The documentation and process conversion measures necessary to comply with this revision shall be completed by 14 June 1994

INCH-POUND

MIL-S-19500/127M
14 March 1994
SUPERSEDING
MIL-S-19500/127L
8 September 1992

MILITARY SPECIFICATION

SEMICONDUCTOR DEVICES, DIODE, SILICON, VOLTAGE REGULATOR, TYPES 1N4370A-1 THROUGH 1N4372A-1, AND 1N746A-1 THROUGH 1N759A-1, 1N4370AUR-1 THROUGH 1N4372AUR-1 AND 1N746AUR-1 THROUGH 1N759AUR-1, 1N4370C-1 THROUGH 1N4372C-1, AND 1N746C-1 THROUGH 1N759C-1, 1N4370CUR-1 THROUGH 1N4372CUR-1 AND 1N746CUR-1 THROUGH 1N759CUR-1, 1N4370D-1 THROUGH 1N4372D-1, AND 1N746D-1 THROUGH 1N759D-1, 1N4370DUR-1 THROUGH 1N4372DUR-1 AND 1N746DUR-1 THROUGH 1N759DUR-1, JAN, JANTX, JANTXV, AND JANHC

JANS level (see 6.3).

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for 500 milliwatt, silicon, voltage regulator diodes with voltage tolerances of 5, 2, and 1 percent. Three levels of product assurance are provided for each device type as specified in MIL-S-19500. One level of product assurance is provided for die.

1.2 Physical dimensions. See 3.3 (similar to DO-35 and DO-213AA).

1.3 Maximum ratings. Maximum ratings are as shown in column 4 of table IV herein and as follows:

P_T = 500 mW, (DO-35) at T_L = +50°C, L = .375 inch (9.53 mm); both ends of case or diode body to heat sink at L = .375 inch (9.53 mm). Derate I_Z to 0.0 mA dc at +175°C.
P_T = 500 mW (DO-213AA) at T_{EC} = +125°C, derate to 0 at +175°C.
-65°C ≤ T_{OP} ≤ +175°C; -65°C ≤ T_{STG} ≤ +175°C.

1.4 Primary electrical characteristics. Primary electrical characteristic are as shown in columns 2, 9, 12, and 14 of table IV herein and as follows:

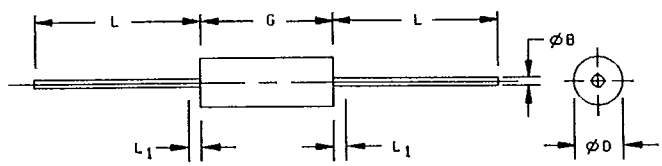
2.4 V dc ≤ V_Z ≤ 12 V dc
1N4370A-1 through 1N4372A-1 and 1N746A-1 through 1N759A-1 are 5 percent voltage tolerance.
1N4370C-1 through 1N4372C-1 and 1N746C-1 through 1N759C-1 are 2 percent voltage tolerance.
1N4370D-1 through 1N4372D-1 and 1N746D-1 through 1N759D-1 are 1 percent voltage tolerance.

Thermal resistance:

$R_{\theta JL}$ = 250°C/W maximum at L = .375 inch (9.53 mm) (DO-35).
$R_{\theta JEC}$ = 100°C/W maximum. Junction to end-caps (DO-213AA).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Electronics Supply Center, ATTN: DESC-ELDT, 1507 Wilmington Pike, Dayton, OH 45444-5765, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

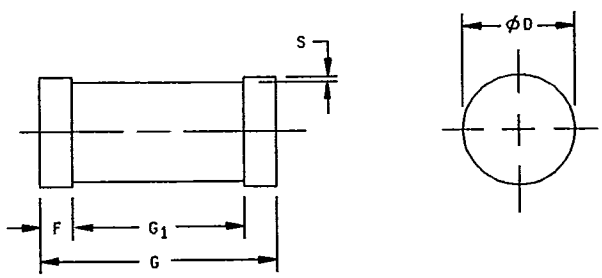
AMSC N/A
FSC 5961



Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
ϕD	.055	.090	1.40	2.29	3
ϕB	.018	.023	0.46	0.58	
G	.120	.200	3.05	5.08	3
L	1.000	1.500	25.40	38.10	
L_1		.050		1.27	4

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Package contour optional within ϕD and length G. Heat slugs, if any, shall be included within this cylinder but shall not be subject to minimum limit of ϕD.
4. Within this zone, lead diameter may vary to allow for lead finishes and irregularities other than heat slugs.

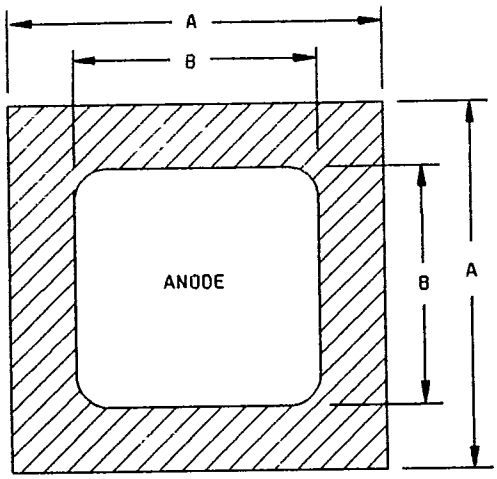
FIGURE 1. Semiconductor device, diode, types 1N4370A-1 through 1N4372A-1, 1N4370C-1 through 1N4372C-1, 1N4370D-1 through 1N4372D-1, 1N746A-1 through 1N759A-1, 1N746C-1 through 1N759C-1, and 1N746C-1 through 1N759C-1 (DO-35).



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
ϕD	.063	.067	1.60	1.70
F	.016	.022	0.41	0.55
G	.130	.146	3.30	3.70
G_1	.100 ref		2.54 ref	
S	.001 min		0.03 min	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 2. Physical dimensions types 1N4370AUR-1 through 1N4372AUR-1, 1N4370CUR-1 through 1N4372CUR-1, 1N4370DUR-1 through 1N4372DUR-1, 1N746AUR-1 through 1N759AUR-1, 1N746CUR-1 through 1N759CUR-1, and 1N746DUR-1 through 1N759RUR-1 (DO-213AA).



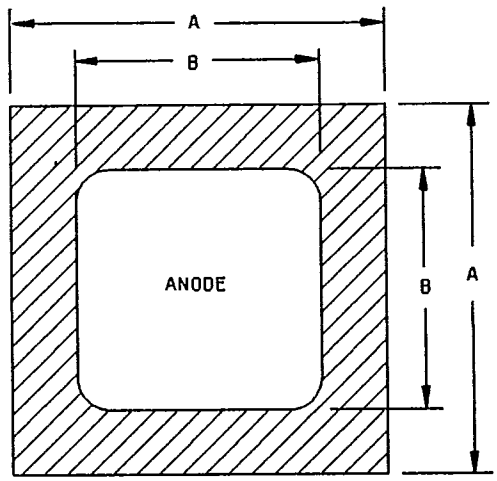
BACKSIDE IS CATHODE

(A-version)

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.021	.025	0.53	0.63
B	.013	.017	0.33	0.43

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The physical characteristics of the die thickness are .010 ±.002 (0.25 mm). Metallization is top = (anode)-AL, back: (cathode)-AU. AL thickness = 25000 Å minimum, AU thickness = 4000 Å minimum.
4. Circuit layout data: For zener operation, cathode must be operated positive with respect to anode.
5. Requirements in accordance with MIL-S-15000 (appendix H) are performed in a TO-5 package (see 6.5).

FIGURE 3. Physical dimensions JANHCA die dimensions.



BACKSIDE IS CATHODE

(B-version)

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.024	.028	0.61	0.71
B	.017	.021	0.43	0.53

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The physical characteristics of the die thickness are .010 ±.002 (0.25 mm). Metallization is top = (anode)-AL, back: (cathode)-AU. AL thickness = 40000 Å minimum, AU thickness = 5000 Å minimum.
4. Circuit layout data: For zener operation, cathode must be operated positive with respect to anode.
5. Requirements in accordance with MIL-S-19500 (appendix H) are performed in a TO-5 package (see 6.5).

FIGURE 4. Physical dimensions JANHCB die dimensions.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in this solicitation (see 6.2).

SPECIFICATION

MILITARY

MIL-S-19500 - Semiconductor Devices, General Specification for.

STANDARD

MILITARY

MIL-STD-750 - Test Methods for Semiconductor Devices.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Associated detail specification. The individual item requirements shall be in accordance with MIL-S-19500, and as specified herein.

3.2 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-S-19500, and herein.

EC - - - - - - - - - - - - - - - - - end-caps.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-S-19500, and figures 1 (DO-35), 2 (DO-213), 3 and 4 (die) herein.

3.3.1 Lead finish. Lead finish shall be solderable as defined in MIL-S-19500, MIL-STD-750, and herein. Where a choice of lead finish is desired, it shall be specified in the acquisition document.

3.3.2 Dash one construction. Dash one (-1) devices shall be metallurgically bonded double plug construction in accordance with the requirements of category I, II, or III (see MIL-S-19500, paragraph 30.14 and subparagraphs).

3.4 Marking. Marking shall be in accordance with MIL-S-19500, except at the option of the manufacturer, the DO-35 versions may leave off "-" portion of type designation (example: JANTX1N4370A1).

3.4.1 Marking of UR-1 version devices. For UR-1 version devices only, all marking (except polarity) may be omitted from the body, but shall be retained on the initial container.

3.5 Selection of tight tolerance devices. The C and D suffix devices shall be selected from JAN, JANTX, JANTXV, or JANS devices, which have successfully completed all applicable screening, and groups A, B, and C testing as 5 percent tolerance devices. All sublots of C and D suffix devices shall pass group A, subgroup 2, at tightened tolerances. Tighter tolerances for mounting clip temperature shall be maintained for reference purpose to establish correlation. For C and D tolerance levels, T_L = +25°C ±2°C at 0.375 inch from body or equivalent.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2.1 JANHC devices. JANHC devices shall be qualified in accordance with appendix H of MIL-S-19500.

4.2.2 Construction verification. Cross sectional photos from three devices shall be submitted in the qualification report.

4.3 Screening (JAN, JANTXV, and JANTX levels only). Screening shall be in accordance with MIL-S-19500 (table II) and as specified herein. The following measurements shall be made in accordance with table I herein. Devices that exceed the limits of table I herein shall not be acceptable.

Screen (see table II of MIL-S-19500)	Measurement	
	JANTX and JANTXV	JAN level
3a	Temperature cycling	Temperature cycling
3c 1/	Thermal impedance, see 4.5.5.	Thermal impedance, see 4.5.5.
9	Not applicable.	Not applicable
11	I_{R1} and V_Z	
12	See 4.3.2, t = 48 hrs	
13 2/	ΔI_{R1} ≤ 100% of initial reading or 50 nA dc, whichever is greater; ΔV_Z ≤ ±2% initial reading Subgroup 2 of table I herein.	

1/ Thermal impedance shall be performed any time after sealing provided temperature cycling is performed in accordance with MIL-S-19500, screen 3 prior to this thermal test.

2/ PDA = 5 percent for screen 13 applies to ΔI_{R1}, ΔV_Z, and subgroup 2 of table I herein. Thermal impedance ($Z_{\theta JX}$) is not required in screen 13.

4.3.1 Screening (JANHC). Screening of JANHC die shall be in accordance with MIL-S-19500, appendix H. As a minimum, die shall be 100 percent probed to ensure compliance with group A, subgroup 2 herein (with exception to thermal impedance).

4.3.2 Power burn-in conditions. Power burn-in conditions are as follows: I_Z = column 8 of table IV minimum; mounting conditions in accordance with MIL-STD-750, method 1038, test condition B, T_{EC} = +75°C to +125°C for surface mount devices. To better utilize burn-in equipment, higher values of I_Z shall be permitted provided:

a. The junction temperature does not exceed +175°C.
b. The power dissipation does not exceed 500 mW (see figure 5).

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with MIL-S-19500, and table I herein.

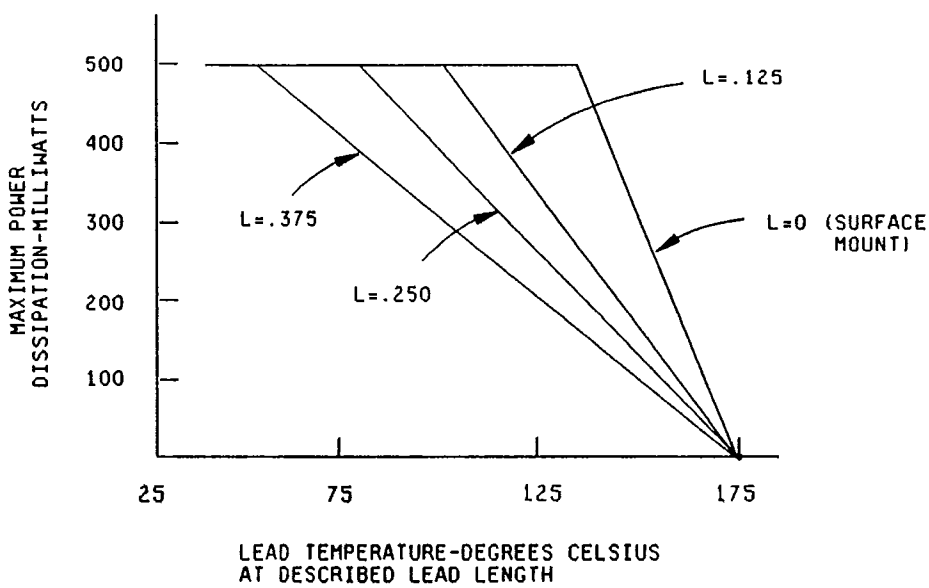


FIGURE 5. Maximum power versus lead temperature and lead length (see 6.4).

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table IVb (JAN, JANTX, and JANTXV) of MIL-S-19500, and as follows. Electrical measurements (end-points) shall be in accordance with the applicable steps of table III herein.

Subgroup	Method	Condition
B2	4066	See 4.5.1
B3	1027	I_Z = column 8 of table IV; (see 4.3.2).
B4	2075	See 4.5.7
B5	----	Not applicable
B6	1032	T_A = +175°C.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table V of MIL-S-19500, and as follows. Electrical measurements (end-points) shall be in accordance with the applicable footnotes and steps of table III herein.

Subgroup	Method	Condition
C2	2036	Tension: Test condition A; weight = 4 lbs; t = 15 seconds. Lead fatigue: Test condition E. (Tension and lead fatigue are not required for UR-1 suffix devices).
C3	----	Not applicable.
C6	1026	I_Z = column 8 of table IV; See 4.3.2.
C7	4071	I_Z = 7.5 mA dc; T_1 = +25°C ±5°C; T_2 = T_1 +125°C ±5°C. (Max limit per column 14 of table IV.)

4.5 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows:

4.5.1 Surge current (I_{ZSM}). The peak currents shown in column 10 of table IV shall be applied in the reverse direction and these shall be superimposed on the current (I_Z = 20 mA dc) a total of 5 surges at 1-minute intervals. Each individual surge shall be one-half square-wave-pulse of one one-hundred twenth second duration or an equivalent one-half sine wave with the same effective rms current. T_A = +25°C ±5°C.

4.5.2 Regulator voltage measurements. The test current shall be applied until thermal equilibrium is attained (20 ±2 seconds) prior to reading the breakdown voltage. For this test, the diode shall be suspended by its leads with mounting clips whose inside edge is located at 0.375 inch (9.53 mm) from the body and the mounting clips shall be maintained at a temperature of +25°C +8°C, and -2°C. This measurement may be performed after a shorter time following application of the test current than that which provides thermal equilibrium if correlation to stabilized readings can be established to the satisfaction of the Government.

4.5.3 Voltage regulation V_Z (reg). Voltage regulation shall be determined by the difference of the regulator voltage measured at different currents as specified in table I, group A, subgroup 7. Both test shall be performed at thermal equilibrium. This ΔV_Z shall not exceed column 7 of table IV.

4.5.4 Temperature coefficient of regulator voltage (αV_Z). The device shall be temperature stabilized with current applied prior to reading regulator voltage at the specified ambient temperature as specified in paragraph 4.4.3, group C, subgroup 7.

4.5.5 Thermal impedance ($Z_{\Theta JX}$). The $Z_{\Theta JX}$ measurements shall be performed in accordance with MIL-STD-750C, method 3101. The maximum limit for $Z_{\Theta JX}$ in screening (table II of MIL-S-19500) shall be derived by each vendor by means of process control. When three lot date codes have exhibited control, the data from these three lots will be used to establish a fixed screening limit, (not to exceed the group A, subgroup 2 limit). Once a fixed limit has been established, monitor all future sealing lots using a five piece sample from each lot to be plotted on the applicable X and R chart.

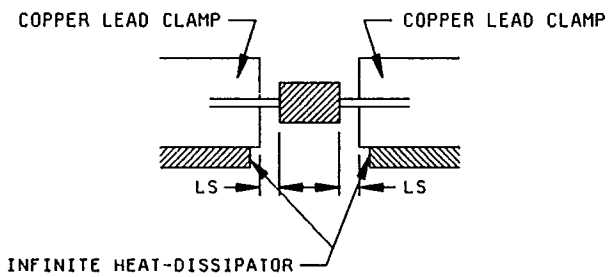
a.	I_M measurement current	1 mA - 10 mA.
b.	I_H forward heating current	.5 A - 1.0 A.
c.	t_H heating time	10 ms.
d.	t_{MD} measurement delay time	70 μs maximum.

4.5.5.1 For initial qualification or requalification. Read and record data ($Z_{\Theta JX}$) shall be supplied to the qualifying activity on one lot (random sample of 500 devices minimum). Twenty-two serialized devices shall be sent to the qualifying activity for test correlation.

4.5.6 Thermal resistance. Thermal resistance measurement shall be performed in accordance with MIL-STD-750, method 3101 or 4081. Forced moving air or draft shall not be permitted across the device during test. The maximum limit for $R_{\Theta JL}$ under these test conditions shall be $R_{\Theta JL(max)}$ = 250°C/W or $R_{\Theta JEC(max)}$ = 100°C/W The following conditions shall apply when using method 3101:

a.	I_M	1 mA to 10 mA
b.	I_H	200 mA to 400 mA
c.	t_H	25 seconds minimum
d.	t_{MD}	70 μs maximum

LS = Lead spacing = .375 inch as defined on figure 6 below:
LS = 0 inch for "UR" suffix devices.



NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 6. Mounting conditions.

4.5.6.1 For initial qualification and requalification. Read and record data in accordance with group E herein and shall be included in the qualification report.

4.5.7 Decap internal visual scribe and break. Scratch glass at cavity area with diamond scribe. Carefully snap open. Using 30X magnification examine the area where die (or bonding material) are in contact with the plugs, verify metallurgical bonding area. If the verification of the metallurgical bonding area is in question, the test method 3101 and test condition; and limits herein ($Z_{\Theta JX}$) shall be used to determine suitability for use.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limits 2/		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical inspection	2071					
Subgroup 2						
Forward voltage	4011	I_F = 200 mA dc	V_F		1.1	V dc
Reverse current	4016	DC method, V_R = column 11 of table IV	I_{R1}		Col. 12	µA dc
Regulator voltage (see 4.5.2)	4022	I_{Z1} = 250 µA dc	V_{Z1}	Col. 9	Col. 4	V dc
Regulator voltage (see 4.5.2)	4022	I_{Z2} = 20 mA dc	V_{Z2}	Col. 3	Col. 4	V dc
Thermal impedance	3101	See 4.5.5	$Z_{\Theta JX}$		35	°C/W
Subgroup 3						
High temperature operation		T_A = +150°C				
Reverse current	4016	DC method, V_R = column 11 of table IV	I_{R2}		Col. 5	µA dc
Subgroup 4						
Small-signal reverse breakdown impedance	4051	I_Z = 20 mA dc I_{SIG} = 10% of I_Z ac	Z_Z		Col. 6	Ω
Subgroups 5 and 6						
Not applicable						
Subgroup 7						
Voltage regulation (see 4.5.3)		I_{Z3} = 2 mA dc I_{Z4} = 20 mA dc	V_Z (reg)		Col. 7	V dc

1/ For sampling plan, see MIL-S-19500.
2/ Column references are to table IV.

TABLE II. Group E inspection (all quality levels).

Inspection	MIL-STD-750		Qualification conformance inspection
	Method	Conditions	
Subgroup 1			
Temperature cycling	1051	500 cycles	22 devices, c = 0
Electrical measurements		See table III, steps 1, 3, 4, and 5	
Subgroup 2			
Steady-state intermittent operating life	1037	6,000 cycles, I_{ZM} = Col. 8	22 devices, c = 0
Electrical measurements		See table III, steps 2, 3, 4, and 5	
Subgroup 3			
Not applicable			
Subgroup 4			
Thermal resistance surface mount	3101 or 4081	$R_{\Theta JEC}$ = 100°C/W (max) at zero lead length. +25°C ≤ T_{EC} ≤ +35°C; (see 4.5.6)	22 devices, c = 0
Thermal resistance leaded	3101 or 4081	$R_{\Theta JL}$ = 250°C/W (maximum) at .375 inches. Lead length at +25°C ≤ T_L ≤ +35°C (see 4.5.6).	22 devices, c = 0

TABLE III. Groups B, C, and E electrical measurements. 1/2/

Step	Inspection	MIL-STD-750		Symbol	Limits 3/		Unit
		Method	Conditions		Min	Max	
1.	Reverse current	4016	DC method; V_R = column 11 of table IV	I_{R1}		Col. 12	µA dc
2.	Reverse current	4016	DC method; V_R = column 11 of table IV	I_{R3}		Col. 13	µA dc
3.	Regulator voltage (see 4.5.2)	4022	I_{Z2} = 20 mA dc	V_Z	Col. 3	Col. 4	V dc
4.	Small-signal reverse breakdown impedance	4051	I_{Z2} = 20 mA dc, I_{SIG} = 10% of I_Z rms	Z_Z		Col. 6	Ω
5.	Thermal impedance	3101	See 4.5.5.	$Z_{\Theta JX}$		35	°C/W

1/ The electrical measurements for table IVb of MIL-S-19500 are as follows:

a. Subgroup 2, see table III herein, steps 1, 3, 4, and 5.

b. Subgroups 3 and 6, see table III herein, steps 2, 3, and 4.

2/ The electrical measurements for table V of MIL-S-19500 are as follows:

a. Subgroup 2, see table III herein, steps 1, 3, 4, and 5.

b. Subgroup 6, see table III herein, steps 2, 3, and 4.

3/ Column references are to table IV.

TABLE IV. Electrical characteristics (5 percent tolerance diodes).

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13	Col 14	Col 15
Type	V_Z nom at I_Z = 20 mA	V_Z min	V_Z max	I_{R2} at T_A = +150°C V_R = col 11	Z_Z at I_Z = 20 mA	V_Z (reg)	I_{ZM}	V_Z (min)	I_{ZSM}	V_R	I_{R1} at T_A = +25°C V_R = col 11	I_{R3} life test end-points T_A = +25°C	αV_Z neg. limit	αV_Z pos. limit
	Volts	Volts	Volts	µA	ohms	Volts	mA	Volts	mA	Volts	µA	µA	%/°C	%/°C
1N4370A-1	2.4	2.28	2.52	200	30	1.0	155	1.1	1000	1.0	100	150	-0.085	0
1N4371A-1	2.7	2.57	2.83	150	30	1.0	140	1.2	1000	1.0	60	100	-0.080	0
1N4372A-1	3.0	2.85	3.15	100	29	1.0	125	1.3	1000	1.0	30	60	-0.075	0
1N746A-1	3.3	3.14	3.46	30	24	1.0	120	1.5	1000	1.0	5	10	-0.070	0
1N747A-1	3.6	3.42	3.78	30	22	1.0	110	1.8	1000	1.0	3	6	-0.065	0
1N748A-1	3.9	3.71	4.09	30	20	1.0	100	2.0	1000	1.0	2	4	-0.060	0
1N749A-1	4.3	4.09	4.51	50	18	1.0	90	2.4	990	1.0	2	4	-0.055	+.020
1N750A-1	4.7	4.47	4.93	50	15	1.0	85	2.8	980	1.5	5	10	-0.043	+.025
1N751A-1	5.1	4.85	5.35	50	14	0.8	75	3.3	960	2.0	5	10	-0.030	+.030
1N752A-1	5.6	5.32	5.88	50	8	0.8	70	4.3	950	2.5	5	10	-0.028	+.036
1N753A-1	6.2	5.89	6.51	50	3	0.6	65	5.2	910	3.5	5	10	0	+.045
1N754A-1	6.8	6.46	7.14	50	3	0.4	60	6.0	870	4.0	2	4	0	+.050
1N755A-1	7.5	7.13	7.87	50	4	0.4	55	6.6	810	5.0	2	4	0	+.058
1N756A-1	8.2	7.79	8.61	50	5	0.4	50	7.5	740	6.0	1	2	0	+.062
1N757A-1	9.1	8.65	9.55	50	6	0.5	45	8.4	650	7.0	1	2	0	+.068
1N758A-1	10.0	9.50	10.50	50	7	0.7	40	9.1	540	8.0	1	2	0	+.076
1N759A-1	12.0	11.40	12.60	50	10	1.0	35	11.0	400	9.0	1	2	0	+.08

TABLE IV. Electrical characteristics (2 percent tolerance diodes) - Continued.

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13	Col 14	Col 15
Type	V_Z nom at I_Z = 20 mA	V_Z min	V_Z max	I_{R2} at T_A = +150°C V_R = col 11	Z_Z at I_Z = 20 mA	V_Z (reg)	I_{ZM}	V_Z (min)	I_{ZSM}	V_R	I_{R1} at T_A = +25°C V_R = col 11	I_{R3} life test end-points T_A = +25°C	αV_Z neg. limit	αV_Z pos. limit
	Volts	Volts	Volts	µA	ohms	Volts	mA	Volts	mA	Volts	µA	µA	%/°C	%/°C
1N4370C-1	2.4	2.352	2.448	200	30	1.0	155	1.1	1000	1.0	100	150	-0.085	0
1N4371C-1	2.7	2.646	2.754	150	30	1.0	140	1.2	1000	1.0	60	100	-0.080	0
1N4372C-1	3.0	2.94	3.06	100	29	1.0	125	1.3	1000	1.0	30	60	-0.075	0
1N746C-1	3.3	3.234	3.366	30	24	1.0	120	1.5	1000	1.0	5	10	-0.070	0
1N747C-1	3.6	3.528	3.672	30	22	1.0	110	1.8	1000	1.0	3	6	-0.065	0
1N748C-1	3.9	3.822	3.978	30	20	1.0	100	2.0	1000	1.0	2	4	-0.060	0
1N749C-1	4.3	4.214	4.986	50	18	1.0	90	2.4	990	1.0	2	4	-0.055	+.020
1N750C-1	4.7	4.606	4.794	50	15	1.0	85	2.8	980	1.5	5	10	-0.043	+.025
1N751C-1	5.1	4.998	5.202	50	14	0.8	75	3.3	960	2.0	5	10	-0.030	+.030
1N752C-1	5.6	5.488	5.712	50	8	0.8	70	4.3	950	2.5	5	10	-0.028	+.036
1N753C-1	6.2	6.076	6.324	50	3	0.6	65	5.2	910	3.5	5	10	0	+.045
1N754C-1	6.8	6.664	6.936	50	3	0.4	60	6.0	870	4.0	2	4	0	+.050
1N755C-1	7.5	7.357	7.650	50	4	0.4	55	6.6	810	5.0	2	4	0	+.058
1N756C-1	8.2	8.036	8.364	50	5	0.4	50	7.5	740	6.0	1	2	0	+.062
1N757C-1	9.1	8.918	9.282	50	6	0.5	45	8.4	650	7.0	1	2	0	+.068
1N758C-1	10.0	9.80	10.20	50	7	0.7	40	9.1	540	8.0	1	2	0	+.076
1N759C-1	12.0	11.76	12.24	50	10	1.0	35	11.0	400	9.0	1	2	0	+.08

TABLE IV. Electrical characteristics (1 percent tolerance diodes) - Continued.

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13	Col 14	Col 15
Type	V_Z nom at I_Z = 20 mA	V_Z min	V_Z max	I_{R2} at T_A = +150°C V_R = col 11	Z_Z at I_Z = 20 mA	V_Z (reg)	I_{ZM}	V_Z (min)	I_{ZSM}	V_R	I_{R1} at T_A = +25°C V_R = col 11	I_{R3} life test end-points T_A = +25°C	αV_Z neg. limit	αV_Z pos. limit
	Volts	Volts	Volts	µA	ohms	Volts	mA	Volts	mA	Volts	µA	µA	%/°C	%/°C
1N4370D-1	2.4	2.376	2.424	200	30	1.0	155	1.1	1000	1.0	100	150	-0.085	0
1N4371D-1	2.7	2.673	2.727	150	30	1.0	140	1.2	1000	1.0	60	100	-0.080	0
1N4372D-1	3.0	2.970	3.030	100	29	1.0	125	1.3	1000	1.0	30	60	-0.075	0
1N746D-1	3.3	3.267	3.333	30	24	1.0	120	1.5	1000	1.0	5	10	-0.070	0
1N747D-1	3.6	3.564	3.636	30	22	1.0	110	1.8	1000	1.0	3	6	-0.065	0
1N748D-1	3.9	3.861	3.939	30	20	1.0	100	2.0	1000	1.0	2	4	-0.060	0
1N749D-1	4.3	4.257	4.343	50	18	1.0	90	2.4	990	1.0	2	4	-0.055	+.020
1N750D-1	4.7	4.653	4.747	50	15	1.0	85	2.8	980	1.5	5	10	-0.043	+.025
1N751D-1	5.1	5.049	5.151	50	14	0.8	75	3.3	960	2.0	5	10	-0.030	+.030
1N752D-1	5.6	5.544	5.656	50	8	0.8	70	4.3	950	2.5	5	10	-0.028	+.036
1N753D-1	6.2	6.138	6.262	50	3	0.6	65	5.2	910	3.5	5	10	0	+.045
1N754D-1	6.8	6.732	6.868	50	3	0.4	60	6.0	870	4.0	2	4	0	+.050
1N755D-1	7.5	7.425	7.575	50	4	0.4	55	6.6	810	5.0	2	4	0	+.058
1N756D-1	8.2	8.118	8.282	50	5	0.4	50	7.5	740	6.0	1	2	0	+.062
1N757D-1	9.1	9.009	9.90	50	6	0.5	45	8.4	650	7.0	1	2	0	+.068
1N758D-1	10.0	9.90	10.10	50	7	0.7	40	9.1	540	8.0	1	2	0	+.076
1N759D-1	12.0	11.88	12.12	50	10	1.0	35	11.0	400	9.0	1	2	0	+.08

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-S-19500.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Notes. The notes specified in MIL-S-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents shall specify the following:

a. Issue of DODISS to be cited in the solicitation.

b. Lead finish (see 3.3.1).

c. For die acquisition, the JANHC letter version should be specified (see figures 3 and 4).

d. Type designation and product assurance level.

6.3 Cross reference substitution list. JANS level will no longer be built to this specification. Devices in stock are acceptable provided the date code does not exceed the date of implementation of this specification. Devices required for space high reliability applications shall meet requirements of MIL-S-19500/533. Existing supplies of the superseded parts may be used until exhausted. A PIN for PIN replacement table follows, and these devices are directly interchangeable:

JANS superseded PIN	JANS superseding PIN
1N4370A-1, C-1 or D-1	1N6309, C, D
1N4371A-1, C-1 or D-1	1N6310, C, D
1N4372A-1, C-1 or D-1	1N6311, C, D
1N746A-1, C-1 or D-1	1N6312, C, D
1N747A-1, C-1 or D-1	1N6313, C, D
1N748A-1, C-1 or D-1	1N6314, C, D
1N749A-1, C-1 or D-1	1N6315, C, D
1N750A-1, C-1 or D-1	1N6316, C, D
1N751A-1, C-1 or D-1	1N6317, C, D
1N752A-1, C-1 or D-1	1N6318, C, D
1N753A-1, C-1 or D-1	1N6319, C, D
1N754A-1, C-1 or D-1	1N6320, C, D
1N755A-1, C-1 or D-1	1N6321, C, D
1N756A-1, C-1 or D-1	1N6322, C, D
1N757A-1, C-1 or D-1	1N6323, C, D
1N758A-1, C-1 or D-1	1N6324, C, D
1N759A-1, C-1 or D-1	1N6326, C, D

6.4 Maximum power versus lead temperature. Typical maximum power rating as a function of lead temperature for various lead lengths is shown on figure 6.

6.5 Suppliers of JANHC die. The qualified JANHC die suppliers with the applicable letter version (example JANHCA1N4370A) will be identified on the QPL.

JANHC ordering information 1/

PIN	Manufacture CAGE	
	55801	12954
1N4370	JANHCA1N4370	JANHCB1N4370
1N4371	JANHCA1N4371	JANHCB1N4371
1N4372	JANHCA1N4372	JANHCB1N4372
1N746	JANHCA1N746	JANHCB1N746
1N747	JANHCA1N747	JANHCB1N747
1N748	JANHCA1N748	JANHCB1N748
1N749	JANHCA1N749	JANHCB1N749
1N750	JANHCA1N750	JANHCB1N750
1N751	JANHCA1N751	JANHCB1N751
1N752	JANHCA1N752	JANHCB1N752
1N753	JANHCA1N753	JANHCB1N753
1N754	JANHCA1N754	JANHCB1N754
1N755	JANHCA1N755	JANHCB1N755
1N756	JANHCA1N756	JANHCB1N756
1N757	JANHCA1N757	JANHCB1N757
1N758	JANHCA1N758	JANHCB1N758
1N759	JANHCA1N759	JANHCB1N759

1/ Suffixes can be "A", "C", or "D".

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Army - ER
Navy - EC
Air Force - 17
NASA - NA

Review activities:
Army - AR, AV, MI, SM
Navy - AS, CG, MC
Air Force - 13, 19, 85, 99

Preparing activity:
DLA - ES

Agent:
DLA - ES

(Project 5961-1631)