	0	3,767	
319-2			NS-0001	5	Burn-In W. Vibr	0	6,640	
319-3			NS-0001	5	Oper. Burn-In	0	53,205	
319-4			NS-0001	5	Rel Demo, A-1	0	40,655	
319-5			NS-0001	5	Naval, Sheltered	0	261,425	
320-1	JTX1N4467	131	AI-0008	1	Rel Demo, F	0	5,665	
320-2			AI-0016	1	Rel Demo, F	0	3,026	
321-1	JTX1N4469	131	AI-0010	1	Rel Demo, F	0	3,767	
321-2			AI-0014	50	Rel Demo, E	0	7,660	
321-3			AI-0015	2	Rel Demo, F	0	8,560	
321-4			GF-0002	3	Rel Demo	0	1,260	
322-1	JTX1N4472	131	NS-0001	5	Oper. Burn-In	0	53,205	
322-2			NS-0001	5	Burn-In W. Vibr	0	6,640	
322-3			NS-0001	5	Rel Demo, A-1	0	40,655	
322-4			NS-0001	5	Naval, Sheltered	0	261,425	
323	1N4527A	120	AI-0003	1	Rel Demo, F	0	4,000	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
324	JTX1N4531	111	AI-0014	382	Rel Demo, E	0	58,522	
325	JTX1N4532	111	GF-0002	5	Rel Demo	0	2,249	
326	JTX1N4570A	132	GF-0005	1	Rel Demo, A-1	0	5,251	
327-1	1N4611C	131	AI-0005	1	Burn-In, TCPC	0	1,131	
327-2			AI-0005	1	Rel Demo, TCVPC	0	4,074	
328-1	J1N4617	131	GF-0003	1	Ground Fixed	0	172,971	
328-2			GF-0003	1	Rel Demo, A-1	0	58,251	
329-1	1N4617+	131	SF-0001	N/R	Equip. Checkout	0	26,706,794	
329-2			SF-0001	N/R	Space, Flight	0	4,853,206	
330-1	1N4618+	131	SF-0001	N/R	Space, Flight	0	1,396,445	
330-2			SF-0001	N/R	Equip. Checkout	0	2,470,147	
331	JTX1N4627	131	AU-0002	S/R	Rel Demo, F	0	24,045	Qty=1 or 2, depending on configuration
332-1	1N4692	131	AI-0005	4	Rel Demo, TCVPC	0	29,488	
332-2			AI-0005	4	Burn-In, TCPC	0	7,780	
333	1N4733A+	131	GF-0001	20	Rel Demo, A	0	31,882	
334	1N4735+	131	GF-0001	3	Rel Demo, A	0	4,782	
335	1N4735A+	131	GF-0001	4	Rel Demo, A	0	6,376	
336	1N4736A+	131	GF-0001	1	Rel Demo, A	0	1,594	
337	1N4762A+	131	GF-0001	2	Rel Demo, A	0	3,188	
338	1N4764A+	131	GF-0001	2	Rel Demo, A	0	3,188	
339-1	(1N4765A)+	132	AI-0001	3	Burn-In, TCVPC	0	2,382	
339-2			AI-0001	3	Rel Demo, F	0	56,151	
340-1	1N4795B	309	GF-0003	1	Rel Demo, A-1	0	58,251	
340-2			GF-0003	1	Ground,Fixed	0	172,971	
341-1	1N4800+	309	SF-0001	N/R	Equip. Checkout	0	124,684	
341-2			SF-0001	N/R	Space, Flight	0	30,368	
342-1	J1N4807B	309	AI-0001	3	Burn-In, TCVPC	0	2,382	
342-2			AI-0001	3	Rel Demo, F	0	56,151	
343-1	1N4812B+	309	SF-0001	N/R	Space, Flight	0	8,328	
343-2			SF-0001	N/R	Equip. Checkout	0	44,736	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
344-1	JTX1N4813B	309	NS-0001	15	Naval, Sheltered	0	78,275	
344-2			NS-0001	15	Oper. Burn-In	0	159,615	
344-3			NS-0001	15	Rel Demo, A-1	0	121,965	
344-4			NS-0001	15	Burn-In W. Vibr	0	19,920	
345	1N4830+	132	GF-0001	2	Rel Demo, A	0	8,031	
346	JTX1N4871	131	AU-0002	1	Rel Demo, F	0	14,509	
347	(1N4884)	131	GF-0001	1	Rel Demo, A	0	1,594	Alias UZ720 by Unitrode
348-1	JTX1N4938+	111	SF-0001	N/R	Equip. Checkout	2	1,425,458	SF-0001/F#002, 003
348-2			SF-0001	N/R	Space, Flight	0	743,638	
349	JTX1N4938	111	AI-0013	2	Rel Demo, F	0	300	
350-1	1N4938+	111	SF-0001	N/R	Space, Flight	0	39,233,643	
350-2			SF-0001	N/R	Equip. Checkout	1	58,126,093	SF-0001/F#001
351-1	JTX1N4942	124	AI-0002	S/R	Rel Demo, A	0	87,155	Qty=18, 28, 41, 51, depending on configuration
351-2			AI-0002	S/R	Rel Demo, A	0	83,794	Qty=18, 28, 41, 51, depending on configuration
351-3			AI-0002	S/R	Rel Demo, F	0	663,167	Qty=18, 28, 41, 51, depending on configuration
351-4			AI-0003	2	Rel Demo, F	0	8,000	
351-5			AI-0004	N/R	Airborne, Inhabited	1	2,595,996	AI-0004/F#011
351-6			AI-0004	N/R	Rel Demo, E	0	88,786	
351-7			AI-0013	6	Rel Demo, F	0	900	
351-8			AI-0014	225	Rel Demo, E	0	34,470	
351-9			AI-0015	9	Rel Demo, F	0	38,520	
351-10			GF-0004	2	Rel Demo, A-1	0	9,071	
352	(JTX1N4942)	126	AI-0004	N/R	Rel Demo, E	0	15,548	Chip hours
353-1	JTX1N4942	124	AI-0005	17	Rel Demo, TCVPC	0	125,324	
353-2			AI-0005	17	Burn-In, TCPC	0	33,065	
354-1	JTX1N4942B+	124	SF-0001	N/R	Equip. Checkout	0	5,040,916	
354-2			SF-0001	N/R	Space, Flight	0	2,787,164	
355-1	JTX1N4944	124	AI-0014	32	Rel Demo, E	0	4,902	
355-2			AI-0017	1	Rel Demo, E	0	1,000	
355-3			GF-0002	24	Rel Demo	0	10,082	
356	1N4944+	124	GF-0001	20	Rel Demo, A	0	80,315	
357-1	JTX1N4946	124	AI-0013	18	Rel Demo, F	0	2,700	
357-2			AI-0014	56	Rel Demo, E	0	8,579	
357-3			AI-0015	2	Rel Demo, F	0	8,560	
357-4			GF-0005	10	Rel Demo, A-1	0	52,505	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
358	1N4946+	124	GF-0001	8	Rel Demo, A	0	32,126	
359-1	JTX1N4947	124	AI-0002	S/R	Rel Demo, F	0	72,334	Qty=0 or 5, depending on configuration
359-2			AI-0002	S/R	Rel Demo, A	0	10,509	Qty=0 or 5, depending on configuration
359-3			AI-0002	S/R	Rel Demo, A	0	8,962	Qty=0 or 5, depending on configuration
360	JTX1N4948	124	AI-0013	10	Rel Demo, F	0	1,500	
361-1	JTX1N4954	131	AI-0008	1	Rel Demo, F	0	5,665	
361-2			AI-0013	2	Rel Demo, F	0	300	
361-3			GF-0002	11	Rel Demo	0	4,702	
362	1N4954A+	131	AI-0004	N/R	Rel Demo, E	0	11,038	
363	JTX1N4955	131	AI-0004	N/R	Rel Demo, E	0	1,944	
364	JTX1N4957	131	AI-0007	1	Rel Demo, F	0	2,468	
365-1	JTX1N4958	131	AI-0008	4	Rel Demo, F	0	22,660	
365-2			NS-0001	18	Naval, Sheltered	0	941,130	
365-3			NS-0001	18	Rel Demo, A-1	0	146,358	
365-4			NS-0001	18	Burn-In W. Vibr	0	23,904	
365-5			NS-0001	18	Oper. Burn-In	0	171,538	
366-1	JTX1N4959	131	AI-0016	2	Rel Demo, F	0	6,052	
366-2			AI-0017	6	Rel Demo, E	0	6,000	
367-1	JTX1N4960	131	AI-0017	1	Rel Demo, E	0	1,000	
367-2			AU-0002	3	Rel Demo, F	0	43,527	
368	JTX1N4961	131	AI-0017	2	Rel Demo, E	0	2,000	
369-1	JTX1N4962	131	AI-0001	1	Rel Demo, F	0	18,717	
369-2			AI-0001	1	Burn-In, TCVPC	0	794	
369-3			AI-0017	7	Rel Demo, E	0	7,000	
370	JTX1N4963	131	AI-0017	13	Rel Demo, E	0	13,000	
371-1	JTX1N4964	131	AI-0013	1	Rel Demo, F	0	150	
371-2			GF-0002	68	Rel Demo	0	28,460	
372	J1N4964	131	GF-0002	12	Rel Demo	0	5,271	
373	JTX1N4965	131	AI-0008	2	Rel Demo, F	0	11,330	
374	JTX1N4966	131	AI-0017	4	Rel Demo, E	0	4,000	
375-1	(1N4966)+	131	AI-0001	1	Rel Demo, F	0	18,717	
375-2			AI-0001	1	Burn-In, TCVPC	0	794	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
376-1	JTX1N4968	131	AI-0014	20	Rel Demo, E	0	3,064	
376-2			AI-0015	1	Rel Demo, F	0	4,280	
376-3			AI-0017	2	Rel Demo, E	0	2,000	
377-1	JTX1N4969	131	AI-0008	1	Rel Demo, F	0	5,665	
377-2			AI-0013	2	Rel Demo, F	0	300	
377-3			GF-0002	11	Rel Demo	0	4,702	
378	JTX1N4970	131	GF-0004	1	Rel Demo, A-1	0	4,536	
379	JTX1N4971	131	AI-0013	3	Rel Demo, F	0	450	
380-1	JTX1N4972	131	AI-0012	1	Burn-In, TCVPC	0	5,340	
380-2			AI-0013	2	Rel Demo, F	0	300	
381	JTX1N4974	131	GF-0004	1	Rel Demo, A-1	0	4,536	
382-1	JTX1N4975+	131	SF-0001	N/R	Space, Flight	0	2,288	
382-2			SF-0001	N/R	Equip. Checkout	0	21,592	
383-1	JTX1N4975	131	AI-0001	7	Rel Demo, F	0	131,019	
383-2			AI-0001	7	Burn-In, TCVPC	0	5,558	
384-1	JTX1N4979	131	AI-0001	4	Rel Demo, F	0	74,868	
384-2			AI-0001	4	Burn-In, TCVPC	0	3,176	
385-1	JTX1N4980+	131	SF-0001	N/R	Equip. Checkout	0	21,592	
385-2			SF-0001	N/R	Space, Flight	0	2,288	
386-1	J1N4982	131	AI-0001	1	Rel Demo, F	0	18,717	
386-2			AI-0001	1	Burn-In, TCVPC	0	794	
387-1	J1N4983	131	AI-0001	1	Burn-In, TCVPC	0	794	
387-2			AI-0001	1	Rel Demo, F	0	18,717	
388-1	J1N4985	131	AI-0001	1	Rel Demo, F	0	18,717	
388-2			AI-0001	1	Burn-In, TCVPC	0	794	
389-1	J1N4986	131	AI-0001	3	Rel Demo, F	0	56,151	
389-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
390-1	J1N4987	131	AI-0001	1	Burn-In, TCVPC	0	794	
390-2			AI-0001	1	Rel Demo, F	0	18,717	
391	JTX1N4990	131	AI-0013	1	Rel Demo, F	0	150	
392-1	J1N4993	131	AI-0001	14	Rel Demo, F	0	262,038	
392-2			AI-0001	14	Burn-In, TCVPC	0	11,116	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
393	(1N5063)+	131	AI-0015	1	Rel Demo, F	0	4,280	Alias UZ706-S by Unitrode
394	(1N5083)	131	GF-0001	1	Rel Demo, A	0	1,594	Alias UZ745 by Unitrode
395-1	1N5126	131	GF-0003	2	Ground Fixed	0	345,942	
395-2			GF-0003	2	Rel Demo, A-1	0	110,541	
396	1N5139A	309	GF-0004	5	Rel Demo, A-1	0	22,678	
397-1	JTX1N5140A	309	AI-0013	12	Rel Demo, F	0	1,800	
397-2			GF-0004	2	Rel Demo, A-1	0	9,071	
398-1	JTX1N5144A	309	AI-0016	1	Rel Demo, F	0	3,026	
398-2			NS-0001	2	Burn-In W. Vibr	0	2,656	
398-3			NS-0001	2	Rel Demo, A-1	0	16,262	
398-4			NS-0001	2	Oper. Burn-In	0	21,282	
398-5			NS-0001	2	Naval, Sheltered	0	104,570	
399	(1N5165)	303	AI-0013	50	Rel Demo, F	0	7,500	
400-1	(1N5181)+	122	AI-0001	6	Rel Demo, F	0	112,302	
400-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
401	JTX1N5186	124	GF-0002	79	Rel Demo	0	33,546	
402-1	JTX1N5188	124	AI-0001	3	Burn-In, TCVPC	0	2,382	
402-2			AI-0001	3	Rel Demo, F	0	56,151	
402-3			GF-0002	36	Rel Demo	0	15,124	
403-1	JTX1N5190	124	AI-0014	240	Rel Demo, E	0	36,768	
403-2			AI-0015	6	Rel Demo, F	0	25,680	
404	JTX1N5198	123	AI-0011	2	Rel Demo, F	0	14,479	
405	1N5198+	123	GF-0001	S/R	Rel Demo, A	0	30,862	Qty=4 or 8, depending on configuration
406	1N5200+	123	GF-0001	16	Rel Demo, A	0	64,252	
407-1	(1N5207)	123	AI-0001	10	Rel Demo, F	0	187,170	Alias UT4040 by Unitrode
407-2			AI-0001	10	Burn-In, TCVPC	0	7,940	Alias UT4040 by Unitrode
408	(1N5297)	133	AI-0015	8	Rel Demo, F	0	34,240	
409	1N5301+	133	GF-0001	4	Rel Demo, A	0	6,376	
410-1	1N5305	133	AI-0002	S/R	Rel Demo, A	0	20,272	Qty=5 or 8, depending on configuration
410-2			AI-0002	S/R	Rel Demo, F	0	155,777	Qty=5 or 8, depending on configuration
410-3			AI-0002	S/R	Rel Demo, A	0	18,840	Qty=5 or 8, depending on configuration

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
411	1N5314+	133	GF-0001	S/R	Rel Demo, A	0	12,243	Qty=2 or 4, depending on configuration
412-1	JTX1N5415+	124	SF-0001	N/R	Space, Flight	0	2,288	
412-2			SF-0001	N/R	Equip. Checkout	0	21,592	
413	JTX1N5415	124	AI-0006	3	Rel Demo, F	0	11,460	
414-								
414-1	1N5415	124	GF-0003	S/R	Rel Demo, A-1	0	352,485	Qty=6 or 7, depending on configuration
414-2			GF-0003	6	Ground,Fixed	0	1,037,826	
415-1	JTX1N5416+	124	SF-0001	N/R	Equip. Checkout	0	32,388	
415-2			SF-0001	N/R	Space, Flight	0	3,432	
416-1	JTX1N5416	124	AI-0004	N/R	Rel Demo, E	0	3,887	
416-2			AI-0013	74	Rel Demo, F	0	11,100	
416-3			AI-0017	144	Rel Demo, E	0	144,000	
416-4			GF-0004	12	Rel Demo, A-1	0	54,427	
417-1	JTX1N5417	124	AI-0010	23	Rel Demo, F	0	86,641	
417-2			AI-0013	2	Rel Demo, F	0	300	
417-3			AI-0014	196	Rel Demo, E	0	30,027	
417-4			AI-0015	12	Rel Demo, F	0	51,360	
417-5			AI-0016	24	Rel Demo, F	0	72,624	
418	(JTX1N5417)	126	AI-0004	N/R	Rel Demo, E	0	15,548	Chip hours
419-1	1N5417	124	GF-0003	S/R	Rel Demo, A-1	0	515,316	Qty=6 or 9, depending on configuration
419-2			GF-0003	9	Ground,Fixed	0	1,556,739	
420-1	JTX1N5418+	124	SF-0001	N/R	Space, Flight	0	19,448	
420-2			SF-0001	N/R	Equip. Checkout	0	183,532	
421-1	JTX1N5418	124	AI-0008	4	Rel Demo, F	0	22,660	
421-2			AI-0013	59	Rel Demo, F	0	8,850	
421-3			AI-0017	6	Rel Demo, E	0	6,000	
422	JTX1N5419	124	AI-0013	4	Rel Demo, F	0	600	
423-1	JTX1N5464B	309	NS-0001	2	Naval, Sheltered	0	104,570	
423-2			NS-0001	2	Oper. Burn-In	0	21,282	
423-3			NS-0001	2	Rel Demo, A-1	0	16,262	
423-4			NS-0001	2	Burn-In W. Vibr	0	2,656	
424-1	JTX1N5476B	309	NS-0001	2	Burn-In W. Vibr	0	2,656	
424-2			NS-0001	2	Rel Demo, A-1	0	16,262	
424-3			NS-0001	2	Oper. Burn-In	0	21,282	
424-4			NS-0001	2	Naval, Sheltered	0	104,570	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
425-1	JTX1N5550+	123	SF-0001	N/R	Equip. Checkout	0	129,552	
425-2			SF-0001	N/R	Space, Flight	0	13,278	
426-1	JTX1N5550	123	AI-0001	9	Burn-In, TCVPC	0	7,146	
426-2			AI-0001	9	Rel Demo, F	0	168,453	
426-3			AI-0017	22	Rel Demo, E	0	22,000	
426-4			GF-0002	52	Rel Demo	0	22,169	
427	(JTX1N5550)	127	AI-0004	N/R	Rel Demo, E	0	46,644	Chip hours
428	JTX1N5551	123	GF-0002	10	Rel Demo	0	4,498	
429	JTX1N5552	123	AI-0016	5	Rel Demo, F	0	15,130	
430-1	JTX1N5553	123	AI-0013	6	Rel Demo, F	0	900	
430-2			AI-0016	12	Rel Demo, F	0	36,312	
431	JTX1N5554	123	GF-0002	5	Rel Demo	0	2,249	
432-1	JTX1N5555	141	AI-0001	9	Burn-In, TCVPC	0	7,146	
432-2			AI-0001	9	Rel Demo, F	0	168,453	
432-3			AI-0007	2	Rel Demo, F	0	4,936	
433-1	JTX1N5610	141	AI-0003	1	Rel Demo, F	0	4,000	
433-2			AI-0013	4	Rel Demo, F	0	600	
434-1	JTX1N5614	123	AI-0001	30	Burn-In, TCVPC	0	23,820	
434-2			AI-0001	30	Rel Demo, F	0	561,510	
434-3			AI-0007	24	Rel Demo, F	0	59,232	
434-4			AI-0011	21	Rel Demo, F	0	152,030	
434-5			AI-0016	13	Rel Demo, F	0	39,338	
434-6			AU-0002	6	Rel Demo, F	0	87,054	
435-1	1N5614	123	GF-0003	36	Rel Demo, A-1	0	1,989,738	
435-2			GF-0003	36	Ground,Fixed	0	6,226,956	
436-1	JTX1N5615	124	AI-0003	10	Rel Demo, F	0	40,000	
436-2			AI-0006	4	Rel Demo, F	0	15,280	
436-3			AI-0008	4	Rel Demo, F	0	22,660	
436-4			AI-0013	26	Rel Demo, F	0	3,900	
436-5			AI-0016	48	Rel Demo, F	0	145,248	
437-1	1N5615	124	GF-0003	23	Ground,Fixed	0	3,978,333	
437-2			GF-0003	23	Rel Demo, A-1	0	1,271,222	
438-1	JTX1N5617	124	AI-0004	N/R	Rel Demo, E	0	15,549	
438-2			AI-0016	14	Rel Demo, F	0	42,364	
438-3			GF-0002	12	Rel Demo	0	5,041	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
439	1N5617	124	AI-0017	12	Rel Demo, E	0	12,000	
440-1	JTX1N5618	123	AI-0017	27	Rel Demo, E	0	27,000	
440-2			GF-0002	85	Rel Demo	0	38,231	
441-1	JTX1N5620	123	AI-0007	1	Rel Demo, E	0	2,468	
441-2			AI-0016	6	Rel Demo, F	0	18,156	
442	JTX1N5621	124	GF-0002	15	Rel Demo	0	6,747	
443-1	JTX1N5622	123	AI-0001	3	Rel Demo, F	0	56,151	
443-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
444-1	(1N5630A)+	141	AI-0001	2	Rel Demo, F	1	37,434	AI-0001/F#012
444-2			AI-0001	2	Burn-In, TCVPC	0	1,588	
445-1	(1N5641A)+	141	AI-0001	3	Burn-In, TCVPC	0	2,382	
445-2			AI-0001	3	Rel Demo, F	0	56,151	
446-1	(1N5644A)+	141	AI-0001	3	Burn-In, TCVPC	0	2,382	
446-2			AI-0001	3	Rel Demo, F	0	56,151	
447-1	JTX1N5711	303	AI-0001	3	Rel Demo, F	0	56,151	
447-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
447-3			AI-0010	11	Rel Demo, F	0	41,437	
447-4			GF-0004	4	Rel Demo, A-1	0	18,142	
447-5			NS-0001	312	Naval, Sheltered	1	16,312,920	NS-0001/F#009
447-6			NS-0001	312	Burn-In W. Vibr	0	414,336	
447-7			NS-0001	312	Oper. Burn-In	0	3,319,992	
447-8			NS-0001	312	Rel Demo, A-1	0	2,556,872	
448-1	1N5711	303	GF-0003	13	Ground, Fixed	0	2,248,623	
448-2			GF-0003	13	Rel Demo, A-1	0	718,517	
449	(1N5712)	303	AI-0013	2	Rel Demo, F	0	300	Vendor generic equivalent
450	JTX1N5765	611	GF-0002	72	Rel Demo	0	30,815	
451-1	1N5767	304	GF-0003	S/R	Rel Demo, A-1	0	410,736	Qty=7 or 8, depending on configuration
451-2			GF-0003	7	Ground, Fixed	0	1,210,797	
452	1N5832	303	GF-0002	14	Rel Demo	0	6,091	
453	2N309+	221	GF-0001	2	Rel Demo, A	0	4,843	
454	2N409+	240	GF-0001	2	Rel Demo, A	0	3,188	
455	JTX2N491A	240	GF-0002	21	Rel Demo	0	9,261	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
456	JTX2N491B	240	GF-0002	5	Rel Demo	0	2,249	
457	JTX2N492A	231	GF-0004	1	Rel Demo, A-1	0	4,536	
458-1	J2N198	221	AI-0005	2	Burn-In, TCPC	0	4,184	
458-2			AI-0005	2	Rel Demo, TCVPC	0	9,596	
459-1	JTX2N682	520	AI-0011	1	Rel Demo, A	0	7,240	
459-2			GF-0002	16	Rel Demo	0	7,046	
460	2N682+	520	GF-0001	S/R	Rel Demo, A	0	6,121	Qty=1 or 2, depending on configuration
461	JTX2N683	520	AI-0013	1	Rel Demo, F	0	150	
462-1	J2N683+	520	AI-0004	N/R	Airborne, Inhabited	0	2,163,330	
462-2			AI-0004	N/R	Rel Demo, E	0	73,988	
463	JTX2N685	520	GF-0002	16	Rel Demo	0	7,046	
464	JTX2N697	520	GF-0004	1	Rel Demo, A-1	0	4,536	
465-1	JTX2N708	211	AI-0003	1	Rel Demo, F	0	4,000	
465-2			NS-0001	15	Naval, Sheltered	0	784,275	
465-3			NS-0001	15	Oper. Burn-In	0	159,615	
465-4			NS-0001	15	Rel Demo, A-1	0	121,965	
465-5			NS-0001	15	Burn-In W. Vibr	0	19,920	
466-1	JTX2N718A	211	AI-0017	1	Rel Demo, E	0	1,000	
466-2			NS-0001	74	Naval, Sheltered	0	3,869,090	
466-3			NS-0001	74	Burn-In W. Vibr	0	98,272	
466-4			NS-0001	74	Rel Demo, A-1	0	601,695	
466-5			NS-0001	74	Oper. Burn-In	0	787,434	
467-1	JTX2N720A	211	AI-0001	2	Rel Demo, F	0	37,434	
467-2			AI-0001	2	Burn-In, TCVPC	0	1,588	
468-1	J2N760A	211	AI-0005	2	Burn-In, TCPC	0	2,262	
468-2			AI-0005	2	Rel Demo, TCVPC	0	8,148	
469	JTX2N869A	252	AI-0013	4	Rel Demo, F	0	600	
470-1	J2N910	211	NS-0001	16	Naval, Sheltered	0	836,560	
470-2			NS-0001	16	Rel Demo, A-1	0	130,096	
470-3			NS-0001	16	Oper. Burn-In	0	170,256	
470-4			NS-0001	16	Burn-In W. Vibr	0	21,248	
471-1	J2N916	211	NS-0001	175	Burn-In W. Vibr	0	232,400	
471-2			NS-0001	175	Oper. Burn-In	1	1,862,175	NS-0001/F#001

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
471-3			NS-0001	175	Rel Demo, A-1	0	1,422,925	
471-4			NS-0001	175	Naval, Sheltered	1	9,149,875	NS-0001/F#009
472-1	JTX2N918	251	AI-0001	15	Rel Demo, F	0	280,755	
472-2			AI-0001	15	Burn-In, TCVPC	0	11,910	
472-3			AI-0013	1	Rel Demo, F	0	150	
472-4			NS-0001	206	Naval, Sheltered	0	10,770,710	
472-5			NS-0001	212	Burn-In W. Vibr	0	281,536	
472-6			NS-0001	212	Oper. Burn-In	0	2,255,892	
472-7			NS-0001	212	Rel Demo, A-1	0	1,723,772	
473-1	J2N918	251	GF-0001	8	Rel Demo, A	0	32,126	
473-2			GF-0003	5	Rel Demo, A-1	0	291,254	
473-3			GF-0003	5	Ground Fixed	0	864,855	
474	2N918+	251	GF-0001	28	Rel Demo, A	0	112,441	
475-1	(2N918)+	251	AI-0004	N/R	Airborne, Inhabited	0	3,461,328	Chip hours; dual flat pack
475-2			AI-0004	N/R	Rel Demo, E	0	148,004	Chip hours; dual flat pack
476	2N918	251	AI-0003	2	Rel Demo, F	0	8,000	
477-1	JTX2N930	211	AI-0002	2	Rel Demo, A	0	5,385	
477-2			AI-0002	2	Rel Demo, A	0	4,146	
477-3			AI-0002	2	Rel Demo, F	0	44,950	
477-4			AI-0005	10	Burn-In, TCPC	0	11,310	
477-5			AI-0005	10	Rel Demo, TCVPC	0	40,740	
477-6			AI-0007	9	Rel Demo, F	0	22,212	
477-7			AI-0012	9	Burn-In, TCVPC	(1)	48,060	AI-0012/F#006*
477-8			AI-0013	1	Rel Demo, F	0	150	
477-9			AI-0017	13	Rel Demo, E	0	13,000	
477-10			AU-0002	2	Rel Demo, F	0	29,216	
478-1	J2N930	211	AI-0005	24	Rel Demo, TCVPC	0	97,776	
478-2			AI-0005	24	Burn-In, TCPC	0	27,144	
479	2N930+	211	GF-0001	S/R	Rel Demo, A	0	20,784	Qty=2 or 10, depending on configuration
480	2N956+	211	GF-0001	S/R	Rel Demo, A	0	2,485,844	Qty=596 or 654, depending on configuration
481-1	2N999+	271	SF-0001	N/R	Equip. Checkout	0	6,370,478	Part hours
481-2			SF-0001	N/R	Space, Flight	0	1,732,744	Part hours
482-1	(2N999)+	271	AI-0001	9	Burn-In, TCVPC	0	7,146	Part hours
482-2			AI-0001	9	Rel Demo, F	0	168,453	Part hours
483	2N1131	212	NS-0002	30	Equip. Checkout	0	33,990	
484	2N1132+	212	GF-0001	2	Rel Demo, A	0	8,031	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
485	JTX2N1486	211	GF-0002	6	Rel Demo	0	2,521	
486	2N1596+	520	GF-0001	2	Rel Demo, A	0	3,188	
487	2N1671B+	240	GF-0001	4	Rel Demo, A	0	6,376	
488-1	JTX2N1711	211	AI-0003	3	Rel Demo, F	0	12,000	
488-2			AU-0002	8	Rel Demo, F	1	116,072	AU-0002/F#001
489	J2N1711	211	GF-0002	182	Rel Demo	0	78,564	
490	2N1711+	211	GF-0001	S/R	Rel Demo, A	0	127,337	Qty=20, 22, or 33, depending on configuration
491	JTX2N1771A	520	AI-0017	2	Rel Demo, E	0	2,000	
492	JTX2N1774A	520	GF-0002	99	Rel Demo	0	42,563	
493	(JTX2N1777A)	520	AI-0005	2	Rel Demo, TCVPC	1	2,262	AI-0005/F#019
494-1	J2N1777A	520	AI-0005	2	Burn-In, TCPC	1	8,148	AI-0005/F#012
494-2			AI-0005	2	Rel Demo, TCVPC	(1)	8,148	AI-0005/F#020*
495	2N1777A+	520	GF-0001	3	Rel Demo, A	0	12,047	
496	2N1778+	520	GF-0001	4	Rel Demo, A	0	6,376	
497	JTX2N1871A	520	AI-0017	5	Rel Demo, E	0	5,000	
498	J2N1871A	520	AI-0017	2	Rel Demo, E	0	2,000	
499-1	2N1874A+	520	SF-0001	N/R	Equip. Checkout	0	104,926	
499-2			SF-0001	N/R	Space, Flight	0	67,490	
500	2N1874A	520	AI-0017	2	Rel Demo, E	0	2,000	
501	2N1882+	520	GF-0001	2	Rel Demo, A	0	3,188	
502-1	JTX2N1893	211	AI-0001	3	Burn-In, TCVPC	0	2,382	
502-2			AI-0001	3	Rel Demo, F	0	56,151	
502-3			GF-0004	2	Rel Demo, A-1	0	9,071	
502-4			NS-0001	3	Naval, Sheltered	0	156,855	
502-5			NS-0001	3	Burn-In W. Vibr	0	3,984	
502-6			NS-0001	3	Oper. Burn-In	0	31,923	
502-7			NS-0001	3	Rel Demo, A-1	0	24,393	
503-1	J2N1893	211	AI-0005	13	Burn-In, TCPC	0	20,469	
503-2			AI-0005	13	Rel Demo, TCVPC	0	57,306	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
504	2N1893+	211	GF-0001	S/R	Rel Demo, A	0	21,459	Qty=0, 2 or 13, depending on configuration
505-1	JTX2N2060	261	AI-0001	6	Burn-In, TCVPC	0	9,528	Chip hours
505-2			AI-0001	6	Rel Demo, F	0	224,604	Chip hours
505-3			AI-0014	4	Rel Demo, E	0	1,226	Chip hours
505-4			AI-0016	4	Rel Demo, F	0	24,208	Chip hours
506	(JTX2N2060)	261	AI-0015	8	Rel Demo, F	0	68,480	Chip hours
507-1	J2N2060	261	AI-0005	1	Rel Demo, TCVPC	0	4,074	Chip hours
507-2			AI-0005	1	Burn-In, TCPC	0	2,262	Chip hours
508	2N2060	261	GF-0002	32	Rel Demo	0	36,384	Chip hours
509	2N2060A	261	GF-0002	192	Rel Demo	0	157,005	Chip hours
510	(2N2151)	221	AI-0014	34	Rel Demo, E	0	5,209	
511-1	J2N2219	211	AI-0005	1	Rel Demo, TCVPC	0	7,372	
511-2			AI-0005	1	Burn-In, TCPC	0	1,945	
512-1	(2N2219)+	261	AI-0004	N/R	Airborne, Inhabited	1	11,537,760	AI-0004/F#007;chip hours, dual flat pack
512-2			AI-0004	N/R	Rel Demo, E	0	448,580	Chip hours, dual flat pack
512-3			AI-0004	N/R	Airborne, Inhabited	2	4,759,326	AI-0004/F#005;flat pack, one-half of complimentary pair
512-4			AI-0004	N/R	Rel Demo, E	0	200,172	Flat pack, one-half of complimentary pair
513-1	JTX2N2219A	211	AI-0002	4	Rel Demo, A	0	10,770	
513-2			AI-0002	4	Rel Demo, A	0	8,292	
513-3			AI-0002	4	Rel Demo, F	0	89,900	
513-4			AI-0004	N/R	Rel Demo, E	0	7,774	
513-5			AI-0006	2	Rel Demo, F	0	7,640	
513-6			AI-0010	3	Rel Demo, F	0	11,301	
513-7			AI-0011	20	Rel Demo, F	0	144,790	
513-8			AI-0013	9	Rel Demo, F	0	1,350	
513-9			AI-0016	5	Rel Demo, F	0	15,130	
513-10			AI-0017	33	Rel Demo, E	0	33,000	
513-11			AU-0002	5	Rel Demo, F	0	72,545	
513-12			GF-0002	404	Rel Demo	0	181,802	
513-13			GF-0004	14	Rel Demo, A-1	0	63,498	
513-14			NS-0001	21	Naval, Sheltered	0	1,097,985	
513-15			NS-0001	21	Rel Demo, A-1	0	170,751	
513-16			NS-0001	21	Oper. Burn-In	0	223,461	
513-17			NS-0001	21	Burn-In W. Vibr	0	27,888	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
514-1	J2N2219A	211	AI-0005	4	Burn-In, TCPC	0	6,966	
514-2			AI-0005	4	Rel Demo, TCVPC	0	26,190	
514-3			GF-0002	12	Rel Demo	0	5,271	
514-4			GF-0003	3	Ground Fixed	0	518,913	
514-5			GF-0003	3	Rel Demo, A-1	0	174,752	
515	2N2219A+	211	GF-0001	S/R	Rel Demo, A	0	83,595	Qty=1, 13 or 27, depending on configuration
516-1	(2N2219A)	260	AI-0015	2	Rel Demo, F	0	34,240	Chip hours, quad transistor
516-2			AI-0015	10	Rel Demo, F	0	17,120	Chip hours, dual transistor
517-1	JTX2N2222	211	AI-0005	102	Rel Demo, TCVPC	0	489,396	
517-2			AI-0005	102	Burn-In, TCPC	1	213,384	AI-0005/F#018
517-3			AI-0014	470	Rel Demo, E	0	72,004	
518-1	J2N2222	211	AI-0005	41	Rel Demo, TCVPC	0	183,524	
518-2			AI-0005	41	Burn-In, TCPC	0	50,441	
519-1	(2N2222)+	211	SF-0001	N/R	Space, Flight	0	174,096	TO-5 package
519-2			SF-0001	N/R	Space, Flight	0	1,751,806	TO-18 package
519-3			SF-0001	N/R	Space, Flight	0	4,386,370	TO-52 package
519-4			SF-0001	N/R	Equip. Checkout	0	8,032,204	TO-52 package
519-5			SF-0001	N/R	Equip. Checkout	0	5,513,640	TO-18 package
519-6			SF-0001	N/R	Equip. Checkout	0	377,288	TO-5 package
520	2N2222	211	NS-0002	1279	Equip. Checkout	0	1,449,107	
521-1	JTX2N2222A	211	AI-0001	S/R	Rel Demo, F	2+(1)	939,486	AI-0001/F#009,013,014; Qty=50 or 54, depending on configuration
521-2			AI-0001	54	Burn-In, TCVPC	0	42,876	
521-3			AI-0002	S/R	Rel Demo, F	0	923,065	Qty=41 or 42, depending on configuration
521-4			AI-0002	S/R	Rel Demo, A	0	124,502	Qty=41 or 42, depending on configuration
521-5			AI-0002	S/R	Rel Demo, A	0	112,186	Qty=41 or 42, depending on configuration
521-6			AI-0003	26	Rel Demo, F	0	104,000	
521-7			AI-0004	N/R	Rel Demo, E	0	167,730	
521-8			AI-0004	N/R	Airborne, Inhabited	3	3,317,106	AI-0004/F#004
521-9			AI-0005	69	Rel Demo, TCVPC	0	278,334	
521-10			AI-0005	69	Burn-In, TCPC	0	71,298	
521-11			AI-0006	6	Rel Demo, F	0	22,920	
521-12			AI-0007	38	Rel Demo, F	0	93,784	
521-13			AI-0008	3	Rel Demo, F	0	16,995	
521-14			AI-0010	37	Rel Demo, F	3	139,379	AI-0010/F#002, 003, 005
521-15			AI-0012	120	Burn-In, TCVPC	0	541,973	
521-16			AI-0013	26	Rel Demo, F	0	3,900	
521-17			AI-0015	21	Rel Demo, F	0	89,880	
521-18			AI-0016	114	Rel Demo, F	0	344,964	
521-19			AI-0017	119	Rel Demo, E	0	119,000	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
521-20			AU-0002	15	Rel Demo, F	0	217,635	
521-21			GF-0002	559	Rel Demo	0	246,955	
521-22			GF-0004	114	Rel Demo, A-1	0	517,058	
521-23			GF-0005	32	Rel Demo, A-1	0	158,640	
521-24			NS-0001	55	Naval, Sheltered	0	2,875,675	
521-25			NS-0001	55	Oper. Burn-In	0	585,255	
521-26			NS-0001	55	Rel Demo, A-1	0	447,205	
521-27			NS-0001	55	Burn-In W. Vibr	0	63,040	
522-1	J2N2222A	211	AI-0005	37	Burn-In, TCPC	0	44,059	
522-2			AI-0005	37	Rel Demo, TCVPC	0	146,869	
522-3			GF-0003	50	Ground,Fixed	0	8,648,550	
522-4			GF-0003	S/R	Rel Demo, A-1	1	2,915,520	GF-0003/F#003; Qty=50 or 51, depending on configuration
523	2N2222A+	211	GF-0001	S/R	Rel Demo, A	0	366,162	Qty=1, 72 or 118, depending on configuration
524-1	2N2223	261	AI-0005	12	Rel Demo, TCVPC	0	176,928	Chip hours
524-2			AI-0005	12	Burn-In, TCPC	1	46,680	AI-0005/F#015; chip hours
525-1	2N2243+	211	SF-0001	N/R	Equip. Checkout	0	1,372,379	
525-2			SF-0001	N/R	Space, Flight	0	516,999	
526	2N2270+	221	GF-0001	S/R	Rel Demo, A	0	32,004	Qty=4 or 14, depending on configuration
527	JTX2N2323	520	GF-0002	803	Rel Demo	0	337,682	
528	J2N2323	520	GF-0002	12	Rel Demo	0	5,271	
529-1	2N2323A	520	GF-0003	1	Rel Demo, A-1	0	58,251	
529-2			GF-0003	1	Ground,Fixed	0	172,971	
530	JTX2N2324	520	AI-0013	2	Rel Demo, F	0	300	
531	JTX2N2369	211	GF-0004	1	Rel Demo, A-1	0	4,536	
532	(2N2369)+	211	AI-0015	1	Rel Demo, F	0	4,280	
533	2N2369	211	AI-0003	32	Rel Demo, F	1	128,000	AI-0003/F#003
534-1	JTX2N2369A	211	AI-0001	S/R	Rel Demo, F	0	880,608	Qty=47 or 48, depending on configuration
534-2			AI-0001	48	Burn-In, TCVPC	0	38,112	
534-3			AI-0007	1	Rel Demo, F	0	2,468	
534-4			AI-0008	3	Rel Demo, F	0	16,995	
534-5			AI-0010	1	Rel Demo, F	0	3,767	
534-6			AI-0011	20	Rel Demo, F	0	144,790	
534-7			AI-0013	15	Rel Demo, F	0	2,250	
534-8			AI-0014	20	Rel Demo, E	0	3,064	
534-9			AI-0015	1	Rel Demo, F	0	4,280	
534-10			AI-0016	14	Rel Demo, F	0	42,364	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
534-11			AI-0017	70	Rel Demo, E	0	70,000	
534-12			GF-0002	69	Rel Demo	0	29,135	
534-13			GF-0005	214	Rel Demo, A-1	0	1,107,900	
535-1	J2N2369A	211	AI-0005	1	Burn-In, TCPC	0	1,131	
535-2			AI-0005	1	Rel Demo, TCVPC	0	4,074	
535-3			GF-0003	4	Rel Demo, A-1	0	233,003	
535-4			GF-0003	4	Ground, Fixed	0	691,884	
536-1	2N2369A+	211	GF-0001	20	Rel Demo, A	0	80,315	
536-2			SF-0001	N/R	Equip. Checkout	1	29,111,435	SF-0001/F#004
536-3			SF-0001	N/R	Space, Flight	0	8,591,693	
537-1	(2N2369A)+	261	SF-0001	N/R	Space, Flight	0	698,580	Chip hours, dual flat pack
537-2			SF-0001	N/R	Equip. Checkout	0	2,540,104	Chip hours, dual flat pack
538	2N2405+	221	GF-0001	1	Rel Demo, A	0	1,594	
539-1	2N2412+	212	SF-0001	N/R	Equip. Checkout	0	3,999,233	
539-2			SF-0001	N/R	Space, Flight	0	3,141,155	
540-1	(2N2412)+	212	SF-0001	N/R	Space, Flight	0	30,368	TO-5 package
540-2			SF-0001	N/R	Equip. Checkout	0	124,684	TO-5 package
541	JTX2N2419A	240	AI-0016	1	Rel Demo, F	0	3,026	
542-1	2N2419B+	240	SF-0001	N/R	Equip. Checkout	0	378,920	
542-2			SF-0001	N/R	Space, Flight	0	217,654	
543	(JTX2N2432)+	281	AI-0013	12	Rel Demo, F	0	1,800	Vendor generic equivalent
544-1	JTX2N2432	281	AI-0012	10	Burn-In, TCVPC	0	53,400	
544-2			GF-0005	8	Rel Demo, A-1	0	25,877	
545-1								
545-1	J2N2432	281	AI-0005	2	Burn-In, TCPC	0	2,262	
545-2			AI-0005	2	Rel Demo, TCVPC	0	8,148	
546	2N2432+	281	GF-0001	2	Rel Demo, A	0	8,031	
547-1	2N2432	281	AI-0005	2	Rel Demo, TCVPC	0	8,148	
547-2			AI-0005	2	Burn-In, TCPC	0	2,262	
548-1	JTX2N2432A	281	AI-0007	13	Rel Demo, F	1	32,184	AI-0007/F#001
548-2			AI-0017	1	Rel Demo, E	0	1,000	
548-3			AU-0002	S/R	Rel Demo, F	0	62,599	Qty=3 or 5, depending on configuration
549-1	(2N2453)+	261	SF-0001	N/R	Equip. Checkout	0	1,243,398	Chip hours, dual flat pack
549-2			SF-0001	N/R	Space, Flight	0	652,658	Chip hours, dual flat pack

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
550-1	2N2453A+	261	SF-0001	N/R	Space, Flight	0	4,529,808	Chip hours
550-2			SF-0001	N/R	Equip. Checkout	0	8,870,976	Chip hours
551-1	(2N2475)+	211	AI-0001	3	Rel Demo, F	0	56,151	
551-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
552-1	JTX2N2484	211	AI-0001	14	Burn-In, TCVPC	0	11,116	
552-2			AI-0001	14	Rel Demo, F	0	262,038	
552-3			AI-0013	2	Rel Demo, F	0	300	
552-4			NS-0001	28	Naval, Sheltered	0	1,463,980	
552-5			NS-0001	28	Rel Demo, A-1	0	227,668	
552-6			NS-0001	28	Oper. Burn-In	0	297,948	
552-7			NS-0001	28	Burn-In W. Vibr	0	37,184	
553-1	J2N2484	211	GF-0002	14	Rel Demo	0	6,043	
554-1	JTX2N2605	212	AI-0016	3	Rel Demo, F	0	9,078	
554-2			AI-0017	1	Rel Demo, E	0	1,000	
555-1	(2N2605)+	262	SF-0001	N/R	Equip. Checkout	0	3,186,096	Chip hours, dual TO-5 package
555-2			SF-0001	N/R	Space, Flight	0	1,550,376	Chip hours, dual TO-5 package
556	(2N2605)	212	AI-0014	1	Rel Demo, E	0	153	
557	2N2606+	232	GF-0001	2	Rel Demo, A	0	8,031	
558	2N2608+	232	GF-0001	2	Rel Demo, A	0	3,188	
559-1	2N2634+	221	SF-0001	N/R	Space, Flight	0	223,382	
559-2			SF-0001	N/R	Equip. Checkout	0	744,382	
560	2N2646+	240	GF-0001	2	Rel Demo, A	0	3,188	
561-1	2N2658+	221	SF-0001	N/R	Equip. Checkout	0	838,884	
561-2			SF-0001	N/R	Space, Flight	0	261,246	
562-1	2N2775	221	AI-0005	2	Rel Demo, TCVPC	0	14,744	
562-2			AI-0005	2	Burn-In, TCPC	0	3,890	
563	2N2784+	211	GF-0001	6	Rel Demo, A	0	24,095	
564	2N2850+	211	GF-0001	1	Rel Demo, A	0	1,594	
565-1	JTX2N2857	251	AI-0002	6	Rel Demo, A	0	12,440	
565-2			AI-0002	6	Rel Demo, A	0	16,155	
565-3			AI-0002	6	Rel Demo, F	1	134,849	AI-0002/F#012
565-4			AI-0003	1	Rel Demo, F	0	4,000	
565-5			AI-0013	14	Rel Demo, F	0	2,100	
565-6			NS-0001	34	Naval, Sheltered	0	1,777,690	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
565-7			NS-0001	34	Oper. Burn-In	1	361,794	NS-0001/F#004
565-8			NS-0001	34	Burn-In W. Vibr	1	45,152	NS-0001/F#008
565-9			NS-0001	34	Rel Demo, A-1	0	276,454	
566-1	J2N2857	251	GF-0003	3	Rel Demo, A-1	0	165,812	
566-2			GF-0003	3	Ground,Fixed	0	518,913	
567-1	2N2857	251	AI-0002	1	Rel Demo, A	0	2,073	
567-2			AI-0002	1	Rel Demo, A	0	2,693	
567-3			AI-0002	1	Rel Demo, F	0	22,475	
568	2N2894+	212	GF-0001	2	Rel Demo, A	0	8,031	
569-1	J2N2904	212	AI-0005	9	Burn-In, TCPC	0	17,505	
569-2			AI-0005	9	Rel Demo, TCVPC	0	66,348	
570-1	JTX2N2905	212	AI-0002	S/R	Rel Demo, A	0	598	Qty=0 or 1, depending on configuration
570-2			AI-0002	S/R	Rel Demo, A	0	903	Qty=0 or 1, depending on configuration
570-3			AI-0002	S/R	Rel Demo, F	0	5,887	Qty=0 or 1, depending on configuration
571	2N2905+	212	GF-0001	2	Rel Demo, A	0	8,031	
572-1	(2N2905)+	264	AI-0004	N/R	Airborne, Inhabited	2	4,759,326	AI-0004/F#003; flat pack, one-half of complimentary pair
572-2			AI-0004	N/R	Rel Demo, E	0	200,172	Flat pack, one-half of complimentary pair
573-1	JTX2N2905A	212	AI-0001	S/R	Rel Demo, F	0	129,201	Qty=5 or 7, depending on configuration
573-2			AI-0001	5	Burn-In, TCVPC	0	3,970	
573-3			AI-0002	S/R	Rel Demo, A	0	4,483	Qty=1 or 2, depending on configuration
573-4			AI-0002	S/R	Rel Demo, F	0	34,770	Qty=1 or 2, depending on configuration
573-5			AI-0002	S/R	Rel Demo, A	0	3,548	Qty=1 or 2, depending on configuration
573-6			AI-0003	1	Rel Demo, F	0	4,000	
573-7			AI-0004	N/R	Rel Demo, E	0	7,774	
573-8			AI-0006	2	Rel Demo, F	0	7,640	
573-9			AI-0010	3	Rel Demo, F	(2)	11,301	AI-0010/F#001*, 004*
573-10			AI-0011	24	Rel Demo, F	0	173,748	
573-11			AI-0013	10	Rel Demo, F	0	1,500	
573-12			AI-0016	9	Rel Demo, F	0	27,234	
573-13			AI-0017	43	Rel Demo, E	0	43,000	
573-14			AU-0002	13	Rel Demo, F	0	188,617	
573-15			GF-0002	322	Rel Demo	1	136,370	GF-0002/F#003
573-16			GF-0004	10	Rel Demo, A-1	0	45,356	
574-1	J2N2905A	212	AI-0005	7	Burn-In, TCPC	0	7,917	
574-2			AI-0005	7	Rel Demo, TCVPC	0	28,518	
574-3			GF-0003	6	Ground,Fixed	0	1,037,826	
574-4			GF-0003	6	Rel Demo, A-1	0	349,505	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
575	2N2905A+	212	GF-0001	S/R	Rel Demo, A	0	51,317	Qty=10 or 17, depending on configuration
576	2N2905A	212	GF-0002	18	Rel Demo	0	8,155	
577	(2N2905A)	262	AI-0015	3	Rel Demo, F	0	25,680	Chip hours, dual transistor
578	JTX2N2906	212	AI-0003	2	Rel Demo, F	0	8,000	
579	JTX2N2906A	212	AI-0003	8	Rel Demo, F	0	32,000	
580-1	J2N2906A	212	AI-0005	2	Rel Demo, TCVPC	0	9,956	
580-2			AI-0005	2	Burn-In, TCPC	0	4,184	
581-1	JTX2N2907	212	AI-0005	5	Burn-In, TCPC	0	10,460	
581-2			AI-0005	5	Rel Demo, TCVPC	0	23,990	
581-3			AI-0012	16	Burn-In, TCVPC	0	72,081	
582-1	J2N2907	212	AI-0005	21	Rel Demo, TCVPC	0	93,518	
582-2			AI-0005	21	Burn-In, TCPC	0	34,322	
582-3			GF-0002	70	Rel Demo	0	30,217	
583	2N2907+	212	GF-0001	S/R	Rel Demo, A	0	12,243	Qty=2 or 4, depending on configuration
584-1	(2N2907)+	262	SF-0001	N/R	Equip. Checkout	0	6,687,538	Chip hours, dual flat pack
584-2			SF-0001	N/R	Space, Flight	0	3,977,778	Chip hours, dual flat pack
585-1	JTX2N2907A	212	AI-0001	S/R	Rel Demo, F	1	749,589	AI-0001/F#003;Qty=40 or 41, depending on configuration
585-2			AI-0001	41	Burn-In, TCVPC	0	32,554	
585-3			AI-0002	S/R	Rel Demo, F	1+(1)	493,402	AI-0002/F#004*, 010;Qty=22, 23 or 24, depending on configuration
585-4			AI-0002	S/R	Rel Demo, A	0	50,063	Qty=22, 23 or 24, depending on configuration
585-5			AI-0002	S/R	Rel Demo, A	0	61,930	Qty=22, 23 or 24, depending on configuration
585-6			AI-0003	8	Rel Demo, F	0	32,000	
585-7			AI-0004	N/R	Airborne, Inhabited	0	1,730,664	
585-8			AI-0004	N/R	Rel Demo, E	0	104,077	
585-9			AI-0005	11	Rel Demo, TCVPC	1	44,432	AI-0005/F#026
585-10			AI-0005	11	Burn-In, TCPC	0	13,085	
585-11			AI-0006	8	Rel Demo, F	0	30,560	
585-12			AI-0007	22	Rel Demo, F	0	54,296	
585-13			AI-0008	11	Rel Demo, F	0	62,315	
585-14			AI-0010	26	Rel Demo, F	0	97,942	
585-15			AI-0012	26	Burn-In, TCVPC	0	138,840	
585-16			AI-0013	25	Rel Demo, F	0	3,750	
585-17			AI-0014	162	Rel Demo, E	0	24,818	
585-18			AI-0015	9	Rel Demo, F	0	38,520	
585-19			AI-0016	32	Rel Demo, F	0	84,728	
585-20			AI-0017	61	Rel Demo, E	0	61,000	
585-21			AU-0002	6	Rel Demo, F	0	87,054	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
585-22			GF-0002	167	Rel Demo	0	73,160	
585-23			GF-0004	70	Rel Demo, A-1	0	317,492	
585-24			GF-0005	46	Rel Demo, A-1	0	231,738	
585-25			NS-0001	20	Rel Demo, A-1	0	162,620	
585-26			NS-0001	20	Burn-In, W. Vibr	0	26,560	
585-27			NS-0001	20	Oper. Burn-In	0	212,820	
585-28			NS-0001	20	Naval, Sheltered	0	1,045,700	
586-1	J2N2907A	212	AI-0005	44	Burn-In, TCPC	0	70,906	
586-2			AI-0005	44	Rel Demo, TCVPC	0	195,184	
586-3			GF-0003	16	Ground Fixed	0	2,767,536	
586-4			GF-0003	S/R	Rel Demo, A-1	0	929,033	Qty=15 or 16, depending on configuration
587-1	2N2907A+	212	GF-0001	S/R	Rel Demo, A	0	470,336	Qty=3, 113, 121, depending on configuration
587-2			SF-0001	N/R	Equip. Checkout	0	6,612,124	
587-3			SF-0001	N/R	Space, Flight	0	3,151,380	
588	2N2907A	212	NS-0002	227	Equip. Checkout	0	257,191	
589-1	JTX2N2919	261	AI-0017	3	Rel Demo, E	0	6,000	Chip hours
590-1	JTX2N2920	261	AI-0001	S/R	Rel Demo, F	0	1,818	Chip hours;Qty=0, 1, depends on configuration
590-2			AI-0001	1	Burn-In, TCVPC	0	1,588	Chip hours
590-3			AI-0004	N/R	Rel Demo, E	0	38,872	Chip hours
590-4			AI-0013	3	Rel Demo, F	0	900	Chip hours
590-5			AI-0014	40	Rel Demo, E	0	12,256	Chip hours
590-6			GF-0004	3	Rel Demo, A-1	0	27,214	Chip hours
590-7			GF-0005	31	Rel Demo, A-1	0	322,696	Chip hours
591	2N2922+	211	GF-0001	S/R	Rel Demo, A	0	36,729	Qty=6 or 12, depending on configuration
592	2N2945+	282	GF-0001	S/R	Rel Demo, A	0	18,364	Qty=3 or 6, depending on configuration
593-1	2N2945	282	AI-0005	2	Burn-In, TCPC	0	2,262	
593-2			AI-0005	2	Rel Demo, TCVPC	0	8,148	
594-1	JTX2N2945A	282	AI-0007	35	Rel Demo, F	0	86,380	
594-2			AI-0010	12	Rel Demo, F	0	45,204	
594-3			AI-0014	20	Rel Demo, E	0	3,064	
594-4			AI-0015	1	Rel Demo, F	0	4,280	
594-5			AU-0002	9	Rel Demo, F	0	130,581	
594-6			GF-0005	4	Rel Demo, A-1	0	12,938	
595-1	2N2946	282	AI-0005	16	Burn-In, TCPC	0	18,096	
595-2			AI-0005	16	Rel Demo, TCVPC	0	65,184	
596	(JTX2N2946A)+	282	AI-0013	12	Rel Demo, F	0	1,800	Vendor generic equivalent
597	JTX2N2946A	282	AU-0002	S/R	Rel Demo, F	0	178,671	Qty=11 or 13, depending on configuration

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
598	2N2972+	261	GF-0001	S/R	Rel Demo, A	0	109,132	Chip hours; Qty=12, 16 depends on configuration
599-1	2N2989	221	AI-0005	20	Burn-In, TCPC	0	22,620	
599-2			AI-0005	20	Rel Demo, TCVPC	0	814,800	
600	2N3011+	211	GF-0001	12	Rel Demo, A	0	19,129	
601	2N3012+	212	GF-0001	1	Rel Demo, A	0	1,594	
602-1	JTX2N3013	211	AI-0001	6	Burn-in, TCVPC	0	4,764	
602-2			AI-0001	6	Rel Demo, F	0	112,302	
602-3			AI-0010	4	Rel Demo, F	0	15,068	
603-1	JTX2N3019	211	AI-0001	3	Burn-In, TCVPC	0	2,382	
603-2			AI-0001	3	Rel Demo, F	0	56,151	
603-3			AI-0008	6	Rel Demo, F	1	33,990	AI-0008/F#001
603-4			AI-0013	8	Rel Demo, F	0	1,200	
603-5			AI-0016	64	Rel Demo, F	0	193,664	
603-6			GF-0002	353	Rel Demo	0	149,111	
603-7			GF-0004	2	Rel Demo, A-1	0	9,071	
603-8			GF-0005	3	Rel Demo, A-1	0	15,572	
603-9			NS-0001	8	Naval, Sheltered	0	418,280	
603-10			NS-0001	8	Rel Demo, A-1	0	65,048	
603-11			NS-0001	8	Oper. Burn-In	0	85,128	
603-12			NS-0001	8	Burn-In W. Vibr	0	10,624	
604-1	J2N3019	211	GF-0002	24	Rel Demo	0	10,541	
604-2			GF-0003	2	Rel Demo, A-1	0	116,502	
604-3			GF-0003	2	Ground, Fixed	0	345,942	
605	(2N3049/2N2411)	262	AI-0014	20	Rel Demo, E	0	6,128	Chip hours
606-1	2N3052+	261	AI-0004	N/R	Airborne, Inhabited	0	6,922,656	Chip hours
606-2			AI-0004	N/R	Rel Demo, E	(1)	288,234	AI-0004/F#001*;Chip hours
607	2N3054+	221	GF-0001	S/R	Rel Demo, A	0	51,377	Qty=12 or 14, depending on configuration
608-1	JTX2N3055	211	AI-0007	2	Rel Demo, F	0	4,936	
608-2			AI-0011	1	Rel Demo, F	1	7,240	AI-0011/F#001
608-3			AI-0017	1	Rel Demo, E	0	1,000	
608-4			GF-0002	40	Rel Demo	1	17,958	GF-0002/F#002
608-5			NS-0001	18	Naval, Sheltered	0	941,130	
608-6			NS-0001	18	Rel Demo, A-1	0	146,358	
608-7			NS-0001	18	Oper. Burn-In	0	191,538	
608-8			NS-0001	18	Burn-In W. Vibr	0	23,904	
609-1	J2N3055	211	GF-0003	4	Ground, Fixed	0	691,884	
609-2			GF-0003	4	Rel Demo, A-1	0	233,003	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
610	2N3055+	221	GF-0001	S/R	Rel Demo, A	0	20,093	Qty=1 or 5, depending on configuration
611	JTX2N3057	211	NS-0001	18	Naval, Sheltered	0	941,130	
612-1	JTX2N3057A	211	NS-0001	18	Burn-In W. Vibr	0	23,904	
612-2			NS-0001	18	Rel Demo, A-1	0	146,358	
612-3			NS-0001	18	Oper. Burn-In	1	191,538	NS-0001/F#007
613-1	2N3137	251	NS-0001	27	Burn-In W. Vibr	0	35,856	
613-2			NS-0001	27	Rel Demo, A-1	0	219,537	
613-3			NS-0001	27	Oper. Burn-In	0	287,307	
614	(2N3137)	251	NS-0001	27	Naval, Sheltered	0	1,411,695	
615-1	JTX2N3250A	212	AI-0014	20	Rel Demo, E	0	3,064	
615-2			AI-0015	1	Rel Demo, F	0	4,280	
616-1	J2N3250A	212	AI-0005	5	Rel Demo, TCVPC	0	36,860	
616-2			AI-0005	5	Burn-In, TCPC	0	9,725	
617	JTX2N3251	212	GF-0002	5	Rel Demo	0	2,249	
618	2N3251+	212	AI-0014	42	Rel Demo, E	0	6,434	
619-1	JTX2N3251A	212	AI-0010	17	Rel Demo, F	0	74,039	
619-2			AI-0014	6	Rel Demo, E	0	919	
619-3			AI-0017	16	Rel Demo, E	0	16,000	
619-4			GF-0002	5	Rel Demo	0	2,249	
619-5			GF-0005	59	Rel Demo, A-1	0	309,149	
620-1	J2N3257A	520	AI-0005	2	Burn-In, TCPC	0	3,890	
620-2			AI-0005	2	Rel Demo, TCVPC	0	14,744	
621	2N3375+	251	GF-0001	S/R	Rel Demo, A	0	9,309	Qty=1 or 2, depending on configuration
622	2N3411F	211	GF-0002	12	Rel Demo	0	5,041	
632-1	JTX2N3421	211	AI-0004	N/R	Rel Demo, E	0	5,831	
623-2			AI-0008	2	Rel Demo, F	0	11,330	
623-3			AI-0016	5	Rel Demo, F	0	15,130	
623-4			AI-0017	1	Rel Demo, E	0	1,000	
624-1	2N3421+	211	AI-0004	N/R	Airborne, Inhabited	2	1,874,886	AI-0004/F#006
624-2			AI-0004	N/R	Rel Demo, E	0	68,412	
625-1	JTX2N3439	211	AI-0013	1	Rel Demo, F	0	150	
625-2			AI-0016	1	Rel Demo, F	0	3,026	
625-3			AI-0017	32	Rel Demo, E	1	32,000	AI-0017/F#002

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
626-1	J2N3439	211	AI-0001	40	Rel Demo, F	1	748,680	AI-0001/F#010
626-2			AI-0001	40	Burn-In, TCVPC	0	31,760	
627	2N3439+	211	GF-0001	S/R	Rel Demo, A	0	38,502	Qty=8 or 12, depending on configuration
628-1	JTX2N3440	211	AI-0014	3	Rel Demo, E	0	460	
628-2			AI-0015	1	Rel Demo, F	0	4,280	
628-3			AI-0017	18	Rel Demo, E	0	18,000	
628-4			GF-0002	48	Rel Demo	0	21,137	
629	2N3440+	211	GF-0001	3	Rel Demo, A	0	4,782	
630-1	2N3440	211	AI-0002	2	Rel Demo, A	0	4,146	
630-2			AI-0002	2	Rel Demo, A	0	5,385	
630-3			AI-0002	2	Rel Demo, F	0	44,950	
630-4			AI-0005	1	Burn-In, TCPC	0	1,945	
630-5			AI-0005	1	Rel Demo, TCVPC	0	7,372	
630-6			GF-0003	2	Rel Demo, A-1	0	116,502	
630-7			GF-0003	2	Ground,Fixed	0	345,942	
631	JTX2N3441	221	AI-0017	1	Rel Demo, E	0	1,000	
632-1	J2N3441	221	AI-0001	1	Rel Demo, F	0	18,717	
632-2			AI-0001	1	Burn-In, TCVPC	0	794	
633	2N3441+	221	GF-0001	S/R	Rel Demo, A	0	5,428	Qty=1 or 3, depending on configuration
634-1	2N3441	221	GF-0003	1	Rel Demo, A-1	0	58,251	
634-2			GF-0003	1	Ground,Fixed	0	172,971	
635-1	J2N3442	221	AI-0001	6	Rel Demo, F	2+(2)	112,302	AI-0001/F#004*, 005*, 015, 016
635-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
635-3			AI-0003	1	Rel Demo, F	0	4,000	
636	2N3442+	221	GF-0001	1	Rel Demo, A	0	1,594	
637-1	J2N3444	221	AI-0001	1	Burn-In, TCVPC	0	794	
637-2			AI-0001	1	Rel Demo, F	0	18,717	
638	2N3444+	211	GF-0001	2	Rel Demo, A	0	8,031	
639	JTX2N3467	212	AI-0003	1	Rel Demo, F	0	4,000	
640	2N3467+	262	AI-0014	3	Rel Demo, E	0	919	Chip hours
641	2N3467	262	AI-0014	3	Rel Demo, E	0	919	Chip hours
642	2N3486+	212	GF-0001	2	Rel Demo, A	0	3,188	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
643	2N3486A+	212	GF-0001	S/R	Rel Demo, A	0	67,140	Qty=3, 9 or 21, depcnding on configuration
644	2N3497+	212	GF-0001	10	Rel Demo, A	0	15,941	
645-1	JTX2N3499	211	NS-0001	4	Naval, Sheltered	0	209,140	
645-2			NS-0001	4	Burn-In W. Vibr	0	5,312	
645-3			NS-0001	4	Oper. Burn-In	0	42,564	
645-4			NS-0001	4	Rel Demo, A-1	0	32,524	
646-1	JTX2N3500	211	AI-0004	N/R	Rel Demo, E	0	3,887	
646-2			AI-0014	20	Rel Demo, E	0	3,064	
646-3			AI-0015	1	Rel Demo, F	0	4,280	
647-1	JTX2N3501	211	AI-0013	5	Rel Demo, F	0	750	
647-2			AI-0016	6	Rel Demo, F	0	18,156	
647-3			AI-0017	3	Rel Demo, E	0	3,000	
647-4			GF-0002	103	Rel Demo	0	44,012	
648-1	(2N3504)+	212	AI-0001	1	Burn-In, TCVPC	0	794	
648-2			AI-0001	1	Rel Demo, F	0	18,717	
649	JTX2N3506	211	GF-0002	6	Rel Demo	0	2,521	
650-1	JTX2N3507	211	AI-0001	1	Burn-In, TCVPC	0	794	
650-2			AI-0001	1	Rel Demo, F	0	18,717	
651	JTX2N3507A	211	AI-0006	1	Rel Demo, F	0	3,820	
652-1	2N3571	211	NS-0001	10	Oper. Burn-In	0	106,410	
652-2			NS-0001	10	Burn-In W. Vibr	0	13,280	
652-3			NS-0001	10	Rel Demo, A-1	0	81,310	
653	(2N3571)	211	NS-0001	10	Naval, Sheltered	0	522,850	
654-1	JTX2N3584	221	AI-0016	14	Rel Demo, F	0	42,364	
654-2			GF-0002	9	Rel Demo	0	4,078	
655	2N3584+	221	GF-0001	8	Rel Demo, A	0	32,126	
656-1	JTX2N3585	221	AI-0001	6	Burn-In, TCVPC	0	4,764	
656-2			AI-0001	6	Rel Demo, F	1	112,302	AI-0001/F#007
656-3			AI-0017	8	Rel Demo, E	0	8,000	
657	2N3585+	221	GF-0001	2	Rel Demo, A	0	3,188	
658	(2N3585)	221	AI-0014	2	Rel Demo, E	0	306	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
659-1	(2N3598)+	221	SF-0001	N/R	Space, Flight	0	275,268	
659-2			SF-0001	N/R	Equip. Checkout	0	454,068	
660-1	JTX2N3635	212	AI-0002	1	Rel Demo, F	0	22,475	
660-2			AI-0002	1	Rel Demo, A	0	2,692	
660-3			AI-0002	1	Rel Demo, A	0	2,074	
660-4			AI-0013	1	Rel Demo, F	0	150	
660-5			AI-0016	64	Rel Demo, F	0	193,664	
660-6			AI-0017	2	Rel Demo, E	0	2,000	
661-1	2N3636+	212	SF-0001	N/R	Space, Flight	0	1,144	
661-2			SF-0001	N/R	Equip. Checkout	0	10,796	
662-1	JTX2N3637	212	AI-0001	3	Rel Demo, F	0	56,151	
662-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
662-3			AI-0008	1	Rel Demo, F	0	5,665	
662-4			AI-0013	1	Rel Demo, F	0	150	
662-5			GF-0002	63	Rel Demo	0	26,466	
663	JTX2N3700	211	AI-0008	5	Rel Demo, F	0	28,325	
664-1	J2N3700	211	GF-0003	1	Ground,Fixed	0	172,971	
664-2			GF-0003	1	Rel Demo, A-1	0	55,271	
665	2N3700+	211	GF-0001	S/R	Rel Demo, A	0	117,223	Qty=23 or 31, depending on configuration
666	2N3715+	221	GF-0001	S/R	Rel Demo, A	0	22,184	Qty=1, 4 or 6, depending on configuration
667-1	2N3715	221	AI-0005	8	Burn-In, TCPC	0	15,560	
667-2			AI-0005	8	Rel Demo, TCVPC	0	58,976	
668-1	JTX2N3716	221	AI-0010	5	Rel Demo, F	0	18,835	
668-2			AI-0013	2	Rel Demo, F	0	300	
668-3			AI-0016	6	Rel Demo, F	1	18,156	AI-0016/F#001
668-4			AI-0017	1	Rel Demo, E	0	1,000	
669-1	2N3716+	221	AI-0004	N/R	Airborne, Inhabited	0	865,332	
669-2			AI-0004	N/R	Rel Demo, E	0	29,595	
669-3			GF-0001	S/R	Rel Demo, A	0	46,371	Qty=10 or 14, depending on configuration
670-1	2N3716	221	AI-0005	9	Burn-In, TCPC	0	17,505	
670-2			AI-0005	9	Rel Demo, TCVPC	1	66,348	AI-0005/F#025
671-1	2N3719	222	AI-0005	6	Rel Demo, TCVPC	0	44,232	
671-2			AI-0005	6	Burn-In, TCPC	0	11,670	
672-1	2N3720	222	AI-0005	2	Burn-In, TCPC	0	3,890	
672-2			AI-0005	2	Rel Demo, TCVPC	0	14,744	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
673-1	2N3723+	211	SF-0001	N/R	Equip. Checkout	0	1,423,567	
673-2			SF-0001	N/R	Space, Flight	0	787,420	
674	(2N3725)+	265	AI-0014	14	Rel Demo, E	0	8,579	Chip hours; quad
675	(2N3725)	265	AI-0014	22	Rel Demo, E	0	13,482	Chip hours; quad switching
676	(2N3725)	265	AI-0013	74	Rel Demo, F	0	44,400	Chip hours; vendor generic equivalent; quad
677-1	JTX2N3735	211	AI-0010	3	Rel Demo, F	0	11,301	
677-2			AI-0013	2	Rel Demo, F	0	300	
677-3			AI-0016	19	Rel Demo, F	0	57,494	
677-4			GF-0002	40	Rel Demo	0	19,098	
678	2N3737+	211	AU-0001	1	Equip. Checkout	9	11,448,000	AU-0001/F#001
679-1	2N3738	221	AI-0005	1	Rel Demo, TCVPC	0	7,372	
679-2			AI-0005	1	Burn-In, TCPC	0	1,945	
680	JTX2N3739	221	AI-0016	4	Rel Demo, F	0	12,104	
681-1	JTX2N3740	222	AI-0003	2	Rel Demo, F	2	8,000	AI-0003/F#004, 006; Failure report shows non-JAN no.
681-2			GF-0002	5	Rel Demo	0	2,249	
682-1	JTX2N3741	222	AI-0016	19	Rel Demo, F	0	57,494	
682-2			AU-0002	2	Rel Demo, F	0	29,018	
682-3			GF-0002	14	Rel Demo	0	6,091	
683	2N3741+	222	GF-0001	S/R	Rel Demo, A	0	36,984	Qty=4, 5 or 10, depending on configuration
684-1	2N3741	222	GF-0003	4	Ground,Fixed	0	691,884	
684-2			GF-0003	4	Rel Demo, A-1	0	233,003	
684-3			NS-0002	22	Equip. Checkout	0	24,926	
685	JTX2N3742	221	GF-0002	9	Rel Demo	0	3,781	
686-1	JTX2N3743	212	AI-0001	7	Burn-In, TCVPC	0	5,558	
686-2			AI-0001	7	Rel Demo, F	0	131,019	
686-3			AI-0017	1	Rel Demo, E	0	1,000	
686-4			GF-0002	6	Rel Demo	0	2,521	
687-1	JTX2N3771	221	AU-0002	1	Rel Demo, F	0	14,509	
687-2			GF-0002	14	Rel Demo	0	6,091	
688	2N3771+	221	GF-0001	S/R	Rel Demo, A	0	24,486	Qty=4 or 8, depending on configuration
689	JTX2N3772	221	GF-0002	5	Rel Demo	0	2,249	
690-1	2N3772	221	AI-0017	3	Rel Demo, E	0	3,000	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
690-2			GF-0003	1	Rel Demo, A-1	0	58,251	
690-3			GF-0003	1	Ground, Fixed	0	172,971	
691	(2N3773)	221	AI-0017	5	Rel Demo, E	0	10,000	Chip hours ; dual
692-1	2N3777	212	AI-0005	2	Burn-In , TCPC	0	4,184	
692-2			AI-0005	2	Rel Demo, TCVPC	0	9,596	
693-1	2N3789	222	AI-0005	3	Rel Demo, TCVPC	0	22,116	
693-2			AI-0005	3	Burn-In, TCPC	0	5,835	
694-1	2N3791+	222	AI-0004	N/R	Airborne, Inhabited	1	865,332	AI-0004/F#010
694-2			AI-0004	N/R	Rel Demo, E	0	29,595	
695-1	2N3791	222	AI-0005	4	Burn-In, TCPC	2	7,780	AI-0005/F#013, 021
695-2			AI-0005	4	Rel Demo, TCVPC	0	29,488	
696-1	JTX2N3792	222	AI-0013	2	Rel Demo, F	0	300	
696-2			AI-0016	9	Rel Demo, F	0	27,234	
696-3			AI-0017	1	Rel Demo, E	0	1,000	
697-1	2N3792	222	GF-0003	2	Ground, Fixed	0	345,924	
697-2			GF-0003	2	Rel Demo, A-1	0	116,502	
698	JTX2N3810	262	AI-0013	1	Rel Demo, F	0	300	Chip hours
699	JTX2N3821	231	AI-0006	1	Rel Demo, F	0	3,820	
700-1	JTX2N3823	231	AI-0013	2	Rel Demo, F	0	300	
700-2			NS-0001	11	Naval, Sheltered	0	575,135	
700-3			NS-0001	11	Rel Demo, A-1	0	89,441	
700-4			NS-0001	11	Oper. Burn-In	0	117,051	
700-5			NS-0001	11	Burn-In W. Vibr	0	14,608	
701	J2N3823	231	GF-0002	14	Rel Demo	0	5,881	
702	2N3829+	212	AI-0014	2	Rel Demo, E	0	306	
703	(2N3829)+	212	AI-0015	2	Rel Demo, F	0	8,560	
704-1	2N3839	211	AI-0002	1	Rel Demo, A	0	2,693	
704-2			AI-0002	1	Rel Demo, A	0	2,073	
704-3			AI-0002	1	Rel Demo, F	0	22,475	
705-1	JTX2N3866	251	AI-0013	8	Rel Demo, F	0	1,200	
705-2			NS-0001	44	Naval, Sheltered	0	2,300,540	
705-3			NS-0001	44	Oper. Burn-In	0	468,204	
705-4			NS-0001	44	Burn-In W. Vibr	0	58,432	
705-5			NS-0001	44	Rel Demo, A-1	0	357,764	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
706	2N3866+	251	GF-0001	2	Rel Demo, A	0	8,031	
707-1	2N3866	251	AI-0002	2	Rel Demo, F	0	44,950	
707-2			AI-0002	2	Rel Demo, A	0	5,385	
707-3			AI-0002	2	Rel Demo, A	0	4,146	
708	JTX2N3867	222	GF-0002	6	Rel Demo	0	2,521	
709-1	2N3868	212	AI-0002	1	Rel Demo, F	0	22,475	
709-2			AI-0002	1	Rel Demo, A	0	2,693	
709-3			AI-0002	1	Rel Demo, A	0	2,073	
710-1	2N3879	221	GF-0003	3	Ground, Fixed	0	518,913	
710-2			GF-0003	3	Rel Demo, A-1	0	174,752	
711	JTX2N3902	221	AI-0010	1	Rel Demo, F	0	3,767	
712	2N3902◆	221	GF-0001	6	Rel Demo, A	0	24,095	
713	2N3927+	251	GF-0001	S/R	Rel Demo, A	0	6,121	Qty=1 or 2, depending on configuration
714	2N3933+	251	GF-0001	2	Rel Demo, A	0	8,031	
715-1	JTX2N3960	211	AI-0003	2	Rel Demo, F	0	8,000	
715-2			AI-0013	6	Rel Demo, F	0	900	
715-3			NS-0001	30	Naval, Sheltered	0	1,568,550	
715-4			NS-0001	30	Rel Demo, A-1	0	243,930	
715-5			NS-0001	30	Burn-In W. Vibr	0	39,840	
715-6			NS-0001	30	Oper. Burn-In	0	319,230	
716-1	2N3971	231	GF-0003	2	Rel Demo, A-1	0	110,541	
716-2			GF-0003	2	Ground, Fixed	0	345,942	
717-1	JTX2N3996	221	AI-0011	7	Rel Demo, F	1	50,677	AI-0011/F#002
717-2			AU-0002	2	Rel Demo, F	0	29,018	
718-1	2N3999+	221	AI-0004	N/R	Rel Demo, E	0	29,595	
718-2			AI-0004	N/R	Airborne, Inhabited	0	865,332	
719	2N4014+	211	AI-0003	2	Rel Demo, F	0	8,000	
720-1	(2N4014)+	211	AI-0001	3	Burn-In, TCVPC	0	2,382	
720-2			AI-0001	3	Rel Demo, F	0	56,151	
721-1	(2N4035)+	252	AI-0001	24	Rel Demo, F	0	449,208	
721-2			AI-0001	24	Burn-In, TCVPC	0	19,056	
722-1	2N4036	222	AI-0005	4	Rel Demo, TCVPC	0	19,192	
722-2			AI-0005	4	Burn-In, TCVPC	0	8,368	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
723-1	(2N4066)	232	AI-0005	10	Burn-In, TCPC	1	22,620	AI-0005/F#011; Chip hours;Dual FET
723-2			AI-0005	10	Rel Demo, TCVPC	0	81,480	Chip Hours; Dual FET
724	2N4167+	520	GF-0001	2	Rel Demo, A	0	3,188	
725	2N4170	520	GF-0002	34	Rel Demo	(1)	15,174	GF-0002/F#001*
726-1	(2N4209)+	212	AI-0001	3	Burn-In, TCVPC	0	2,382	
726-2			AI-0001	3	Rel Demo, F	0	56,151	
727	2N4220+	231	GF-0001	2	Rel Demo, A	0	3,188	
728	2N4236+	222	GF-0001	1	Rel Demo, A	0	1,278	
729	2N4260	212	AI-0003	1	Rel Demo, F	0	4,000	
730	2N4261	212	GF-0002	24	Rel Demo	0	10,082	
731-1	2N4268	232	NS-0001	5	Burn-In W. Vibr	0	6,640	
731-2			NS-0001	5	Oper. Burn-In	0	53,205	
731-3			NS-0001	5	Rel Demo, A-1	0	40,655	
732	(2N4268)	232	NS-0001	5	Naval, Sheltered	0	261,425	
733-1	2N4301+	221	AI-0004	N/R	Airborne, Inhabited	0	2,595,996	
733-2			AI-0004	N/R	Rel Demo, E	0	88,786	
734-1	2N4307	221	AI-0005	4	Rel Demo, TCVPC	0	29,488	
734-2			AI-0005	4	Burn-In, TCPC	0	5,835	
735-1	2N4308	221	AI-0005	2	Burn-In, TCPC	0	3,890	
735-2			AI-0005	2	Rel Demo, TCVPC	0	14,744	
736-1	2N4353	232	AI-0005	4	Rel Demo, TCVPC	0	15,532	
736-2			AI-0005	4	Burn-In, TCPC	0	5,812	
737	JTX2N4399	222	AI-0010	2	Rel Demo, F	0	7,534	
738	JTX2N4404	222	AI-0010	1	Rel Demo, F	0	3,767	
739-1	2N4407+	222	SF-0001	N/R	Equip. Checkout	0	1,036,430	
739-2			SF-0001	N/R	Space, Flight	0	551,238	
740-1	(2N4407)+	222	AI-0001	6	Rel Demo, F	(1)	112,302	AI-0001/F#017*
740-2			AI-0001	6	Burn-In, TCVPC	0	4,764	
741	2N4416+	231	GF-0001	S/R	Rel Demo, A	0	19,252	Qty=4 or 6, depending on configuration

SYSTEM NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
742-1	2N4416	231	GF-0003	S/R	Rel Demo, A-1	0	64,222	Qty=1 or 3, depending on configuration
742-2			GF-0003	1	Ground, Fixed	0	172,971	
743-1	JTX2N4416A	231	GF-0005	14	Rel Demo, A-1	0	72,037	
743-2			NS-0001	30	Naval, Sheltered	0	1,568,550	
743-3			NS-0001	30	Rel Demo, A-1	0	243,930	
743-4			NS-0001	30	Burn-In W. Vibr	0	39,840	
743-5			NS-0001	30	Oper. Burn-In	0	319,230	
744-1	2N4428	251	GF-0003	2	Ground, Fixed	0	345,942	
744-2			GF-0003	2	Rel Demo, A-1	0	116,502	
745-1	JTX2N4856	231	AI-0006	1	Rel Demo, F	0	3,820	
745-2			AI-0010	7	Rel Demo, F	0	26,369	
745-3			AI-0017	2	Rel Demo, E	0	2,000	
745-4			NS-0001	2	Naval, Sheltered	0	104,570	
745-5			NS-0001	2	Rel Demo, A-1	0	16,262	
745-6			NS-0001	2	Oper. Burn-In	0	21,282	
745-7			NS-0001	2	Burn-In W. Vibr	0	2,656	
746	JTX2N4857	231	AI-0016	7	Rel Demo, F	0	21,182	
747-1	JTX2N4858	231	AI-0017	3	Rel Demo, E	0	3,000	
747-2			GF-0002	16	Rel Demo	0	7,046	
747-3			NS-0001	11	Naval, Sheltered	0	575,135	
747-4			NS-0001	11	Burn-In W. Vibr	0	14,608	
747-5			NS-0001	11	Oper. Burn-In	0	117,051	
747-6			NS-0001	11	Rel Demo, A-1	0	89,441	
748	2N4918+	222	GF-0001	16	Rel Demo, A	0	64,252	
749	2N4919+	222	GF-0001	12	Rel Demo, A	0	48,189	
750	2N4920	222	AI-0003	1	Rel Demo, F	0	4,000	
751	2N4922+	221	GF-0001	4	Rel Demo, A	1	721	GF-0001/F#001;designed out
752	2N4923	221	AI-0003	2	Rel Demo, F	0	8,000	
753	JTX2N4931	212	AI-0017	2	Rel Demo, E	0	2,000	
754-1	JTX2N4948	240	AI-0016	4	Rel Demo, F	1	12,104	AI-0016/F#002
754-2			GF-0002	16	Rel Demo	0	7,046	
755	2N4949	240	NS-0002	2	Equip. Checkout	0	2,266	
756	JTX2N4957	212	GF-0002	18	Rel Demo	0	7,562	
757	2N4961+	211	GF-0001	12	Rel Demo, A	0	48,189	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
758-1	2N5003+	222	AI-0004	N/R	Rel Demo, E	0	14,798	
758-2			AI-0004	N/R	Airborne, Inhabited	14	432,666	AI-0004/F#008
759	JTX2N5038	221	GF-0002	6	Rel Demo	0	2,521	
760-1	2N5066	281	AI-0007	5	Rel Demo, F	0	12,340	
760-2			AU-0002	2	Rel Demo, F	0	29,216	
761-1	JTX2N5109	251	AI-0003	2	Rel Demo, F	0	8,000	
761-2			AI-0013	35	Rel Demo, F	0	5,250	
761-3			NS-0001	36	Rel Demo, A-1	0	292,716	
761-4			NS-0001	36	Burn-In W. Vibr	0	47,808	
761-5			NS-0001	36	Oper. Burn-In	0	383,076	
761-6			NS-0001	36	Naval, Sheltered	1	1,882,260	NS-0001/F#012
762-1	2N5109	251	GF-0003	6	Ground, Fixed	0	1,037,826	
762-2			GF-0003	6	Rel Demo, A-1	0	349,505	
763-1	(2N5114)+	232	AI-0001	2	Rel Demo, F	0	37,434	
763-2			AI-0001	2	Burn-In, TCVPC	0	1,588	
764-1	2N5116	252	GF-0003	2	Ground, Fixed	0	345,942	
764-2			GF-0003	2	Rel Demo, A-1	0	116,502	
765	JTX2N5157	221	AI-0010	2	Rel Demo, F	0	7,534	
766	2N5192	221	AI-0003	2	Rel Demo, F	0	8,000	
767	2N5195	222	AI-0003	1	Rel Demo, F	0	4,000	
768-1	2N5333+	212	AI-0004	N/R	Airborne, Inhabited	2	1,730,664	AI-0004/F#009
768-2			AI-0004	N/R	Rel Demo, E	0	59,190	
768-3			SF-0001	N/R	Space, Flight	0	145,436	
768-4			SF-0001	N/R	Equip. Checkout	0	292,798	
769-1	2N5384+	222	SF-0001	N/R	Equip. Checkout	0	1,433,998	
769-2			SF-0001	N/R	Space, Flight	0	1,232,088	
770	(2N5384)+	222	AI-0015	8	Rel Demo, F	0	34,240	
771-1	2N5385+	222	SF-0001	N/R	Space, Flight	0	72,798	
771-2			SF-0001	N/R	Equip. Checkout	0	138,090	
772-1	2N5397	231	NS-0001	12	Rel Demo, A-1	0	97,572	
772-2			NS-0001	12	Oper. Burn-In	0	127,692	
772-3			NS-0001	12	Burn-In W. Vibr	0	15,936	
772-4			NS-0001	12	Naval, Sheltered	0	627,420	
773	(JTX2N5416)+	212	AI-0013	2	Rel Demo, F	0	300	Vendor generic equivalent

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
774-1	2N5416	212	AI-0017	2	Rel Demo, E	0	2,000	
774-2			GF-0002	14	Rel Demo	0	6,091	
775-	2N5428	221	AI-0017	9	Rel Demo, E	0	9,000	
776-1	2N5542+	221	SF-0001	N/R	Equip. Checkout	0	316,578	
776-2			SF-0001	N/R	Space, Flight	0	141,870	
777	2N5550	211	AI-0003	1	Rel Demo, F	0	4,000	
778	JTX2N5660	221	AI-0016	2	Rel Demo, F	0	6,052	
779	JTX2N5664	221	AI-0016	8	Rel Demo, F	0	24,208	
780-1	2N5664+	221	SF-0001	N/R	Space, Flight	0	1,144	
780-2			SF-0001	N/R	Equip. Checkout	0	10,796	
781	JTX2N5665	221	AI-0017	1	Rel Demo, E	0	1,000	
782-1	2N5666+	211	SF-0001	N/R	Equip. Checkout	0	32,388	
782-2			SF-0001	N/R	Space, Flight	0	3,432	
783-1	(2N5671)+	221	AI-0001	1	Rel Demo, F	0	18,717	
783-2			AI-0001	1	Burn-In, TCVPC	0	794	
784	2N5672	221	GF-0004	2	Rel Demo, A-1	0	9,071	
785	JTX2N5685	221	AU-0002	1	Rel Demo, F	0	14,509	
786	JTX2N5686	221	AI-0016	1	Rel Demo, F	0	3,026	
787	2N5686	221	AI-0017	3	Rel Demo, E	0	3,000	
788	(2N5920)	251	AI-0013	1	Rel Demo, F	0	150	
789	2N5954	222	AI-0003	1	Rel Demo, F	0	4,000	
790	2N5982	222	AI-0003	1	Rel Demo, F	0	4,000	
791	2N5985	221	AI-0003	1	Rel Demo, F	0	4,000	
792-1	2N6215+	221	SF-0001	N/R	Space, Flight	0	2,288	
792-2			SF-0001	N/R	Equip. Checkout	0	21,592	
793	2N6251+	221	AI-0004	N/R	Rel Demo, E	0	15,549	
794-1	2N6277	211	GF-0003	4	Rel Demo, A-1	0	233,003	
794-2			GF-0003	4	Ground, Fixed	0	691,884	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
795	2N6283	271	AI-0017	2	Rel Demo, E	0	2,000	Part hours
796	2N6286	272	AI-0017	1	Rel Demo, E	0	1,000	Part hours
797	2N6299	272	AI-0017	13	Rel Demo, E	0	13,000	Part Hours
798	2N6301	271	AI-0017	18	Rel Demo, E	0	18,000	Part hours
799	3N200	231	AI-0003	6	Rel Demo, F	0	24,000	
800	35024A (HPA)	211	AI-0003	2	Rel Demo, F	0	8,000	
801	40820 (RCA)	231	AI-0003	4	Rel Demo, F	0	16,000	
802	40821 (RCA)	231	AI-0003	1	Rel Demo, F	0	4,000	
803	40853 (RCA)	221	GF-0002	32	Rel Demo	0	14,091	
804	47047 (MIC)	304	AI-0003	2	Rel Demo, F	0	8,000	
805	47080 (MIC)	304	AI-0003	2	Rel Demo, F	0	8,000	
806	(5082-0151) (HPA)	310	AI-0013	1	Rel Demo, F	0	150	Vendor generic equivalent
807	(5082-0320) (HPA)	310	AI-0013	1	Rel Demo, F	0	150	Vendor generic equivalent
808	(5082-2711) (HPA)	303	AI-0013	1	Rel Demo, F	0	150	Vendor generic equivalent
809	5082-2800 (HPA)	303	GF-0001	4	Rel Demo, A	0	6,376	
810	5082-2811 (HPA)	303	AI-0003	5	Rel Demo, F	0	20,000	
811	5082-3080 (HPA)	304	AI-0003	2	Rel Demo , F	0	8,000	
812-1	(673-1S) (UNI)	126	AI-0001	4	Burn-In, TCVPC	0	12,704	Chip hours
812-2			AI-0001	4	Rel Demo, F	0	299,472	Chip hours
813-1	(673-2) (UNI)	126	AI-0001	2	Rel Demo, F	0	149,736	Chip hours
813-2			AI-0001	2	Burn-In, TCVPC	0	6,352	Chip hours
814-1	BB109 (ALGG)	309	GF-0001	S/R	Rel Demo, A	0	80,315	Qty=0 or 20, depending on configuration
814-2			GF-0003	1	Ground, Fixed	0	172,971	
814-3			GF-0003	1	Rel Demo, A-1	0	55,271	
815	C103A (MULT)	520	AI-0003	1	Rel Demo, F	0	4,000	
816	C106A1 (MULT)	520	GF-0001	S/R	Rel Demo, A	0	8,032	Qty=0 or 2, depending on configuration

ENTRY NO	PART NUMBER		DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
817	C38E	(SLCB)	231	GF-0001	12	Rel Demo, A	0	19,129	
818	DTS425	(DEL)	221	GF-0001	4	Rel Demo, A	0	6,376	
819-1	(DTS-701)	(DEL)	221	AI-0001	3	Rel Demo, F	0	56,151	
819-2				AI-0001	3	Burn-In, TCVPC	0	2,382	
820	FD700	(FSC)	111	GF-0001	6	Rel Demo, A	0	9,565	
821-1	L82A	(SET)	141	GF-0003	2	Ground, Fixed	0	345,942	
821-2				GF-0003	2	Rel Demo, A-1	0	110,541	
822-1	(LVA43A)	(TRW)	134	AI-0001	3	Burn-In, TCVPC	0	2,382	
822-2				AI-0001	3	Rel Demo, F	0	56,151	
823	LVA51A	(TRW)	134	GF-0001	S/R	Rel Demo, A	0	6,122	Qty=0, 1, 2 or 3, depending on configuration
824-1	(LVA51A)	(TRW)	134	AI-0001	2	Rel Demo, F	0	37,434	
824-2				AI-0001	2	Burn-In, TCVPC	0	1,588	
825	LVA68A	(TRW)	134	GF-0001	S/R	Rel Demo, A	0	10,965	Qty=0, 1, 4 or 5, depending on configuration
826	LVA75A	(TRW)	134	GF-0001	S/R	Rel Demo, A	0	8,032	Qty=0 or 2, depending on configuration
827	(MA44230)	(MIC)	310	AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor generic equivalent
828	(MA47054)	(MIC)	304	AI-0013	1	Rel Demo, F	0	150	Three vendors, vendor generic equivalent
829-1	MAN-72	(MTO)	641	NS-0001	10	Naval, Sheltered	0	522,850	
829-2				NS-0001	10	Rel Demo, A-1	0	81,310	
829-3				NS-0001	10	Burn-In W. Vibr	0	13,280	
829-4				NS-0001	10	Oper. Burn-In	1+(1)	106,410	NS-0001/F#003, 005*
830	MDA920-1	(MOTA)	126	NS-0002	1	Equip. Checkout	0	4,532	
831	MEM517AL	(GIC)	232	GF-0001	S/R	Rel Demo, A	0	34,682	Qty=2, 8 or 10, depending on configuration
832-1	(MPD4000)	(GESY)	112	AI-0005	2	Rel Demo, TCVPC	0	9,596	
832-2				AI-0005	2	Burn-In, TCPC	0	4,184	
833-1	MV109	(MOTA)	309	GF-0003	3	Rel Demo, A-1	0	165,812	
833-2				GF-0003	3	Ground, Fixed	0	518,913	
834	MV3102	(MOTA)	309	AI-0003	6	Rel Demo, F	0	24,000	
835-1	MZ4625	(MOTA)	130	GF-0003	1	Ground, Fixed	0	172,971	
835-2				GF-0003	1	Rel Demo, A-1	0	55,271	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
836	PD6204 (TRW)	130	AI-0003	1	Rel Demo, F	0	4,000	
837	SDT5001 (MULT)	221	GF-0001	3	Rel Demo, A	0	4,782	
838	SDT5910 (SOD)	221	AI-0015	2	Rel Demo, F	0	8,560	
839	(SDT7603) (SOD)	221	AI-0008	2	Rel Demo, F	1	24,720	AI-0008/F#002
840	SLA-1 (OPC)	641	GF-0005	1	Rel Demo, A-1	0	10,501	
841	(SVD450-5) (TRW)	120	AI-0013	3	Rel Demo, F	0	450	Vendor generic equivalent
842	SVT250-5C (TRW)	221	GF-0002	16	Rel Demo	0	7,046	
843	SVT350-3C (TRW)	221	GF-0002	16	Rel Demo	0	7,046	
844	(SVT450-5) (TRW)	221	AI-0013	18	Rel Demo, F	0	2,700	Three vendors, vendor generic equivalent
845-1	(TN-80) (SPR)	211	AI-0001	6	Burn-In, TCVPC	0	4,764	
845-2			AI-0001	S/R	Rel Demo, F	0	5,454	Qty=0 or 6, depending on configuration
846	(UES-502-S) (UNI)	123	AI-0013	6	Rel Demo, F	0	900	Two vendors, vendor generic equivalent
847	UM7010CB (UNI)	304	GF-0003	1	Rel Demo, A-1	0	2,980	
848	UM9053 (UNI)	304	GF-0003	1	Ground,Fixed	0	172,971	
849-1	(UTR-20) (UNI)	124	AI-0001	5	Rel Demo, F	0	93,585	
849-2			AI-0001	5	Burn-In, TCVPC	0	3,970	
850-1	(UTX225) (UNI)	124	AI-0001	6	Burn-In, TCVPC	0	4,764	
850-2			AI-0001	6	Rel Demo, F	0	112,302	
851	UZ5114 (UNI)	130	GF-0003	2	Rel Demo, A-1	0	5,961	
852	UZ5709 (UNI)	130	GF-0001	S/R	Rel Demo , A	0	12,047	Qty=0 or 3, depending on configuration
853	UZ7775R (UNI)	130	AI-0003	1	Rel Demo, F	0	4,000	
854	UZ7833L (UNI)	130	AI-0003	1	Rel Demo, F	0	4,000	
855	UZ7845L (UNI)	130	AI-0003	2	Rel Demo, F	0	8,000	
856-1	(UZ824) (UNI)	130	AI-0001	3	Rel Demo, F	0	56,151	
856-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
857-1		100	NS-0001	1	Burn-In W. Vibr	0	1,328	
857-2			NS-0001	1	Naval, Sheltered	0	52,285	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
857-3			NS-0001	1	Oper. Burn-In	0	10,641	
857-4			NS-0001	1	Rel Demo, A-1	0	8,131	
858-1		100	NS-0001	1	Rel Demo, A-1	0	8,131	
858-2			NS-0001	1	Oper. Burn-In	0	10,641	
858-3			NS-0001	1	Naval, Sheltered	0	52,285	
858-4			NS-0001	1	Burn-In W. Vibr	0	1,328	
859-1		100	NS-0001	1	Oper. Burn-In	0	10,641	
859-2			NS-0001	1	Rel Demo, A-1	0	8.131	
859-3			NS-0001	1	Burn-In W. Vibr	0	1,328	
860-1		100	NS-0001	22	Rel Demo, A-1	0	178,882	
860-2			NS-0001	22	Burn-In W. Vibr	0	29,216	
860-3			NS-0001	22	Naval, Sheltered	0	1,150,270	
860-4			NS-0001	22	Oper. Burn-In	0	234,102	
861-1		100	NS-0001	7	Naval, Sheltered	0	365,995	
861-2			NS-0001	7	Oper. Burn-In	0	74,487	
861-3			NS-0001	7	Burn-In W. Vibr	0	9,296	
861-4			NS-0001	7	Rel Demo, A-1	0	56,917	
862		100	AI-0016	1	Rel Demo, F	0	3,026	
863		100	AI-0017	6	Rel Demo, E	0	6,000	
864		100	AI-0017	24	Rel Demo, E	0	24,000	
865		100	AI-0017	2	Rel Demo, E	0	2,000	
866		100	AI-0017	1	Rel Demo, E	0	1,000	
867		100	AI-0017	2	Rel Demo, E	0	2,000	
868		100	AI-0017	2	Rel Demo, E	0	2,000	
869		100	AI-0017	25	Rel Demo, E	0	25,000	
870		100	AI-0017	12	Rel Demo, E	0	12,000	
871		100	AI-0017	1	Rel Demo, E	0	1,000	
872		100	AI-0017	1	Rel Demo, E	0	1,000	
873		100	AI-0017	9	Rel Demo, E	0	9,000	
874		100	AI-0017	2	Rel Demo, E	0	2,000	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
875		100	AI-0017	1	Rel Demo, E	0	1,000	
876		100	AI-0017	6	Rel Demo, E	0	6,000	
877		100	AI-0017	10	Rel Demo, E	0	10,000	
878		100	AI-0013	6	Rel Demo, F	0	900	Proprietary, FKI Special
879		100	AI-0017	2	Rel Demo, E	0	2,000	
880		100	GF-0001	S/R	Rel Demo, A	0	36,729	Qty=0, 16, 12 or 18, depending on configuration
881		100	GF-0001	4	Rel Demo, A	0	6,376	
882		100	GF-0001	2	Rel Demo, A	0	3,188	
883		100	GF-0001	S/R	Rel Demo, A	0	19,373	Qty=0 or 8, depending on configuration
884		100	GF-0001	S/R	Rel Demo, A	0	192,756	Qty=0 or 48, depending on configuration
885		100	GF-0001	S/R	Rel Demo, A	0	16,063	Qty=0 or 4, depending on configuration
886		100	AI-0013	6	Rel Demo, F	0	900	Proprietary, HPA special
887		100	AI-0012	11	Burn-In, TCVPC	0	48,056	
888		100	AI-0012	22	Burn-In, TCVPC	0	58,718	
889		100	AI-0012	18	Burn-In, TCVPC	0	96,120	
890		100	AI-0012	5	Burn-In, TCVPC	0	26,700	
891		100	AI-0012	1	Burn-In, TCVPC	0	5,340	
892		100	AI-0012	7	Burn-In, TCVPC	0	29,367	
893		100	AI-0012	7	Burn-In, TCVPC	0	24,025	
894		100	AI-0012	4	Burn-In, TCVPC	0	16,018	
895		100	AI-0012	2	Burn-In, TCVPC	0	8,009	
896		100	AI-0012	13	Burn-In, TCVPC	0	45,381	
897		100	AI-0012	51	Burn-In, TCVPC	0	202,894	
898		100	AI-0012	4	Burn-In, TCVPC	0	16,018	
899		100	AI-0012	7	Burn-In, TCVPC	0	26,696	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
900		100	AI-0012	175	Burn-In, TCVPC	1	694,110	AI-0012/F#002
901		100	AI-0012	37	Burn-In, TCVPC	0	118,416	
902		100	AI-0012	22	Burn-In, TCVPC	0	107,045	
903		100	AI-0012	18	Burn-In, TCVPC	0	96,120	
904		100	AI-0012	16	Burn-In, TCVPC	0	42,704	
905		100	AI-0012	1	Burn-In, TCVPC	0	5,495	
906		100	AI-0012	1	Burn-In, TCVPC	0	5,340	
907		100	AI-0012	1	Burn-In, TCVPC	0	5,340	
908		100	AI-0012	6	Burn-In, TCVPC	0	26,698	
909		100	AI-0012	2	Burn-In, TCVPC	0	5,338	
910		100	AI-0012	3	Burn-In, TCVPC	1	16,020	AI-0012/F#009
911		100	AI-0012	2	Burn-In, TCVPC	0	10,680	
912		100	AI-0012	9	Burn-In, TCVPC	0	48,060	
913		100	GF-0002	400	Rel Demo	0	190,980	
914		100	GF-0001	S/R	Rel Demo, A	0	29,060	Qty=0 or 12, depending on configuration
915		100	GF-0001	S/R	Rel Demo, A	0	29,060	Qty=0 or 12, depending on configuration
916		100	GF-0002	1317	Rel Demo	0	627,254	
917		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, SOD special
918		100	AI-0013	2	Rel Demo, F	0	300	Proprietary, VAS special
919		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, VAS special
920		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, VAS special
921		100	GF-0001	1	Rel Demo, A	0	1,594	
922		100	GF-0001	S/R	Rel Demo, A	0	36,847	Qty=0, 6 or 14, depending on configuration
923		100	GF-0002	2	Rel Demo	0	955	PWR, <1W
924		100	GF-0002	2	Rel Demo	0	955	1W, SIL

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
925		100	GF-0002	2	Rel Demo	0	955	<1W, SIL
926		100	GF-0002	1414	Rel Demo	0	573,599	LP, SIL
927		100	GF-0002	336	Rel Demo	0	136,301	PWR, SIL
928		100	GF-0002	72	Rel Demo	0	27,821	
929		100	AI-0016	64	Rel Demo, F	0	193,664	
930		100	AI-0016	10	Rel Demo, F	0	30,260	
931		100	GF-0001	2	Rel Demo, A	0	3,188	
932		100	GF-0001	S/R	Rel Demo, A	0	144,567	Qty=0 or 36, depending on configuration
933		100	GF-0001	6	Rel Demo, A	0	9,565	
934		100	AI-0013	67	Rel Demo, F	0	10,050	Proprietary, FSC special
935		100	AI-0013	5	Rel Demo, F	0	750	Proprietary, SIX special
936		100	GF-0003	1	Rel Demo, A-1	0	2,980	
937-1		100	GF-0003	1	Rel Demo, A-1	0	55,271	
937-2			GF-0003	1	Ground, Fixed	0	172,971	
938-1		100	AI-0001	2	Burn-In, TCVPC	0	1,588	
938-2			AI-0001	2	Rel Demo, F	0	37,434	
939		100	GF-0001	S/R	Rel Demo, A	0	8,032	Qty=0 or 2, depending on configuration
940-1		100	GF-0003	3	Rel Demo, A-1	0	174,752	
940-2			GF-0003	3	Ground, Fixed	0	518,913	
941		100	GF-0001	2	Rel Demo, A	0	3,188	
942		100	GF-0001	S/R	Rel Demo, A	0	5,113	Qty=0 or 4, depending on configuration
943		100	GF-0001	S/R	Rel Demo, A	0	8,032	Qty=0 or 2, depending on configuration
944		100	GF-0001	2	Rel Demo, A	0	3,188	
945		100	GF-0001	2	Rel Demo, A	0	3,188	
946		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special
947		100	AI-0013	6	Rel Demo, F	0	900	Proprietary, SET special



ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
948		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special
949		100	AI-0013	6	Rel Demo, F	0	900	Proprietary, SET special
950		100	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special
951		100	AI-0010	3	Rel Demo, F	0	11,301	
952		100	GF-0003	2	Rel Demo, A-1	0	5,961	
953		100	GF-0003	20	Rel Demo, A-1	0	59,606	
954		100	GF-0001	S/R	Rel Demo, A	0	29,060	Qty=0 or 12, depending on configuration
955		100	GF-0003	3	Rel Demo, A-1	0	8,941	
956		100	GF-0001	S/R	Rel Demo, A	0	88,347	Qty=0 or 22, depending on configuration
957		100	AI-0010	2	Rel Demo, F	0	7,534	
958		100	AI-0013	2	Rel Demo, F	0	300	Proprietary, SET special
959		100	GF-0002	36	Rel Demo	0	15,812	
960		100	AI-0005	1	Rel Demo, TCVPC	0	4,074	
961		100	AI-0005	1	Burn-In, TCPC	0	1,131	
962		100	AI-0013	2	Rel Demo, F	0	300	Proprietary, PFD special
963		100	AI-0012	1	Burn-In, TCVPC	0	5,340	
964		100	AI-0013	1	Rel Demo, F	0	150	Proprietary UNI special
965		100	AI-0013	10	Rel Demo, F	0	1,500	Proprietary, UNI special
966-1		100	AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
966-2			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
966-3			AI-0013	6	Rel Demo, F	0	900	Two Vendors, Vendor specials
966-4			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
966-5			AI-0013	29	Rel Demo, F	0	4,350	Two vendors, vendor specials
966-6			AI-0013	9	Rel Demo, F	0	1,350	Two vendors, vendor specials
966-7			AI-0013	14	Rel Demo, F	0	2,100	Two vendors, vendor specials
967		110	AI-0003	7	Rel Demo, F	0	28,000	
968		110	GF-0003	11	Rel Demo, A-1	0	32,783	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
969		111	NS-0001	1	Naval, Sheltered	0	52,285	
970-1		111	AI-0005	90	Rel Demo, TCVPC	0	431,820	
970-2			AI-0005	90	Burn-In, TCPC	0	188,280	
971		111	GF-0002	24	Rel Demo	0	10,082	
972-1		111	AI-0005	6	Burn-In, TCPC	0	12,552	
972-2			AI-0005	6	Rel Demo, TCVPC	0	28,788	
973-1		111	AI-0005	63	Rel Demo, TCVPC	0	253,890	
973-2			AI-0005	63	Burn-In, TCPC	0	64,512	
974		111	AI-0005	17	Rel Demo, TCVPC	0	81,566	
975		111	AI-0005	17	Burn-In, TCPC	0	35,564	
976		120	AI-0016	4	Rel Demo, F	0	12,104	
977		120	AI-0016	1	Rel Demo, F	0	3,026	
978		120	AI-0016	1	Rel Demo, F	0	3,026	
979-1		120	AI-0002	3	Rel Demo, A	0	8,078	
979-2			AI-0002	3	Rel Demo, F	0	67,425	
979-3			AI-0002	3	Rel Demo, A	0	6,220	
980		120	AI-0012	6	Burn-In, TCVPC	0	32,040	
981		120	AI-0003	5	Rel Demo, F	0	20,000	
982		120	AI-0015	2	Rel Demo, F	0	8,560	
983		120	AI-0001	24	Rel Demo, F	0	449,208	
984-1		120	AI-0001	12	Rel Demo, F	0	224,604	
984-2			AI-0001	12	Burn-In, TCVPC	0	9,528	
985		120	AI-0001	24	Burn-In, TCVPC	0	19,056	
986		120	GF-0003	32	Rel Demo, A-1	0	95,370	
987-1		120	AI-0005	5	Burn-In, TCPC	0	19,450	Chip hours, dual rectifier
987-2			AI-0005	5	Rel Demo, TCVPC	0	73,720	Chip hours, dual rectifier
988		120	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special
989		120	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
990		120	AI-0013	1	Rel Demo, F	0	150	Proprietary, SET special
991		120	AI-0010	6	Rel Demo, F	0	22,602	
992		120	GF-0001	S/R	Rel Demo, A	0	128,504	Qty=0 or 32, depending on configuration
993		120	GF-0001	S/R	Rel Demo, A	0	64,252	Qty=0 or 16, depending on configuration
994		120	GF-0001	S/R	Rel Demo, A	0	32,126	Qty=0 or 8, depending on configuration
995		120	GF-0001	S/R	Rel Demo, A	0	64,252	Qty=0 or 16, depending on configuration
996-1		120	AI-0002	S/R	Rel Demo, A	0	5,401	Qty=0 or 6, depending on configuration
996-2			AI-0002	S/R	Rel Demo, A	0	5,229	Qty=0 or 6, depending on configuration
996-3			AI-0002	S/R	Rel Demo, F	0	48,049	Qty=0 or 6, depending on configuration
997-1		120	AI-0002	S/R	Rel Demo, F	0	75,433	Qty=3 or 4, depending on configuration
997-2			AI-0002	S/R	Rel Demo, A	0	8,977	Qty=3 or 4, depending on configuration
997-3			AI-0002	S/R	Rel Demo, A	0	7,091	Qty=3 or 4, depending on configuration
998-1		120	AI-0002	2	Rel Demo, A	0	5,385	
998-2			AI-0002	2	Rel Demo, A	0	4,146	
998-3			AI-0002	2	Rel Demo, F	0	36,365	
999-1		120	AI-0013	3	Rel Demo, F	0	450	Two vendors, vendor specials
999-2			AI-0013	12	Rel Demo, F	0	1,800	Two vendors, vendor specials
999-3			AI-0013	4	Rel Demo, F	0	600	Two vendors, vendor specials
999-4			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
999-5			AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
999-6			AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
999-7			AI-0013	18	Rel Demo, F	0	2,700	Two vendors, vendor specials
999-8			AI-0013	4	Rel Demo, F	0	600	Two vendors, vendor specials
999-9			AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
1000		123	GF-0002	9	Rel Demo	0	3,781	
1001		123	GF-0002	28	Rel Demo	0	12,181	
1002		126	AI-0014	20	Rel Demo, E	0	12,256	Chip hours
1003		126	AI-0014	32	Rel Demo, E	0	19,610	Chip hours
1004-1		126	AI-0001	5	Burn-In, TCVPC	0	15,880	Chip hours
1004-2			AI-0001	5	Rel Demo, F	0	374,340	Chip hours
1005		126	GF-0002	15	Rel Demo	0	25,908	Chip hours
1006		126	GF-0002	18	Rel Demo	0	31,414	Chip hours

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1007		127	GF-0002	176	Rel Demo	0	447,851	Chip hours
1008-1		130	AI-0002	1	Rel Demo, A	0	2,693	
1008-2			AI-0002	1	Rel Demo, F	0	22,475	
1008-3			AI-0002	1	Rel Demo, A	0	2,073	
1009		130	GF-0002	20	Rel Demo	0	8,996	
1010		130	GF-0002	10	Rel Demo	0	4,498	
1011		130	AI-0014	20	Rel Demo, E	0	3,064	Used as fuse
1012-1		130	GF-0002	2	Rel Demo	0	955	
1012-2			GF-0002	405	Rel Demo	0	164,176	
1012-3			GF-0002	2	Rel Demo	0	955	
1013-1		130	AI-0002	S/R	Rel Demo, A	0	3,585	Qty=0 or 2, depending on configuration
1013-2			AI-0002	S/R	Rel Demo, F	0	28,934	Qty=0 or 2, depending on configuration
1013-3			AI-0002	S/R	Rel Demo, A	0	2,404	Qty=0 or 2, depending on configuration
1014		130	AI-0012	2	Burn-In, TCVPC	0	10,680	
1015-1		130	AI-0002	1	Rel Demo, A	0	2,692	
1015-2			AI-0002	1	Rel Demo, A	0	2,074	
1015-3			AI-0002	1	Rel Demo, F	0	22,475	
1016-1		130	AI-0002	3	Rel Demo, A	0	8,920	
1016-2			AI-0002	3	Rel Demo, F	0	67,425	
1017-1		130	AI-0002	1	Rel Demo, F	0	22,475	
1017-2			AI-0002	1	Rel Demo, A	0	2,074	
1017-3			AI-0002	1	Rel Demo, A	0	2,692	
1018-1		130	AI-0002	S/R	Rel Demo, F	0	14,467	Qty=0 or 1, depending on configuration
1018-2			AI-0002	S/R	Rel Demo, A	0	1,202	Qty=0 or 1, depending on configuration
1018-3			AI-0002	S/R	Rel Demo, A	0	1,792	Qty=0 or 1, depending on configuration
1019-1		130	AI-0002	S/R	Rel Demo, A	0	5,377	Qty=0 or 3, depending on configuration
1019-2			AI-0002	S/R	Rel Demo, F	0	43,400	Qty=0 or 3, depending on configuration
1019-3			AI-0002	S/R	Rel Demo, A	0	6,305	Qty=0 or 3, depending on configuration
1020-1		130	AI-0002	S/R	Rel Demo, F	0	28,934	Qty=0 or 2, depending on configuration
1020-2			AI-0002	S/R	Rel Demo, A	0	2,404	Qty=0 or 2, depending on configuration
1020-3			AI-0002	S/R	Rel Demo, A	0	3,585	Qty=0 or 2, depending on configuration
1021-1		130	AI-0002	1	Rel Demo, F	0	22,475	
1021-2			AI-0002	1	Rel Demo, A	0	2,073	
1021-3			AI-0002	1	Rel Demo, A	0	2,693	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1022		130	AI-0002	3	Rel Demo, A	0	8,078	
1023		132	AI-0013	1	Rel Demo, F	0	150	Proprietary, DIC special
1024		140	AI-0013	2	Rel Demo, F	0	300	Proprietary, vendor unknown
1025-1		171	AI-0002	13	Rel Demo, F	0	292,174	
1025-2			AI-0002	13	Rel Demo, A	0	35,003	
1025-3			AI-0002	13	Rel Demo, A	0	26,953	
1026		174	AI-0014	588	Rel Demo, E	0	90,082	Chip hours
1027-1		174	SF-0001	N/R	Space, Flight	0	64,242,960	Chip hours, flat pack
1027-2			SF-0001	N/R	Equip. Checkout	0	96,706,000	Chip hours, flat pack
1028-1		200	AI-0001	S/R	Rel Demo, F	0	2,727	Qty=0 or 3, depending on configuration
1028-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
1029-1		200	AI-0001	S/R	Rel Demo, F	0	909	Qty=0 or 1, depending on configuration
1029-2			AI-0001	1	Burn-In, TCVPC	0	794	
1030-1		200	AI-0005	1	Rel Demo, TCVPC	0	7,372	
1030-2			AI-0005	1	Burn-In, TCPC	0	1,945	
1031-1		200	AI-0002	2	Rel Demo, A	0	5,385	
1031-2			AI-0002	2	Rel Demo, F	0	44,950	
1031-3			AI-0002	2	Rel Demo, A	0	4,146	
1032		200	AI-0017	1	Rel Demo, E	0	1,000	
1033		200	AI-0017	23	Rel Demo, E	0	23,000	
1034		200	AI-0017	2	Rel Demo, E	0	2,000	
1035		200	AI-0017	28	Rel Demo, E	0	28,000	
1036		200	AI-0017	1	Rel Demo, E	0	1,000	
1037		200	AI-0017	2	Rel Demo, E	0	2,000	
1038		200	AI-0017	6	Rel Demo, E	0	6,000	
1039		200	AI-0017	51	Rel Demo, E	1	51,000	AI-0017/F#001
1040		200	AI-0017	45	Rel Demo, E	0	45,000	
1041		200	AI-0017	28	Rel Demo, E	0	28,000	
1042		200	AI-0017	1	Rel Demo, E	0	1,000	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1043		200	AI-0017	6	Rel Demo, E	0	6,000	
1044		200	AI-0017	1	Rel Demo, E	0	1,000	
1045		200	AI-0017	1	Rel Demo, E	0	1,000	
1046		200	AI-0017	9	Rel Demo, E	0	9,000	
1047		200	AI-0017	30	Rel Demo, E	0	30,000	
1048		200	AI-0017	2	Rel Demo, E	0	2,000	
1049		200	AI-0010	4	Rel Demo, F	0	15,068	
1050		200	AI-0010	3	Rel Demo, F	0	11,301	
1051		200	GF-0001	4	Rel Demo, A	0	6,376	
1052		200	AI-0013	1	Rel Demo, F	0	150	Vendor unknown
1053		200	GF-0001	12	Rel Demo, A	0	19,129	
1054		200	GF-0001	2	Rel Demo, A	0	3,188	
1055		200	GF-0004	2	Rel Demo, A-1	0	9,071	
1056		200	AI-0010	11	Rel Demo, F	0	41,437	
1057		200	AI-0012	9	Burn-In, TCVPC	0	42,718	
1058		200	AI-0012	1	Burn-In, TCVPC	1	5,340	AI-0012/F#010
1059		200	AI-0012	15	Burn-In, TCVPC	0	40,035	
1060		200	AI-0012	40	Burn-In, TCVPC	0	106,760	
1061		200	AI-0012	4	Burn-In, TCVPC	0	18,689	
1062		200	AI-0012	37	Burn-In, TCVPC	0	98,753	
1063		200	AI-0012	28	Burn-In, TCVPC	2	149,520	AI-0012/F#007, 008
1064		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1065		200	AI-0012	9	Burn-In, TCVPC	0	34,705	
1066		200	AI-0012	3	Burn-In, TCVPC	(1)	10,678	AI-0012/F#004*

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
1067		200	AI-0012	4	Burn-In, TCVPC	0	21,360	
1068		200	AI-0012	2	Burn-In, TCVPC	0	10,680	
1069		200	AI-0012	5	Burn-In, TCVPC	0	26,700	
1070		200	AI-0012	13	Burn-In, TCVPC	0	40,039	
1071		200	AI-0012	3	Burn-In, TCVPC	0	8,007	
1072		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1073		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1074		200	AI-0012	2	Burn-In, TCVPC	0	5,338	
1075		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1076		200	AI-0012	12	Burn-In, TCVPC	0	32,028	
1077		200	AI-0012	3	Burn-In, TCVPC	0	16,020	
1078		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1079		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1080		200	AI-0012	26	Burn-In, TCVPC	0	69,394	
1081		200	AI-0012	8	Burn-In, TCVPC	(2)	21,352	AI-0012/F#001*
1082		200	AI-0012	1	Burn-In, TCVPC	0	5,340	
1083		200	GF-0005	10	Rel Demo, A-1	0	52,505	
1084		200	AI-0013	3	Rel Demo, F	0	450	Proprietary, SOD special
1085		200	AI-0007	1	Rel Demo, F	0	2,468	
1086		200	AI-0007	2	Rel Demo, F	0	4,936	
1087		200	AI-0013	2	Rel Demo, F	0	300	Proprietary, MWS special
1088		200	AI-0013	4	Rel Demo, F	0	600	Proprietary, TSC special
1089		200	AI-0016	8	Rel Demo, F	0	24,208	
1090		200	AI-0013	10	Rel Demo, F	0	1,500	Proprietary, SIX special

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
1091-1		200	GF-0003	1	Ground, Fixed	0	172,971	
1091-2			GF-0003	1	Rel Demo, A-1	0	55,271	
1092-1		200	GF-0003	S/R	Rel Demo, A-1	0	235,984	Qty=4 or 5, depending on configuration
1092-2			GF-0003	4	Ground, Fixed	0	691,884	
1093-1		200	GF-0003	1	Ground, Fixed	0	172,971	
1093-2			GF-0003	1	Rel Demo, A-1	0	58,251	
1094-1		200	GF-0003	1	Ground, Fixed	0	172,971	
1094-2			GF-0003	1	Rel Demo, A-1	0	55,271	
1095		200	GF-0001	1	Rel Demo, A	0	1,594	
1096		200	GF-0001	S/R	Rel Demo, A	0	48,189	Qty=0 or 12, depends on configuration
1097		200	GF-0001	1	Rel Demo, A	0	1,594	
1098		200	GF-0001	4	Rel Demo, A	0	6,376	
1099		200	AI-0003	1	Rel Demo, F	0	4,000	
1100		200	AI-0003	1	Rel Demo, F	0	4,000	
1101-1		200	GF-0003	1	Rel Demo, A-1	0	58,251	
1101-2			GF-0003	1	Ground, Fixed	0	172,971	
1102-1		200	GF-0003	1	Ground, Fixed	0	172,971	
1102-2			GF-0003	1	Rel Demo, A-1	0	58,251	
1103-1		200	GF-0003	1	Rel Demo, A-1	0	58,251	
1103-2			GF-0003	1	Ground, Fixed	0	172,971	
1104		200	AI-0013	2	Rel Demo, F	0	300	Proprietary, TRW special
1105		200	AI-0010	11	Rel Demo, F	0	41,437	
1106		200	AI-0010	9	Rel Demo, F	0	33,903	
1107		200	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1108		200	AI-0010	2	Rel Demo, F	0	7,534	
1109		200	GF-0001	S/R	Rel Demo, A	0	16,063	Qty=0 or 4, depending on configuration
1110		200	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1111		200	AI-0010	8	Rel Demo, F	0	30,136	

ENTRY NO.	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
1112		200	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1113		200	AI-0013	7	Rel Demo, F	0	1,050	Proprietary, MOTA special
1114		200	AI-0013	2	Rel Demo, F	0	300	Proprietary, MOTA special
1115		200	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1116		200	AI-0001	S/R	Rel Demo, F	0	35,616	Qty=0 or 2, depending on configuration
1117		200	AI-0013	1	Rel Demo, F	0	150	Proprietary, NECJ special
1118-1		200	AI-0013	3	Rel Demo, F	0	450	Two vendors, vendor specials
1118-2			AI-0013	2	Rel Demo, F	0	300	Three vendors, vendor specials
1118-3			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1118-4			AI-0013	19	Rel Demo, F	0	2,850	Three vendors, vendor specials
1118-5			AI-0013	3	Rel Demo, F	0	450	Two parts, one vendor, vendor specials
1118-6			AI-0013	2	Rel Demo, F	0	300	Two parts, one vendor, vendor specials
1118-7			AI-0013	2	Rel Demo, F	0	300	Three parts, two vendors, vendor specials
1118-8			AI-0013	4	Rel Demo, F	0	600	Four parts, two vendors, vendor specials
1118-9			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1118-10			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1118-11			AI-0013	12	Rel Demo, F	0	1,800	Two vendors, vendor specials
1118-12			AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1118-13			AI-0013	3	Rel Demo, F	0	450	Two vendors, vendor specials
1118-14			AI-0013	4	Rel Demo, F	0	600	Five parts, three vendors, vendor specials
1119		201	AI-0017	2	Rel Demo, E	0	2,000	
1120		201	GF-0002	5	Rel Demo	0	2,249	
1121		201	GF-0002	10	Rel Demo	0	4,498	
1122		201	GF-0002	5	Rel Demo	0	2,249	
1123		201	GF-0002	10	Rel Demo	0	4,498	
1124		201	AI-0014	59	Rel Demo, E	0	9,039	NPN high-volt amplifier
1125		201	AI-0003	3	Rel Demo, F	0	12,000	
1126		201	AI-0003	3	Rel Demo, F	0	12,000	
1127		201	AI-0007	3	Rel Demo, F	0	7,404	
1128-1		201	AI-0005	4	Burn-In, TCPC	0	4,524	
1128-2			AI-0005	4	Rel Demo, TCVPC	0	16,296	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
1129		201	GF-0002	2	Rel Demo	0	955	> 1W
1130		201	GF-0002	36	Rel Demo	0	17,188	< 1W
1131		201	GF-0062	87	Rel Demo	0	33,617	
1132		201	GF-0002	18	Rel Demo	0	8,594	PWR > 1W
1133		201	GF-0002	4	Rel Demo	0	1,210	PWR <1W
1134		202	GF-0002	2	Rel Demo	0	955	
1135		202	AI-0007	8	Rel Demo, F	0	19,744	
1136-1		202	AI-0005	3	Rel Demo, TCVPC	0	12,222	
1136-2			AI-0005	3	Burn-In, TCPC	0	3,393	< 1W
1137		202	GF-0002	10	Rel Demo	0	4,775	<1W
1138		202	GF-0002	86	Rel Demo	0	33,230	
1139-1		210	AI-0005	6	Rel Demo, TCVPC	0	24,444	
1139-2			AI-0005	6	Burn-In, TCPC	0	6,786	
1140-1		211	AI-0002	1	Rel Demo, A	0	2,073	
1140-2			AI-0002	1	Rel Demo, F	0	22,475	
1140-3			AI-0002	1	Rel Demo, A	0	2,693	
1141-1		211	AI-0002	5	Rel Demo, F	0	112,375	
1141-2			AI-0002	5	Rel Demo, A	0	10,367	
1141-3			AI-0002	5	Rel Demo, A	0	13,463	
1142		211	AI-0014	24	Rel Demo, E	0	3,677	LID
1143-1		211	AI-0001	6	Burn-In, TCVPC	0	4,764	
1143-2			AI-0001	6	Rel Demo, F	0	112,302	
1144-1		211	AI-0002	1	Rel Demo, F	0	22,475	
1144-2			AI-0002	1	Rel Demo, A	0	2,693	
1144-3			AI-0002	1	Rel Demo, A	0	2,073	
1145-1		211	AI-0002	S/R	Rel Demo, F	0	172,133	Qty=0 or 14, depending on configuration
1145-2			AI-0002	S/R	Rel Demo, A	0	25,054	Qty=0 or 14, depending on configuration
1145-3			AI-0002	S/R	Rel Demo, A	0	20,653	Qty=0 or 14, depending on configuration
1146-1		211	AI-0002	S/R	Rel Demo, A	0	17,328	Qty=3 or 7, depending on configuration
1146-2			AI-0002	S/R	Rel Demo, A	0	15,246	Qty=3 or 7, depending on configuration
1146-3			AI-0002	S/R	Rel Demo, F	0	25,292	Qty=3 or 7, depending on configuration

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1147		211	AI-0001	S/R	Rel Demo, F	0	53,424	Qty=0 or 3, depending on configuration
1148-1		211	AI-0002	2	Rel Demo, F	0	44,950	
1148-2			AI-0002	2	Rel Demo, A	0	5,385	
1148-3			AI-0002	2	Rel Demo, A	0	4,147	
1149-1		211	AI-0002	1	Rel Demo, A	0	2,073	
1149-2			AI-0002	1	Rel Demo, A	0	2,693	
1149-3			AI-0002	1	Rel Demo, F	0	22,475	
1150-1		211	AI-0001	S/R	Rel Demo, F	0	2,727	Qty=0 or 3, depending on configuration
1150-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
1151-1		211	AI-0002	3	Rel Demo, A	0	8,078	
1151-2			AI-0002	3	Rel Demo, F	0	54,549	
1152		211	AI-0001	S/R	Rel Demo, F	1	106,848	AI-0001/F#018;Qty=0 or 6, depending on configuration
1153		211	GF-0002	553	Rel Demo	0	224,328	
1154-1		212	AI-0002	S/R	Rel Demo, F	0	14,467	Qty=0 or 1, depending on configuration
1154-2			AI-0002	S/R	Rel Demo, A	0	1,792	Qty=0 or 1, depending on configuration
1154-3			AI-0002	S/R	Rel Demo, A	0	1,202	Qty=0 or 1, depending on configuration
1155		212	AI-0003	8	Rel Demo, F	0	32,000	
1156		212	AI-0008	5	Rel Demo, F	0	28,325	
1157-1		212	AI-0001	3	Rel Demo, F	0	56,151	
1157-2			AI-0001	3	Burn-In, TCVPC	0	2,382	
1158		212	GF-0002	56	Rel Demo	0	22,717	
1159		220	AI-0010	2	Rel Demo, F	0	7,534	
1160		220	AI-0010	1	Rel Demo, F	0	3,767	
1161-1		220	AI-0005	8	Rel Demo, TCVPC	0	32,240	
1161-2			AI-0005	8	Burn-In, TCPC	0	8,192	
1162-1		220	AI-0005	4	Burn-In, TCPC	0	4,524	
1162-2			AI-0005	4	Rel Demo, TCVPC	0	16,296	
1163-1		220	AI-0005	1	Rel Demo, TCVPC	0	7,372	
1163-2			AI-0005	1	Burn-In, TCPC	0	1,945	
1164-1		220	AI-0005	2	Rel Demo, TCVPC	0	8,148	
1164-2			AI-0005	2	Burn-In, TCPC	0	2,262	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO. FAIL	PART HOURS	REMARKS
1165		220	AI-0005	6	Rel Demo, TCVPC	0	23,298	
1166		220	AI-0005	6	Burn-In, TCPC	1+(9)	8,718	AI-0005/F#001, 002*-010*
1167		221	AI-0015	1	Rel Demo, F	0	9,200	Equiv to SOD chip #12; set of 4 matched, chip hours
1168		221	AI-0016	8	Rel Demo, F	0	24,208	
1169-1		221	AI-0002	1	Rel Demo, F	0	22,475	
1169-2			AI-0002	1	Rel Demo, A	0	2,073	
1169-3			AI-0002	1	Rel Demo, A	0	2,693	
1170-1		221	AI-0002	S/R	Rel Demo, A	0	2,404	Qty=0 or 2, depending on configuration
1170-2			AI-0002	S/R	Rel Demo, F	0	28,934	Qty=0 or 2, depending on configuration
1170-3			AI-0002	S/R	Rel Demo, A	0	3,585	Qty=0 or 2, depending on configuration
1171-1		221	AI-0002	S/R	Rel Demo, A	0	872	Qty=0 or 1, depending on configuration
1171-2			AI-0002	S/R	Rel Demo, A	0	900	Qty=0 or 1, depending on configuration
1171-3			AI-0002	S/R	Rel Demo, F	(1)	8,008	AI-0002/F#002*,Qty=0 or 1, depending on configuration
1172		221	AI-0015	2	Rel Demo, F	0	8,560	
1173		221	AI-0015	1	Rel Demo, F	0	4,280	
1174		221	AI-0014	68	Rel Demo, E	0	10,418	Isolated collector
1175-1		221	AI-0001	6	Burn-In, TCVPC	0	4,764	
1175-2			AI-0001	S/R	Rel Demo, F	0	5,454	Qty=0 or 6, depending on configuration
1176-1		221	AI-0008	1	Rel Demo, F	0	5,665	SOD chip #91
1176-2			AI-0010	4	Rel Demo, F	0	15,068	SOD chip #91
1177		221	AI-0015	1	Rel Demo, F	(1)	7,928	AI-0015/F#004*,chip hours, power quad
1178-1		221	AI-0002	3	Rel Demo, F	0	54,599	
1178-2			AI-0002	3	Rel Demo, A	0	6,220	
1178-3			AI-0002	3	Rel Demo, A	0	8,078	
1179		221	AI-0002	3	Rel Demo, A	0	6,220	
1180		221	GF-0002	126	Rel Demo	0	51,113	
1181		222	GF-0002	42	Rel Demo	0	17,038	
1182		230	GF-0001	2	Rel Demo, A	0	3,188	
1183		230	AI-0012	3	Burn-In, TCVPC	1	10,678	AI-0012/F#005

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1184		230	AI-0014	198	Rel Demo, E	0	30,334	FET used as diode
1185-1		230	AI-0005	10	Burn-In, TCPC	0	11,310	
1185-2			AI-0005	10	Rel Demo, TCVPC	0	40,740	
1186		230	AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1187-1		231	AI-0002	20	Rel Demo, A	0	53,850	
1187-2			AI-0002	20	Rel Demo, F	0	449,498	
1187-3			AI-0002	20	Rel Demo, A	0	41,466	
1188-1		231	AI-0002	2	Rel Demo, A	0	4,146	
1188-2			AI-0002	2	Rel Demo, A	0	5,385	
1188-3			AI-0002	2	Rel Demo, F	0	44,950	
1189-1		231	AI-0002	1	Rel Demo, A	0	2,073	Dual gate
1189-2			AI-0002	1	Rel Demo, F	0	22,475	Dual gate
1189-3			AI-0002	1	Rel Demo, A	0	2,693	Dual gate
1190		231	GF-0003	2	Rel Demo, A-1	0	5,961	
1191		231	GF-0003	1	Rel Demo, A-1	0	2,980	
1192-1		232	AI-0002	4	Rel Demo, A	0	8,292	
1192-2			AI-0002	4	Rel Demo, A	0	10,770	
1192-3			AI-0002	4	Rel Demo, F	0	89,900	
1193-1		232	AI-0002	1	Rel Demo, A	0	2,693	
1193-2			AI-0002	1	Rel Demo, F	0	22,475	
1193-3			AI-0002	1	Rel Demo, A	0	2,073	
1194-1		240	AI-0002	1	Rel Demo, F	0	18,182	
1194-2			AI-0002	1	Rel Demo, A	0	2,693	
1194-3			AI-0002	1	Rel Demo, A	0	2,073	
1195-1		240	AI-0005	1	Burn-In, TCPC	0	1,131	
1195-2			AI-0005	1	Rel Demo, TCVPC	0	4,074	
1196		251	AI-0003	1	Rel Demo, F	2	4,000	AI-0003/F#001, 005;12 watt dual emitter
1197-1		261	AI-0002	S/R	Rel Demo, A	0	42,819	Chip hours;Qty=6, 9, depends on configuration
1197-2			AI-0002	S/R	Rel Demo, F	0	356,548	Chip hours;Qty =6, 9, depends on configuration
1197-3			AI-0002	S/R	Rel Demo, A	0	43,064	Chip hours;Qty =6, 9, depends on configuration
1198-1		262	AI-0002	1	Rel Demo, F	0	44,950	Chip hours
1198-2			AI-0002	1	Rel Demo, A	0	4,146	Chip hours
1198-3			AI-0002	1	Rel Demo, A	0	5,385	Chip hours

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1199-1		265	AI-0002	S/R	Rel Demo, F	0	94,200	Chip hours;Qty=0, 4, depends on configuration
1199-2			AI-0002	S/R	Rel Demo, A	0	9,570	Chip hours;Qty =0, 4, depends on configuration
1199-3			AI-0002	S/R	Rel Demo, A	0	14,446	Chip hours;Qty =0, 4, depends on configuration
1200		265	AI-0014	9	Rel Demo, E	0	5,515	Quad, matched; power (NPN), chip hours
1201		265	AI-0014	18	Rel Demo, E	0	11,030	Matched quad, chip hours
1202-1		265	AI-0001	2	Rel Demo, F	0	149,736	Chip hours
1202-2			AI-0001	2	Burn-In, TCVPC	0	6,352	Chip hours
1203		270	AI-0014	4	Rel Demo, E	0	613	Part hours
1204		270	AI-0014	2	Rel Demo, E	0	306	Part hours
1205		270	AI-0015	2	Rel Demo, F	3	8,560	AI-0015/F#001, 005, 007; part hours;two chips, power, PNP-in/NPN-out
1206		271	AI-0015	1	Rel Demo, F	3	4,280	AI-0015/F#002, 003, 006;part hours; two chips, power
1207-1		302	AI-0002	1	Rel Demo, A	0	2,073	
1207-2			AI-0002	1	Rel Demo, A	0	2,693	
1207-3			AI-0002	1	Rel Demo, F	0	22,475	
1208-1		303	NS-0001	4	Burn-In,W. Vibr	0	21,248	Chip hours; matched schottky quad
1208-2			NS-0001	4	Naval, Sheltered	0	836,560	Chip hours, matched schottky quad
1208-3			NS-0001	4	Rel Demo, A-1	0	130,096	Chip hours, matched schottky quad
1208-4			NS-0001	4	Oper. Burn-In	0	170,256	Chip hours, matched schottky quad
1209-1		303	AI-0002	5	Rel Demo, A	0	41,466	Chip hours, quad schottky barrier diode
1209-2			AI-0002	5	Rel Demo, F	2+(1)	449,500	AI-0002/F#001*,005, 006;chip hours, quad schottky barrier diode
1209-3			AI-0002	5	Rel Demo, A	0	53,850	Chip hours, quad schottky barrier diode
1210-1		303	AI-0002	6	Rel Demo, F	0	134,849	
1210-2			AI-0002	6	Rel Demo, A	0	16,155	
1210-3			AI-0002	6	Rel Demo, A	0	12,440	
1211-1		303	AI-0002	3	Rel Demo, F	0	67,425	
1211-2			AI-0002	3	Rel Demo, A	0	6,220	
1211-3			AI-0002	3	Rel Demo, A	0	8,078	
1212-1		303	AI-0002	25	Rel Demo, A	0	51,833	
1212-2			AI-0002	25	Rel Demo, F	1	561,873	AI-0002/F#003
1212-3			AI-0002	25	Rel Demo, A	0	67,313	

ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1213-1		303	AI-0002	1	Rel Demo, F	0	22,475	
1213-2			AI-0002	1	Rel Demo, A	0	2,693	
1213-3			AI-0002	1	Rel Demo, A	0	2,073	
1214		303	AI-0014	26	Rel Demo, E	0	3,983	
1215		303	GF-0002	28	Rel Demo	0	12,191	
1216		304	AI-0014	3	Rel Demo, E	0	460	
1217		304	AI-0014	6	Rel Demo, E	0	919	
1218		304	AI-0003	4	Rel Demo, F	0	16,000 8,292	
1219		304	AI-0003	4	Rel Demo, F	0	16,000	
1220-1		304	AI-0002	4	Rel Demo, A	0	10,770	
1220-2			AI-0002	4	Rel Demo, A	0	8,292	
1220-3			AI-0002	4	Rel Demo, F	0	89,900	
1221		304	GF-0003	1	Rel Demo, A-1	0	55,271	
1222-1		304	GF-0003	1	Rel Demo, A-1	0	55,271	
1222-2			GF-0003	1	Ground, Fixed	0	172,971	
1223		309	AI-0003	6	Rel Demo, F	0	24,000	
1224-1		309	AI-0002	1	Rel Demo, F	0	22,475	
1224-2			AI-0002	1	Rel Demo, A	0	2,693	
1224-3			AI-0002	1	Rel Demo, A	0	2,073	
1225		309	AI-0013	1	Rel Demo, F	0	150	Proprietary, VAS special
1226		310	AI-0003	1	Rel Demo, F	0	4,000	
1227-1		310	AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
1227-2			AI-0013	1	Rel Demo, F	0	150	Four vendors, vendor specials
1227-3			AI-0013	1	Rel Demo, F	0	150	Two vendors, vendor specials
1228-1		520	AI-0002	S/R	Rel Demo, F	0	8,008	Qty=0 or 1, depending on configuration
1228-2			AI-0002	S/R	Rel Demo, A	0	872	Qty=0 or 1, depending on configuration
1228-3			AI-0002	S/R	Rel Demo, A	0	900	Qty=0 or 1, depending on configuration
1229-1		520	AI-0002	S/R	Rel Demo, A	0	900	Qty=0 or 1, depending on configuration
1229-2			AI-0002	S/R	Rel Demo, F	0	8,008	Qty=0 or 1, depending on configuration
1229-3			AI-0002	S/R	Rel Demo, A	0	872	Qty=0 or 1, depending on configuration
1230		520	GF-0001	S/R	Rel Demo, A	0	16,063	Qty=0 or 4, depending on configuration



ENTRY NO	PART NUMBER	DEVICE TYPE CODE	EQUIPMENT USED ON	QTY PER SYS	DATA TYPE	NO FAIL	PART HOURS	REMARKS
1231		520	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1232-1		520	AI-0002	S/R	Rel Demo, A	0	1,202	Qty=0 or 1, depending on configuration
1232-2			AI-0002	S/R	Rel Demo, A	0	1,792	Qty=0 or 1, depending on configuration
1232-3			AI-0002	S/R	Rel Demo, F	(1)	14,467	AI-0002/F#008*;Qty=0 or 1, depending on configuration
1233-1		520	AI-0002	S/R	Rel Demo, F	0	14,467	Qty=0 or 1, depending on configuration
1233-2			AI-0002	S/R	Rel Demo, A	0	1,202	Qty=0 or 1, depending on configuration
1233-3			AI-0002	S/R	Rel Demo, A	0	1,792	Qty=0 or 1, depending on configuration
1234		520	AI-0013	2	Rel Demo, F	0	300	Two vendors, vendor specials
1235		520	AI-0013	4	Rel Demo, F	0	600	Proprietary, TII special
1236		600	AI-0013	1	Rel Demo, F	0	150	Proprietary, MOTA special
1237		611	GF-0002	101	Rel Demo	0	44,313	
1238		611	GF-0002	14	Rel Demo	0	5,881	
1239		621	GF-0002	14	Rel Demo	0	5,679	
1240		622	GF-0002	7	Rel Demo	0	2,941	
1241		630	GF-0005	1	Rel Demo, A-1	0	5,251	
1242		630	GF-0002	24	Rel Demo	0	10,541	
1243		640	AI-0016	28	Rel Demo, F	0	84,728	7-segment
1244		640	AI-0016	10	Rel Demo, F	0	30,260	16-segment
1245		640	AI-0016	7	Rel Demo, F	0	21,182	Decimal display

DISCRETE SEMICONDUCTOR RELIABILITY

TRANSISTOR/DIODE DATA

Section 3

FAILURE ANALYSIS DATA

3.1 - Failure Event Tabulation

3.2 - Failure Classification Summary

PRECEDING PAGE NOT FILMED
BLANK

Section 3.1

FAILURE EVENT TABULATION

This section contains the detail failure information for the failures reported in Sections I and II. The failures have been assigned failure event numbers for reference purposes. The failure event number is simply the equipment designation followed by a failure number. For example: AI-0001/F # 001 should be interpreted as a failure event on AI-0001 given the failure number one. (Note that the numbers were assigned randomly by RAC and do not signify a sequence). Knowing the failure event number, the detailed failure description is found in the tabulation where the failure event entries are listed in alphanumeric order. The failure event numbers which have asterisks are events which most likely were not caused by the part, but the failure analysis report did not conclude that the part was not at fault. Discrete semiconductor failures which were conclusively identified as caused by other than the part are not shown.

The typical information given for a failure event includes part number, part manufacturer, date code, failure indicator, constituent failure mode, mechanism, cause, stress activation, time to failure, failure date and pertinent corrective action.

PRECEDING PAGE NOT FILMED
BLANK

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATA CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0001 REL DEMO					
AI-0001/F#001	JTX1N4148	ITT	----	Short	Die misaligned and anode stud tilted; vendor workmanship. Failed November 1974 during 7th cycle at -54°C
AI-0001/F#002	(1N3647) 3Ø Bridge Rect S3BR30	SEMTECH	----	Short	Metoxilite case cracks from potting process in all 6 diodes; vendor workmanship. Failed November 1974 during 4th cycle at +71°C
AI-0001/F#003	JTX2N2907A	ITT	----	Short	Localized thermal runaway remelt, direct collector to emitter short; Failed during 3rd cycle at -54°C in December 1974
AI-0001/F#004*	JTX2N3442	SENSITRON	----	Short	Severe thermal overstress in emitter finger area reflowed solder; suspect AC line transient (EOS). Failed December 1974 during 7th cycle at +71°C. Circuit redesigned in August 1976.
AI-0001/F#005*	JTX2N3442	SENSITRON	----	Short	Remelt near emitter contact, localized heating; suspect AC line transients (EOS). Failed April 1975 during 1st cycle at +71°C. Engineering change proposal for circuit card assy. in August 1976
AI-0001/F#006	1N3909R+	SOLITRON	----	Short	Excess die attach material at die header; vendor workmanship. Failed April 1975 during 8th cycle at -54°C
AI-0001/F#007	JTX2N3585	RCA	---	Short	Metalization bridge at B-E junction; vendor workmanship. Failed April 1975 during 2nd cycle at +71°C
AI-0001/F#008*	JTX1N4148	ITT	----	Short	Severe cracks in die, suspect excess current. Failed May 1975 during 5th cycle at +71°C (Reference AI-0001/F#009). Confirmed EOS in August 1976
AI-0001/F#009*	JTX2N2222A	ITT	----	Short	E-B resistive junction breakdown, suspected EOS. Failed May 1975 during 5th cycle at +71°C (Reference AI-0001/F#008). Confirmed EOS in August 1976
AI-0001/F#010	J2N3439	RCA	----	Open	Base wire break at protective passivation, mechanical fatigue. Failed May 1975 during 1st cycle at +71°C

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0001 REL DEMO (cont'd)					
AI-0001/F#011	JTX1N4148	ITT	----	Open (Intermittent)	Failure of cathode pressure bond. Failed June 1975 during 8th cycle at +71°C
AI-0001/F#012	1N5630A+	GENERAL SEMI	----	Shorted	Failed July 1975 during 6th cycle at +71°C
AI-0001/F#013	JTX2N2222A	ITT	----	Shorted	Thermal runaway, causing C-E short. Failed July 1975 during 1st cycle at -54°C
AI-0001/F#014	JTX2N2222A	ITT	----	Short	All junction resistive; E-B breakthrough with emitter metalization heating. Failed September 1975 during 3rd cycle at +71°C
AI-0001/F#015	J2N3442	----	----	Degraded	C-E leakage; failed September 1975 during temperature cycling in repair activity
AI-0001/F#016	J2N3442	RCA	7405	Shorted	C-E resistive short due to cracked silicon chip; vendor workmanship. Failed December 1975 during 6th cycle at +71°C
AI-0001/F#017*	(2N4407)+	MOTOROLA	----	Short	C-E short, suspect EOS. Failed May 1976 during 3rd cycle at +71°C. Circuit design change proposed
AI-0001/F#018	NPN, Low Power Transistor	MOTOROLA	----	Intermittent Open, B-E	Poor step coverage of emitter fingers; vendor workmanship. Failed September 1976 during 3rd cycle at +71°C. In analysis, operates at ambient, opens during temp. cycle
AI-0001 BURN-IN					
AI-0001/F#019	JTX1N3031B	NAE, Inc.	----	Voltage Breakdown	Crack in chips, voids in die attach, no evidence of EOS; vendor workmanship. Failed August 1976 during 6th cycle at +71°C
AI-0002 REL DEMO					
AI-0002/F#001*	Quad Schottky Barrier Diode	SOLITRON	6905	Open	External lead broken, suspect operator damaged during installation, failed April 1971
AI-0002/F#002*	NPN, High Power	RCA	6910	Shorted E-C	Suspect EOS failed May 1971
AI-0002/F#003	Schottky Barrier Diode	SOLITRON	----	Open (Erratically)	Whisker misaligned, failed June 1971
AI-0002/F#004*	JTX2N2907A	MOTOROLA	6750C	Unknown	Destroyed in subsequent test, evidence confounded; unknown cause; removed September 1971
AI-0002/F#005	Quad Schottky Barrier Diode	SOLITRON	6905	Shorts at High Temp	Tilted pellet under chip, vendor workmanship, failed November 1971

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0002 REL DEMO (cont'd)					
AI-0002/F#006	Quad Schottky Barrier Diode	SOLITRON	6905	Degraded High V_F	Eutectic reflowed experienced excess power and subsequent short; failed December 1971
AI-0002/F#007	JTX1N970B	TRW	6902	Open (Intermittent)	Epoxy case; insufficient eutectic stud to chip; failed December 1971
AI-0002/F#008*	Silicon Controlled Switch	SSPI	6942	Short Gate-Cathode	Suspect EOS; failed December 1970; reference AI-0002/F#009* below which failed concurrently
AI-0002/F#009*	JTX1N758A	CDC	6811	Shorted	Suspect EOS; failed December 1970; reference AI-0002/F#008* above which failed concurrently
AI-0002/F#010	JTX2N2907A	MOTOROLA	6750	Open	TC Wedge base bond at chip; evidence of multiple bonding attempts; vendor workmanship; failed February 1971
AI-0002/F#011*	JTX1N943B	SEMCOR	6913A	Open	Broken glass case, suspect handling damage, failed February 1971
AI-0002/F#012	JTX2N2857	RCA	6711	Open	Base metalization at scratch near bond, vendor workmanship, failed February 1971
AI-0002: NO POST REL DEMO 25°C or 55°C FAILURES					
AI-0003 REL DEMO					
AI-0003/F#001	NPN, 12 Watt RF Dual Emitter	POWER HYBRIDS, INC.	---	Open E-B	Open base metalization and ballast resistors led to localized high current & thermal breakdown, power stress is at 20% voltage stress is at 90%; failed October 1973 during warm-up at -54°C, proposed alternate device with higher rate V_{CE} and gain
AI-0003/F#002	JTX1N3023B	TRW	---	Degraded	Separation of die from mount; stress is 30% at quiescent and 75% at 80% modulation signal; failed October 1973 at -54°C
AI-0003/F#003	2N2369	MOTOROLA	---	Open	Overbonding at terminal post activated by thermal and vibration stresses; vendor workmanship; failed November 1973 at -54°C
AI-0003/F#004	2N3740	FAIRCHILD	---	Open E-B	Plastic appearing die overcoat mechanically stressed bond; power stress is 30%, voltage stress is 50%; failed November 1973 at -54°C
AI-0003/F#005	NPN, 12 Watt, RF Dual Emitter	POWER HYBRIDS, Inc.	---	---	Considered a pattern failure reference AI-0003/F#001 above; failed November 1973 at -54°C; replaced with higher rated V_{CE} and gain transistor at accumulated time of 3502 hours

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0003 REL DEMO (cont'd)					
AI-0003/F#006	2N3740	FAIRCHILD	---	Open	Base bond broke at crack in die overcoat; considered pattern failure reference AI-0003/F#004 above; failed December 1973 at -54°C; proposed corrective action; use JTX2N3740
AI-0004: IN-HOUSE CHECKOUT					
AI-0004/F#001*	2N3052+	T.I.	6852A	---	Marginal design problem - older part passed noise spike while newer date code 7206A did not; analyzed September 1972, power stress <10% with case temp= 73°C
AI-0004/F#002	1N3154A+	DICKSON	7404	Degraded	Conducts at 5V, high temperature; failed May 1975 power stress 23% with case temp=77°C
AI-0004/F#003	JTX1N3827A	DICKSON	7139C	Open	Anode spring to chip, poor solder wetting; vendor workmanship; failed September 1972 in 5th cycle a few seconds after power applied. Power stress 28% with case temp=117°C
AI-0004 FIELD					
AI-0004/F#004	JTX2N2222A	---	---	---	Verified cause unknown (3 failures)
AI-0004/F#005	(2N2219/2N2905)+ Complimentary pair Flat Pack	---	---	---	Verified cause unknown (2 failures)
AI-0004/F#006	2N3421+	---	---	---	Verified cause unknown (2 failures)
AI-0004/F#007	(2N2219)+ Dual Flat Pack	---	---	---	Verified cause unknown
AI-0004/F#008	2N5003+	---	---	---	Verified cause unknown (14 failures)
AI-0004/F#009	2N5333+	---	---	---	Verified cause unknown (2 failures)
AI-0004/F#010	2N3791+	---	---	---	Verified cause unknown
AI-0004/F#011	JTX1N4942	---	---	---	Verified cause unknown
AI-0004/F#012	1N4148	---	---	---	Verified cause unknown

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0005 BURN-IN (4FF)					
AI-0005/F#001	NPN, Lamp Driver Low Profile TO5	TRANSITRON	7205	Open at -55°C	Bond at emitter terminal; failed October 1972 during 1st cycle at -55°C
AI-0005/F#002*	NPN, Lamp Driver Low Profile TO5	TRANSITRON	7208	---	Suspect EOS in trouble shooting, probable cause low gain at -55°C, failed September 1972 during 2nd cycle at -55°C
AI-0005/F#003* - 0010*	NPN, Lamp Driver Low Profile TO5	TRANSITRON	Noted	Low -55°C HFE	Marginal design - changed SCD to specify -55°C HFE

Failure Event	Date Code	Failed at -55°C During	Failure Date
AI-0005/F#003	7204	1st Cycle	Aug 1972
4	7203	3rd Cycle	Sept 1972
5	7204	4th Cycle	Sept 1972
6	7208	2nd Cycle	Dec 1972
7	7204	3rd Cycle	Jan 1973
8	7204	1st Cycle	Mar 1973
9	7204	1st Cycle	Mar 1973
10	7204	2nd Cycle	Mar 1973

AI-0005/F#011	(2N4066)	G.I.	7202	Short	Oxide defect under drain metalization; failed November 1972 during 2nd cycle at -55°C
AI-0005/F#012	JAN2N1777A	TRANSITRON	7225	Short	Cathode to anode; failed March 1973 during 2nd cycle at -55°C
AI-0005/F#013	2N3791	MOTOROLA	---	Open E-B	Failed October 1972 during 4th cycle at +55°C
AI-0005/F#014	JTX1N914	---	---	Opens at -55°C	Failed March 1973 during 1st cycle at -55°C
AI-0005/F#015	2N2223	RAYTHEON	---	Intermittent	Failed May 1973 during 3rd cycle at -55°C
AI-0005/F#016	JTX1N3827A	DICKSON	7139C	Open (Intermittent)	Bad lot, poor header and spring adhesion to die; failed June 1972 during 1st cycle at -55°C power stress 10%
AI-0005/F#017	JTX1N3827A	DICKSON	7139C	Open (Intermittent)	Same as AI-0005/F#016; failed September 1972 during 4th cycle
AI-0005/F#018	JTX2N2222	NSC	7206	Short	Bond wire shorting to scribe line; improper lead dress; failed July 1973 during 4th cycle at +55°C

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0005 REL DEMO (cont'd)					
AI-0005/F#019	(JTX2N1777A)	TRANSITRON	7108	Degraded	Excess reverse gate current, pores on chip surface; failed May 1973 during 11th cycle at +25°C
AI-0005/F#020*	JAN2N1777A	TRANSITRON	---	Short	Suspect EOS; failed December 1972 during 8th cycle at +55°C
AI-0005/F#021	2N3791	MOTOROLA	7229	Open	Open bond at emitter terminal, failed February 1973 during 12th cycle at +55°C
AI-0005/F#022	JTX1N3827A	DICKSON	7139C	Open	Same as AI-0005/F#016 failed June 1972 during 11 cycle at -25°C
AI-0005/F#023	1N829	MICROSEMICONDUCTOR	7110	---	Verified; failed July 1972 during 7th cycle at +55°C
AI-0005/F#024	JTX1N3827A	DICKSON	7139C	Open	Same as AI-0005/F#016; failed August 1972 during 1st cycle at -25°C
AI-0005/F#025	2N3716	MOTOROLA	7208	---	Bond to emitter post defective; failed January 1973 during 5th cycle at +55°C
AI-0005/F#026	JTX2N2907A	RAYTHEON	7103	Degraded	Base to collector leakage; thermally defaced metalization over oxide next to emitter finger; failed July 1973 during 3rd cycle at +55°C
AI-0006 REL DEMO					
AI-0006: NO FAILURES					
AI-0007 REL DEMO					
AI-0007/F#001	JTX2N2432A	---	---	Degraded	Emitter leakage; failed July 1973 at -40°C during initial check cycle
AI-0008 REL DEMO					
AI-0008/F#001	JTX2N3019	NSC	7115A	Degraded	High I_{CBO}; channeling, failed February 1973 at +71°C
AI-0008/F#002	NPN, Power (SDT 7603)	SOLITRON	7130	Open	Both emitter post bonds open; vendor workmanship; failed February 1973 at +71°C

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0010 REL DEMO					
AI-0010/F#001*	JTX2N2905A	T.I.	---	Degraded	High I_{CBO}; insufficient power rating for application, redesigned using 2N4404; misapplication; failed May 1973 after 84 hours test time
AI-0010/F#002	JTX2N2222A	TRANSITRON	7135	Short	Base wire scribe line short; vendor workmanship; failed May 1973 after 147 hours test time
AI-0010/F#003	JTX2N2222A	TRANSITRON	---	Intermittent	Intermittent base connection, distorted internal wire due to mishandling during manufacture; vendor workmanship; failed July 1973 after 372 hours test time
AI-0010/F#004*	JTX2N2905A	---	---	---	Same as AI-0010/F#001*; failed August 1973
AI-0010/F#005	JTX2N2222A	T.I.	7307A	Open	Open emitter ball bond; failed September 1974 after 556 hours test time but during verification cycle
AI-0011 REL DEMO					
AI-0011/F#001	JTX2N3055	SENSITRON	7138	Degraded	B-E and C-B junctions were present, but BV_{CBO} and BV_{CEO} showed high resistive shorts, coating on chip cracked, exact cause not determined; failed on S/N0008 at ambient and ETI reading of 223 hours
AI-0011/F#002	JTX2N3996	PIRGO	7216	Short	Resistively shorted C-B and C-E, zero ohm short E-B, located area of emitter with molten metalization, cross-sectioning did not detect voids between the BeO and chip. Failed in S/N0009 December 1972 at ambient and ETI reading 230 hours
AI-0012 BURN-IN					
AI-0012/F#001*	Transistor	---	---	---	Verified cause of failure unknown (2 failures). Devices failed at +25°C. Suspect EOS. Failed July 1974
AI-0012/F#002	J1N914+	---	---	Degraded	Troubleshooting revealed diode was leaky. Failed December 1975 at +55°C
AI-0012/F#003*	J1N3612	---	---	---	Diode destroyed. Cause of failure could not be determined. Failed July 1974 at +25°C

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0012 BURN-IN (cont'd)					
AI-0012/F#004*	(2N2219)	---	---	---	Internal component failure due to overstress. Failed February 1976 at +55°C
AI-0012/F#005	TIS25	TII	---	Intermittent	Field effect transistor fails at high temperature. Failed December 1975 at +55°C
AI-0012/F#006*	JTX2N930	---	---	---	Component electrically overstressed but no external circuit problems could be associated with failure. Failed March 1976 at +55°C
AI-0012/F#007	2N918+	---	---	Open	Open E to B. High emitter currents fused emitter metal. Emitter open due to excessive V_{CE}. Vendor workmanship. Failed November 1974 at =25°C
AI-0012/F#008	2N918+	---	---	Short	Internal B-E short. Failed August 1975 at +55°C
AI-0012/F#009	Diode	---	---	Short	Crystal diode shorted. No other circuit problems existed. Failed March 1976 at +55°C
AI-0012/F#010	SCR	---	---	---	Internal component failure due to faulty manufacture of internal lead bond. Failed February 1976 at +55°C
AI-0013 REL DEMO					
AI-0013: NO FAILURES					
AI-0014 REL DEMO					
AI-0014/F#001	SSL-55L (LED)	GENERAL ELECTRIC	---	Open	Internal lead fractured by epoxy expansion, excessive epoxy cover of gold bondwire; vendor workmanship. Failed January 1975 during 6th cycle at +90°F (Reference AI-0014/F#002)
AI-0014/F#002	SSL-55L (LED)	GENERAL ELECTRIC	---	Open	Post bond marginal due to pressure point, internal lead fractured by epoxy expansion per AI-0018/F#001; vendor workmanship. Failed January 1975 during 9th cycle at +90°F

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0015 REL DEMO					
AI-0015/F#001	Darlington Power Xistor PNP-Input/ NPN-Output Two Chips, TO3	SOLITRON	7207	Open B-E	Output chip, open base, 5 mil Al us bond to 300 µinch Au plated BeO pad, cause stated was under-bonding, corrective action sited was changing to mono-metallic Al bonding systems; ETI 340 hrs (S/N 9) cold start failure at -65°F on December 1972 during non count time
AI-0015/F#002	Darlington Power Xistor, Two NPN Chips, TO3	SOLITRON	7207	Open	Open bond, failed 10 minutes into evaluation cycle #3 at -65°F; ETI 982 hrs (S/N 9) (Reference AI-0015/F#001 above regarding cause and corrective action)
AI-0015/F#003	Darlington Power Xistor, two NPN Chips, TO3	SOLITRON	7246	Open	Open collector lead; under-bonded Al us bond at Au plated BeO pad (reference AI-0015/F#001 above). Interim corrective action screen: 50 cycles, -55°C/+140°C; failed April 1973 at -65°F cold start with ETI 1240 hours (S/N 9)
AI-0015/F#004*	Power Quad Xistor	SOLITRON	7232	Short/Open	EOS, all chips shorted C-E, three with collector leads fused open; two JTX2N2222 were removed as secondary failures, this incident non relevant since quad was replaced by discretes and equipment was not to latest engineering level (implies design related overstress) failed June 1973 cold start at -65°F on the 214th cycle, ETI 1803 hours (S/N 9)
AI-0015/F#005	Darlington Power Xistor, PNP-Input/ NPN-Output Two Chips, TO3	SOLITRON	7207	Open	Open output chip base wire bond at BeO pad; underbonded - aggravated by internal coating, Corrective action: monometallic bonds except at pins, 50 temp. cycles, removed internal coating. Effective 7319, ETI 522 hours (S/N 15). Failed June 1973 at +160°F on 48th cycle. (Reference AI-0015/F#001)
AI-0015/F#006	Darlington Power Xistor Two NPN Chips, TO3	SOLITRON	7207	Open (Intermittent)	Intermittent Al us bond at BeO pad, (reference AI-0015/F#001, 2, 3 & 5), failed June 1973 at -65°F, ETI 706 hours (S/N 15) on 79th cycle
AI-0015/F#007	Darlington Power Xistor, PNP-Input/ NPN-Output Two Chips, TO3	SOLITRON	7207	Degraded	Four high resistance wire bonds at BeO pad, underbonded, (reference AI-0015/F#001), failed November 1973 at +160°F, ETI 1448 (S/N 15)

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
AI-0016 REL DEMO					
AI-0016/F#001	JTX2N3716	---	---	---	Failed March 1975 after 125 hours. Verified, cause of failure unknown
AI-0016/F#002	JTX2N4948	---	---	---	Failed May 1975 after 975 hours. Verified, cause of failure unknown
AI-0017 REL DEMO					
AI-0017/F#001	Transistor	---	---	---	Destroyed during removal, unable to analyze. Failed April 1973 after approx. 300 hours
AI-0017/F#002	2N3439	---	---	Open	Failed April 1973 after approx. 250 hours of Rel Demo testing
AI-0017/F#003*	2N6213	---	---	Open	Electrical Overstress - Power transient; interruption of 400 cycle primary power from test set caused surge. Failed June 1973
AU-0001 REL DEMO					
AU-0001/F#001	2N3737+	MOTOROLA	---	Open	This failure indicator applies to 9 transistors. No further failure classification was performed
AU-0002 REL DEMO					
AU-0002/F#001	JTX2N1711	FSC	---	Open	Emitter bond at chip open failed September 1973 during the 249th cycle
GF-0001 REL DEMO					
GF-0001/F#001	2N4922	---	---	Open	Mechanical break of base wire above die bond; mechanically stressed from thermal expansion of encapsulant failed September 1970 immediately after warm-up; redesigned using 2N3716 since application could exceed max temp on warm up
GF-0002 REL DEMO					
GF-0002/F#001*	2N4170	MOTOROLA	---	Open	Device destroyed by testing before conclusive results Preliminary testing indicated proper device operation. Failed August 1975 at +78°F

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
GF-0002 REL DEMO (cont'd)					
GF-0002/F#002	JTX2N3055	T.I.	---	Open	Melted metalization and fissure visible at B-C junction. Failed August 1975 at 118°F
GF-0002/F#003	JTX2N2905A	---	---	Degraded	Leaky collector/emitter; vendor workmanship. Failed October 1975 at 121°F
GF-0003 REL DEMO					
GF-0003/F#001*	2N6277	MOTOROLA	---	Short	Destroyed at emitter junction due to excess power dissipation; suspected circuit design problem. Failed on December 1974 (Reference GF-0003/F#002) Two transistors involved. Design change January 1975
GF-0003/F#002 *	2N6277	MOTOROLA	---	Short	Electrical degradation resulting runaway; suspected circuit design problem. Failed on January 1975 (Reference GF-0003/F#001) Two transistors involved. Design change January 1975
GF-0003/F#003	J2N2222A	NSC	---	Short	Punch-through short, pinhole in oxide layer; part defect. Failed on February 1975 during repair verification cycle
GF-0003 FIELD					
GF-0003: NO FAILURES					
GF-0004 REL DEMO					
GF-0004: NO FAILURES					
GF-0005 REL DEMO					
GF-0005: NO FAILURES					
NS-0001 IN-HOUSE CHECKOUT					
NS-0001/F#001	J2N916	---	---	---	Failed May 1974 during integration with ETI reading of 29 hours
NS-0001/F#002	JTX1N4126	---	---	---	Failed June 1974 during integration with ETI reading of 30 hours

* Denotes component may not be the cause of failure

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
NS-0001 IN-HOUSE CHECKOUT (cont'd)					
NS-0001/F#003	Led 7 Segment Display (MAN-72)	MONSANTO	---	Degraded	Dim segments, failed June 1974 during integration with ETI reading of 12 hours; verified component failure
NS-0001/F#004	JTX2N2857	---	---	Open	Open emitter, crack-in metalization, electromigration, failed July 1974 during integration ETI = 68 hours
NS-0001/F#005	Led 7 Segment Display (MAN-72)	MONSANTO	---	Degraded	One segment missing; one segment dim; failed August 1974 during system burn-in; ETI = 126 hours; cause unknown
NS-0001/F#006	JTX1N3828A	---	---	Degraded	Failed August 1974 during final test; ETI = 189 hours
NS-0001/F#007	JTX2N3057A	RAYTHEON	7328	Open	Failed November 1974 during final test, ETI = 207 hours
NS-0001 QUALITY CONFORMANCE 50°C					
NS-0001/F#008	JTX2N2857	TELEDYNE	7120	Intermittent	Failed November 1974 during quality conformance test, ETI = 84 hours
NS-0001: NO REL DEMO FAILURES					
NS-0001 FIELD					
NS-0001/F#009	JTX1N5711	---	---	---	Three parts removed as "bad": two 2N916 and one 1N5711; this event is one countable failure but since the primary failures is unknown for this publication one 2N916 and one 1N5711 failures are assumed until further clarification is obtained. Failure occurred October 1974. ETI reading unknown but occurred between 418 and 1233 hours. Reference NS-0001/F#013
NS-0001/F#010	1N963B	---	---	---	Failure occurred in power supply where parts list not available yet. This event is one failure but a 2N2907A was removed as "bad" also. Since the primary failure is unknown one 1N963B and one 2N2907A failure is assumed. Failure occurred April 1975 at ETI = 1600 hours. Reference NS-0001/F#011

FAILURE EVENT	PART NUMBER OR TYPE DESCRIPTION	MANUFACTURER	DATE CODE	FAILURE INDICATOR	CONSTITUENT MODE, MECHANISM, CAUSE, STRESS ACTIVATION AND MISCELLANEOUS
NS-0001 FIELD (cont'd)					
NS-0001/F#011	2N2907A	---	---	---	See NS-0001/F#010
NS-0001/F#012	JTX2N5109	---	---	---	Five parts removed as "bad": four 2N5109 and one capacitor. Since primary failure is unknown, one 2N5109 failure is assumed until further clarification is obtained. Failure occurred May 1975. ETI reading unknown but occurred between 1233 and 3193 hours
NS-0001/F#013	J2N916	---	---	---	See NS-0001/F#009
NS-0001/F#014	2N657	---	---	---	Failure occurred in power supply where parts list not available yet. Failure occurred September 1974 at ETI = 1331 hours
NS-0002: NO FAILURES					
SF-0001 IN-HOUSE CHECKOUT					
SF-0001/F#001	1N4938+	G.E.	7034	Short (Intermittent)	Foreign carbon particle; vendor workmanship; failed June 1972 during vibration test; power stress 1%
SF-0001/F#002	JTX1N4938+	SYLVANIA	7038	Degraded	High VF; insufficient contact pressure ball to pellet; failed February 1975 at high temperature concurrently with SF-0001/F#003 below; power stress 1%
SF-0001/F#003	JTX1N4938+	SYLVANIA	7038	Degraded	High VF; insufficient contact pressure ball to pellet, failed February 1975 at high temperature concurrently with SF-0001/F#002 above; power stress 13%
SF-0001/F#004	2N2369+	T.I.	7033A	Short	Intermittent to case (collector); emitter post misaligned at seal; vendor workmanship; failed May 1972 during firs cold test after vibration; power stress 1%
SF-0001: NO FIELD CHECKOUT OR FIELD FAILURES					

Section 3.2

FAILURE CLASSIFICATION SUMMARY

(Tables 3.2-1 to 3.2-4)

The failure indicators and constituent failure modes of diodes and transistors have been classified and are shown with respect to their relative occurrence in Tables 3.2-1 to 3.2-4. It can be assumed that the percent occurrences are representative of discrete semiconductor failures in electronic equipment, since all the failures for a known operating time are included.

Table 3.2-1 DIODE FAILURE INDICATORS

FAILURE INDICATORS	QTY	%	NORMALIZED PERCENT
OPEN	9	30%	38%
AI-0001/F#011			
AI-0002/F#003,007			
AI-0004/F#003			
AI-0005/F#014,016,017,022,024			
SHORT	7	23%	29%
AI-0001/F#001,002,006,012			
AI-0002/F#005			
AI-0012/F#009			
SF-0001/F#001			
DEGRADED	8	27%	33%
AI-0001/F#019			
AI-0002/F#006			
AI-0003/F#002			
AI-0004/F#002			
AI-0012/F#002			
NS-0001/F#006			
SF-0001/F#002,003			
UNKNOWN	6	20%	
AI-0004/F#011,012			
AI-0005/F#023			
NS-0001/F#002,009,010			

Table 3.2-2 DIODE CONSTITUENT FAILURE MODES

CONSTITUENT FAILURE MODES	QTY	%	NORMALIZED PERCENT
DIE ATTACH/MATERIAL			
PRESSURE CONTACT	14	47%	78%
AI-0001/F#001,006,011			
AI-0002/F#005,006,007			
AI-0003/F#002			
AI-0004/F#003			
AI-0005/F#016,017,022,024			
SF-0001/F#002,003			
CRACKED DIE	1	3%	5.5%
AI-0001/F#019			
WHISKER ALIGNMENT	1	3%	5.5%
AI-0002/F#003			
FOREIGN PARTICLE	1	3%	5.5%
SF-0001/F#001			
PACKAGE	1	3%	5.5%
AI-0001/F#002			
UNKNOWN	12	41%	---
AI-0001/F#012			
AI-0004/F#002,011,012			
AI-0005/F#014,023			
AI-0012/F#002,009			
NS-0001/F#002,006,009,010			

Table 3.2-3 TRANSISTOR FAILURE INDICATORS

FAILURE INDICATORS	QTY	%	NORMALIZED PERCENT
OPEN	34	37%	60%
AI-0001/F#010,018			
AI-0002/F#010,012			
AI-0003/F#001,003,004,006			
AI-0005/F#001,013,021			
AI-0008/F#002			
AI-0010/F#005			
AI-00012/F#007			
AI-0015/F#001,002,003,005,006			
AI-0017/F#002			
AU-0001/F#001 (9 failures)			
AU-0002/F#001			
GF-0001/F#001			
GF-0002/F#002			
NS-0001/F#004,007			
SHORT	12	13%	21%
AI-0001/F#003,007,013,014,016			
AI-0005/F#011,018			
AI-0010/F#002			
AI-0011/F#002			
AI-0012/F#008			
GF-0003/F#003			
SF-0001/F#004			
DEGRADED	7	8%	12%
AI-0001/F#015			
AI-0005/F#026			
AI-0007/F#001			
AI-0008/F#001			
AI-0011/F#001			
AI-0015/F#007			
GF-0002/F#003			
INTERMITTENT	4	4%	7%
AI-0005/F#015			
AI-0010/F#003			
AI-0012/F#005			
NS-0001/F#008			

Table 3.2-3 Transistor Failure Indicators (cont'd)

FAILURE INDICATORS	*QTY*	*%*	*NORMALIZED PERCENT*
UNKNOWN	35	38%	---
AI-0003/F#005			
AI-0004/F#004-010 (25 failures)			
AI-0005/F#025			
AI-0016/F#001,002			
AI-0017/F#001			
NS-0001/F#001,011-014			

Table 3.2-4 TRANSISTOR CONSTIUENT FAILURE MODES

CONSTITUENT FAILURE MODES	QTY	%	NORMALIZED PERCENT
BOND	15	16%	36%
AI-0002/F#010			
AI-0003/F#003			
AI-0005/F#001,021,025			
AI-0008/F#002			
AI-0010/F#005			
AI-0015/F#001-003,005-007			
AU-0002/F#001			
SF-0001/F#004			
DIE	9	10%	21%
AI-0001/F#003,013-016			
AI-0005/F#026			
AI-0007/F#001			
AI-0011/F#001,002			
METALIZATION/BRIDGE/SCRATCH	7	8%	17%
AI-0001/F#007, 018			
AI-0002/F#012			
AI-0003/F#001			
AI-0012/F#007			
GF-0002/F#002			
NS-0001/F#004			
WIREBREAK AT OVERCOAT/ENCAPSULANT	4	4%	10%
AI-0001/F#010			
AI-0003/F#004,006			
GF-0001/F#001			
WIRE DRESS	3	3%	7%
AI-0005/F#018			
AI-0010/F#002,003			
OXIDE DEFECT	2	2%	5%
AI-0005/F#011			
GF-0003/F#003			
OXIDE CONTAMINATION	1	1%	2%
AI-0008/F#001			
PACKAGE	1	1%	2%
SF-0001/F#001			

Table 3.2-4 Transistor Constituent Failure Modes (cont'd)

CONSTITUENT FAILURE MODES	QTY	%	NORMALIZED PERCENT
UNKNOWN	50	55%	---
AI-0004/F#004-010 (25 failures)			
AI-0005/F#013,015			
AI-0012/F#005,008			
AI-0016/F#001,002			
AI-0017/F#001,002			
AU-0001/F#001 (9 failures)			
GF-0002/F#003			
NS-0001/F#001,007,008,011-014			

Appendix A DATA SOURCES

Appendix B GLOSSARY OF SYMBOLS & ABBREVIATIONS

Appendix C MANUFACTURERS' ABBREVIATIONS

Appendix D DEVICE TYPE CODE

PRECEDING PAGE NOT FILMED
BLANK

Appendix A

DATA SOURCES

General

The discrete semiconductor data in this publication was derived from written reports on reliability experience in military equipment. Except for AI-0004 and SF-0001 equipment, part lists were utilized to obtain quantity used and part type description. For AI-0004 and SF-0001 quantity used is not available, but all the equipment manufacturers' component drawings are on file and the report gives hours by part number.

Twenty-six different electronic systems were utilized to compile the data in this publication. The data sources are summarized in Table A-1.

To enable more effective utilization of the data herein, details of the source of data are provided in this appendix.

The Equipment Code Designator has been stuffed with two more zero's to permit future expansion and computer entry standardization. AI-01 in DSR-1 is now shown as AI-0001.

AI-0001, AU-0002 (formerly AI-0009) and NS-0001 have accumulated additional failure rate data since DSR-1 and it is anticipated more data will be available in the future.

New data sources added since DSR-1 are AI-0011 thru AI-0017, AU-0001, and GF-0002 thru GF-0005.

PRECEDING PAGE NOT FILMED
BLANK

Table A-1 DATA SOURCE SUMMARY

EQUIPMENT CODE APPLICATION ENVIRONMENT EQUIPMENT TYPE	DATA TYPE TEST CONDITIONS	QUALITY GRADE SCREENING FACTORS
AI-0001 Airborne, Inhabited Receiver-Transmitter	1. Burn-In, MIL-STD-781B Level F, -54°/+71°C, Vibration, PWR Cyc. 2. Rel Demo, MIL-STD-781B Level F, -54°/+71°C, Vibration, PWR Cyc.	Military Grade JTX, SCD's with screening
AI-0002 Airborne, Inhabited Radio Communications	1. Rel Demo, MIL-STD-781A Level F,-54°/+71°C Vibration, PWR Cyc. 2. Post Rel Demo 25°C 25°C, Vibration 3. Post Rel Demo 55°C 55°C, Vibration	Military Grade JTX, SCD's Screening unknown
AI-0003 Airborne, Inhabited Radio Communications	Rel Demo, MIL-STD-781B Level E, -54°C/+55°C Vibration, PWR, Cyc.	Military Grade JTX, SCD's Screening unknown
AI-0004 Airborne, Inhabited Data Processing	1. In-House Checkout -25°/+55°C Vibration, PWR Cyc. 2. Field 55° Average Case Temp	Military Grade JTX SCD's with screening

Table A-1 DATA SOURCE SUMMARY (cont'd)

EQUIPMENT CODE *APPLICATION ENVIRONMENT* *EQUIPMENT TYPE*	*DATA TYPE* *TEST CONDITIONS*	*QUALITY GRADE* *SCREENING FACTORS*
AI-0005 Airborne, Inhabited Inertial Navigation Set	1. Burn-In (4FF) -55°/+55°C PWR Cyc. 2. Rel Demo -25°/+55°C Vibration, PWR Cyc.	Military Grade JTX, JAN, SCD's with & without screening
AI-0006 Airborne, Inhabited Altitude Indicator	Rel Demo, MIL-STD-781B, Level F, -54°/+71°C	Military Grade All JTX
AI-0007 Airborne, Inhabited Signal Data Recorder	Rel Demo, MIL-STD-781B, Level F, -54°/+71°C Vibration, PWR Cyc. -40°C ON	Military Grade JTX, SCD's with screening
AI-0008 Airborne, Inhabited Air Data Computer	Rel Demo, MIL-STD-781B, Level F, -54°/+71°C Vibration, PWR Cyc.	Military Grade JTX, SCD's screening unknown
AI-0009 (Deleted) See AU-0002	---	---
AI-0010 Airborne, Inhabited Indicator Group	Rel Demo, MIL-STD-781B, Level F, -54°/+71°C Vibration, PWR Cyc. -40°C ON	Military Grade JTX, SCD's screening unknown

Table A-1 DATA SOURCE SUMMARY (cont'd)

EQUIPMENT CODE APPLICATION ENVIRONMENT EQUIPMENT TYPE	DATA TYPE TEST CONDITIONS	QUALITY GRADE SCREENING FACTORS
AI-0011 Airborne, Inhabited Interference Blanker Set	Rel Demo, MIL-STD-781B Level F, -54°/+71°C Vibration, PWR Cyc.	Military Grade All JTX
AI-0012 Airborne, Inhabited Search Radar Set	Burn-In -25°/+55°C Vibration, PWR Cyc.	Military Grade JTX, JAN, SCD's Screening unknown
AI-0013 Airborne, Inhabited Radar Set	Rel Demo, MIL-STD-781B Level F, -54°/+71°C Vibration, PWR Cyc.	Military Grade JTX, SCD's Screening unknown
AI-0014 Airborne, Inhabited Data Processing Group	Rel Demo, MIL-STD-781B Level E, -54°/+54°C Vibration, 11 hrs. ON	Military Grade JTX, SCD's Screening unknown
AI-0015 Airborne, Inhabited Central Computer	Rel Demo, MIL-STD-781B Level F, -65°/+160°F Vibration, PWR Cyc.	Military Grade JTX, SCD's With screening
AI-0016 Airborne, Inhabited LORAN Navigation Set	Rel Demo, MIL-STD-781B Level E, F, -54°/+55°C or -54°/+71°C Vibration, PWR Cyc.	Military Grade JTX, SCD's Screening unknown
AI-0017 Airborne, Inhabited Countermeasures Set	Rel Demo, MIL-STD-781B Level E, -55°/+55°C Vibration, PWR Cyc.	Military Grade JTX, JAN, SCD's Screening unknown

Table A-1 DATA SOURCE SUMMARY (cont'd)

EQUIPMENT CODE APPLICATION ENVIRONMENT EQUIPMENT TYPE	DATA TYPE TEST CONDITIONS	QUALITY GRADE SCREENING FACTORS
AU-0001 Airborne, Uninhabited Phased Array Antenna	Rel Evaluation +34°C	Commercial Grade JAN, Off-the-Shelf
AU-0002 (Formerly AI-0009) Airborne, Uninhabited Electronic Air Inlet Controller	Rel Demo, MIL-STD-781B Level F, -54°/+71°C Vibration, PWR Cyc.	Military Grade All JTX
GF-0001 Ground, Fixed Communications Central	Rel Demo 25°C, 11 hours ON 1 hour OFF	Military Grade Screening by independent lab
GF-0002 Ground, Fixed Air Control Center	Rel Demo 40°/125°F PWR Cyc.	Military Grade JTX, JAN, SCD's Screening unknown
GF-0003 Ground, Fixed UHF Transceiver	1. Rel Demo, MIL-STD-781B Level A-1, +25°C Continuous ON 2. Field Max. 42°C ambient	Military Grade JAN, SCD's Screening unknown
GF-0004 Ground, Fixed Group Data Modem	Rel Demo, MIL-STD-781B Level A-1, +25°C Voltage Cyc.	Military Grade JTX, SCD's Screening unknown
GF-0005 Ground, Fixed Multiplexer Set	Rel Demo, MIL-STD-781B Level A-1, +25°C no cycling	Military Grade JTX, SCD's Screening unknown

Table A-1 DATA SOURCE SUMMARY (cont'd)

EQUIPMENT CODE *APPLICATION ENVIRONMENT* *EQUIPMENT TYPE*	*DATA TYPE* *TEST CONDITIONS*	*QUALITY GRADE* *SCREENING FACTORS*
NS-0001 Naval, Sheltered Radio Direction Finder	1. In-House Checkout 25°C, Integration Burn-In, Final Test	Military Grade JTX, SCD's Screening unknown
	2. Quality Conformance 50°C, Vibration	
	3. Rel Demo, MIL-STD-781B, Level A-1 25°C, 23.5 hours ON 0.5 hours STANDBY	
	4. Field	
NS-0002 Naval, Sheltered Communications Circuit Configuration Monitor Set	Rel Evaluation 100°F	Commercial Grade Off-the-shelf
SF-0001 Space, Flight Space Program	1. In-House Checkout -30°/+65°C, Vibration Thermal Vacuum	Space Grade Special Hi Rel and"A"+
	2. Field Checkout & Flight -7°/+32°C, Thermal Vacuum 20°/+32°C - Flight	

AI-0001 RECEIVER-TRANSMITTER

The data from the AI-0001 system comes from two builds. The short-term test performed on each system from the first build (Rel Demo test data) for the calendar time period May 1974 through June 1976 generated 17,808 system hours. For this first build, a system burn-in test practically identical to the Rel Demo test conditions was performed, except that the number of burn-in cycles varied from 5 to 14 and failure data was not available.

From the second build Burn-In data and Rel Demo data are being generated. For this reporting period, data from the calendar time period August 1976 through September 1976 is available. The Burn-In data is from the 5th cycle of burn-in since detailed failure analysis to identify or verify part failures is not available until the 5th cycle. Burn-in cycles may vary from 8 minimum to 20 maximum and generally four failure free cycles are desired before entering Rel Demo. The second build equipment carries an A revision and the part usage changed slightly. The system hours accumulated to date for the second build are 794 burn-in hours and 909 Rel Demo hours.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, level F, Test Plan II, and as follows:

Temperature:	-54°C to +71°C (8 cycles)
On-Time:	During heating portion of cycle (6.25 hrs min., 6.50 hrs max.)
Heating Portion of Cycle:	6.25 hrs min., 6.50 hrs. max.
Cooling Portion of Cycle:	1.5 hrs max.
Vibration:	After first operating hour and for ten minutes per hour, a fixed non-resonant frequency between 26 and 29 cps, with a minimum displacement of .01" double amplitude, was applied.

AI-0001 Receiver-Transmitter (cont'd)

Quality and Screening Factors

The general quality grade of the AI-0001 equipment is illustrated by the following usage profile:

DIODES:	
Total per System	688
JTX	551 or 80%
JAN	29 or 4%
SCD's	108 or 16%
TRANSISTORS:	
Total per System	348
JTX	209 or 60%
JAN	54 or 16%
SCD's	85 or 24%

The SCD's require screening. For the purpose of this publication, the general quality grade of the AI-01 system is termed "MILITARY GRADE".

AI-0002 RADIO COMMUNICATIONS

On the AI-0002 system, the data is derived from a Rel Demo test, a post Rel Demo test at 25°C, and a post Rel Demo test at +55°C. Eleven equipments with eight different configurations were used to generate the Rel Demo data. Three equipments with three different configurations were extended in test under less rigorous conditions. Because of the many different configurations of AI-0002 the part quantity used per system reflects the maximum quantity of the different configurations. The calendar time period for the data is April 1971 to April 1972.

Rel Demo

The Rel Demo test was performed in phases such that at predesignated, accumulated hours the results were reviewed to evaluate the reliability growth process. After 17,744.5 countable hours it was apparent that the maturation process was essentially complete and an additional fix time of 4600 hours would be accumulated. The actual total system accumulated hours for the Rel Demo was 22475.

The conditions of the Rel Demo test were in accordance with MIL-STD-781A, Level F, Test Plan XVIII and as follows:

Temperature:	-54°C to +71°C
Temperature Cycling:	Time to stablize at low temperature followed by time to stablize at high temperature plus approximately 10 hours.
Vibration:	2.2G $\pm$ 10% peak acceleration at any nonresonant frequency between 20 to 60 cycles, 10 minutes during each hour of operation time.
Equipment On-Off Cycling:	OFF during cooling cycle, ON during heating cycle. During the equipment ON time, except during test, a five-minute tone-modulated transmit, ten minute receive duty cycle was maintained.
ON Time:	9.5 hours per cycle
OFF Time:	2.5 hours
Total Cycle:	12 hours
Voltage Cycling:	None

Post Rel Demo

It was suspected by the manufacturer of the AI-0002 equipment that the stresses of the Rel Demo exceeded the actual use environment. Therefore, a special test under less rigorous conditions was conducted. The test conditions were as follows:

Post Rel Demo (cont'd)

1. Continuous operation, alternating 5- minute transmit and 10- minute receive.
2. Vibration at 2.2g for 10 minutes out of every hour.
3. Chamber temperature at room ambient (25°C) for 2078.7 hours and at 55°C for 2687.1 hours.

Quality and Screen Factors

The general quality grade of the AI-0002 system is illustrated by the following usage profile for one of the configurations which is representative of all the configurations.

DIODES:	
Total per conf.	360
JTX	242 or 67%
SCD's	118 or 33%
TRANSISTORS:	
Total per conf.	175
JTX	81 or 46%
SCD's	94 or 54%

The amount of screening, if any, on the SCD's is unknown.

For the purpose of this publication the general quality grade of the AI-0002 system is termed "MILITARY GRADE".

AI-0003 RADIO COMMUNICATIONS

Like the AI-0002, this was a multiconfiguration system. However, only one configuration was chosen for the Rel Demo test. Eight radio sets were tested for 500 hours each, a total of 4000 hours.

The major sub-assemblies of the radio set were subjected to a pre-test environmental period identical to the Rel Demo test except that fewer performance parameters were checked and the accept/reject criteria for each sub-assembly was revised to 50 hours failure-free. The testing conducted during this period resulted in a design evaluation period where a number of design oriented problems were encountered in the radio set. These problems masked the identification of a valid pre-test environmental period.

The calendar time period for the Rel Demo test is October to December 1973.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, Level F, Test Plan XXVI, and as follows:

Temperature:	Cycled between - 54°C and +55°C in six hour intervals. The time to pull-up plus radio set stablization was two hours. An additional two hours were added to the pull-up and stabilization period, making the heating portion of the cycle four hours. The remaining two hours, one and one-half hours pull-down and stabilization plus thirty minutes, represented the cooling cycle.
Vibration:	Vibrated for ten minutes of each hour of ON-Time at an acceleration of 2.2g's $\pm$10% at a frequency between twenty five and thirty cycles. One chamber vibration had a calibrated frequency of 29.6 cps while the other was 27 cps. The first vibration period occurred within ten minutes after the chamber started out of cold and the remaining three periods were evenly spaced in the remaining three-hour period of ON-Time.
ON-OFF Cycling:	ON during the heating portion of the cycle and OFF during the cooling portion of the cycle.
Performance Test in Cold:	Approximately thirty minutes.

Rel Demo (cont'd)

Voltage Cycling:	27.5 Volts +5, -2% Weekends, Holidays & Mondays
	30.25 Volts, +5, -2% Tuesdays & Thursdays
	24.75 Volts. +5, -2% Wednesday & Fridays

Quality and Screening Factors

The general quality grade of the AI-0003 equipment is illustrated by the following usage profile:

DIODES:	
Total per System	299
JTX	193 or 65%
JAN	54 or 18%
SCD's	52 or 17%
TRANSISTORS:	
Total per System	136
JTX	55 or 40%
JAN	1 or 1%
SCD's	80 or 59%

The amount of screening, if any, on the SCD's is unknown.

For the purpose of this publication, the general quality grade of the AI-0003 system is termed "MILITARY GRADE".

AI-0004 DATA PROCESSING SYSTEM

The AI-0004 system initial deliveries began in 1968. The system continued in production into 1974. For any one year the quantity produced varied from 13 to 39 systems. The system consisted of three major assembles up to 1974, when one more assembly was added to the system. The data in this publication covers In-House Checkout data from 1971 to part of 1974, and field data from the 1968 buy to part of the 1972 buy.

In-House Checkout Test

The In-House Checkout test is equivalent to MIL-STD-781, Level E. The average hours per system is 80. The conditions of this test were as follows:

Temperature:	Cycled between -25°C and +55°C in 12 hour intervals. The time to pull-up was 2.25 hours. An additional 6 hours were added at +55°C making the total heating portion of the cycle 8.25 hours. The remaining 3.75 hours consisted of the cooling cycle.
Vibration:	Vibrated for 10 minutes of each hour of ON-Time at an acceleration of 2 g's at a frequency of 27 cps.
ON-OFF Cycling:	ON during the heating portion of the cycle (8.25 hours) and OFF during the cooling portion of the cycle (3.75 hours).

The test described above was changed when applied to the fourth major assembly added to the system in 1974. The heating portion of the cycle and ON-Time became 9 hours. The cooling portion of the cycle and OFF-Time became 3 hours.

Field Conditions

Field conditions for the AI-0004 system are airborne, inhabited. The system has a cooling air inlet temperature of 30° C, which results in an average case temperature of 55°C for all components, according to the manufacturer's thermal analysis. The total field hours are 142,222. System hours at time of failure was 77 hours at the lowest, 1,100 hours at the average, and 5,070 hours at the highest. The manufacturer of AI-0004 has suggested that since the field failures were only verified, and no autopsy was performed, only 30% may have been the fault of the component. The failure rates calculated on Table 1.1-8 of Section I did not take this into consideration.

AI-0004 Data Processing System (cont'd)

Derating Guidelines

The following derating guidelines applied to the AI-0004 systems:

Junction Temperature:	100°C to 125°C max.
Voltage:	
Instantaneous	90% of rated
Continuous	75% of rated
Design maximum (D.C. Volts)	60% of rated
Current:	75% of rated

Electrical Stress Distribution

The following describes the electrical stress distribution of discrete semiconductors used in the AI-0004 system:

DIODES:

Switch:	Entire population was stressed 10% or less of procurement max. power/current rating.
Zener & Rectifier:	60% of population was 10% or less of procurement max. power/current rating.
	20% of population was between 11% and 20% of procurement max. power/current rating
	20% of population was between 21% and 50% of procurement max. power/current rating.

TRANSISTORS:

Switch & Power:	80% of population are 10% or less of procurement max. power rating.
	20% of population are between 11% and 30% of procurement power rating.

The above information enabled the weighted-average predicted failure rates which appear in Table VII of Section I, to be calculated.

Quality and Screening Factors

The general quality grade of the AI-0004 equipment is illustrated by the following usage profile:

DIODES:

JTX	75%
SCD's	25%

AI-0004 Data Processing System (cont'd)

Quality and Screening Factors (cont'd)

TRANSISTORS:

JTX	9%
JAN	6%
SCD's	85%

The lack of JTX transistors in the AI-0004 system may be a result of the fact that the system went into production in 1968 when the availability of JTX devices was limited. However, the fourth major assembly, added in 1974, used JTX devices extensively.

The SCD's for the AI-0004 required screening to the system manufacturer's general screening specifications for transistors and diodes. These screening requirements are equal to, if not better than, JTX screening. A comparison of the AI-0004 SCD screening versus the JTX screens is presented in Table A-II.

For the purpose of this publication, the general quality grade of the AI-0004 system is termed "MILITARY GRADE".

Table A-II COMPARISON - AI-0004 AND JAN TX SCREENING

TRANSISTORS

AI-0004 SCREEN		JAN TX SCREEN	
Pre Seal Visual			
High Temp. Storage	200°C, 48 Hrs	High Temp. Storage	200°C, 24 Hrs
Thermal Shock	-65°C to 200°C, 20 Cycles	Thermal Shock	-65°C to 200°C, 10 Cycles
Centrifuge	20,000, 4 minutes	Centrifuge	20,000G, 1 Minute
Hermetic Seal	Fine & Gross Leak	Hermetic Seal	Fine & Gross Leak
High Temp. Reverse Bias	150°C, 40 Hrs		
Burn-In	168 Hrs. Conditions per Detail Spec	Burn-In	168 Hrs. @ 25°C
Radiographic Inspection			

DIODES

High Temp. Storage	200°C, 48 Hrs	High Temp. Storage	200°C, 48 Hrs
Thermal Shock	-65°C to 200°C, 5 Cycles	Thermal Shock	-65°C to 200°C, 5 Cycles
		Centrifuge	20,000, 1 Minute
Case Leakage Test	100 PSI, 2 Hrs	Hermetic Seal	Fine & Gross Leak
Visual Insp.	20X		
Power Pulse	1/2 Sine @ 60 cps Reverse Breakdown		
Burn-In	Duration & Conditions per Detail Spec/Dwg	Burn-In	164 Hrs @ 25°C

AI-0005 INERTIAL NAVIGATION SET

The AI-0005 data is the sum of data from six major assemblies, comprising the inertial navigation set, which were tested separately to a four failure-free cycle (4FF) test followed by a Rel Demo test. The AI-0005 had been in production at least three years prior to the start of these tests. The calendar period for data is May 1972 through October 1973. Each of the major assemblies produced during this period was subjected to these tests. The conditions of the 4FF and Rel Demo test were similiar for each major assembly. Both tests consisted of thermal cycles of six hour duration. The six major assemblies are Navigation Control, Gyro Assembly Control (GAC), Interial Measurement Unit (IMU), Power Supply (P.S.), Position Indicator (P.I.) and Computer.

Burn-In (4FF)

Hours accumulated by major assembly for this test are: Nav Con-1124 hours, GAC-1453 hours, IMU-1131 hours, P.S.-1945 hours, PI-1024 hours, and Computer-2092 hours. Each major assembly was tested until four cycles were completed failure-free. The conditions of the 4FF test were as follows:

Temperature:	-55°C to +55°C
ON-Time:	
NAV CON	From the last half hour of the cooling portion of the cycle to the heating portion of the cycle (3.5 hours)
GAC	From the last hour of the cooling portion of the cycle to the end of the heating portion of the cycle (4.0 hours)
IMU & PI	During the heating portion of the cycle (3.0 hours)
P.S.	During the heating portion of the cycle (4.5 hours); also on the last cycle during the cooling cycle (6 hours)
Computer	During the heating portion of the cycle and the first two hours of the cooling portion of the cycle (5.0 hours)
Heating Portion of Cycle :	Three(3) hours except P.S. which is 4.5 hours
Cooling Portion of Cycle:	Three(3) hours except P.S. which is 1.5 hours
Hot to Cold Chamber Transition Time :	Three(3) hours except P.S. which is 1.5 hours and except P.I. and Computer which is 2 hours

AI-0005 Inertial Navigation Set (cont'd)

Burn-In (4FF) (cont'd)

Cold to Hot Chamber :	One(1) hour except P.S. which is 16 minutes
Vibration :	None
Input Voltage :	Normal specified values

Rel Demo

Hours accumulated by major assembly for this test are: Nav Con-3652 hours, GAC-3883 hours, IMU-4074 hours, P.S.-7372 hours, P.I.-4030 hours, and Computer-4798 hours. Each major assembly was tested for 16 complete cycles. The conditions of the Rel Demo test were as follows:

Temperature :	-25°C to +55°C
ON-Time :	Three(3) hours during heating portion of cycle except P.S. which is 4.75 hours coinciding with its heating portion of the cycle. Also on the last (sixteenth) cycle the P.S. is ON during the cooling portion of the cycle.
Heating Portion of Cycle:	Three(3) hours except P.S. which is 4.75 hours
Cooling Portion of Cycle:	Three(3) hours except P.S. which is 1.25 hours
Hot to Cold Chamber Transition Time:	One and half(1 1/2) hour except P.S. which is 1.25 hours
Cold to Hot Chamber Transition Time:	One(1) hour except P.S. which is 16 minutes
Vibration:	Ten(10) minutes prior to the first test cycle and after the eighth test cycle. Peak acceleration was calibrated to 2.0g's and the non-resonant frequency was between 20 and 70 cps. Black boxes were not energized during vibration.
Input Voltage :	Normal specified values

Quality and Screening Factors

The general quality grade of the AI-0005 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	781
JTX	229 or 29%
JAN	329 or 42%
SCD's	223 or 29%

AI-0005 Inertial Navigation Set (cont'd)

Quality and Screening Factors (cont'd)

TRANSISTORS:

Total per system	551
JTX	197 or 36%
JAN	212 or 38%
SCD's	142 or 26%

Some of the SCD's may have specified screening but for the most part no screening was required.

For the purpose of this publication, the general quality grade of the AI-0005 system is termed "MILITARY GRADE".

AI-0006 ALTITUDE INDICATOR

The data on the AI-0006 is from a Rel Demo test performed on three units for a total of 3820 system-accumulated hours. Prior to Rel Demo test, each unit was subjected to a four cycle burn-in test which was identical to the Rel Demo test. The calendar time period for the data is January 1973 to June 1973.

Rel Demo

The conditions of the Rel Demo tests were in accordance with MIL-STD-781B, Level F, Test Plan III and as follows:

Temperature:	-54°C to +71°C
ON-Time :	Six(6) hours during the heating portion of the cycle
Heating Portion of Cycle:	Six(6) hours in the first 25 minutes, the chamber goes from -54°C to +71°C; at the end of the first 1.5 hours the equipment is stabilized at +71°C
Cooling Portion of Cycle:	Two(2) hours in the first 25 minutes, the chamber goes from +71°C to -54°C; at the end of the 2 hours, the equipment is stabilized at -54°C
Vibration:	After the first 15 minutes of the heating portion of the cycle, the equipment is vibrated for 10 minutes; and thereafter, 10 minutes every hour during the heating portion of the cycle.
Input Voltage:	Normal specified values

Quality and Screening Factors

All the transistors and diodes on the AI-0006 were JTX. There are 16 diodes and 21 transistors. The general quality grade for the purpose of this publication is termed "MILITARY GRADE".

AI-0007 SIGNAL DATA RECORDER

The data on the AI-0007 is from a Rel Demo test performed on two(2) units for a total of 2468 system-accumulated hours. Prior to Rel Demo test, each unit was tested to a burn-in test identical to the conditions of the Rel Demo for 42 hours of operation. If a failure occurred during burn-in, the test was interrupted, the unit repaired and burn-in continued with an additional period for verification of repair. The calendar time period for the data is August 1973 to January 1974.

Rel Demo

The conditions of the Rel Demo tests were in accordance with MIL-STD-781B, Level F, Test Plan III and as follows:

Environmental Cycle:

a. After stabilization at -54°C, (when the point of maximum thermal inertia is changing at a rate less than 2°C per hour and is within ±2° of -54°C), raise the chamber at a 5°C per minute rate to -40°C.

b. When the SDR temperature stabilizes at -40°C, (when equipment temperature is -40°C ±2°C and a rate of temperature change less than 2°C an hour), apply cooling air at 30°C. (85°F) ±5°C and the flow rate determined by the thermal survey which would result in an average stabilized exit air temperature of 60°C (140°F) from the SDR. Turn SDR on and resume chamber temperature rise at the 5°C per minute rate until the chamber reaches 71°C (160°F). Stabilize chamber at this temperature.

c. Continue to operate the SDR as in Step (b) until the SDR temperature stabilizes (when a point of maximum thermal inertia is changing at a rate less than 2°C per hour). Maintain this condition.

d. At a time determined by the thermal survey for compliance with step (c) time period, decrease the amount of cooling air to the flow rate which would result in an average stabilized exit air temperature of 71°C (160°F) from the SDR.

e. Stabilize the small mass piece parts of the SDR while maintaining the step (d) cooling air condition, and operate for an additional 15 minutes. The operating time from stabilization of the SDR temperature in Step (c) to the completion of this 15 minutes of stabilization operation shall be two(2)

Rel Demo (cont'd)

	hours. Small mass piece parts are to include, but not be limited to, heat-sinked semi-conductors, resistors, capacitors, components which contain semiconductors such as integrated circuits and cordwood modules, and small transformers.
	f. Discontinue power to the SDR (turn off), discontinue cooling air to the SDR and initiate chamber cooling cycle to lower and stablize the SDR temperature at -54°C for the start of another cycle.
Cooling Air:	At the inlet 85 ±9°F. The higher flow rate is 1.95 inches of water maximum, with an exit temperature of 140°F. The lower rate is 0.45 inches of water maximum with an exit temperature of 160°F.
Vibration:	After the first 15 minutes of ON-Time the SDR is vibrated for 10 minutes and thereafter 10 minutes every hour of ON-Time. The vibration applied parallel to the major axis of the SDR is 2.2g's peak acceleration at a frequency of 39± 1 cps.
Input Voltage Cycling:	The first third of the equipment ON-Time 118 volts minimum; the second 115 ± 1 volts; the last third with a maximum of 108 volts.

Quality and Screening Factors

The general quality grade of the AI-0007 equipment is illustrated by the following usage profile:

DIODES:	
JTX	142 or 100%
TRANSISTORS:	
Total per system	145
JTX	120 or 83%
SCD	25 or 17%

The amount of screening required on the SCD's is similiar to JTX.

For the purpose of this publication the general quality grade of the AI-0007 is termed "MILITARY GRADE".

Design Derating Goals

The AI-0007 was designed to the following derating goals:

TRANSISTORS :	
Voltage	80% of rated
Current	50% of rated
Power	70% of rated power at operating temperature
DIODES, POWER:	
Voltage	50% of rated
Current	75% of rated
Junction Temperature	70% of rated
DIODES, ZENER:	
Power	70% of rated
DIODES, SIGNAL:	
Voltage	60% of rated
Current	75% of rated
Junction Temperature	70% of rated

AI-0008 AIR DATA COMPUTER

The data on the AI-0008 is from a Rel Demo test performed on three units for a total of 5565 system-accumulated hours. Each unit prior to Rel Demo test was subjected to a burn-in test of four cycles similiar to the conditions of the Rel Demo test. The calendar period for the Rel Demo test is January 1973 to September 1973.

Rel Demo

The conditions of the Rel Demo tests were in accordance with MIL-STD-781B, Level F, Test Plan III and as follows:

Temperature:	-54°C to 71°C
ON-Time:	During heating portion of the cycle (5 hours)
Heating Portion of Cycle:	Five(5) hours
Cooling Portion of Cycle:	Three(3) hours
Vibration:	Ten(10) minutes out of every hour during the heating portion of the cycle (.9g's minimum at 21± cps)
Cooling Air:	Chamber air, at .372 lb/min. during the first hour of the heating portion of the cycle and .948 lb/min. for the next 4 hours.
Input Voltage Cycling:	The first third of the equipment ON-Time 118 vac minimum; the second 115 +5, -2 vac; the last third 113 vac maximum.

Quality and Screen Factors

The general quality grade of the AI-0008 equipment is illustrated by the following usage profile:

DIODES:	
JTX	59 or 100%
TRANSISTORS:	
Total per system	39
JTX	31 or 80%
SCD's	8 or 20%

The amount of screening on the SCD's is unknown.

For the purpose of this publication the general quality grade of the AI-0008 system has been termed "MILITARY GRADE".

AI-0010 INDICATOR GROUP

The data on the AI-0010 equipment is from two Rel Demo tests. The first, performed on two units, arrived at a reject decision at 921 hours and ran from April to August 1973. Modifications were then incorporated into the equipment and the second test (also on two units) ran from February 1974 to January 1975, accumulating an additional 2846 hours. Each unit was tested to four 8-hour cycles of burn-in prior to the Rel Demo test. The conditions of the burn-in were similiar to the Rel Demo test.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, Level F, Test Plan III and as follows:

Temperature:	-54°C (4 hours) -40°C (1.6 hours) +71°C (6.4 hours)
ON-Time:	Power was applied when the temperature began to come up from -40°C. (116.5 volts minimum for the first 120 minutes, 115 volts nominal for the next 132 minutes, and 109.5 volts maximum for the last 132 minutes)
Vibration:	Twelve(12) minutes each hour commencing 12 minutes after turn-ON. (2.2g's $\pm$ 0.2g's at 42-50 cps)
Cooling Air:	For a part of AI-0010 only, a flow rate of 1.09 lbs/min for exit temperature of 140°F for the first 348 minutes of ON-Time; 0.621 lbs/min for exit temperature of 160°F for the last 36 minutes of ON-Time

Quality and Screening Factors

The general quality of the AI-0010 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	188
JTX	177 or 94%
SCD's	11 or 6%
TRANSISTORS:	
Total per system	186
JTX	124 or 67%
SCD's	62 or 33%

AI-0010 Indicator Group (cont'd)

Quality and Screening Factors (cont'd)

The amount of screening on the SCD's is unknown.

For the purposes of this publication the general quality grade of the AI-0010 equipment is termed "MILITARY GRADE".

AI-0011 INTERFERENCE BLANKER SET

The data on the AI-0011 is from a Rel Demo Test performed on three units (S/N 7, 8 and 9) for a total of 7239.5 system-accumulated hours. Each unit prior to Rel Demo was subjected to six burn-in cycles consisting of 2 hours cooling and stabilization at -54 °C, equipment power-up and heating to +71 °C, 2 hours (minimum) operating time after 2 hours' temperature stabilization, and non-operating cooling to -54 °C. Input power to the unit was varied between 108, 115 and 118 V ac for equal time periods and each unit was vibrated (1.0g at 22.7 cps) for 10 minutes during each operating hour.

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, Level F, Test Plan III. The exact profile was not described in the available report but a profile similar to the burn-in described above would probably have been used. The calendar time period for this data is December 1972 to September 1973.

Quality and Screening Factors

The general quality of the AI-0011 is termed "MILITARY GRADE" since the 62 diodes, 72 transistors, and 1 thyristor used are JTX.

AI-0012 SEARCH RADAR SET

The data on the AI-0012 System is extracted from a series of monthly reports on Burn-In tests. The radar set consists of five distinct LRU's: Antenna Position Programmer (APP) Receiver-Transmitter (RT), Antenna, Antenna Control (AC), Radar Set Control (RC). The Burn-In test was for 72 hours per LRU and, as such, the accumulated hours per LRU are as follows:

APP	- 31 LRU's, 2669 hrs
RT	- 66 LRU's, 5340 hrs
Antenna	- 70 LRU's, 5423 hrs
AC	- 37 LRU's, 2860 hrs
RC	- 71 LRU's, 5495 hrs

The calendar time period for the data is May, 1974 to April, 1976

Burn-In:

The conditions of the Burn-In test were high stress, with temperature cycling from -25°C to +55°C, vibration and power cycling requirements. More detailed information was not readily available.

Quality and Screening Factors:

DIODES:

Total per system:	447
JTX	11 or 2%
JAN	12 or 3%
SCD	454 or 95%

TRANSISTORS:

Total per system	415
JTX	181 or 44%
SCD	234 or 56%

The screening quality of the SCD's is presently unknown. For the purpose of this publication, the general quality grade for this system is "MILITARY GRADE".

AI-0013 RADAR SET

The data on system AI-0013 is from a Rel Demo test performed on two preproduction Radar Sets, S/N 11 and 13, during the calendar time period November 1973 to September 1974. The test accumulated 150 test hours. Prior to the Rel Demo test, the two units underwent a total of 96 hours of burn-in each, subject to the environmental conditons listed below, during the period April to May, 1973 (S/N 11) and July, 1973 (S/N 13).

Burn-In:

Temperature:	-65°C to +71°C with temperature change between the extremes of at least 5°C per minute
ON-Time:	1.7 hours ON from cold start
OFF-Time:	1.3 hours OFF from turn-off at high temperature
Heating Portion of Cycle:	30 min. to cool down from +71°C to -65°C where it remains for an additional 40 min, at which time it is returned to ambient over 20 min. to begin a new cycle.
Vibration:	Vibrated at 2.2g during each half hour of ON time.
Input Voltage:	Changed for each temperature cycle between high/nominal/low

Rel Demo:

The conditions of the Rel Demo test was in accordance with MIL-STD-781B, Test Plan III, Level F and as follows:

Temperature:	-54°C to +71°C
Environmental Cycle:	(As specified by thermal survey) a. Temperature chamber raised to +71°C and maintained there for 70 min in "dry-out" cycle. b. Dive from a stabilized condition of +71°C $\pm$ 2°C at a minimum average rate of 5°C/minute to -54°C, with dive time being 23 min (desired 25 min maximum dive time).

c. Stabilize (< 2°C per hour temperature change) at -54°C for 5-1/2 hours.
d. With radar still OFF, raise chamber to -40°C at a minimum average rate of 5°C/minute with climb time being 3 minutes.
e. Turn power ON and operate the radar through test sequences. At power turn-on, turn on 30°C air heaters. Flow rate at 30°C to be 11.38 lbs/min.
f. Fifteen minutes after power ON begin Vibration at 23Hz, 1.3g for 10 minutes and, thereafter, for 10 minutes out of every hour for the next 7.75 hrs.
g. When the first instrumented module's exit air reaches 60°C, increase plenum air to nominal flow (15.5 lbs/min) and maintain condition until stabilization of 2°C/hour change occurs.
h) Reduce plenum air to 11.38 lbs/min (minimum flow). When first instrumented module's exit air reaches +71°C, adjust plenum air flow for temperature stabilization (2°C/hour rate of temperature change) for 7 hours.
i. Climb from stabilized condition of -40°C ± 2°C at a minimum average rate of 5°C/minute to +71°C to take a maximum of 22 minutes.
j. At 8 minutes after equipment turn off at +71°C, proceed with chamber dive of step(b) to begin next environmental cycle.

Cooling Air: At inlet, flow is 2.5 GPM @ inlet temp of -54°C at inlet, flow is 5.2 GPM @ inlet temp of 46°C

Input Voltage: Changed for each temperature cycle between high/nominal/low

Quality and Screening Factors

The general quality grade of the AI-0013 equipment is illustrated by the following usage profile:

DIODES:

Total per system	981
JTX	599 or 61%
SCD	382 or 39%

AI-0013 Radar Set (cont'd)

TRANSISTORS:	
Total per system	401
JTX	210 or 52%
SCD	191 or 48%
THYRISTORS:	
Total per system	10
JTX	3 or 30%
SCD	7 or 70%
OPTOELECTRONICS:	
SCD	1 or 100%

The amount of screening, if any, on the SCD's is unknown.

For the purpose of this publication, the general quality grade of the AI-0013 system is termed "MILITARY GRADE".

AI-0014 DATA PROCESSING SUBSYSTEM

The data for AI-0014 is taken from a Rel Demo test performed during the calendar time period of 10 January - 25 January, 1975. One system underwent test and accumulated a total of 153.2 countable hours. Prior to the Rel Demo test, the system experienced approximately 100 hours of burn-in.

Rel Demo

The reliability assessment criteria for this Rel Demo test was based on MIL-STD-781B, Test Plan XX, Level E, and employed the following environmental criteria:

Temperature:	-54°C to +54°C
ON-Time:	Eleven (11) hours, during heating portion of cycle.
Heating Portion of Cycle:	17 minutes to heat from -54°C to 32°C, where chamber remains for 4 hours and 43 minutes. 5 minutes to heat from 32°C to 54°C, where chamber remains for 5 hours and 54 minutes.
Cooling Portion of Cycle:	22 minutes to cool down from 54°C to -54°C (Power OFF), where chamber remains for 5 hours and 8 minutes before heating cycle begins and power is turned ON.
Vibration:	10 minutes every hour of power-ON at 0.71g's @ 45Hz.
Input Voltage:	Normal specified values

Quality and Screening Factors

The general quality grade of AI-0014 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	3119
JTX	2424 or 78%
SCD	695 or 22%
TRANSISTORS:	
Total per system	1290
JTX	765 or 59%
SCD	525 or 41%

The amount of screening on the SCD's is unknown.

For the purpose of this publication, the general quality grade of the AI-0014 system has been termed "MILITARY GRADE".

AI-0015 CENTRAL COMPUTER

The data on the AI-0015 equipment is from a Rel Demo test which was completed in two phases. Phase A accumulated a total of 3002 countable hours on three systems (S/N 9-1135 hrs, S/N 15-847 hrs, S/N 17-1020 hrs). Computer S/N 9 started the test 27 November 1972, S/N 15 on 9 May 1973 and S/N 17 on 16 May 1973. The test was interrupted in early December 1973 as the result of hardware damage brought on by the extremely severe cooling air requirements. Phase B started April 4, 1974 using modified cooling on S/N 15 and S/N 17 with a significant amount of the identified corrective actions implemented in the hardware. Phase B accumulated 1280 countable hours when an accept design was made on June 6, 1974.

Rel Demo

The conditons of the Rel Demo test were in accordance with MIL-STD-781B, Level F, Test Plan III, and as follows:

Temperature:	-65°F to +160°F
ON-Time:	During heating portion of cycle (5 hrs)
Cooling Portion of Cycle:	3 hours
Vibration:	1.15G ± 10% at 25 ± 5 Hz, 10 minutes during each hour of operation
Voltage Cycling:	Over a three cycle period one cycle at the upper limit, one cycle at nominal and one cycle at the lower limit during the "ON" portion

Quality and Screening Factors

The general quality grade of the AI-0015 equipment is illustrated by the following usage profile:

DIODES	
Total per system	69
JTX	58 or 84%
SCD	11 or 16%
TRANSISTORS	
Total per system	77
JTX	43 or 56%
SCD	34 or 44%

The SCD's require screening. For the purpose of this publication, the general quality grade of the AI-0015 equipment is termed "MILITARY GRADE".

AI-0016 LORAN NAVIGATION SET

The data on the AI-0016 system is taken from a total of three Rel Demo tests. Test # 1 involved one system which accumulated 216 hours in February and March, 1975 and resulted in test rejection. Test # 2 involved three systems which accumulated 247 hours in March and April, 1975 and again resulted in test rejection. Finally, using the same three systems as test # 2, test # 3 accumulated 2563 hours from April to June, 1975. The test was stopped at the end of June, 1975 due to the termination of Phase II of the contract, with the test still in the continue test region of MIL-STD-781B, Test Plan II. The point estimate MTBF for this third test fell short by 9% of the predicted MTBF value for the LORAN Navigation Set, thus the specified reliability requirements of the system was not exhibited. Prior to the reliability tests, each equipment underwent a 50 hour burn-in test.

Rel Demo

The conditions of the Rel Demo tests were in accordance with MIL-STD-781B, Level E (cockpit controls) or MIL-STD-781B, Level F (all other equipments), Test Plan II and as follows:

Temperature:	-54°C to +55°C (cockpit controls) -54°C to +71°C (all other equipments)
Temperature Cycle:	12 hours per cycle, 2 cycles per day
Heating Portion of Cycle:	30 minute warm-up from -54°C to +55°C or +71°C, with stabilization at high temperature for 8 hours.
Cooling Portion of Cycle:	30 minute temperature dive from high temperature to -54°C, with stabilization at low temperature for 3 hours
Vibration:	2.2g $\pm$ 10% at 20Hz to be applied within 25 minutes after the power turn on of each cycle and maintained for 10 minute intervals during each hour of power on time.
Power Cycling:	ON during heating portion of cycle only.

Quality and Screening Factors

The general quality grade of the AI-0016 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	644
JTX	563 or 87%
SCDs	81 or 13%

AI-0016 Loran Navigation Set (cont'd)

TRANSISTORS:	
Total per system	431
JTX	415 or 96%
SCDs	16 or 4%
OPTOELECTRONICS:	
SCDs	45 or 100%

The amount of screening on the SCD's is unknown.

For the purpose of this publication, the general quality grade of the AI-0016 system is termed "MILITARY GRADE".

AI-0017 COUNTERMEASURES SET

The data for system AI-0017 is extracted from a Rel Demo test during the calendar time period March 1973 to July 1973. The test was conducted on two units, each of which accrued over 500 hours of test time, for a total of 1000 hours since only the first 500 hours of each system was used in determining compliance to the specified requirements. Each system was comprised of six LRU's: 1) Countermeasures Receiver, 2) Countermeasures Transmitter A, 3) RF Switch, 4) Countermeasures Transmitter B, 5) Control Indicator and 6) Control Monitor.

Rel Demo

The conditions of the Rel Demo test are in accordance with MIL-STD-781B, Level E, Test Plan XXVI and as follows:

Temperature:	-55°C to +55°C
Temperature Cycling:	Time to stabilize at low temperature followed by the time to stabilize at high temperature, plus two hours.
Vibration:	2.2g ± 10% peak acceleration at 20Hz.
Equipment ON-OFF Cycle:	ON during heating cycle, OFF during cooling cycle.
Input Voltage:	Nominal, +5-2%
Voltage Cycling:	NOT SPECIFIED

Quality and Screen Factors

The general quality grade of the AI-0017 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	1261
JTX	1150 or 92%
SCD	111 or 8%
TRANSISTORS:	
Total per system	737
JTX	441 or 60%
SCD	296 or 40%
THYRISTORS	
Total per system	11
JTX	7 or 64%
JAN	2 or 18%
SCD	2 or 18%

The amount of screening on the SCD's is unknown.

For the purpose of this publication the general quality grade of the AI-0017 system has been termed "MILITARY GRADE".

AU-0001 PHASED ARRAY ANTENNA

This data comes from an experimental antenna which contained 3816 identical elements. The antenna reliability was evaluated after 2750 hours of ground, fixed operation, 250 hours of airborne-uninhabited operation and 36,000 non-operating hours in a 4.5 year period. The reliability evaluation consisted primarily of tearing down the antenna and testing its 3816 identical elements for proper operation. Thus, any failures discovered could have occurred at any time during the 4.5 year period.

The parts used were considered "COMMERCIAL" grade even though extensive testing was done during the antenna manufacturing cycle.

Since the data is a 11:1 mixture between ground fixed and airborne-uninhabited operation, it was classified as "LOW STRESS TEST" data in the failure rate summaries of this publication. The time span for this data was 1968 to 1973.

AU-0002 ELECTRONIC AIR INLET CONTROLLER

(formerly AI-09 in DSR-1)

The data on the AU-0002 equipment is from two Rel Demo tests, one a qualification test and the other a production reliability test. The Qualification test was performed on three units (S/N 19, 20 and 21) from February 1973 to April 1974 for a total of 9535.9 system-accumulated hours. The Production Reliability test was also performed on three units (S/N 99, 101, and 105) from November 1974 to June 1975 for a total of 4973 system-accumulated hours. Both Rel Demo tests were performed to the same conditions and prior to Rel Demo, each unit was tested to a burn-in of three cycles similar to the Rel Demo, except the heating portion and on-time was seven hours, while the cooling portion and off-time was one hour.

Rel Demo

The conditions of the Rel Demo in accordance with MIL-STD-781B, Level F, Test Plan III and as follows:

Temperature:	-54°C to 71°C
ON-Time:	During heating portion of the cycle (4.5 hours)
Heating Portion of Cycle:	Four and half (4 1/2) hours
Cooling Portion of Cycle:	Three and half (3 1/2) hours
Vibration:	Ten(10) minutes every hour starting 14 minutes after turn-ON (1g $\pm$ 10% at 20 cps)
Cooling:	Three flow rates: 0.6 lbs/min at turn-ON; 1.0 lbs/min at 9 minutes after turn-ON; 1.52 lb/min maximum at 71°C, 18 minutes after turn-ON
Input Voltage Cycling:	The first third of ON-Time 118 vac minimum; the second 115 vac $\pm$ 1v; the last third a maximum of 108 vac.

Quality and Screening Factors

The general quality grade of the AU-0002 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	125
JTX	123 or 98%
JAN	2 or 2%
TRANSISTORS:	
Total per system	80
JTX	77 or 96%
SCD's	3 or 4%

The amount of screening on the SCD's is unknown.

For the purpose of this publication the general quality grade of the AU-0002 is termed "MILITARY GRADE".

GF-0001 COMMUNICATIONS CENTRAL

The data on the GF-0001 systems are from a Rel Demo test. The GF-0001 is a family of transportable hf communication systems housed in shelters. The shelters can be transported by large air cargo planes, helicopters, flat bed trucks or transporters. Operational reliability conditions are ground, fixed, but dormancy failure rates might be higher than normal for ground, fixed since the shelters might be moved frequently. The Rel Demo test data contained herein is the sum of several tests performed on the three configurations of GF-0001. Configuration GF-0001(V1) had a net accumulation of 1594.1 hours. Configuration GF-0001(V2) had a net accumulation of 2421.65 hours. Configuration GF-0001(V3) is the same as GF-0001(V2) plus an additional shelter for higher power output. Thus, the data on GF-0001(V2) configured as a GF-0001(V3) was counted as GF-0001(V2) data and a separate count was made for GF-0001(V3-V2) equipment because it is peculiar to GF-0001(V3). The net time for GF-0001(V3-V2) was 1278.15 hours. The calendar period for the test is September 1970 to September 1972. No more than two units of one configuration were on test at any one time.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781A, Test Plan IV and similiar to Level A as follows:

a. The temperature, pressure, and humidity shall be factory ambient.

b. All equipment within each shelter shall be turned off concurrently for one hour during each twelve hour period.

c. All air exhaust and intake doors and/or ports are open. The external building air conditioner is connected via the air ducts.

Quality and Screening Factors

Only 12 JTX parts were used on the GF-0001. All parts used were screened by an independent test lab or, in a few cases, by the equipment manufacturer himself. Quantity used by configuration is as follows:

GF-0001(V1):	2388 Diodes
	1331 Transistors
GF-0001(V2):	2067 Diodes
	1169 Transistors
GF-0001(V3-V2):	222 Diodes
	122 Transistors

By virtue of the screening by an independent lab, although not as stringent as JTX screening, the GF-0001 is termed "MILITARY GRADE" for the purpose of this publication.

GF-0002 AIR CONTROL CENTER

The data on the GF-0002 system is from a Rel Demo test and is a composite of Rel Demo reports on the 3 major subsystems of the Air Control Center. Subsystem A was tested during the calendar period of August 13, 1975 to September 7, 1975 and accumulated a total of 420 hours. The test was interrupted for approximately four days in mid-August after a relevant failure, and for three days in early September for the Labor Day holiday. Subsystem B underwent Rel Demo test from September 21, 1975 to October 7, 1975 for an accumulated total of 386 hrs. Finally, Subsystem C was tested between September 21, 1975 and October 27, 1975 for an accumulated total of 569 hrs. Interruptions for this test occurred in early October for two days after experiencing a relevant failure and during mid-October for nine days after investigation of an intermittent error.

As with GF-0001, this system can be considered a family of transportable communication systems housed in shelters. Subsequently, failure rates may be higher than normal for ground, fixed depending on the frequency of system re-location. An additional factor which will bias the failure rates on the high side is the design of parallel, identical equipments at various levels internal to each of the three subsystems, where an equipment failure would not interrupt the efficient operation of any of the subsystems. Hence, fewer hours than were actually experienced may be applied to these redundant equipments by assuming the minimal subsystem configurations when determining device failure rates. This method was necessitated by the fact that only those failures which affected subsystem operations would be reported.

Rel Demo

The Rel Demo test ran for 24 hours a day, seven days a week, subject to the aforementioned interruptions.

Subsystems A, B and C were each tested in accordance with MIL-STD-781B, Test Plan IV and subject to the following conditions:

Temperature:	40°F to 125°F (4°C to 52°C)
Temperature Cycle:	a. Five hours at nominal temp. (65°F - 75°F) b. Heating portion requires one hour to raise chamber from nominal to high temp (118°F-125°F) and subsequent stabilization at high temp. for eight hours. c. Cooling portion of cycle requires four hour dive from high temp. (118°F-125°F) to low temp (40°F) for a stabilized two-hour period.

	d. Chamber returned to nominal temperature over one-hour period, where it remains for the balance of the cycle (three hours)
Power Cycling:	Power was shut down for 1/2 hour during the three hour nominal temperature stage of each temperature cycle.

Quality and Screening Factors

The general quality grade of the GF-0002 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	11,159
JTX	3,403 or 31%
JAN	3,125 or 28%
SCD's	4,631 or 41%
TRANSISTORS:	
Total per system	5089
JTX	3274 or 64%
JAN	340 or 7%
SCD's	1475 or 29%
THYRISTORS:	
SCD's	980 or 100%
OPTOELECTRONICS:	
SCD's	232 or 100%

It should be noted with due caution that failed JTX or JAN devices may have been replaced in operation by a standard commercial device.

The amount of screening on the SCD's is unknown.

The general quality grade of the GF-0002 system for the purpose of this publication is termed "MILITARY GRADE".

GF-0003 UHF TRANSCEIVER

The data on system GF-0003 is taken from a series of monthly Rel Demo reports spanning from December, 1974 to July, 1976, as well as a Field Checkout test, which ran from September 1975 through June 1976. The Rel Demo test was divided into two sections: a Pre-Production phase, which involved three systems and accumualted 2980 hours, and a Production phase which, due to design changes, incorporated an additional two transistors and 23 diodes. This Production phase subsequently involved 250 systems and accumulated 55,271 hrs. All Rel Demo systems were subjected to a 48 hour failure free burn-in test.

The Field Checkout test was run in three lots, with 10 systems tested per lot. Lot #1 began test in September 1975, and ran for 62,941 total hours, Lot # 2 began test in October 1975 and ran for 60,177 total hours, and Lot #3 began test in November 1975 and ran for 49,853 hours. All three lots ceased testing in June, 1976 with a 30 system accumulation of 172,971 hours.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, Level A-1, Test Plan XXV for the Pre-Production phase and MIL-STD-781B, Level A-1, Test Plan V for the Production phase and as follows:

Temperature:	+25°C nominal continuous
Vibration:	NONE
Input Voltage:	120V $\pm$ 10% @ 60Hz
Duty Cycle:	9 min. transmit, 1 min. receive (Pre-production) 5.1 min transmit, 4.8 min receive (Production)
Power Cycle:	Continuous ON

Field Checkout

The conditions of the Field Checkout test were as follows:

Temperature:	Receivers will not be allowed to operate in ambient air temperatures above 42°C
Input Voltage:	Standard commercial power @ 60 Hz
Duty Cycle:	6 min. transmit, 6 min receive
Power Cycle:	Continuous ON, except as a result of indicated or actual failure, preventive maintenance, or daily bench tests

Quality and Screen Factors

The general quality grade of the GF-0003 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	255
JAN	138 or 54%
SCD's	117 or 46%
TRANSISTORS:	
Total per system	134
JAN	94 or 70%
SCD's	40 or 30%
THYRISTORS:	
SCD's	2 or 100%

The amount of screening on the SCD's is unknown.

For the purpose of this publication the general quality grade of the GF-0003 has been termed "MILITARY GRADE".

GF-0004 GROUP DATA MODEM

The data for the GF-0004 System is extracted from a Rel Demo test during the calendar period October to November, 1973. The test involved five units and the total accumulated time was 4536 hours. Each unit was subjected to 100 hrs of burn-in test at room ambient temperature prior to the start of Rel Demo testing.

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, Test Level A-1, per Plan IV A and as follows:

Temperature:	25°C Ambient
ON-Time:	24 hrs. per day, 7 days per week
Input Voltage Cycling:	At test initiation, voltage ran at 115 volts for 24 hrs. then reduced to 113 volts for 24 hrs. For the duration of the test, the voltage was cycled in the sequence of 115, 121 and 113 volts for 24 hr intervals each

Quality and Screening Factors

The general quality grade of the GF-0004 equipment is illustrated by the following usage profile:

DIODES:	
Total per system	261
JTX	256 or 98%
SCD	5 or 2%
TRANSISTORS:	
Total per system	221
JTX	217 or 98%
SCD	4 or 2%
THYRISTORS:	
JTX	1 or 100%

The amount of screening on the SCD parts is unknown.

For the purpose of this publication the general quality grade of the GF-0004 system has been termed "MILITARY GRADE".

GF-0005 MULTIPLEXER SET

The data collected on GF-0005 is from a Rel Demo test which commenced on January 20, 1976 and completed on March 1, 1976. The test was run in two distinct phases and ultimately involved six systems, either in independent (Rel Demo) or back to back (tandem) operation. Systems # 3 and 8 maintained a constant configuration throughout the tandem reliability and reliability demonstration tests, being comprised of voice encoders and decoders in the multiplexer and demultiplexer sections. Systems # 4, 5, 6 and 7 basically mirrored the configuration of 3 and 8 for the tandem test only. For the reliability demonstration phase, systems 4, 5, 6 and 7 did not contain the voice decoders and encoders, these being replaced by additional rate comparison buffers and smoothing buffers in the multiplexer/demultiplexer channels. In addition during the tandem test, input bit rates were altered at discrete intervals (24 or 48 hours), at which time the buffer quantities per system may have been altered.

The tandem test covered the calendar time period from January 20 to February 1, 1976, while the reliability demonstration test covered the calendar time period January 20 to March 1, 1976. The hours per system per test is as shown below:

System No.	Tandem Test Hours	Rel Demo Test Hours	Total
3	330 hrs	655 hrs	985 hrs
4	330 hrs	655 hrs	985 hrs
5	330 hrs	654 hrs	984 hrs
6	330 hrs	654 hrs	984 hrs
7	113 hrs	709 hrs	822 hrs
8	- - -	491 hrs	491 hrs
	1433 hrs	3818 hrs	5251 hrs

Rel Demo

The conditions of the Rel Demo test were in accordance with MIL-STD-781B, including Notice 1, Test Plan IV A, Test Level A-1 and as follows:

Temperature	25°C ± 5°C
Input Voltage:	115 VAC, + 5V, -2V @ 60Hz

There was no temperature cycling, vibration, power cycling or input voltage cycling

Quality and Screening Factors

The general quality grade of the GF-0005 system is illustrated by the following usage profile:

DIODES:

JTX	408 or 100%

GF-0005 Multiplexer Set (cont'd)

TRANSISTORS:	
Total per system	421
JTX	411 or 98%
SCD's	10 or 2%
OPTOELECTRONICS:	
SCD's	2 or 100%

The amount of screening on the SCD's is unknown.

The general quality grade of the GF-0005 system for the purpose of this publication is termed "MILITARY GRADE".

NS-0001 RADIO DIRECTION FINDER

The test data on the NS-0001 came from two types of reports. One contained the reliability experience of NS-0001 at the manufacturers plant, from system integration to sell-off. The other report is a reliability demonstration report.

The data from system integration to sell-off is on 37 systems. The sequence of data accumulation was as follows:

a. Integration, 25°C (average 39 hours per system)

b. Quality conformance, vibration, 50°C (average 36 hours)

c. Burn-In, 25°C (average 108 hours)

d. Final test to sell-off, 25°C (average 141 hours)

The total hours accumulated for this short term data are 11,969 hours. The Quality Conformance data was at a slightly higher stress level than the rest and was broken out separately for this publication. Total hours for the Quality Conformance test are 1328 hours. The balance of the data from Integration, Burn-in and Final Test to Sell-off, was at 25°C and was therefore merged under the heading In-House Checkout data. The total hours for the In-House Checkout data are 10,641 hours. The calendar time period from this data is January 1974 to March 1975.

The Rel Demo data are on three units tested 1761, 2672 and 3698 hours, respectively for a total of 8131 hours. This time includes 129.5 hours of trouble-shooting.

Rel Demo

The three NS-0001 systems were tested 24 hours a day, 7 days a week, with a minor adjustment during Thanksgiving holiday period. Each system was in Operate Mode for 23.5 hours per day and Standby Mode for 0.5 hours per day unless adjusted by a failure occurrence. The test was performed at factory ambient. Calendar time period for the Rel Demo test is July 1974 to December 1974. The conditions were in accordance with MIL-STD-781, Level A-1.

Field

Field data on the NS-0001 system was taken from a report covering the calendar period up to May, 1976 with 52,285 total hours accumulated. This data has been censored to exclude installation and debugging failures.

Quality and Screening Factors

The general quality grade of the NS-0001 equipment is illustrated by the following usage profile:

DIODES:

Total per system	1401
JTX	1350 or 96%
JAN	15 or 1%
SCD's	36 or 3%

TRANSISTORS:

Total per system	913
JTX	668 or 73%
JAN	191 or 21%
SCD's	54 or 6%

The amount of screening on the SCD's is unknown.

The general quality grade for the NS-0001 system for the purpose of this publication is termed "MILITARY GRADE".

NS-0002 COMMUNICATIONS CIRCUIT CONFIGURATION

MONITOR SET

The data on NS-0002 came from a reliability evaluation, part of which generated 1131 hours of low stress test (100°F) on one system. The quality grade is termed "COMMERCIAL" since parts were off-the-shelf.

SF-0001 SPACE PROGRAM

The data from the SF-0001 came from in-house system test, field checkout and field flight over a period from 1972 to part of 1975. Quantity per system and system hours are not given but the hours per part are known.

In-House Checkout

The in-house system test data came from a pre-product acceptance test (PRE-PAT) and a product acceptance test (PAT). The PRE-PAT consisted of thermal cycling (-30°C to +65°C) with power cycling. The PAT consisted of random vibration at 8.3g's (10 cps - 2000 cps), thermal cycling (-20°C to +65°C), and thermal vacuum testing (-20°C to +65°C).

Field Checkout and Flight

This data was from room ambient and thermal vacuum conditions (-7°C to +32°C) for field checkout, and launch and space conditions (20°C to 32°C) for flight.

Derating Goals

The derating goals reported for SF-0001 were junction temperature 100°C maximum, except power devices which were 125°C maximum.

Electrical Stress Distribution

The following describes the electrical stress distribution of discrete semiconductors used in the SF-0001 system:

DIODES:	
Switch	Entire population is under 5% of procurement power/current rating
Zener	75% of population are under 10% of procurement max. power/current rating
	15% of population are between 10% and 25% of procurement max. power/current rating
	10% of population are between 26% and 50% of procurement max. power/current rating
Rectifier	75% of population are less than 20% of procurement max. power/current rating
	15% of population are between 20% and 35% of procurement max. power/current rating
	10% of population are between 35% and 50% of procurement max. power/current rating

SF-0001 Space Program (cont'd)

Electrical Stress Distribution (cont'd)

TRANSISTORS:

Switch	80% of population are less than 10% of procurement max. power rating
	20% of population between 10% and 50% of procurement max. power rating
Power	75% of population are between 20% and 30% of procurement max. power rating
	25% of population are between 30% and 50% of procurement max. power rating

The above information enabled the weighted-average, predicted failure rates, which appear in Table XXI of Section I, to be calculated.

Quality and Screening Factors

All the parts of the SF-0001, including JTX parts, were covered by an SCD which also included special screening requirements. The screening levels for SF-0001 were increased during the data period. The levels were termed "Hi Rel" and "A+" by the SF-0001 contractor and are shown in summary on Tables A-III and A-IV. For the purpose of this publication the general quality grade of the SF-0001 is termed "SPACE QUALITY".

Table A-III SF-0001 SPACE PROGRAM - DIODE SCREENING

	Hi Rel User Spec	"A"+ User Spec
Pre Seal Visual	None	(For non-transparent per user spec) Capable of .0005 inch diameter defects
High Temp. Storage	200°C, 48 Hrs	200°C, 48 Hrs
Temp. Cycling	-65°C to 200°C, 5 cycles 15 minutes each extreme	Per MIL-STD-202, Method 107, -55°C to 200°C, 20 cycles
Acceleration	None	Per MIL-STD-750, Method 2006, Y_1 direction, 30,000 G
Shock	None	Per MIL-STD-883, Method 2002, Cond. B, 1500 G, 5 shocks, Y_1 direction
Fine Leak	None	Per MIL-STD-750, Method 1071, 1×10^{-8} atm cc/sec
Gross Leak	Case Leakage, Bomb test 100 PSI, 2 Hrs	Per MIL-STD-750, Method 1071, Cond. C, D or E
Visual Inspection	100%, 20X-Foreign material and construction defects	No
X-Ray	No	Per user spec
Power Pulse	1/2 sine, 60 Hz, Breakdown in reverse direction	1/2 sine, 60 Hz, Breakdown in reverse direction
High Temp. Reverse Bias Burn-In	None	100 Hrs, Reverse bias with T_J at Max
Pre Burn-In	Per Detail Spec	Per Detail Spec
Operating Burn-In	Per Detail Spec	Per Detail Spec, 250 Hrs minimum
Post Burn-In	Per Detail Spec	Per Detail Spec

Table A-IV SF-0001 SPACE PROGRAM - TRANSISTOR SCREENING

	Hi Rel User Spec	"A"+ User Spec
Pre Seal Visual	Per user spec Unijunction per user spec	Per user spec Unijunction per user spec
High Temp. Storage	200°C, 48 Hrs	200°C, 96 Hrs
Temp. Cycling	20 cycles per MIL-STD-202 Method 102, Cond. C, except step 3 temp = 200°C	25 cycles per MIL-STD-202 Method 107, Cond. C-1
Mechanical Shock	None	Per MIL-STD-202, Method 213 Cond. F
Constant Acceleration (Centrifuge)	20,000G, 4 Minutes	30,000G, 1 Minute Pull leads away from chip
Fine Leak	MIL-STD-202, Method 112, Cond. C. Proc III(B) or equivalent, 1×10^{-8} cc/sec	Ref. MIL-STD-202, Method 112, Proc III(A)
Gross Leak	Immersion at 150°C, 15 sec. Bubble Test, 90 PSIG Freon pressure, Dye penetrant	Immersion at 150°C 15 sec. Bubble test, 90 PSIG Freon pressure, Dye penetrant
HTRB Bake	40 Hrs, T_A = 150°C V_{CB} = 80% of BV_{CBO}	100 Hrs, T_A = 150°C V_{CB} = 80% BV_{CBO}
Pre Burn-in Operating Burn-in Post Burn-in	Per Detail Spec Per Detail Spec Group A Electrical per Detail Spec	Per Detail Spec 250 hrs, Conditions per Detail Spec Per Detail Spec
Radiographic	Per user spec Unijunction per user spec	Per user spec Unijunction per user spec
High & Low Temp Measurements	None	High & low temp electrical parameters in Group A per Detail Spec
Thermal Impedance (θ_{JC})	None	For devices with greater than 1 amp. Ref. MIL-STD-750, Method 3132

Appendix B

GLOSSARY OF SYMBOLS AND ABBREVIATIONS

PRECEDING PAGE NOT FILMED
BLANK

Appendix B

GLOSSARY OF SYMBOLS AND ABBREVIATIONS

AI	Airborne, Inhabited
AU	Airborne, Uninhabited
Bridge 3ϕ	Bridge Rectifier, 3-phase
Bridge, FW	Bridge Rectifier, Full Wave
Chip Hours	For devices with more than one chip, hours are given in part hours times the number of chips in the package
Chop Trans	Chopper Transistor
Comp NPN/PNP	Complementary Transistor, NPN/PNP
DA NPN	Differential Amplifier, NPN
E.I.A.	Electronic Industries Association
EOS	Electrical Overstressed
ETI	Elapsed Time Indicator
Fast Rec Rect	Fast Recovery Rectifier
fpmh	Failures per million hours
FET	Field Effect Transistor
GF	Ground, Fixed
GP Diode	General Purpose Diode
H.P. Rectifier	High Power Rectifier
J	Short form prefix for JAN qualification and screening levels of MIL-S-19500
JFET	Junction Field Effect Transistor
JTX	Short form prefix for JANTX qualification and screening levels of MIL-S-19500
L.P. NPN	Low Power, NPN, Transistor
L.P. PNP	Low Power, PNP, Transistor
μWave	Microwave
MIL-HDBK-217B	Military Standardization Handbook, Reliability Prediction of Electronic Equipment
MIL-STD-701	Lists of Standard Semiconductor Devices, Military Standard
MIL-STD-781	Reliability Test:Exponential Distribution
Mult. Transistor	Multiple Transistor (more than one chip per package)
NS	Naval, Sheltered
N/R	Not Reported
Part Hours	System hours times the number of parts in the system

PRECEDING PAGE NOT FILMED
BLANK

PWR CYC	Power Cycling
PWR, NPN	NPN Power Transistor
PWR, PNP	PNP Power Transistor
Rect.	Rectifier
Rel Demo	Reliability demonstration test where the equipment mean-time-between-failure is being measured
RF	Radio Frequency
SCD	Any user specification such as specification control drawings or source control drawings
Sch Bar D	Schottky Barrier Diode
SF	Space, Flight
S/R	See Remarks
SS Diode	Small Signal Diode
SW Diode	Switching Diode
TC Wedge	Thermocompression Wedge Bond
Trans Sup D	Transient Suppressor Diode
US	Ultrasonic
V Ref D	Voltage Reference Diode
V Reg D	Voltage Regulator Diode
Z Diode	Zener Diode
4FF	Four failure-free cycles test
+	Suffix added to part numbers to signify additional screening was performed
$\hat{\lambda}$	Lambda hat, symbol used for maximum likelihood estimator which is number of failures divided by total part hours when a constant failure rate is assumed

Appendix C

MANUFACTURERS' ABBREVIATIONS

PRECEDING PAGE NOT FILMED
BLANK

Appendix C

MANUFACTURER'S ABBREVIATIONS

Part Manufacturer Code	Manufacturers
ALGG	AEG Telefunken
CDC	Continental Devices Corporation
DEL	Delco Electronics Division
DIC	Dickson Electronics
FKI	Fabri-Tek, Inc.
FSC	Fairchild Semiconductor
GESY	General Electric Co.
GIC	General Instrument Corp.
HPA	Hewlett-Packard, HPA Division
ITT	ITT Semiconductors
MIC	Microwave Associates
MOTA	Motorola Semiconductor Products
MTO	Monsanto Commercial Products Co.
MULT	Multiple Vendor
MWS	Microwave Semiconductor Inc.
NECJ	Nippon Electric Co., Ltd.
NSC	National Semiconductor Corp.
OPC	OPCOA, Division of AVX Corp.
PFD	Philco Ford Corp.
RCA	RCA Corp., Solid State Div.
SET	Semtech, Corp.
SIX	Siliconix, Inc.
SLCB	Semitron, Ltd.
SOD	Solitron Devices, Inc.
SPR	Sprague Electric Co.
SSPI	Solid State Products Inc.
TI	Texas Instruments
TRW	TRW Semiconductors, Inc.
TSC	Teledyne Semiconductor Corp.
UNI	Unitrode Corp.
VAS	Varian, Solid State Division

PRECEDING PAGE NOT FILMED
BLANK

Appendix D

DEVICE TYPE CODE

PRECEDING PAGE NOT FILMED
BLANK

APPENDIX D

DEVICE TYPE CODE

The Device Type Code, as utilized in the Reliability Data Tabulation by Part Number (Section II) of this publication, represents a three-level generic structuring of Discrete Semiconductor device type classification , as illustrated by Fig. D-1 through D-4.

The first, or most general, level of classification is represented by the hundreds digit of the code where DIODES = 1 (MICROWAVE DIODES = 3), TRANSISTORS = 2, THYRISTORS = 5, and OPTOELECTRONIC DEVICES = 6.

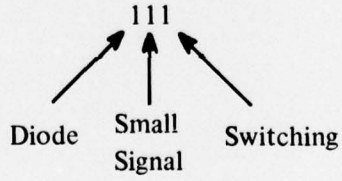
The second generic level is represented by the tens digit of the code where, for DIODES, a tens entry of 1 = SMALL SIGNAL DIODE, a tens entry of 2 = RECTIFIERS, etc., while for TRANSISTORS, a tens entry of 1 = LOW POWER TRANSISTOR, a tens entry of 2 = HIGH POWER TRANSISTOR, etc.

The third generic level is represented by the units digit of the code and serves as a breakdown of the device classifications represented by the tens digit. For example, RECTIFIERS may be broken down into LOW POWER RECTIFIER (represented by a "1" in the units digit, FAST RECOVERY RECTIFIER (represented by a "4" in the units digit), etc., while a LOW POWER TRANSISTOR may be subcategorized into an NPN LOW POWER TRANSISTOR (=1 in the units digit) and a PNP LOW POWER TRANSISTOR (=2 in the units digit).

EXAMPLES:

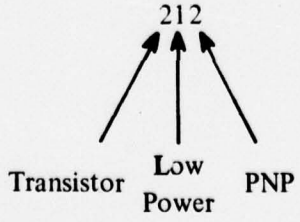
A. Device - 1N4148

Device Type Code - 111



B. Device - 2N2907A

Device Type Code 212



PRECEDING PAGE NOT FILMED BLANK

C. Device - 1N5711

Device Type Code - 303

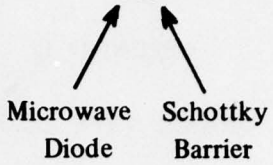


Table D-1

DEVICE TYPE CODE

Device	Device Code
Diodes	100
Small Signal Diode	110
Switching Diode	111
General Purpose Diode	112
Rectifier	120
Low Power Rectifier	121
High Voltage Rectifier	122
High Power Rectifier	123
Fast Recovery Rectifier	124
Schottky Power Rectifier	125
Bridge Rectifier, Full Wave	126
Bridge Rectifier, Three Phase	127
Zener Diode	130
Voltage Regulator Diode	131
Voltage Reference Diode	132
Current Regulator Diode	133
Avalanche Diode	134
Suppressor Diode	140
Transient Suppressor Diode	141
Varistor Diode	142
Special Function Diode	170
Noise Generating Diode	171
Log Conversion Diode	172
Radiation Detector Diode	173
Diode Array	174

Table D-1 (cont'd)

Device	Device Code
Transistors	200
NPN Transistor	201
PNP Transistor	202
Low Power Transistor	210
NPN Low Power Transistor	211
PNP Low Power Transistor	212
High Power Transistor	220
NPN High Power Transistor	221
PNP High Power Transistor	222
Field Effect Transistor	230
JFET N-Channel	231
JFET P-Channel	232
MOSFET (IGFET) N-Channel	233
MOSFET (IGFET) P-Channel	234
Miscellaneous Transistors	240
Unijunction Transistor	241
Radiation Tolerant Transistor	242
RF Transistor	250
NPN RF Transistor	251
PNP RF Transistor	252
Multiple Transistor	260
Differential Amplifier - NPN	261
Differential Amplifier - PNP	262
Complementary NPN Transistor	263
Complementary PNP Transistor	264
Quad Transistor	265
Darlington Transistor	270
NPN Darlington Transistor	271
PNP Darlington Transistor	272
Chopper Transistor	280
NPN Chopper Transistor	281
PNP Chopper Transistor	282
NPN Chopper Transistor - Dual Emitter	283
PNP Chopper Transistor - Dual Emitter	284

Table D-1 (cont'd)

Device	Device Code
Microwave Diodes	300
Tunnel Diode	301
Back Diode (Tunnel Rectifier)	302
Schottky Barrier (Hot Carrier) Diode	303
PIN Diode	304
NIP Diode	305
Point Contact Diode	306
Power Varactor Diode	307
Bulk Semiconductor Diode	308
Variable Capacitance Diode (Varactor)	309
Step Recovery Diode (Multiplier or Harmonic Varactor)	310
Gunn Effect Diode	311
IMPATT Diode	312
TRAPATT Diode	313
BARITT Diode	314
Thyristors	500
Thyristor Diodes	510
Diacs (DAC)	511
Schockley Diodes (Fld)	512
Silicon Asymmetrical Triggers (SAT)	513
Triode, Power, Reverse-Blocking (SCR)	520
Triode, Power, Bi-Directional (TRIAC)	530
Triode, Power, Miscellaneous	540
Triode, Gate Turnoff Devices (GTO)	541
Triode, Light-Activated Switch (LAS)	542
Triode, N-Gate Device (NGT)	543
Reverse Conducting Triode (RCT)	544
Triode, Trigger	550
Programmable Unijunction Transistor (PUT)	551
Silicon Asymmetrical Switch (SAS)	552
Silicon Bi-Directional Switch (SBS)	553
Silicon Unidirectional Switch (SUS)	554
Multigate Device, Thyristor	560
Silicon Control Assy. (SCA)	561
Silicon Control Bridge (SCB)	562
Silicon Control (4-terminal) Switch (SCS)	563

Table D-1 (cont'd)

Device	Device Code
Optoelectronic Device	600
Emitter, Optoelectronic	610
Light Emitting Diode	611
Infrared Emitting Diode	612
LED Emitting Diode Array	613
Infrared Emitting Diode Array	614
Laser Diode	615
Sensor, Optoelectronic	620
Photodiode (PIN, Avalanche, Infrared) Sensor	621
Phototransistor Sensor	622
Photodarlington Sensor	623
Photothyristor Sensor	624
Photocircuit (IC) Sensor	625
Sensor Array: Photodiode, Phototransistor, Transistor Chip	626
Photoconductive Cell (LDR)	627
Photovoltaic Cell (Solar Cell, IR Detector)	628
Photovoltaic Array (T/C Reader, Readout)	629
Photocoupler (Opto-Isolator)	630
Photocell (LDR, Voltaic) Output	631
Phototransistor Output	632
Photodarlington Output	633
Photocircuit (IC) Output	634
Photothyristor Output	635
Display, Optoelectronic	640
LED Display	641
Liquid Crystal Display	642
Incandescent Display	643
Detector, Optoelectronic	650
Gap Detector	651
Reflex Detector	652
Interrupter Detector	653
Emitter/Sensor Pair/Array Detector	654
Miscellaneous Optoelectronic Device	660

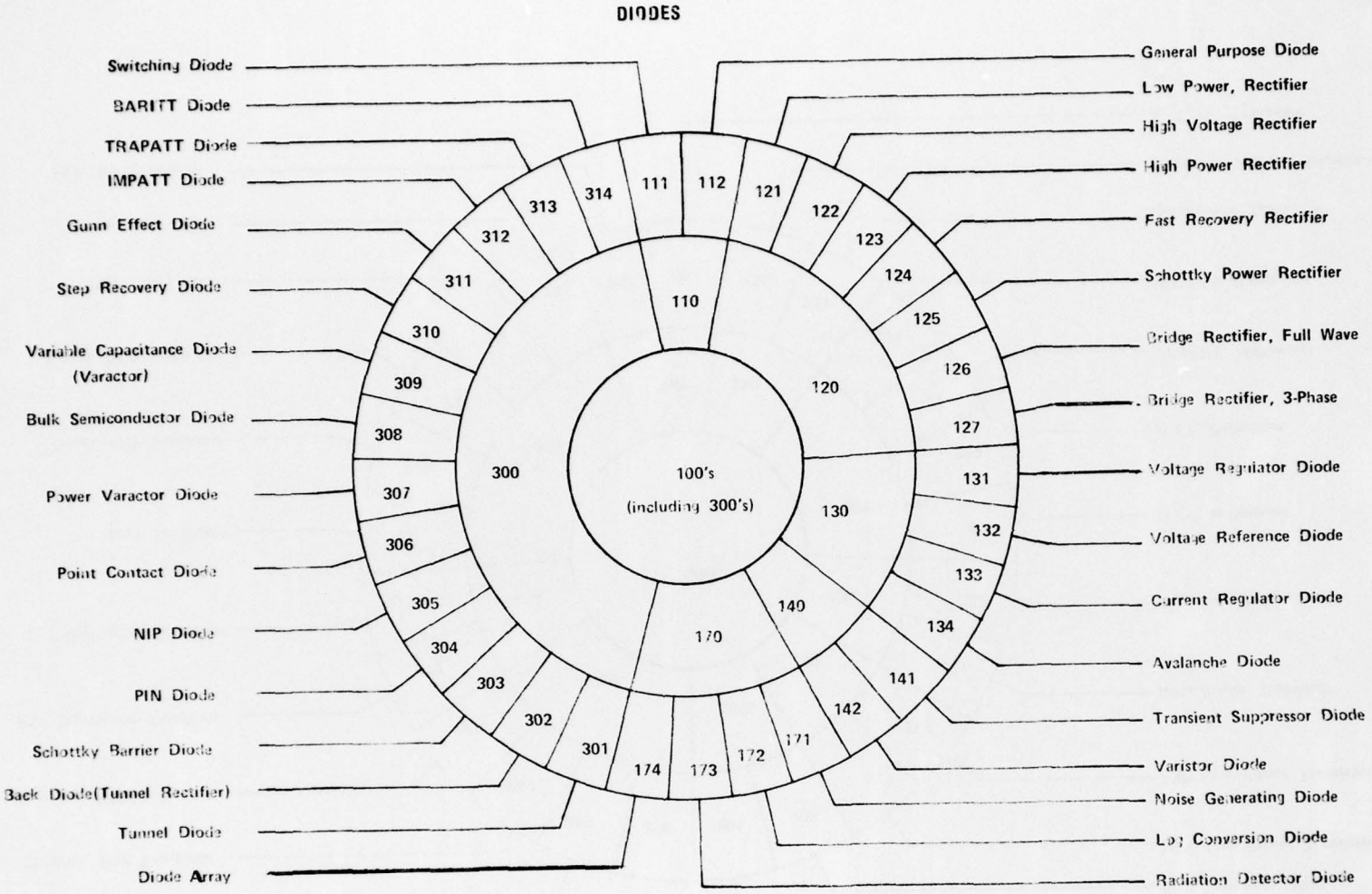


Fig. D-1. DIODES GENERIC STRUCTURE

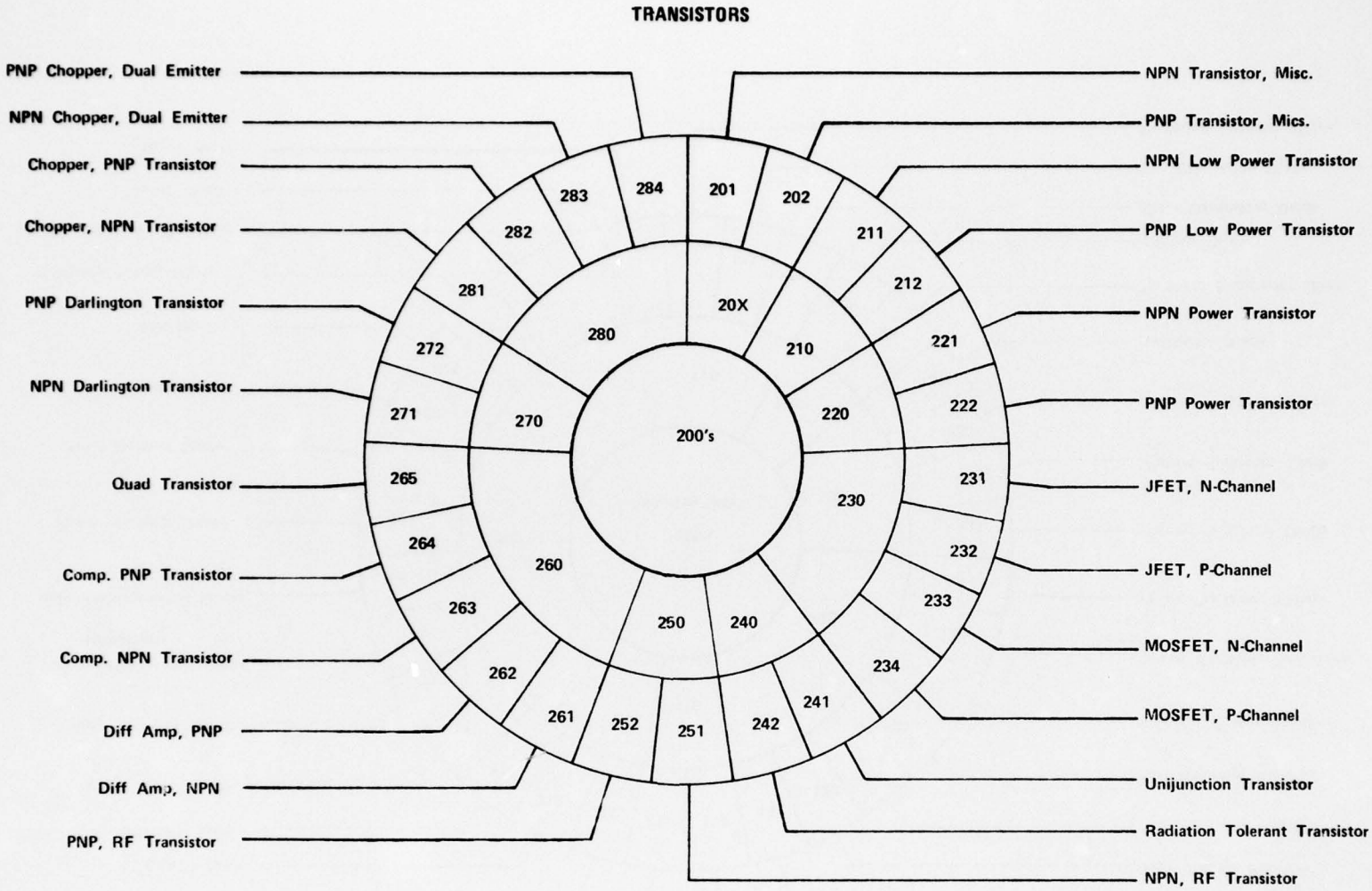


Fig. D-2. TRANSISTORS GENERIC STRUCTURE

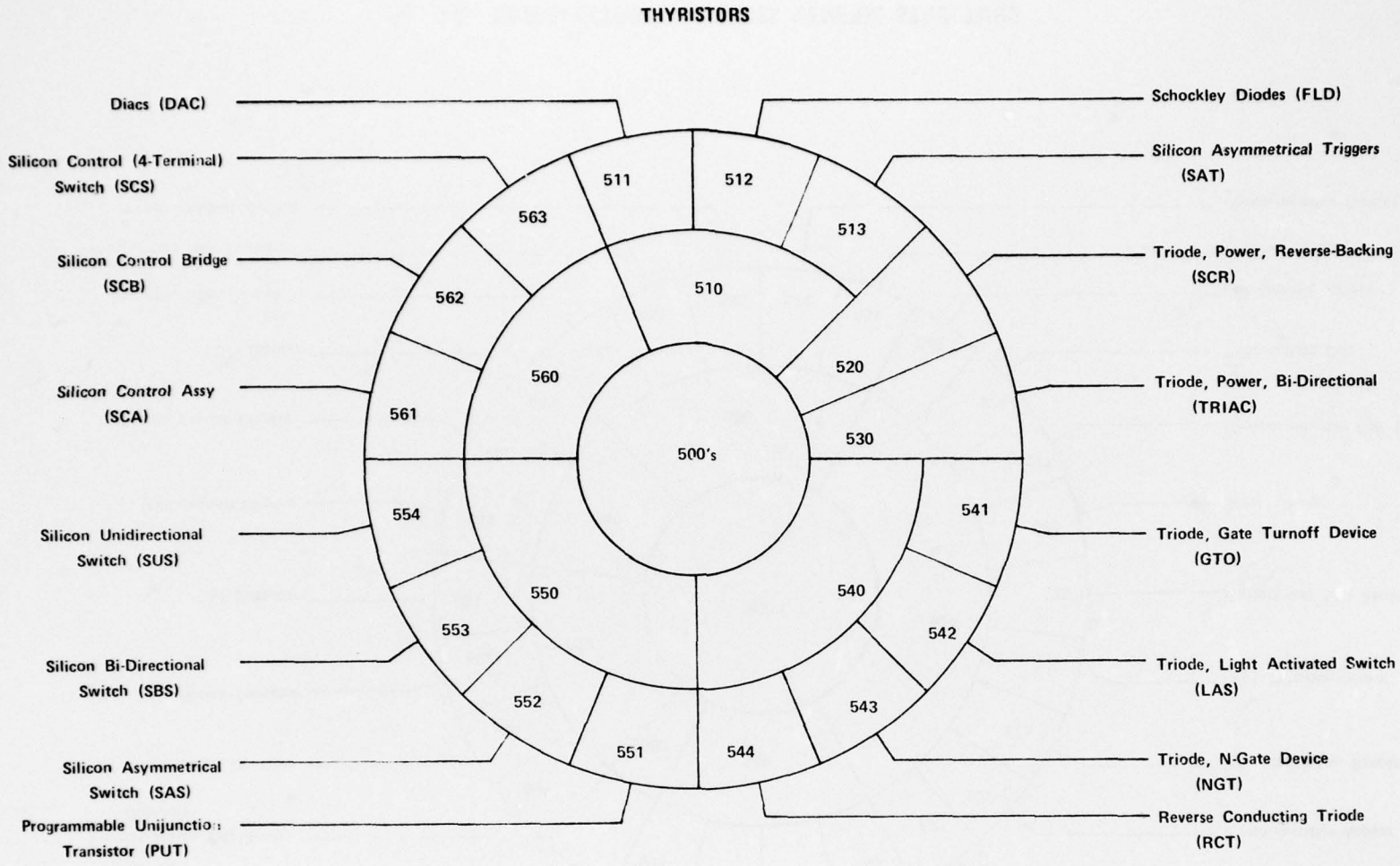


Fig. D-3. THYRISTORS GENERIC STRUCTURE

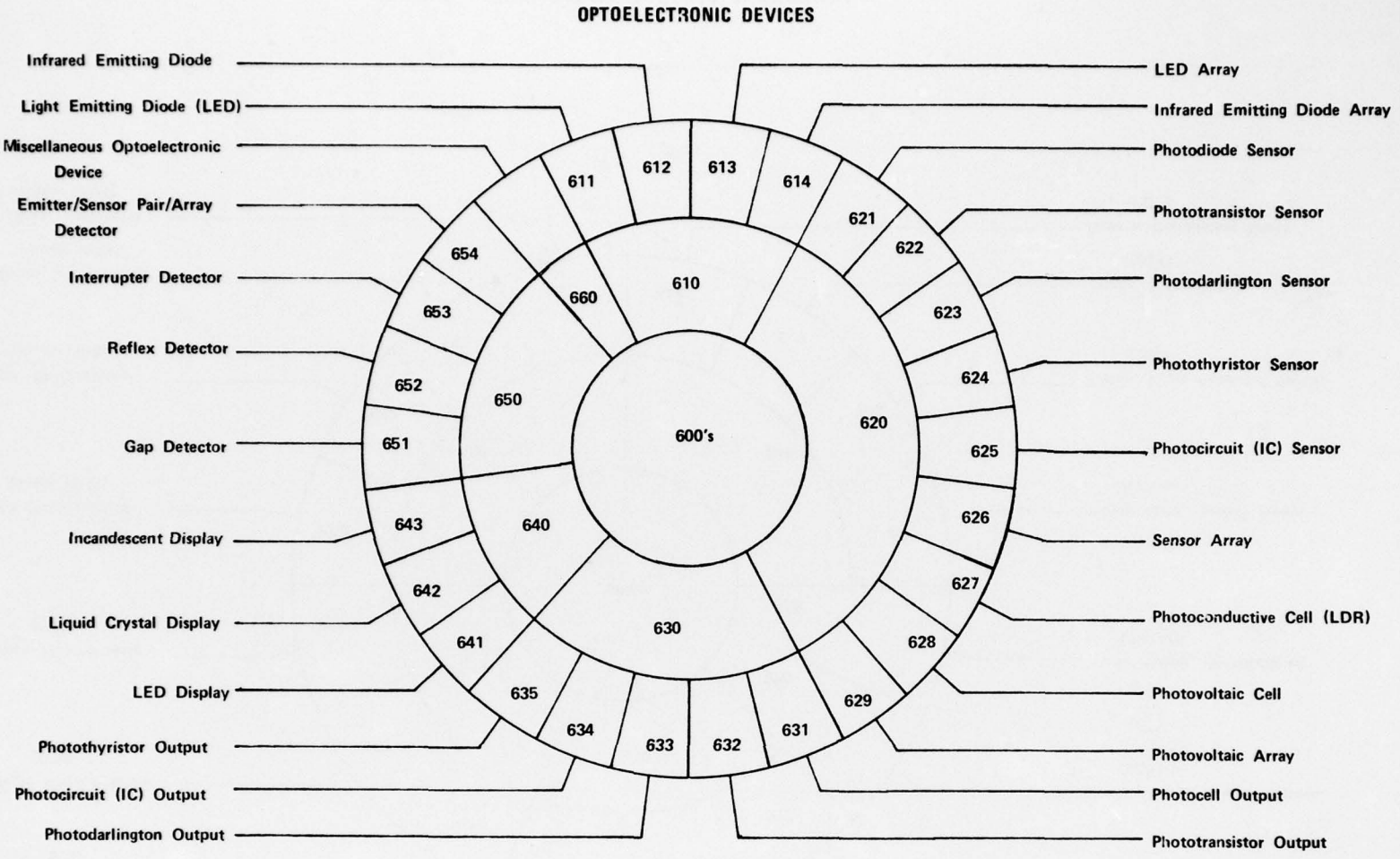


Fig. D-4. OPTOELECTRONIC DEVICES GENERIC STRUCTURE

BIBLIOGRAPHIC DATA SHEET	1. Report No. DSR-2	2.	3. Recipient's Accession No.
4. Title and Subtitle DISCRETE SEMICONDUCTOR RELIABILITY Transistor/Diode Data			5. Report Date 1977 6.
7. Author(s) Roy C. Walker and David B. Nicholls			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Reliability Analysis Center (RBRAC) Rome Air Development Center Griffiss Air Force Base, NY 13441			10. Project/Task/Work Unit No. 11. Contract/Grant No. F30602-76-C-0192
12. Sponsoring Organization Name and Address Rome Air Development Center Griffiss Air Force Base, NY 13441			13. Type of Report & Period Covered 14.

15. Supplementary Notes Second of a series of annual data publications dealing with discrete semiconductor reliability

16. Abstracts

This Discrete Semiconductor Reliability compendium contains failure rates on transistors and diodes from actual field use conditions, in-house checkout and reliability tests performed at the equipment level.

Generic part-type failure rate summaries and a reliability data tabulation by E.I.A.-registered part number are presented. The failures reported are described in a separate section which includes detailed failure analysis information. The details of the data sources are presented as an Appendix.

17. Key Words and Document Analysis. 17a. Descriptors

Discrete Semiconductors
Transistors
Diodes
Field Experience
Reliability Demonstration
Reliability
Failure Rates

17b. Identifiers/Open-Ended Terms

Discrete Semiconductor Reliability compendium

17c. COSATI Field Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Approved for public release; distribution unlimited. Available from NTIS or RAC	UNCLASSIFIED	304
	20. Security Class (This Page) UNCLASSIFIED	22. Price $50.00

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74