

The documentation and process conversion measures necessary to comply with this document shall be completed by 26 April 2010.

INCH-POUND

MIL-PRF-19500/260L
26 January 2010
SUPERSEDING
MIL-PRF-19500/260K
14 March 2007

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, POWER RECTIFIER,
TYPES 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A, AND AR VERSIONS,
JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC,
1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650, 1N1124RA,
1N1126RA, 1N1128RA, 1N3649R, AND 1N3650R, JAN ONLY

The 1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650 and reverse versions have been moved from MIL-S-19500/104, which has been canceled, are now inactive for new design.

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

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-19500.

1. SCOPE

1.1 Scope. This specification covers the performance requirements for silicon semiconductor power rectifier diodes. Four levels of product assurance are provided for each encapsulated 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A device type as specified in MIL-PRF-19500, and two levels of product assurance for each unencapsulated device type. One level of product assurance is provided for each device type as specified in MIL-PRF-19500, for the 1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650. For normal and reverse (A, R, RA, and AR suffix) type devices see 3.4.1.

1.2 Physical dimensions. See figure 1 (DO-203AA, formerly DO-4) and figure 2 (JANHC and JANKC).

1.3 Maximum ratings. Unless otherwise specified, $T_C = +25^\circ\text{C}$.

Type	V_{RWM}	I_o $T_C = 150^\circ\text{C}$	$I_{f(\text{surge})}$ $T_C = 150^\circ\text{C}$ $T = 1/120 \text{ s}$	Barometric pressure (reduced)	T_J and T_{STG}	$R_{\theta JC}$
	<u>V dc</u>	<u>A dc</u>	<u>A pk</u>	<u>mmHg</u>	<u>°C</u>	<u>°C/W max</u>
1N1202A	200	12 (1)	240	N/A	-65 to +200	2.0
1N1204A	400	12 (1)	240	8	-65 to +200	2.0
1N1206A	600	12 (1)	240	16	-65 to +200	2.0
1N3671A	800	12 (1)	240	30	-65 to +200	2.0
1N3673A	1000	12 (1)	240	54	-65 to +200	2.0
1N1124A (2)	200	3.3 (3)	25	8	-65 to +175	2.0
1N1126A (2)	400	3.3 (3)	25	8	-65 to +175	2.0
1N1128A (2)	600	3.3 (3)	25	16	-65 to +175	2.0
1N3649 (2)	800	3.3 (3)	25	30	-65 to +175	2.0
1N3650 (2)	1,000	3.3 (3)	25	54	-65 to +175	2.0

See notes on next page.

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center, Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to Semiconductor@dsc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

1.3 Maximum ratings. Unless otherwise specified, $T_C = +25^\circ\text{C}$ - Continued.

- (1) Derate linearly 2 percent of I_O per degrees Celcius for $T_C = 150^\circ\text{C}$ to $T_C = 200^\circ\text{C}$.
- (2) The 1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650 and reverse versions have been moved from MIL-S-19500/104, which has been canceled, are now inactive for new design.
- (3) Derate linearly 33 mA dc/ $^\circ\text{C}$ for $T_C = 50^\circ\text{C}$ to $T_C = 150^\circ\text{C}$.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

(Copies of these documents are available online at <https://assist.daps.dla.mil/quicksearch/> or <https://assist.daps.dla.mil>, or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

* 2.3 Order of precedence. Unless otherwise noted herein or in the contract, 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

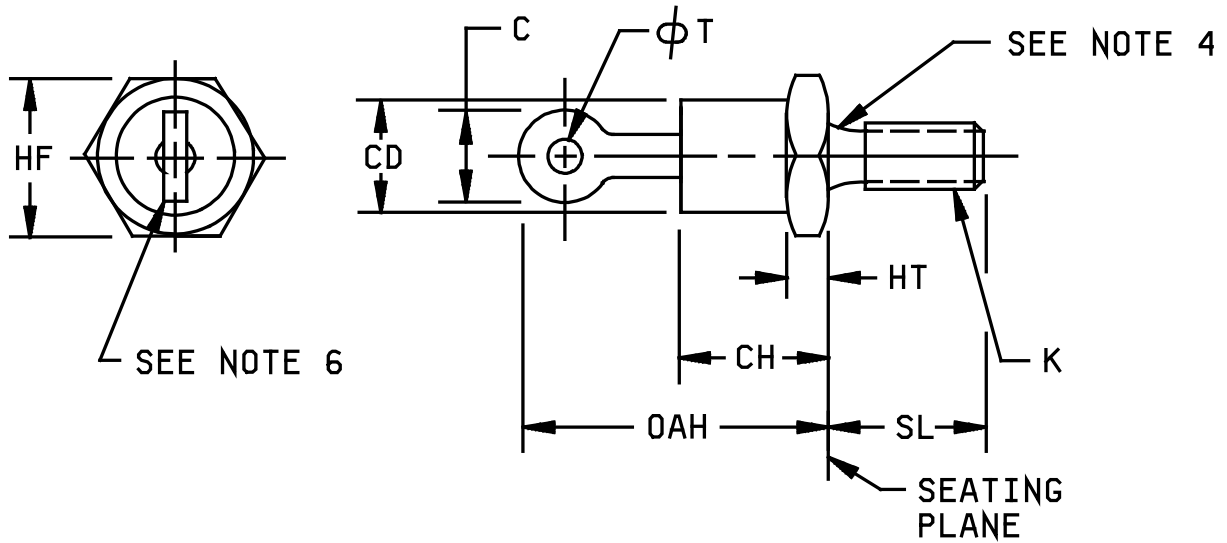
3.1 General. The individual item requirements shall be as specified in MIL-PRF-19500 and as modified herein.

3.2 Qualification. Devices furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturer's list (QML) before contract award (see 4.2 and 6.3).

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

3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500 and on figures 1 (DO-203AA, formerly DO-4) and figure 2 (JANHC and JANKC).

3.4.1 Normal and reverse (A, R, RA, and AR suffix) types. Reverse and normal types are identical except: The normal types have the cathode connected to the stud and the reverse types have the anode connected to the stud.

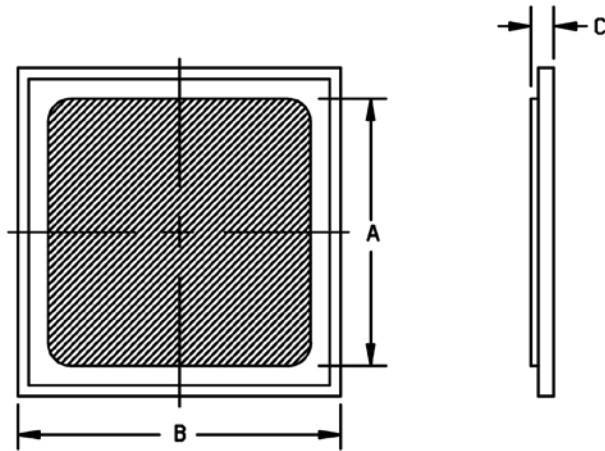


NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Units must not be damaged by torque of 15 inch-pounds applied to 10-32NF-2B nut assembled on thread.
4. Diameter of unthreaded portion .189 inch (4.80 mm) max and .163 inch (4.14 mm) min.
5. Complete threads to extend to within 2.5 threads of seating plane.
6. Angular orientation of this terminal is undefined.
7. Max pitch diameter of plated threads shall be basic pitch diameter .169 inch (4.31 mm) reference FED-STD-H28 (Screw Thread Standards for Federal Services.)
8. The A.S.A. thread reference is 10-32UNF2A.
9. Terminal shape is unrestricted.
10. Reversed (anode to stud) units shall be marked with an R following the last digit in the type number
11. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CH		.405		10.29	
CD		.424		10.77	
HF	.424	.437	10.77	11.10	
HT	.075	.175	1.90	4.44	
OAH		.800		20.32	
C		.250		6.35	9
ϕT	.060		1.52		
SL	.422	.453	10.72	11.51	
K					3,5,7

FIGURE 1. Physical dimensions (DO-203AA, formerly DO-4), 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A and AR versions, and 1N1124A, 1N1126A, 1N1128A, and RA versions 1N3649, 1N3650, and R versions.



A Version

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.112	.118	2.85	2.99
B	.147	.153	3.73	3.89
C	.009	.012	0.229	0.305

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The physical characteristics of the die are: Metallization {front (anode)}, consists of: Ti thickness = 1,200 Å minimum, Ni thickness = 2,000 Å minimum, Ag thickness = 4,000 Å minimum. Metallization {back, (cathode)} consists of: Ti thickness = 1,200 Å minimum, Ni thickness = 2,000 Å minimum, Ag thickness = 4,000 Å minimum.
4. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

* FIGURE 2. Physical dimensions JANHCA and JANKCA 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A.

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3.4.2 Lead finish. Lead finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750 and herein. Where a choice of lead finish is desired, it shall be specified in the contract or order (see 6.2).

3.4.3 Diode construction. All devices shall be in accordance with the requirements of MIL-PRF-19500 and herein.

3.5 Marking. Marking shall be in accordance with MIL-PRF-19500.

3.5.1 Polarity. The polarity shall be indicated by a graphic symbol with the arrow pointing toward the negative end for forward bias. The reversed units shall also be marked with an R, AR, or RA suffix in the part number.

3.6 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in 1.3, 1.4, and table I herein.

3.7 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table I herein.

3.8 Workmanship. Semiconductor devices shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.2).
- b. Screening (see 4.3).
- c. Conformance inspection (see 4.4).

4.1.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-PRF-19500 and herein, except for accumulation period shall be 3 months in lieu of 6 weeks.

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500 and herein. Tests in either polarity shall be sufficient to obtain approval of both polarities.

4.2.1 JANHC and JANKC devices. Qualification for JANHC and JANKC devices shall be in accordance with MIL-PRF-19500.

4.2.2 Group E qualification. Group E inspection shall be performed for qualification or re-qualification only. In case qualification was awarded to a prior revision of the specification sheet that did not request the performance of table II tests, the tests specified in table II herein that were not performed in the prior revision shall be performed on the first inspection lot of this revision to maintain qualification.

4.3 Screening. Screening shall be in accordance with appendix E, table E-IV of MIL-PRF-19500, 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 appendix E, table E-IV of MIL-PRF-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
1a	Required	Not required
1b	Required	Required (JANTXV only)
2	Optional	Not required
3a	Required	Required
(1) 3b	Surge (see 4.3.1)	Surge (see 4.3.1)
3c	Thermal impedance (see 4.3.2)	Thermal impedance (see 4.3.2)
4	Not applicable	Not applicable
5	Applicable	Not applicable
6	Not applicable	Not applicable
7a	Optional	Optional
7b	Optional	Optional
8	Required	Not required
(2) 9	V_{F1} and I_{R1}	Not applicable
10	Method 1038 of MIL-STD-750, test condition A, $t = 96$ hours	Not applicable
11	V_{F1} and I_{R1} ; subgroup 2 of table I herein, $\Delta V_{F1} = \pm 0.1$ V(pk) from initial value; $\Delta I_{R1} = \pm 5$ μ A dc or 100 percent from the initial value, whichever is greater.	V_{F1} and I_{R1}
12	Burn-in, see 4.3.3 and 4.5.2. method 1038 of MIL-STD-750, test condition B.	Method 1038 of MIL-STD-750 test condition A, $t = 48$ hours
13	Subgroups 2 and 3 of table I herein; $\Delta V_{F1} = \pm 0.1$ V (PK); $\Delta I_{R1} = \pm 5$ μ A dc or 100 percent from the initial value, whichever is greater.	Subgroup 2 of table I herein, $\Delta V_{F1} = \pm 0.1$ V(pk) from initial value; $\Delta I_{R1} = \pm 5.0$ μ A dc or 100 percent from the initial value, whichever is greater.
14a	Required	Required
14b	Required	Required
15	Required	Not required
16	Required	Not required

- (1) Surge shall precede thermal impedance. These tests shall be performed anytime after screen 3a and before screen 9.
- (2) I_{R1} measurement shall not be indicative of an open condition.

4.3.1 Surge current. Surge current, method 4066 of MIL-STD-750. $I_O = 0$; $V_{RM(W)} = 0$; $I_{FSM} = 275$ A; six surges; $T_A = 25^\circ\text{C}$; $t_p = 8.3$ ms; one minute minimum time between surges.

NOTE: A shorter time between surges will be allowed as long as it can be demonstrated that $\Delta T_J \leq 10^\circ\text{C}$, as measured immediately prior to the first current pulse and immediately after the final current pulse.

4.3.2 Thermal impedance The thermal impedance measurements shall be performed in accordance with method 3101 of MIL-STD-750. The thermal impedance conditions and maximum thermal impedance limit shall be derived by each vendor. The chosen thermal impedance measurement and conditions for each device in the qualification lot shall be submitted in the qualification report and a thermal impedance curve shall be plotted. The chosen thermal impedance values shall be considered final after the manufacturer has had the opportunity to test five consecutive lots. Heating current (I_H) \geq rated I_O ; $t_H = 150$ to 400 ms; $t_{MD} = 50$ to 300 μ s; 50 mA $\leq I_M \leq 250$ mA.

4.3.3 Power burn-in. Power burn-in conditions are as follows: method 1038 of MIL-STD-750, test condition B. $T_C = 150^\circ\text{C}$, $f = 60$ Hz, $I_O = 12$ A dc (see 4.5.2); $V_R =$ rated V_{RWM} (pk) (see 1.3).

4.3.4 Screening (JANHc and JANKC). Screening of JANHC and JANKC die shall be in accordance with MIL-PRF-19500. As a minimum, die shall be 100-percent probed to ensure compliance with I_{R1} of table I, subgroup 2.

4.4 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500, and as specified herein.

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

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table E-VIa (JANS) and table E-VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 and 4.4.2.1 and 4.4.2.2 herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein. Delta measurements shall be in accordance with table III herein.

* 4.4.2.1 Group B inspection, appendix E, table E-VIa (JANS) of MIL-PRF-19500.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B3	1051	-55°C to +175°C, 100 cycles.
B3	4066	Condition A, $T_C = 150^\circ\text{C}$; $V_R =$ (rated V_R) AC peak (see 1.3), I_{FSM} (surge) = 240 A; $I_O = 12$ A dc; six surges 1/120 s, $t_P = 8.3$ mS, one minute minimum time between surges.
B4	1037	0.25 rated $I_O \leq I_O$ applied \leq rated I_O (see 4.5.3) 2,000 cycles.
B5	1027	$I_F = 4$ A dc; $V_R =$ rated V_R (see 1.3), $T_A = 125^\circ\text{C}$; or adjusted as required to achieve $T_J = 275^\circ\text{C}$ minimum (see 4.5.2), $f = 60$ Hz $t = 1,000$ hours. Option 1: $T_A = +30^\circ\text{C}$ max. ; $T_J = 225^\circ\text{C}$ minimum; $t = 216$ hours; $n = 45$ $c = 0$.
	or	Option 2: $T_A = +100^\circ\text{C}$ max. ; $T_J = 275^\circ\text{C}$ minimum; $t = 96$ hours, $n = 22$, $c = 0$.

* 4.4.2.2 Group B inspection, appendix E, table E-VIb (JAN, JANTX and JANTXV) of MIL-PRF-19500.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B2	1051	-55°C to +175°C, 25 cycles.
B2	4066	Condition A, $T_C = 150^\circ\text{C}$; $V_R = \text{rated } V_R$ (ac peak) (see 1.3), I_f (surge) = 240 A; $I_O = 12$ A dc; six 1/120 s surges. 1 minute minimum time between surges. $t_p = 8.3$ ms.
	or	Test condition C; $T_A = T_C = T_J = 200^\circ\text{C}$; $V_R = \text{rated } V_R$ (ac peak) (see 1.3), $I_O = 0$, I_{FSM} (surge) = 240 A, six 1/120s surges. 1 minute minimum time between surges. $t_p = 8.3$ ms.
B3	1037	0.25 rated $I_O \leq I_O$ applied \leq rated I_O (see 4.5.3) 2,000 cycles.
B3	1038 or 1049	Condition A; 340 hrs. (Separate samples maybe used.)
B5		Not required.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table E-VII of MIL-PRF-19500 and as follows. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein. Delta measurements shall be in accordance with table III herein.

4.4.3.1 Group C inspection, appendix E, table E-VII of MIL-PRF-19500.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	1056	Test condition B.
C2	2036	Test condition A, weight = 10 pounds, $t = 15$ s.
C2	2036	Test condition F, method B, weight = 5 pounds, $t = 15$ s.
C2	2036	Test condition D1, seal torque = 10 ounce-inches, $t = 15$ s.
C2	2036	Test condition D2, stud torque = 15 pound-inches, $t = 15$ s.
C5	3101	$R_{\theta JC} = 2.0^\circ\text{C/W}$ maximum; $I_M = 50 - 250$ mA; $I_H \geq \text{rated } I_O$; $t_H \geq 15$ s; $t_{MD} = 50$ to 300 μs .
C6	1037	0.25 rated $I_O \leq I_O$ applied \leq rated I_O (see 4.5.3) 6,000 cycles.

4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table E-IX of MIL-PRF-19500. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein. Delta measurements shall be in accordance with table III herein.

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

4.5.1 Pulse measurements. Conditions for pulse measurement shall be as specified in section 4 of MIL-STD-750.

4.5.2 Burn-in and steady-state operation life tests. These tests shall be conducted with a half-sine waveform of the specified peak voltage impressed across the diode in the reverse direction followed by a half-sine waveform of the specified average rectifier current. The forward conduction angle of the rectified current not be greater than 180 degrees nor less than 150 degrees.

4.5.3 DC intermittent operation life. A cycle shall consist of an on period, when power is applied suddenly, not gradually, to the device for the time necessary to achieve a delta case temperature of $85^{\circ}\text{C} +15^{\circ}\text{C} -5^{\circ}\text{C}$ followed by an off period, when the power is suddenly removed, for cooling. Auxiliary (forced) cooling is permitted during the off period only. $30\text{ s} \leq t_{\text{Heating}} \leq 60\text{ s}$, $P = V_F \times I_F$ or $P = V_{\text{FPK}} \times I_{\text{av}}$ if using sine wave current. DC full wave current (or equivalent half sine wave current) shall be used for the power required during the on period. The test power, or current, shall be at least the free air rating. Within the time interval of 50 cycles before to 500 cycles after the termination of the test, the sample units shall be removed from the specified test conditions and allowed to reach room ambient conditions. Specified end-point measurements for qualification and quality conformance verification shall be completed within 96 hours after removal of sample units from the specified test conditions. Additional readings may be taken at the discretion of the manufacturer.

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* TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical inspection	2071					
<u>Subgroup 2</u>						
Forward voltage 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A	4011	$I_F = 38 \text{ A (pk) pulse; pulse width } \leq 8.5 \text{ ms, duty cycle } \leq 2 \text{ percent pulse}$	V_{F1}		1.35	V (pk)
Forward voltage 1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650	4011	$I_F = 10 \text{ Adc (pulse); } t_p \leq 8.5 \text{ msec;}$	V_{F1}		2.2	V (pk)
Reverse current	4016	DC method, $V_R = \text{rated } V_{R(dc)}$ (see 1.3)	I_{R1}		5	$\mu\text{A dc}$
Thermal impedance	3101	See 4.3.2	$Z_{\theta JX}$			$^{\circ}\text{C/W}$
<u>Subgroup 3</u>						
High temperature operation:		$T_C = 150^{\circ}\text{C}$				
Reverse current 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A	4016	DC method, $V_R = \text{rated } V_{R(dc)}$ (see 1.3)	I_{R2}		1	mA dc
1N1124A, 1N1126A, 1N1128A, 1N3649, 1N3650	4016	DC method, $V_R = \text{rated } V_{R(dc)}$ (see 1.3)	I_{R2}		200	$\mu\text{A dc}$
Low temperature operation		$T_C = -65^{\circ}\text{C}$				
Reverse current 1N1202A, 1N1204A, 1N1206A, 1N3671A, 1N3673A	4016	DC method, $V_R = \text{rated } V_{R(dc)}$ (see 1.3)	I_{R3}		1	mA dc
<u>Subgroups 4 and 5</u>						
Not applicable						
<u>Subgroup 6 <u>2/</u></u>						
Forward voltage	4011	$I_F = I_{FSM}, t_p = 800 \mu\text{s}$	V_{F2}		2.5	V dc
Forward voltage	4011	$I_F = I_{FSM}, t_p \leq 8.3 \text{ ms}$	V_{F2}		2.3	V dc

1/ For sampling plan, see MIL-PRF-19500.

2/ V_{F2} shall be performed with either $t_p = 800 \mu\text{s}$ or $t_p = 8.3 \text{ ms}$. This subgroup does not apply to 1N1124A, RA; 1N1126A, RA; 1N1128A, RA; 1N3649, R; and 1N3650, R.

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* TABLE II. Group E inspection (all quality levels) for qualification and requalification only.

Inspection	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 1</u>			45 devices c = 0
Thermal shock	1056	100 cycles, 0°C to 100°C.	
Electrical measurements		See table I, subgroup 2 herein.	
Hermetic seal	1071		
Electrical measurements		See table I, subgroup 2 and table III, step 1.	
<u>Subgroup 2</u>			22 devices c = 0
Steady-state dc blocking life	1048	1,000 hours.	
Electrical measurements		See table I, subgroup 2 and table III, steps 1 and 2.	
<u>Subgroup 4</u>			
Thermal impedance curves		See table E-IX of MIL-PRF-19500, group E, subgroup 4.	
<u>Subgroup 5</u>			22 devices c = 0
Barometric pressure, reduced (altitude operation)	1001	Hg = rated Hg (see 1.3), t = 60 s, While the 22 devices, c = 0; test is being performed, I _R shall be monitored and shall not exceed table I limits.	
1N1202A, AR		N/A	
1N1204A, AR		400 V dc	
1N1206A, AR		600 V dc	
1N3671A, AR		800 V dc	
1N3673A, AR		1,000 V dc	
<u>Subgroup 6</u>			
<u>Subgroup 7</u>			

TABLE III. Groups B, C, and E delta measurements. 1/ 2/ 3/ 4/

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Forward voltage	4011	$I_F = 38$ A (pk) pulse; pulse width ≤ 8.5 ms, duty cycle ≤ 2 percent pulse	ΔV_{F1}	± 50 mV dc maximum change from initial measured value.		
2.	Reverse current	4016	DC method, $V_R =$ rated V_R (dc) (see 1.3)	ΔI_{R1} 5/	± 100 percent of initial value.		

- 1/ The delta electrical measurements for appendix E, table E-Via (JANS) of MIL-PRF-19500 are as follows:
- Subgroup 3, see table III herein, steps 1 and 2.
 - Subgroup 4, see table III herein, steps 1 and 2.
 - Subgroup 5, see table III herein, step 2.
- 2/ The delta electrical measurements for appendix E, table E-VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 are as follows:
- Subgroup 2, see table III herein, step 1.
 - Subgroup 3, see table III herein steps 1 and 2.
- 3/ The delta electrical measurements for appendix E, table E-VII of MIL-PRF-19500 are as follows:
- Subgroup 2 see table III herein, step 1 (JAN, JANTX, and JANTXV), steps 1 and 2 (JANS).
 - Subgroup 6, see table III herein, steps 1 and 2 (JANS), and steps 1 and 2 (JAN, JANTX, and JANTXV).
- 4/ The delta electrical measurements for appendix E, table E-IX of MIL-PRF-19500 are as follows:
- Subgroup 1, see table III herein, step 1.
 - Subgroup 2, see table III herein, steps 1 and 2.
- 5/ Devices which exceed the group A limits for this test shall be rejected.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the Military Service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory. The notes specified in MIL-PRF-19500 are applicable to this specification.)

6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Packaging requirements (see 5.1).
- c. Lead finish (see 3.4.2).
- d. Product assurance level and type designator.

* 6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List (QML 19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center, Columbus, ATTN: DSCC/VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail vqe.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.daps.dla.mil>.

6.4 Suppliers of JANHC and JANKC die. The qualified JANHC and JANKC suppliers with the applicable letter version (example, JANHCA1N1202A) will be identified on the QML.

JANHC and JANKC ordering information	
PIN	Manufacturer
	43611
1N1202A	JANHCA1N1202A, JANKCA1N1202A
1N1204A	JANHCA1N1204A, JANKCA1N1204A
1N1206A	JANHCA1N1206A, JANKCA1N1206A
1N3671A	JANHCA1N3671A, JANKCA1N3671A
1N3673A	JANHCA1N3673A, JANKCA1N3673A

6.5 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - CR
Navy - EC
Air Force – 85
NASA – NA
DLA - CC

Preparing activity:
DLA - CC

(Project 5961-2009-099)

Review activities:

Army - AR, MI
Navy – AS, MC
Air Force - 19, 71, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil> .