

The documentation process conversion measures necessary to comply with this revision shall be completed by 26 August 1997

INCH POUND

MIL-PRF-19500/478G
 26 May 1997
 SUPERSEDING
 MIL-S-19500/478F
 3 March 1995

PERFORMANCE SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE, SILICON, POWER RECTIFIER, FAST RECOVERY
 TYPES 1N5812, 1N5814, 1N5816, AND R VERSIONS
 JAN, JANTX, JANTXV, JANHC, JANKC, AND JANS

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 performance requirements for silicon, fast recovery power rectifier diodes. Four levels of product assurance are provided for each device type as specified in MIL-S-19500. Two product assurance levels are provided for die.

1.2 Physical dimensions. See 3.3 (D0-4 and unencapsulated die).

1.3 Maximum ratings.

Types	V _R	V _{RWM}	I _O 1/	I _{FSM}	t _{rr}
			T _C = +100°C	T _C = +100°C t _p = 8.3 ms	
	<u>V dc</u>	<u>V (pk)</u>	<u>A dc</u>	<u>A dc</u>	<u>ns</u>
1N5812, R	50	50	20	400	35
1N5814, R	100	100	20	400	35
1N5816, R	150	150	20	400	35

1/ Derate linearly, 250 mA/°C from +100°C to +150°C, and 300 mA/°C above +150°C.
 Storage temperature: T_{STG} = -65°C to +175°C.
 Operating temperature: T_J = -65°C to +175°C.
 Barometric pressure reduced (altitude operation): 8 mmHg.
 R_{θJC} = 1.5°C/W maximum.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

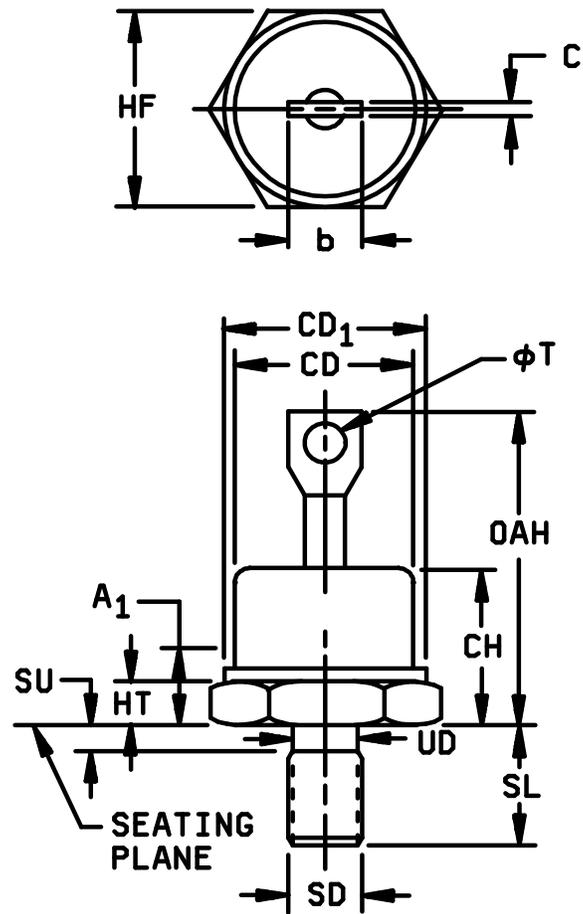


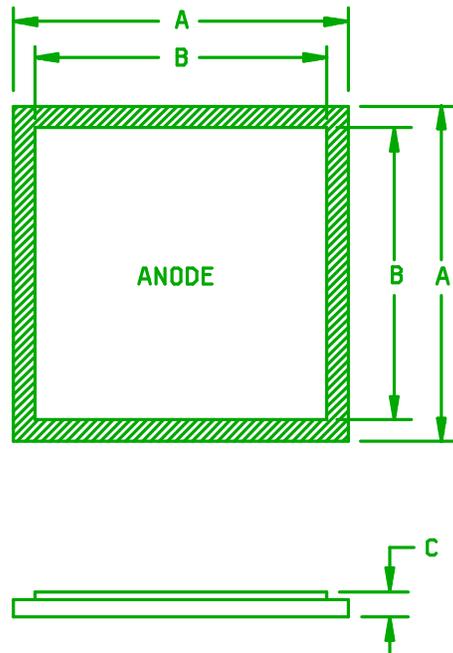
FIGURE 1. Physical dimensions (DO-4).

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.250		6.35	4
C	.018	.065	0.46	1.65	
CD ₁	.265	.424	6.74	10.76	
HF	.424	.437	10.77	11.10	
HT	.075	.175	1.91	4.44	
A ₁		.250		6.35	
CH	.300	.405	7.62	10.28	
OAH	.600	.800	15.42	20.32	
UD	.163	.189	4.14	4.80	
SL	.422	.453	10.72	11.50	
SU		.078		1.98	6
SD					5, 7
øT	.066	.103	1.68	2.62	

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.
4. Angular orientation and contour of this terminal is undefined.
5. Pitch diameter .190-32 UNF-2A (coated) - .1697 (4.310 mm).
6. Length of incomplete or undercut threads of UD.
7. Anode for R suffix devices.

FIGURE 1. Physical dimensions (DO-4). Continued



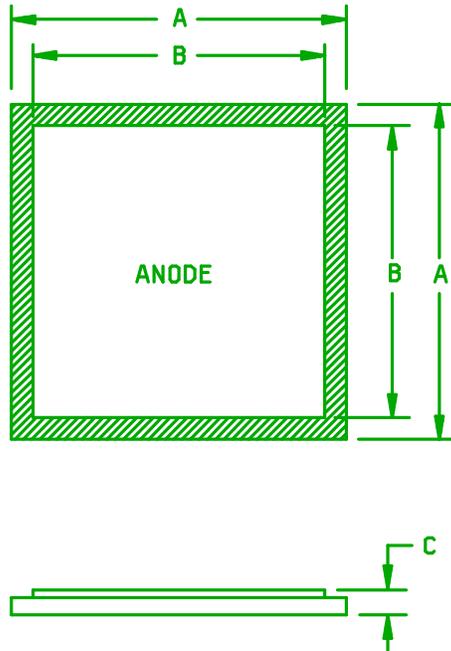
(A-version)

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.130	.133	3.30	3.37
B	.114	.117	2.89	2.97
C	.009	.010	0.228	0.254

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The physical characteristics of the die are: Metallization {front (anode), back (cathode)} consists of: Ag thickness = 3,000 Å minimum, Ni thickness = 1,500 Å minimum, Cr thickness = 800 Å minimum.
4. Requirements in accordance with MIL-PRF-15000 (appendix E) are performed in a DO-4 package (see 6.5).

FIGURE 2. Physical dimensions JANC die dimensions (A-version).



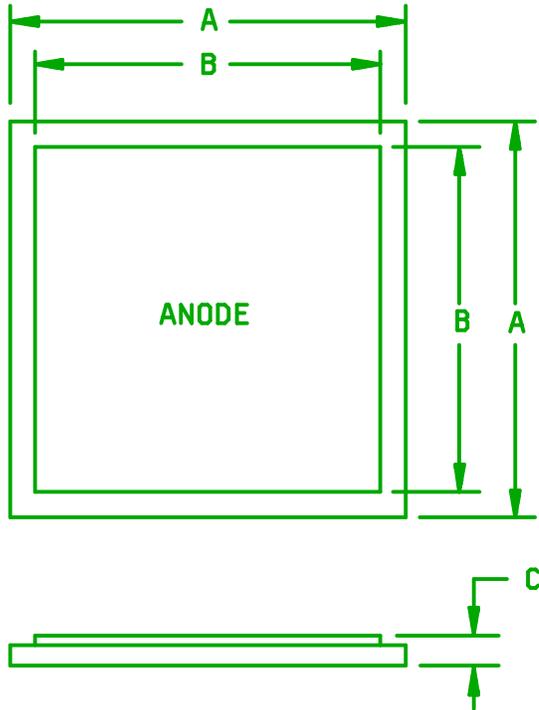
(B-version)

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.130	.143	3.30	3.37
B	.114	.133	2.89	2.97
C	.009	.010	0.228	0.254

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The physical characteristics of the die are: Metallization {front (anode), back (cathode)} consists of: Ag thickness = 3,000 Å minimum, NI thickness = 1,500 Å minimum, Cr thickness = 800 Å minimum, optionally Ti thickness = 300 Å minimum.
4. Requirements in accordance with MIL-PRF-15000 (appendix H) are performed in a DO-4 package (see 6.5).

FIGURE 3. Physical dimensions JANC die dimensions (B-version).



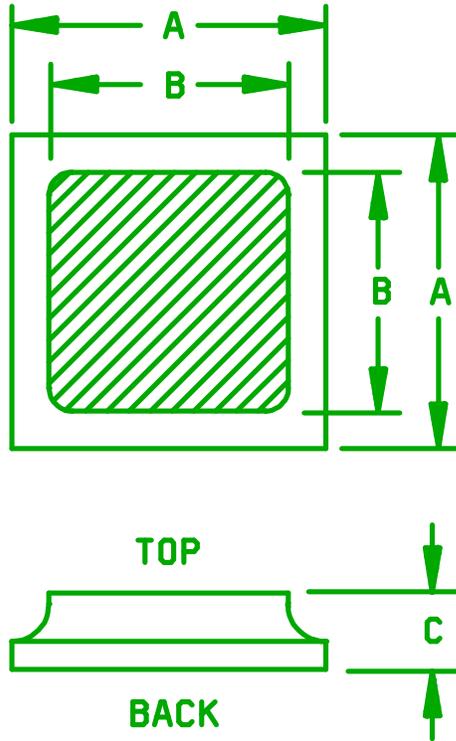
C version

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.152	.156	3.86	3.96
B	.126	.130	3.20	3.30
C	.008	.012	0.20	0.31

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The physical characteristics of the die are: Metallization (front (anode), consists of: AL thickness = 60,000 Å minimum, (back, (cathode)) consists of: AU thickness = 2,500 Å minimum.

FIGURE 4. Physical dimensions JANC (JANH C and JANKC) die dimensions (C-version).



D, E, and F versions

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.136	.142	3.45	3.61
B	.117	.123	2.97	3.12
C	.007	.013	.18	.33

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The metallization consists of:
 D version: front (anode) - aluminum; back (cathode) - gold.
 E version: front (anode) - aluminum; back (cathode) - silver.
 F version: front (anode) - silver; back (cathode) - silver.

FIGURE 5. Physical dimensions JANC (JANH C and JANKC) die dimensions (D, E, and F - versions).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1 General. The documents listed in this section are specified in sections 3 and 4 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 documents cited in sections 3 and 4 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

DEPARTMENT OF DEFENSE

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

STANDARD

MILITARY

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

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

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), 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 Qualification. Devices furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.2 and 6.3).

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

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

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified on figure 1 (DO-4) and figures 2, 3, 4, and 5 (JANHC and JANKC) herein. With approval of the qualifying activity, this device is authorized to contain organic material for JANS as specified in MIL-PRF-19500.

3.3.1 Lead formation and finish. Lead finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750, and as specified herein.

3.3.2 Polarity. Polarity shall be in accordance with MIL-PRF-19500. The reversed units shall also be marked with an R following the last digit in the type number.

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

4. QUALITY ASSURANCE PROVISIONS

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).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500.

4.2.1 Group E inspection. Group E inspection shall be conducted in accordance with MIL-PRF-19500, and table II herein.

4.3 Screening (JANS, JANTX and JANTXV levels only). Screening shall be in accordance with MIL-PRF-19500 (Appendix E, table IV), 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 IV of MIL-PRF-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
1/	Surge, see 4.3.2 Thermal impedance, see 4.3.3	Surge, see 4.3.2 Thermal impedance, see 4.3.3
4	Not applicable	Not applicable
9 2/	V_{F2} and I_{R1}	Not applicable
10	MIL-STD-750, method 1038, test condition A; $t = 96$ hours	Not applicable
11 2/	Subgroup 2 of table I herein; V_{F2} and I_{R1} $\Delta V_{F2} \leq +0.05$ V (pk); $\Delta I_{R1} \leq +2.5$ μ A (dc) or +100 percent of initial value, whichever is greater.	V_{F2} and I_{R1}
12	Burn-in, see 4.3.4, MIL-STD-750, method 1038, test condition A	Burn-in, see 4.3.4
13	Subgroups 2 and 3 of table I herein; $\Delta V_{F2} \leq +0.05$ V (pk) $\Delta I_{R1} \leq 2.5$ μ A dc or 100 percent of initial value, whichever is greater.	Subgroup 2 of table I herein; $\Delta V_{F2} \leq +0.05$ V (pk) $\Delta I_{R1} \leq 2.5$ μ A dc or ± 100 percent of initial value, whichever is greater.

1/ Surge shall precede thermal response. These tests shall be performed anytime after screen 3 and before screen 10.

2/ I_{R1} measurement shall not be indicative of an open condition.

3/ Thermal impedance need not be repeated.

4.3.1 Screening JANHC and JANKC. Screening shall be in accordance with appendix G of MIL-PRF-19500. As a minimum, die shall be 100 percent probed per Table I, subgroup 2 herein for I_{R1} and $V_{(BR)1}$ only. V_{F1} and V_{F2} shall be performed on a sample of 10 pieces mounted on a D0-4 (or equivalent) package.

4.3.2 Surge current. Surge current, see MIL-STD-750, method 4066.

$I_{FSM} = 400$ A, 6 surges, $t_p = 8.3$ ms or rectangular pulse of equivalent I_{rms} , 3 surges.
 $I_O = 0$ A, $V_{RMS} = 0$ V, duty factor 1 percent minimum $T_A = +25^\circ$ C.

4.3.3 Thermal impedance $Z_{\theta JX}$ measurements for screening. The $Z_{\theta JX}$ measurements shall be performed in accordance with MIL-STD-750, method 3101. The maximum limit (not to exceed the group A, subgroup 2 limit) for $Z_{\theta JX}$ in screening (appendix E, table IV of MIL-PRF-19500) shall be derived by each vendor by means of statistical process control. When the process has exhibited control and capability, the capability data shall be used to establish the fixed screening limit. In addition to screening, once a fixed limit has been established, monitor all future sealing lots using a random five piece sample from each lot to be plotted on the applicable X, R chart. If a lot exhibits an out of control condition, the entire lot shall be removed from the line and held for Engineering evaluation and disposition.

4.3.4 Burn-in. Burn-in conditions for all quality levels are as follows: MIL-STD-750, method 1038, test condition A; $T_C = +125^\circ\text{C}$; $V_R = 0.8$ to 0.85 rated V_R dc (see 1.3), $t = 48$ hours.

4.4 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with appendix E, table V of MIL-PRF-19500 and table I herein. The following test conditions shall be used for $Z_{\theta JX}$, group A inspection:

- a. $I_H \geq \text{rated } I_O$
- b. $t_H \leq 250$ ms
- c. $10 \text{ mA} \leq I_M \leq 100 \text{ mA}$
- d. $t_{MD} = 250 \mu\text{s}$ (maximum)

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, tables VIa (JANS) and VIb (JAN, JANTX and JANTXV) of MIL-PRF-19500, and as follows. Electrical measurements (end points) and delta requirements shall be in accordance with the applicable steps and footnotes of table III herein.

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

Subgroup	Method	Condition
B3	4066	$T_C = +100^\circ\text{C}$; $t_p \leq 8.3$ ms; $V_R = \text{rated } V_R$ (see 1.3) six 1/120 s surges; 1 surge/minute maximum. $I_{FSM} = 400$ A dc, $I_O = 20$ A dc
B4	1037	2,000 cycles, 25 percent rated $I_O \leq I_O$ applied \leq rated I_O (see 4.5.2).
B5	1027	$I_F = 20$ A Avg at $T_A = +125^\circ\text{C}$, for 340 hours, or adjusted as required by the chosen T_A to give an average lot $T_J = +175^\circ\text{C}$; $f = 60$ Hz $V_R = V_{RWM}$ (pk) (see 1.3).
B6	4081 or 3101	$R_{\theta JC} = 1.5^\circ\text{C/W}$; $t_H \geq 20$ seconds; heating current (I_H) \geq rated I_O ; $t_{MD} \leq 250 \mu\text{s}$; measurement current $10 \text{ mA} \leq I_M \leq 100 \text{ mA}$.
B7	1018	Only to be performed when organics or silicones are present in the device package; $n = 3$, $c = 0$.

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

Subgroup	Method	Condition
B2	4066	$T_C = +100^\circ\text{C}$; $t_p \leq 8.3$ ms; $V_R = \text{rated } V_R$ (see 1.3) six 1/120 s surges; 1 surge/minute maximum. $I_{FSM} = 400$ A dc, $I_O = 20$ A dc
B3	1036	$I_F \geq 0.25 I_O$ (see 4.5.2) 2000 cycles
B5		Not applicable.
B6	1032	$T_C = +175^\circ\text{C}$.

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 VII of MIL-PRF-19500, and as follows. Electrical measurements (end points) and delta requirements shall be in accordance with the applicable steps of table III herein.

Subgroup	Method	Condition
C2	2036	Terminal strength: Test condition A; weight = 10 pounds; t = 15 s. Bending stress: Test condition F, method B; weight = 3 pounds; t = 15 s. Lead torque: Test condition D1; torque = 10 ounce-inches; t = 15 s. Stud torque: Test condition D2; torque = 10 pound-inches; t = 15 s.
C3	2016	500 G's
C6	1036	$I_F \geq 0.25 I_O$ (see 4.5.2); 6,000 cycles

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 DC intermittent operation life. A cycle shall consist of an "on" period, when forward current is applied suddenly, not gradually, to the device for the time necessary to achieve an increase (delta) case temperature of $+85^\circ\text{C} +15^\circ\text{C}$, -5°C followed by an "off" period, when the current is suddenly removed for cooling, the case through a similar delta temperature. Auxiliary (forced) cooling is permitted during the "off" period only. Forward current and/or "on" time, within specific limits, and "off" time may be adjusted to achieve the delta case temperature. Heat sinks shall only be used if and to the degree necessary to maintain test samples within the desired delta temperature tolerance. The heating time shall be such that $30 \text{ s} \leq t_{\text{heating}} \leq 180 \text{ s}$. The forward current may be steady-state dc, full-wave rectified dc, or the equivalent half-sine wave dc, of the specified value. The test duration shall be the specified number of cycles. Within the time interval of 50 cycles before and 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 inspections 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.

4.5.3 Reverse recovery time. The reverse recovery time shall be measured in the circuit of figure 6 or equivalent. Care should be exercised to minimize stray inductances in the test circuit and to ensure that the total resistance of the reverse current loop can be adjusted sufficiently low that more than 1 ampere will flow if not blocked by the diode being tested. The circuit and the pulsed reverse voltage source shall be adjusted to achieve the following characteristics of the waveform.

- a. The di/dt shall be the specified value between the forward 0.5 ampere point and the reverse 0.2 ampere point.
- b. The peak reverse current, I_R shall be adjusted to 1.0 ampere prior to measuring the device.

The reverse-recovery time shall then be determined from the current waveform as shown on figure 7.

TABLE I. Group A inspection.

Inspection 1/ <u>Subgroup 1</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Thermal impedance	3101	See 4.4.1	$Z_{\theta JX}$		1.35	°C/W
Forward voltage	4011	$t_p \leq 8.3$ ms, duty cycle ≤ 2 percent pulse $I_F = 10$ A (pk) $I_F = 20$ A (pk)	V_{F1} V_{F2}		.860 .950	V dc V (pk)
Reverse current	4016	DC method; $V_R =$ rated V_R (see 1.3)	I_{R1}		10	μ A dc
Breakdown voltage	4021	$I_R = 100$ μ A dc	$V_{(BR)1}$			
1N5812, 1N5812R				60		V dc
1N5814, 1N5814R				110		V dc
1N5816, 1N5816R				160		V dc
<u>Subgroup 3</u>						
High temperature operation		$T_C = +100^\circ\text{C}$				
Reverse current	4016	DC method, $V_R =$ rated V_R ; (see 1.3)	I_{R2}		1.00	mA dc
Forward voltage	4011	$I_{FM} = 10$ A (pk), duty cycle ≤ 2 percent (pulsed); $t_p \leq 8.3$ ms	V_{F3}		.780	V (pk)
Low temperature operation		$T_A = -65^\circ\text{C}$				
Forward voltage	4011	$I_{FM} = 10$ A (pk), duty cycle ≤ 2 percent (pulsed); $t_p \leq 8.3$ ms	V_{F4}		1.05	V (pk)
Breakdown voltage	4021	$I_R = 100$:A dc	$V_{(BR)2}$			
1N5812, 1N5812R				50		V dc
1N5814, 1N5814R				100		V dc
1N5816, 1N5816R				150		V dc
Reverse recovery time	4031	Test condition B4 $I_F = I_R = 1$ A dc (pk) $I_{(REC)} = 0.1$ A; $di/dt = 85$ A/s minimum; (see 4.5.3)	t_{rr}		35	ns

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 4</u>						
Junction capacitance	4001	$V_R = 10 \text{ V}$, $f = 1 \text{ MHz}$ $V_{SIG} = 50 \text{ mV (p-p)}$ maximum	C_J		300	pF
Forward recovery voltage	4026	$t_p \geq 20 \text{ ns}$, $t_r = 8 \text{ ns}$; $I_F = 1,000 \text{ mA}$	V_{FR}		2.2	V (pk)
Forward recovery time	4026	$I_F = 1,000 \text{ mA}$	t_{fr}		15	ns
<u>Subgroups 5, 6, and 7</u>						
Not applicable						

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

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

Inspection	MIL-STD-750		Qualification conformance inspection (LTPD)
	Method	Conditions	
<u>Subgroup 1</u>			10
Thermal shock (glass strain)	1056	0°C to +100°C, 100 cycle	
Electrical measurements		See table III, steps 1, 2, and 3.	
<u>Subgroup 2</u>			5
Steady-state dc blocking life	1038	Test condition A, except in accordance with 4.3.4; 1,000 hours.	
Electrical measurements		See table III, steps 1 and 2.	
<u>Subgroup 3</u>			
Not applicable			
<u>Subgroup 4</u>			10
Thermal resistance	3101 or 4081	$R_{\theta JC} = 1.5^{\circ}\text{C/W}$ maximum; $I_H = \text{rated } I_O$; $t_H \geq 20$ seconds I_M between 10 mA and 100 mA $t_{MD} \leq 250 \mu\text{s}$;	
<u>Subgroup 5</u>			
Not applicable			

TABLE III. Groups A, B, and C electrical end-point inspection measurements.

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Forward voltage	4011	$I_F = 10$ A (pk) pulsed; $t_p \leq 8.3$ ms duty cycle = 2 percent maximum	V_{F1}		0.860	V (pk)
2.	Reverse current	4016	DC method $V_R = \text{rated } V_R$ (see 1.3)	I_{R1}		10	μA dc
3.	Thermal impedance	3101	See 4.4.1	$Z_{\theta JX}$		1.35	$^{\circ}\text{C/W}$

1/ The electrical measurements for appendix E, table VIa (JANS) of MIL-PRF-19500 are as follows:

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

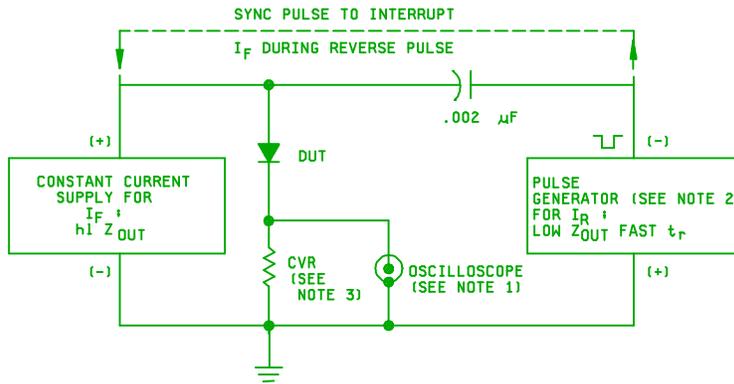
2/ The electrical measurements for appendix E, table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 are as follows:

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

b. Subgroups 3 and 6, see table III herein, steps 1 and 2.

3/ The electrical measurements for appendix E, table VII of MIL-PRF-19500 are as follows:

Subgroups 2, 3, and 6, see table III herein, steps 1 and 2.



NOTES:

1. Oscilloscope: Rise time ≤ 3 ns; input impedance = 50 ohms minimum.
2. Pulse generator: Rise time ≤ 8 ns; source impedance 50 ohms maximum. (Tektronix 109, or equal).
3. Current viewing resistor: Noninductive coaxial type with resistance matched to pulse generator impedance. A 50-ohm, 40 ns charge line may be used.

FIGURE 6. Reverse recovery time test circuit.

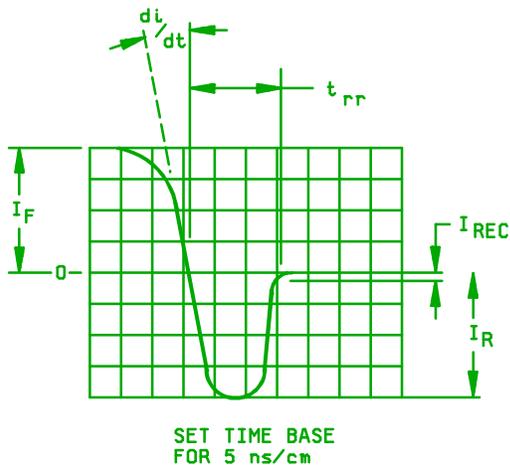


FIGURE 7. Reverse recovery time characteristic waveform.

5. PACKAGING

5.1 Packaging. Packaging shall prevent mechanical damage of the devices during shipping and handling and shall not be detrimental to the device. When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Points' packaging activity within the Military Department or Defense Agency, or within the Military Departments' System Command. Packaging data retrieval is available from the managing Military Departments' or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Marking. Unless otherwise specified (see 6.2), marking shall be in accordance with MIL-STD-129.

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-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. See MIL-PRF-19500.

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 Products List QPL No.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 purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000.

6.4 Suppliers of JANC (JANHC and JANKC) die. The qualified JANHC and JANKC suppliers with the applicable letter version (example, JANHCA1N5812) will be identified on the QPL.

JANHC and JANKC ordering information						
PIN	Manufacturer					
1/	59377	11961	33178	12969	12969	12969
1N5812	JANHCA1N5812	JANHCB1N5812	JANHCC1N5812	JANHCD1N5812	JANHCE1N5812	JANHCF1N5812
1N5814	JANHCA1N5814	JANHCB1N5814	JANHCC1N5814	JANHCD1N5814	JANHCE1N5814	JANHCF1N5814
1N5816	JANHCA1N5816	JANHCB1N5816	JANHCC1N5816	JANHCD1N5816	JANHCE1N5816	JANHCF1N5816
figure #	2	3	4	5	5	5

1/ For JANKC product assurance level, replace the "JANHC" prefix with "JANKC".

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

MIL-PRF-19500/478G

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 17

Preparing activity:
DLA - CC

(Project 5961- 1902-09)

Review activities:

Army - AR, MI, SM
Navy - AS, CG, MC
Air Force - 19, 85, 99
NASA - NA

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-19500/478G	2. DOCUMENT DATE (YYMMDD) 970526
3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, DIODE, SILICON, POWER RECTIFIER, FAST RECOVERY TYPES 1N5812, 1N5814, 1N5816, AND R VERSIONS JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC		
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (Last, First, Middle initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY		
a. NAME Alan Barone	b. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (614) 692-0510 850 0510	
c. ADDRESS (Include Zip Code) Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000Dayton, OH 45444-5765	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	