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August 12, 2026

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of Performance Specification Sheet MIL-PRF-19500/585Lam3,
Project Number 5961-2026-079.

The initial draft for this subject document, dated August 12, 2026, is now available for viewing and downloading from the DLA Weapons Support-VA Web site:

<https://LandandMaritimeApps.dla.mil/Programs/MilSpec/DocSearch.aspx>

The initial draft of the subject document was generated to add a UDA package option and to update it to the latest document format and various editorial changes to bring it into compliance with MIL-STD-961. Highlighting has been used for easy change recognition.

Concurrence or comments are required at this Center within 30 days from the date of this letter (September 11, 2026). Late comments will be held for the next coordination of the document. Comments from military departments must be identified as either "Essential" or "Suggested". Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians of this office, as applicable, in sufficient time to allow for consolidating the department reply.

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/ Signed /

MUHAMMAD AKBAR
Chief
Active Devices Branch

NOTE: This draft, dated 12 August 2026 prepared by DLA – CC, has not been approved and is subject to modification. DO NOT USE PRIOR TO APPROVAL. (Project 5961-2026-079)
COMMENTS ARE DUE BY 11 September 2026.
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INCH-POUND

MIL-PRF-19500/585L
w/AMENDMENT 3
DRAFT
SUPERSEDING
MIL-PRF-19500/585L
w/AMENDMENT 2
7 October 2021

PERFORMANCE SPECIFICATION SHEET

DIODE, SILICON, ULTRA-FAST RECOVERY, POWER RECTIFIER,
AXIAL LEAD THROUGH-HOLE AND SURFACE MOUNT PACKAGES,
1N6620 THROUGH 1N6625, JAN, JANTX, JANTXV, AND JANS

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 a silicon, ultra-fast recovery, semiconductor power rectifier diode. Four levels of product assurance are provided for each device type as specified in [MIL-PRF-19500](#).

* 1.2 Package outlines and die topography. The device package for the encapsulated device type are as follows: (DO-41) in accordance with [figure 1](#), square end-cap (U and US) surface mount versions in accordance with [figure 2](#), and ceramic surface mount (UDAB) in accordance with [figure 3](#).

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

1.3.1 Ratings applicable to all types. Ratings applicable to all Part or Identifying Numbers (PIN).
 $T_{STG} = -65^\circ\text{C}$ to $+175^\circ\text{C}$, $T_J = +150^\circ\text{C}$ maximum.

1.3.2 Ratings applicable to individual types.

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12
Device type	V_{RWM}	$I_{O(L)}$ at $T_L = +55^\circ\text{C}$ $L = .375$ inch (9.52 mm) (1) (2) (3)	I_{O2} $T_A = +25^\circ\text{C}$ max (1) (4) (5)	I_{FSM} at $t_p = 8.3$ ms	Barometric pressure	t_{rr} (6)	$R_{\theta JL}$ at $L = .375$ inch (9.52 mm) (7)	$R_{\theta JEC}$ (8)	$R_{\theta JX}$	$R_{\theta JA}$ (9)	$R_{\theta JSP}$ (9)
	V_{dc}	A	A	A_{pk}	mm Hg	ns	$^\circ\text{C/W}$	$^\circ\text{C/W}$	$^\circ\text{C/W}$	$^\circ\text{C/W}$	$^\circ\text{C/W}$
1N6620, U, US, UDA	200	2.0	1.2	20	8	30	38	13	55	64.9	29.1
1N6621, U, US, UDA	400	2.0	1.2	20	8	30	38	13	55	64.9	29.1
1N6622, U, US, UDA	600	2.0	1.2	20	8	30	38	13	55	64.9	29.1
1N6623, U, US, UDA	800	1.5	1.0	20	33	50	38	13	55	64.9	29.1
1N6624, U, US, UDA	900	1.5	1.0	20	33	50	38	13	55	64.9	29.1
1N6625, U, US, UDA	1,000	1.5	1.0	15	33	60	38	13	55	64.9	29.1

See notes on next page.

Comments, suggestions, or questions on this document should be addressed to DLA [Land and Maritime Weapons Support](#), ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to Semiconductor@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.dla.mil>.



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1.3.2 Maximum ratings – Continued.

- (1) Average current with a half-sine wave including reverse voltage amplitude equal to the magnitude of the full rated V_{RWM} .
- (2) Derate linearly 1.05 percent/°C for $T_L > +55^\circ\text{C}$.
- (3) These rated currents also apply to U or US suffix types when the maximum temperature of the end-caps (mounting surface) is $+110^\circ\text{C}$; derate linearly 2.5 percent/°C above $T_{EC} > +110^\circ\text{C}$.
- (4) Derate linearly 0.80 percent/°C for $T_A > +25^\circ\text{C}$.
- (5) The 1 A rating at $+25^\circ\text{C}$ ambient is for thermal mounting methods (PC boards or other) where thermal resistance from mounting point to ambient is still sufficiently controlled where $T_{J(MAX)}$ in 1.3.1 is not exceeded. This equates to $R_{\theta JX} \leq 55^\circ\text{C/W}$ as shown. Also, see application notes in 6.5.1 for the worst-case for 1N6625.
- (6) The reverse recovery time (method 4031 of MIL-STD-750, condition B) at $T_J = +125^\circ\text{C}$ will not exceed three times the $+25^\circ\text{C}$ limit. Exceeding $T_J = +125^\circ\text{C}$ may change reverse recovery times at $+25^\circ\text{C}$ to higher levels as indicated in accelerated life testing in 4.4.2.1, subgroup B5 for JANS, or other life testing in 4.4.2.2, subgroup B3, and 4.4.3.1, subgroup C6.
- (7) See figure 3, thermal resistance curves for axial lead devices only (no suffix).
- (8) See figure 4, thermal resistance curves for surface mount devices only (U and US suffix).
- (9) UDA suffix devices only. See figures 10 and 11.

* 1.4 Primary electrical characteristics. Unless otherwise specified, $T_A = +25^\circ\text{C}$.

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7
Device type	I_{R1} at $T_J = +25^\circ\text{C}$	I_{R2} at $T_J = +150^\circ\text{C}$	$I_{RM(REC)}$ at 2 A, 100 A/ μs	C_T at $V_R = 10\text{ V}$	V_{FM1} at $I_F = \text{Col. 3}$	V_{FM2} at $I_F = \text{Col. 4}$
	μA	μA	A pk	pF	V	V
1N6620, U, US, UDA	0.5	150	3.5	10	1.60	1.40
1N6621, U, US, UDA	0.5	150	3.5	10	1.60	1.40
1N6622, U, US, UDA	0.5	150	3.5	10	1.60	1.40
1N6623, U, US, UDA	0.5	150	4.2	10	1.80	1.55
1N6624, U, US, UDA	0.5	150	4.2	10	1.80	1.55
1N6625, U, US, UDA	1.0	200	5.0	10	1.95	1.75

1.5 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-19500, and as specified herein. See 6.6 for PIN construction example and 6.7 for a list of available PINs.

1.5.1 JAN certification mark and quality level for encapsulated devices. The quality level designators for encapsulated devices that are applicable for this specification sheet from the lowest to the highest level are as follows: "JAN", "JANTX", "JANTXV" and "JANS".

1.5.2 Device type. The designation system for the device types of semiconductors covered by this specification sheet are as follows.

1.5.2.1 First number and first letter symbols. The semiconductors of this specification sheet use the first number and letter symbols "1N".

1.5.2.2 Second number symbols. The second number symbols for the semiconductors covered by this specification sheet are as follows: "6620", "6621", "6622", "6623", "6624" and "6625".

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* 1.5.3 Suffix symbols. The following suffix letters are incorporated in the PIN in the order listed in the table as applicable:

	A blank first suffix symbol indicates an axial through-hole mount package (see figure 1).
US	Indicates a surface mount, square endcap, package (see figure 2).
UDAB	The 'UDAB' suffix symbol indicates a surface mount LCC 3 leads (land pattern of A-body [US]). Pad 3 = shielding, connected to the lid (See figure 3).

1.5.4 Lead finish. The lead finishes applicable to this specification sheet are listed on [QPDSIS-19500](#).

* 2. APPLICABLE **DOCUMENTS PUBLICATIONS**

* 2.1 General. The **documents publications** listed in this section are specified in sections 3 and 4 of this specification. This section does not include **documents publications** 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 publications** cited in sections 3 and 4 of this specification, whether or not they are listed.

* 2.2 Government **documents publications**.

* 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 publications** are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

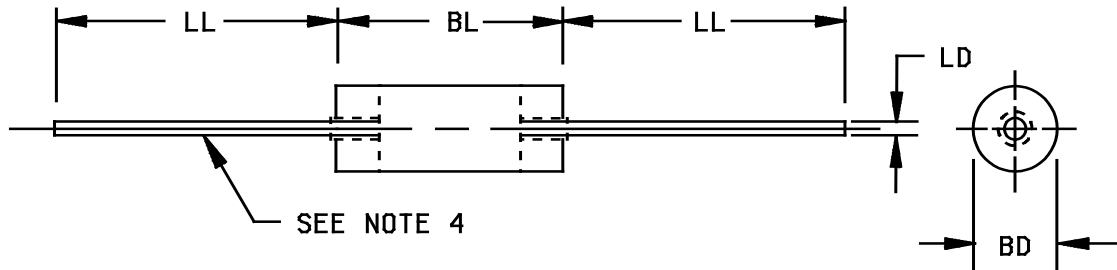
[MIL-PRF-19500](#) - Semiconductor Devices, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

[MIL-STD-750](#) - Test Methods for Semiconductor Devices.

(Copies of these documents are available online at <https://quicksearch.dla.mil/>.)

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.



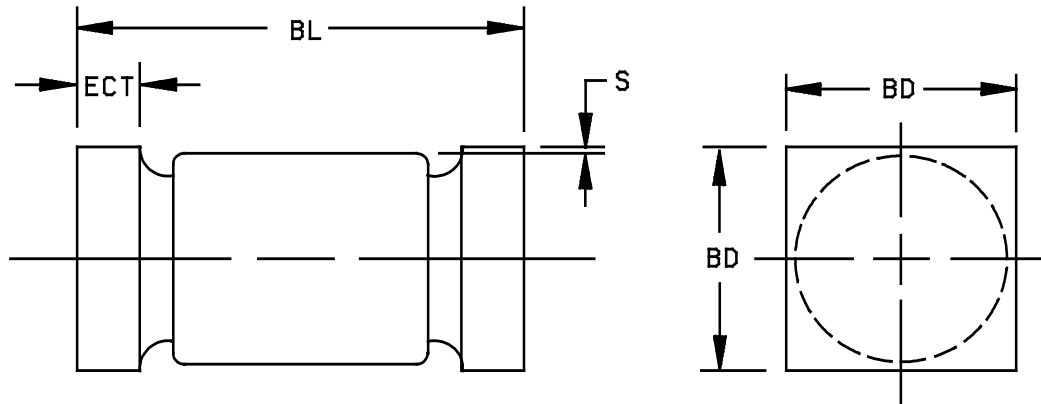
Ltr Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.065	.085	1.65	2.16	4
BL	.125	.250	3.18	6.35	3
LD	.027	.032	0.69	0.81	3
LL	.700	1.30	17.78	33.02	

* NOTES:

- 1 Dimensions are in inches.
- 2 Millimeters are given for general information only.
- 3 Dimension BL shall include the sections of the lead over which the diameter is uncontrolled. This uncontrolled area is defined as the zone between the edge of the diode body and extending .050 inch (1.27 mm) onto the leads.
- 4 Dimension BD shall be measured at the largest diameter.

* ~~5 In accordance with ASME Y14.5, diameters are equivalent to ϕ x symbology.~~

FIGURE 1. Physical dimensions (similar to DO-41).



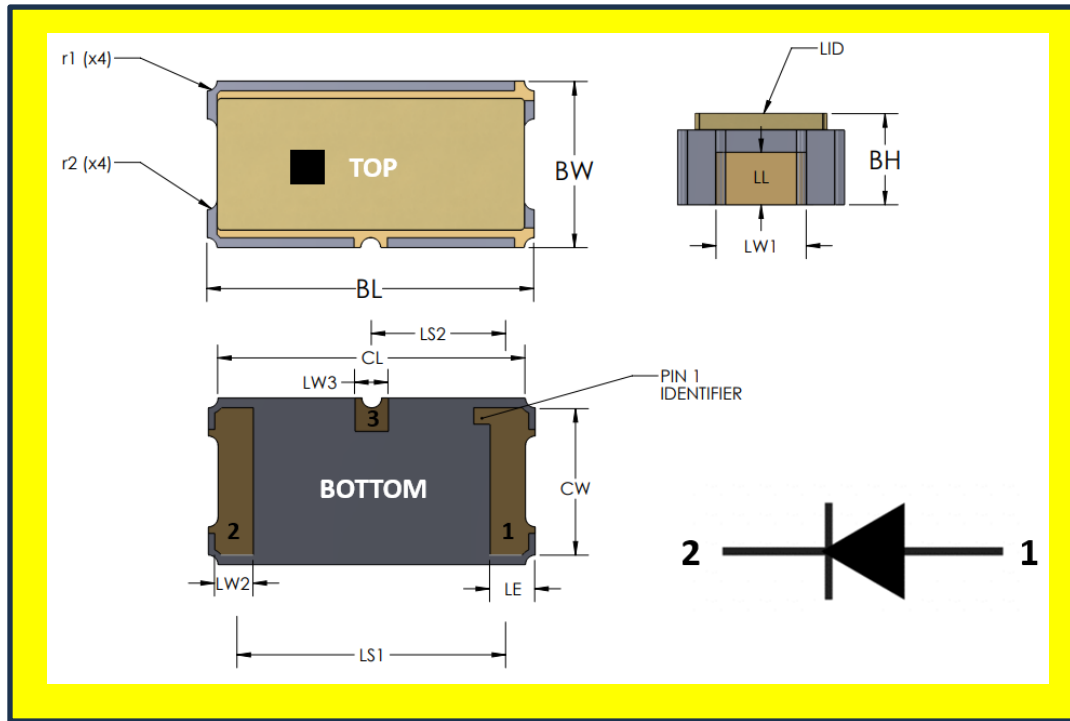
Ltr Symbol	Dimensions				Notes
	1N6620U, US through 1N6625U, US				
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.091	.103	2.31	2.62	
BL	.168	.200	4.27	5.08	
ECT	.019	.028	0.48	0.71	
S	.003		0.08		

NOTES:

- 1 Dimensions are in inches.
- 2 Millimeters are given for general information only.

* 3 In accordance with ASME Y14.5, diameters are equivalent to ϕ x symbology.

FIGURE 2. Physical dimensions of for square end-cap (U and US) surface mount.



Symbol	Inches	Inches	mm	mm	Symbol	Inches	Inches	mm	mm
	Min	Max	Min	Max		Min	Max	Min	Max
BH	0.052	0.061	1.32	1.55	LW1	0.052	0.056	1.32	1.42
BL	0.189	0.205	4.8	5.21	LW2	0.019	0.027	0.48	0.69
BW	0.092	0.108	2.34	2.74	LW3	0.018	0.022	0.46	0.56
CL	0.183	0.187	4.65	4.75	LE	0.021	0.033	0.53	0.84
CW	0.087	0.089	2.21	2.26	r1		0.006		0.15
LL	0.028	0.032	0.71	0.81	r2		0.006		0.15
LS1	0.166	0.174	4.22	4.42					
LS2	0.083	0.087	2.11	2.21					

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Pad 3 = shielding, connected to the lid.
3. Equivalent pad layout to 1N6620US, 1N6621US, 1N6622US, 1N6623US, 1N6624US, and 1N6625US.
4. Cathode marked with a square.

* FIGURE 3. Physical dimensions of surface mount UDA.

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 and as follows:

EC	End-cap.
I _{RM(REC)}	Peak reverse recovery current.
T _{CVF}	Temperature coefficient of forward voltage.
V _{FRM}	Forward recovery voltage.
UDA	Ceramic surface mount diode with land pattern of A-Body (US).

* 3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500 and figure 1 (similar to DO-41) and figure 2 surface mount (US) herein, and figure 3 surface mount (UDA) herein.

3.4.1 Lead finish. Unless otherwise specified, lead or end cap finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750, and herein. When solder alloy is used for finish the maximum lead temperature is limited to +175°C maximum. Where a choice of finish is desired, it shall be specified in the acquisition document (see 6.2).

* 3.4.2 Diode construction. These devices shall be constructed utilizing non-cavity double plug construction with high temperature metallurgical bonding between both sides of the silicon die and terminal pins (see MIL-PRF-19500). Metallurgical bond shall be in accordance with the requirements of category I in MIL-PRF-19500. U and US version devices shall be structurally identical to the non-surface mount devices except for lead terminations. The US version shall be structurally identical to the U version.

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

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

3.7 Marking. Devices shall be marked as specified in MIL-PRF-19500.

3.7.1 Marking for U and US devices. For U and US version devices only, all marking may be omitted from the device except for the cathode marking. All marking which is omitted from the body of the device shall appear on the label of the initial container.

* 3.8 Polarity. The polarity of all types shall be indicated with a contrasting color band to denote the cathode end. Alternatively, for U suffix devices, a minimum of three contrasting color dots spaced around the periphery on the cathode end of the device may be used. The UDA devices shall mark the cathode with a square symbol on the lid.

3.9 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 and table I).

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

4.2.1 Group E qualification. Group E qualification shall be performed herein for qualification or requalification 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 shall be performed by the first inspection lot to this revision to maintain qualification.

4.3 Screening (JANS, JANTX, AND JANTXV levels only). Screening shall be in accordance with 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	Measurement	
	JANS level	JANTXV and JANTX level
(1) 3c	Thermal impedance (see 4.3.1)	Thermal impedance (see 4.3.1)
5	Not applicable	Not applicable
9	Required I_{R1} and V_{FM1}	Not required
10	Method 1038 of MIL-STD-750, condition A	Method 1038 of MIL-STD-750, condition A
11	I_{R1} and V_{FM1} , $\Delta I_{R1} \leq 100$ percent of initial reading or ± 100 nA dc (± 200 nA dc for 1N6625), whichever is greater. $\Delta V_{FM1} \leq \pm 0.05$ V dc	I_{R1} and V_{FM1}
12	Required, see 4.3.2	Required, see 4.3.2
(2) 13	Subgroups 2 and 3 of table I herein: $\Delta I_{R1} \leq 100$ percent of initial reading or ± 100 nA dc (± 200 nA dc for 1N6625), whichever is greater. $\Delta V_{FM1} \leq \pm 0.05$ V dc. Scope display evaluation (see 4.5.4)	Subgroup 2 of table I herein: $\Delta I_{R1} \leq 100$ percent of initial reading or ± 100 nA dc (± 200 nA dc for 1N6625), whichever is greater. $\Delta V_{FM1} \leq \pm 0.05$ V dc. Scope display evaluation (see 4.5.4)

- (1) Thermal impedance shall be performed any time after sealing provided temperature cycling is performed in accordance with MIL-PRF-19500, screen 3 prior to this thermal test.
- (2) $Z_{\theta JX}$ shall be performed anytime after temperature cycling, screen 3a; JANTX and JANTXV levels do not need to be repeated in screening requirements.

4.3.1 Thermal impedance. The thermal impedance measurements shall be performed in accordance with method 3101 as applicable of MIL-STD-750 using the guidelines in that method for determining IM, IH, TH, and K factor. See table II, group E, subgroup 4 herein.

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4.3.2 Power burn-in conditions. Power burn-in conditions are as follows (see 4.5.3, 4.5.3.1) $T_A = +55^\circ\text{C}$ maximum. Test conditions in accordance with method 1038 of MIL-STD-750, condition B. Adjust I_O to achieve the required T_J . Use method 3100 of MIL-STD-750 to measure T_J . $T_J = +115^\circ\text{C}$ minimum and $+150^\circ\text{C}$ maximum.

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 table E-VIA (JANS) and E-VIB (JAN, JANTX and JANTXV) of MIL-PRF-19500 and 4.4.2.1 and 4.4.2.2 herein. Delta measurements shall be in accordance with table III herein.

4.4.2.1 Group B inspection, table E-VIA (JANS) of MIL-PRF-19500. For B5, if a failure occurs, resubmission shall be at the test conditions of the original sample.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B3	1056	-0°C to $+100^\circ\text{C}$, 25 cycles.
B3	1051	-55°C to $+175^\circ\text{C}$, 100 cycles.
B3	4066	Test Condition A, IFSM = rated IFSM (see 1.3, col. 5); ten surges of 8.3 ms each at 1 minute intervals, superimposed on $I_O = 0$, VRWM = 0.
B4	1037	$I_O = I_O$ rated minimum (see 1.3, col. 4); $V_R =$ rated V_{RWM} (see col. 2 of 1.3, and 4.5.3); 2,000 cycles.
B5	1027	$I_O = I_O$ rated minimum (see 1.3, col. 4 and 4.5.3); adjust T_A and or I_O to achieve $T_J = +150^\circ\text{C}$ minimum. $t = 1,000$ hours. Temporary leads may be added for surface mount devices. $n = 45$, $c = 0$. For irradiated devices, include t_{rr} as an end-point measurement. Delta shall not exceed 60 percent of initial reading.
B6	4081	See 4.5.5, $+25^\circ\text{C} \leq T_A \leq +35^\circ\text{C}$ (recorded before test is performed); $R_{\theta JL}$ (maximum) $\leq 38^\circ\text{C/W}$; $L = .375$ inch (9.53 mm). For surface mount devices (U and US version), $R_{\theta JEC} = 13^\circ\text{C/W}$ maximum.
B8	4065	Peak reverse power, $P_{RM} \geq 318$ W for square wave in accordance with method 4065 of MIL-STD-750 ($P_{RM} \geq 500$ W for half-sine wave). Test shall be performed on each subplot; sampling plan $n = 10$, $c = 0$, end-points, see 4.4.2.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B2	1056	-0°C to +100°C, 10 cycles.
B2	1051	-55°C to +175°C, 25 cycles.
B3	1027	IO = IO (rated, see col. 4 of 1.3) minimum; adjust IO to achieve required TJ of +125°C minimum; apply VR = rated VRWM (see col. 2 of 1.3), f = 50 - 60 Hz (see 4.5.3.1). For irradiated devices, include t _{rr} as an end-point measurement. Delta shall not exceed 25 percent of initial reading.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-VII of MIL-PRF-19500. See table III for delta limits when applicable.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	1056	-0°C to +100°C, 10 cycles.
C2	1051	-55°C to +175°C, 25 cycles.
C2	2036	Axial devices - Tension: Test condition A; weight = 12 pounds; t = 15 seconds. Lead fatigue: Test condition E; weight 2 pounds, t = 15 s.
C2	2038	US devices - Tension: Test condition B; weight = 12 pounds; t = 15 seconds.
*	C5	See 4.5.5, +25°C ≤ T _A ≤ +35°C (recorded before test is performed); R _{θJL} (maximum) ≤ 38°C/W; L = .375 inch (9.53 mm). For surface mount devices (U and US version), R _{θJEC} ≤ 13°C/W. For UDA surface mount devices, R _{θJSP} ≤ 29.1 °C/W.
	C6	IO = IO (rated see col. 4 of 1.3) minimum; adjust IO to achieve TJ of +125°C minimum; apply VR = rated VRWM (see col. 2 of 1.3), f = 50 - 60 Hz (see 4.5.3.1). For irradiated devices, include t _{rr} as an end-point measurement. Delta shall not exceed 25 percent of initial reading.

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 and as specified herein. See table III for delta limits when applicable.

4.5 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables 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 Inspection conditions. Unless otherwise specified, all inspections shall be conducted at T_A = room ambient as defined in the general requirements of MIL-STD-750 (see 4.5).

4.5.3 Burn-in and 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 rectified current. The forward conduction angle of the rectified current shall be neither greater than 180 degrees, nor less than 150 degrees.

4.5.3.1 Free air burn-in. The use of a current limiting or ballast resistor is permitted provided that each DUT still sees the full P_t (minimum) and that the minimum applied voltage, where applicable, is maintained through-out the burn-in period. $T_J = +115^\circ\text{C}$ minimum and $+150^\circ\text{C}$ maximum for screening, and $T_J = +125^\circ\text{C}$ minimum for 4.4.2.2 and 4.4.3.1 life tests. Accelerated life test in 4.4.2.1 shall be $T_J = +150^\circ\text{C}$ minimum.

4.5.4 Scope display evaluation. Scope display evaluation shall be stable in accordance with method 4023 of MIL-STD-750. Scope display may be performed on ATE (automatic test equipment) for screening only with the approval of the qualifying activity. Scope display in table I, subgroup 4 shall be performed on a scope. Reverse current (I_{BR}) over the knee shall be 500 μA peak.

4.5.5 Thermal resistance. Thermal resistance measurement shall be performed in accordance with method 4081 of MIL-STD-750 using the guidelines in that method for determining I_M , I_H , and t_H . Measurement delay time $t_{MD} = 100$ μs max. See table E-IX of MIL-PRF-19500.

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TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Thermal impedance	3101	See 4.3.1	Z _{θJX}			°C/W
Forward voltage	4011	Duty cycle ≤ 2 percent (pulsed) (see 4.5.1); t _p = 8.3 ms (max).	V _{FM1}			
1N6620, U, US, UDA		I _{FM} = 2.0 A dc			1.60	V
1N6621, U, US, UDA		I _{FM} = 2.0 A dc			1.60	V
1N6622, U, US, UDA		I _{FM} = 2.0 A dc			1.60	V
1N6623, U, US, UDA		I _{FM} = 1.5 A dc			1.80	V
1N6624, U, US, UDA		I _{FM} = 1.5 A dc			1.80	V
1N6625, U, US, UDA		I _{FM} = 1.5 A dc			1.95	V
Forward voltage	4011	Duty cycle ≤ 2 percent (pulsed) (see 4.5.1); t _p = 8.3 ms (max).	V _{FM2}			
1N6620, U, US, UDA		I _{FM} = 1.2 A dc			1.40	V
1N6621, U, US, UDA		I _{FM} = 1.2 A dc			1.40	V
1N6622, U, US, UDA		I _{FM} = 1.2 A dc			1.40	V
1N6623, U, US, UDA		I _{FM} = 1.0 A dc			1.55	V
1N6624, U, US, UDA		I _{FM} = 1.0 A dc			1.55	V
1N6625, U, US, UDA		I _{FM} = 1.0 A dc			1.75	V
Reverse current leakage	4016	V _{RM} = column 2 (peak) of 1.3; pulsed (see 4.5.1)	I _{R1}		Col. 2 of 1.4	μA
Breakdown voltage	4021	I _R = 50 μA dc; pulsed (see 4.5.1)	V _{(BR)1}	110 percent of col. 2 of 1.3		V
Subgroup 3						
High temperature operation:		T _A = +150°C				
Reverse current leakage	4016	V _{RM} = column 2 (peak); pulsed (see 4.5.1)	I _{R2}		Col. 3 of 1.4	μA
Low-temperature operation:		T _A = -65°C				
Forward voltage	4011	I _{FM3} = 50 percent of I _{F(AV1)} (pk) (col. 3 of 1.3); pulsed (see 4.5.1)	V _{FM3}		110 percent of col. 6 of 1.4	V
Breakdown voltage	4021	I _R = 50 μA dc; pulsed (see 4.5.1)	V _(BR2)	Col. 2 of 1.3		V

See footnote at end of table.

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TABLE I. Group A inspection. – Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 4</u>						
Forward recovery voltage	4026	I _F = 0.5 A, t _r = 12 ns	V _{FRM}			V
1N6620, U, US, UDA					12	
1N6621, U, US, UDA					12	
1N6622, U, US, UDA					12	
1N6623, U, US, UDA					18	
1N6624, U, US, UDA					18	
1N6625, U, US, UDA					30	
Capacitance	4001	V _R = 10 V, f = 0.1 to 1 MHz	C _T			pF
1N6620, U, US, UDA					10	
1N6621, U, US, UDA					10	
1N6622, U, US, UDA					10	
1N6623, U, US, UDA					10	
1N6624, U, US, UDA					10	
1N6625, U, US, UDA					10	
Low current reverse recovery time	4031	Condition B. I _F = 0.5 A, I _{RM} = 1.0 A	t _{rr1}			ns
1N6620, U, US, UDA					30	
1N6621, U, US, UDA					30	
1N6622, U, US, UDA					30	
1N6623, U, US, UDA					50	
1N6624, U, US, UDA					50	
1N6625, U, US, UDA					60	
High current reverse recovery time	4031	Condition D. I _F = 2A, di/dt = 100 A/μs	t _{rr2}			ns
1N6620, U, US, UDA					45	
1N6621, U, US, UDA					45	
1N6622, U, US, UDA					45	
1N6623, U, US, UDA					60	
1N6624, U, US, UDA					60	
1N6625, U, US, UDA					80	
Peak recovery current			I _{RM(REC)}			A
1N6620, U, US, UDA					3.5	
1N6621, U, US, UDA					3.5	
1N6622, U, US, UDA					3.5	
1N6623, U, US, UDA					4.2	
1N6624, U, US, UDA					4.2	
1N6625, U, US, UDA					5.0	
Scope display	4023	Stable only. See 4.5.4, n = 116, c = 0				

See footnote at end of table.

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TABLE I. Group A inspection. – Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 5</u> Not applicable	4066	Condition A. I_{FSM} = rated I_{FSM} (see 1.3 , col. 5); ten surges of 8.3 ms each at 1 minute intervals, superimposed on $I_O = 0$, $V_{RWM} = 0$. $T_A = +25^{\circ}\text{C}$				
<u>Subgroup 6</u> Forward surge						
Electrical measurement						
<u>Subgroup 7</u> Not applicable						

1/ For sampling plan, see [MIL-PRF-19500](#).

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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 (glass strain)	1056	20 cycles, condition D except low temperature shall be achieved using liquid nitrogen (-195°C). Visual for cracked glass.	
Temperature cycling	1051	500 cycles, -65°C to +175°C.	
Hermetic seal gross leak	1071		
Electrical measurement		See table I , subgroup 2 and table III herein steps 1 and 2.	
<u>Subgroup 2</u>			22 devices c = 0
Blocking life	1048	T _A = +150°C; t = 1,000 hours +65, -0 hours; dc = 80 - 85 percent rated V _R	
Electrical measurement		See table I , subgroup 2.	
<u>Subgroup 4</u>			N/A
Thermal impedance curves		See MIL-PRF-19500 .	
<u>Subgroup 5</u>			22 devices c = 0
Barometric pressure (reduced) <u>1/</u>	1001	1N6620 through 1N6622 at 8 mm Hg 1N6623 through 1N6625 at 33 mm Hg	

See footnotes at end of table.

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

Inspection	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 8</u> 2/ Peak reverse power Electrical measurement	4065	Peak reverse power (P_{RM}) = shall be characterized by the supplier and this data shall be available to the Government. Test shall be performed on each subplot. During the P_{RM} test, the voltage (V_{BR}) shall be monitored to verify it has not collapsed. Any collapse in V_{BR} during or after the P_{RM} test or rise in leakage current (I_R) after the test that exceeds I_{R1} in table I shall be considered a failure to that level of applied P_{RM} . Progressively higher levels of P_{RM} shall be applied until failure occurs on all devices within the chosen sample size to characterize each subplot.	n = 45
<u>Subgroup 9</u> 1/ Resistance to glass cracking	1057	~~Test condition B. Step stress to destruction by increasing cycles or up to a maximum of 25 cycles.~~ Test condition B. Test until failure occurs or to a maximum of 25 cycles maximum, whichever comes first. Not applicable for UDAB devices.	n = 45
<u>Subgroup 10</u> Forward surge Electrical measurement	4066	Condition A, I_{FSM} = rated I_{FSM} (see 1.3 , col. 5); ten surges of 8.3 ms each at 1 minute intervals, $I_o = 0$, $V_{RWM} = 0$. See table I , subgroup 2.	22 devices c = 0

1/ Also applies to U and US suffix versions.

2/ The sample size for this step stress requirement shall be determined by the supplier. A statistically significant sample size is required.

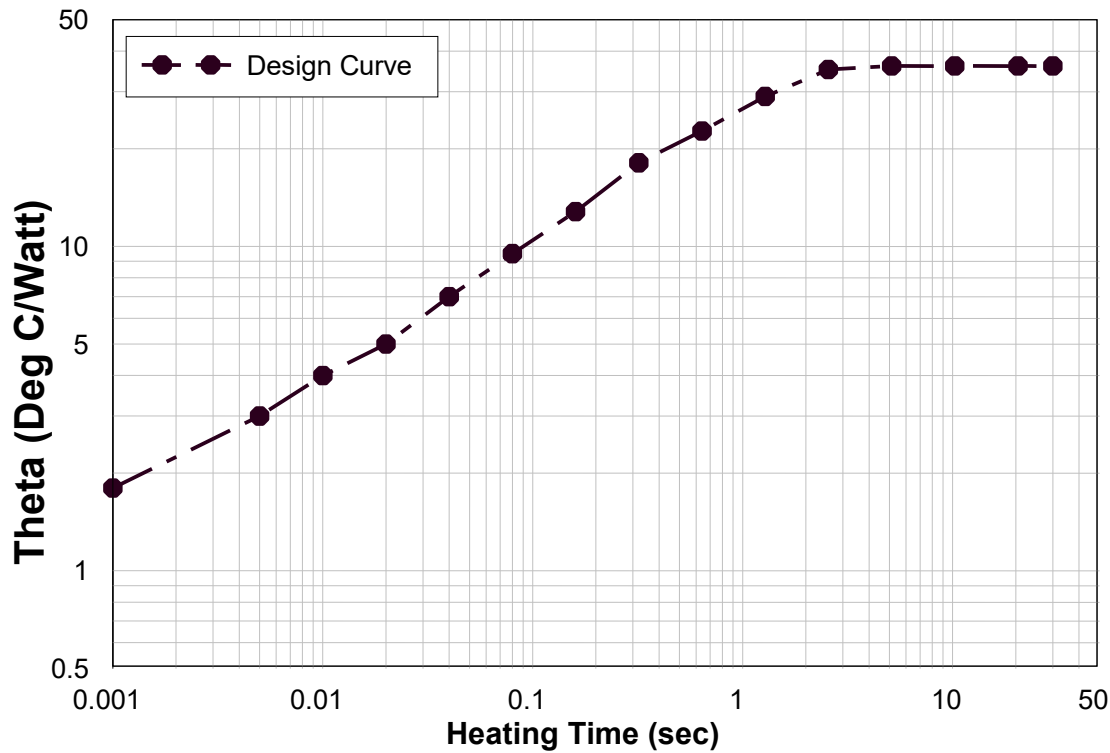
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* TABLE III. Groups B, C, and E delta measurements. 1/ 2/ 3/ 4/ 5/

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Forward voltage change	4011	IFM = col. 4 of 1.3, pulsed (see 4.5.1)	ΔV_{FM1}	± 50 mV change from previous measured value		
2.	Reverse current change 1N6620 through 1N6624 1N6625	4016	V_{RM} = col. 2 of 1.3; pulsed (see 4.5.1)	ΔI_{R1} ΔI_{R1}		≤ 250 nA (or 100% of initial reading, whichever is greater) ≤ 500 nA (or 100% of initial reading, whichever is greater)	

- 1/ Devices which exceed table I, subgroup 2 (group A) limits for this test shall not be accepted.
- 2/ The delta measurements for group B inspection, table E-VIA (JANS) of MIL-PRF-19500 are as follows: Subgroup 5, see table III herein, steps 1 and 2.
- 3/ The delta measurements for group B inspections in table E-VIB (JAN, JANTX, and JANTXV) of MIL-PRF-19500 are as follows:
- a. Subgroup 3, see table III herein, steps 1 and 2.
 - b. Subgroup 6, see table III herein, step 1.
- 4/ The delta measurements for group C inspections in table E-VII of MIL-PRF-19500 are as follows:
- a. Subgroup 2, see table III herein, step 1 (JANS).
 - b. Subgroup 6, see table III herein, steps 1 and 2 (JANS), step 1 (JAN, JANTX, and JANTXV).
- 5/ The delta measurements for group E inspection, table E-IX of MIL-PRF-19500 are as follows: Subgroup 1, see table III herein, steps 1 and 2.
- 6/ See 1.4 herein.
- 7/ Also applies to U, and US, and UDA suffix versions.

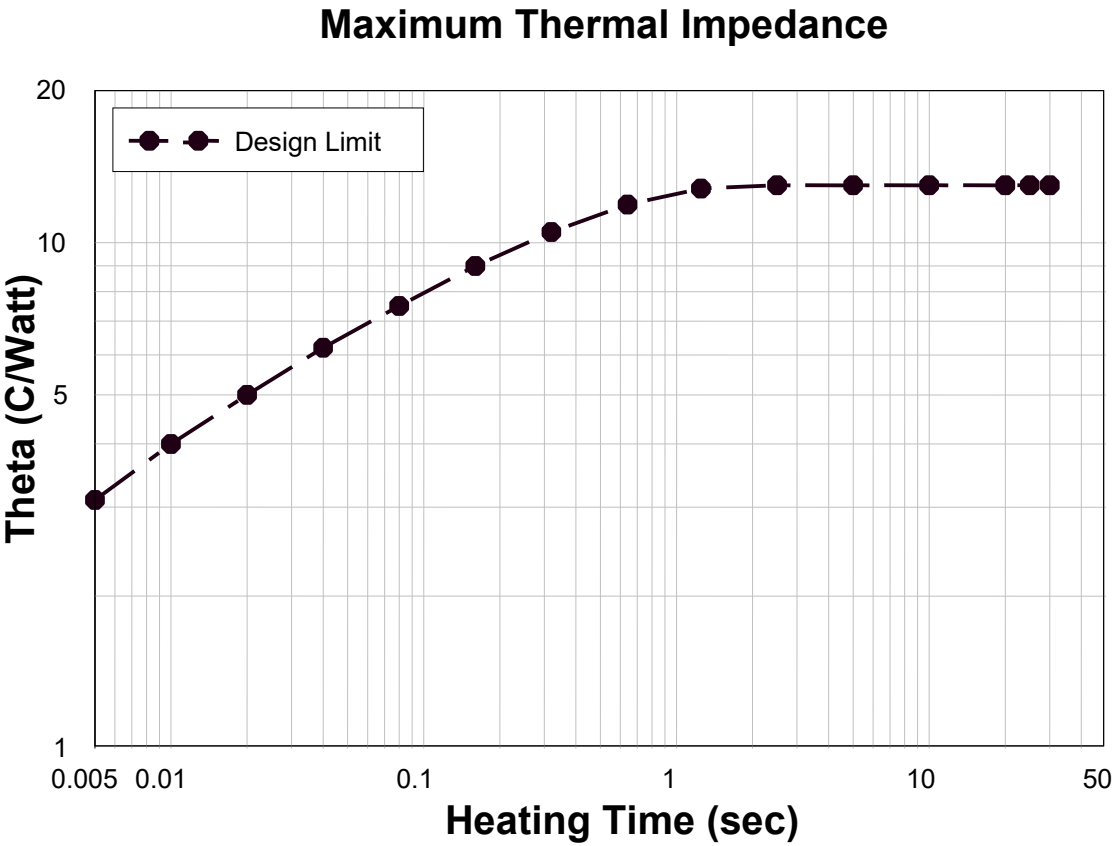
Maximum Thermal Impedance



$Z_{\theta JX} = 4^{\circ}\text{C/W}$ at 10 ms.

$R_{\theta JL} = 38^{\circ}\text{C/W}$

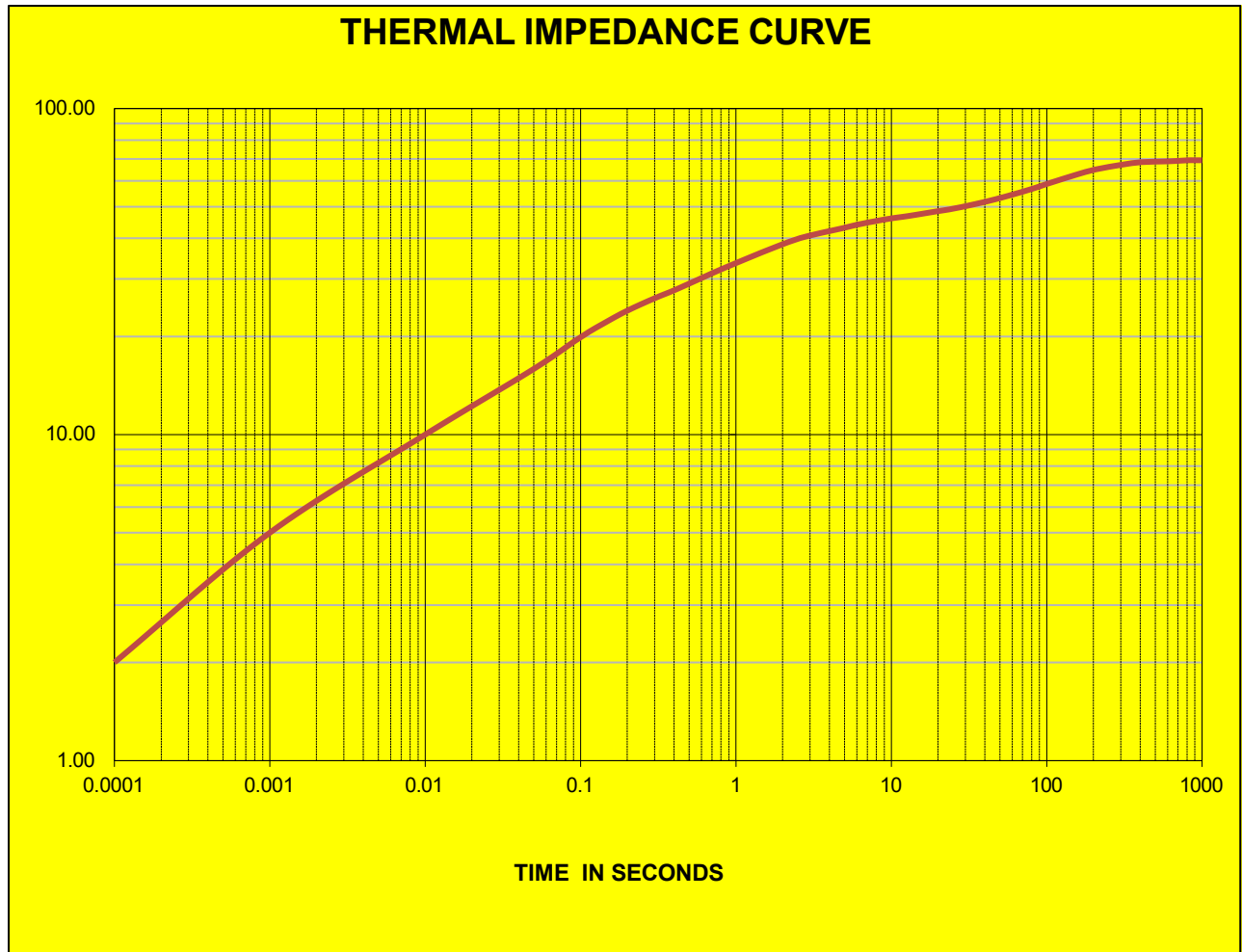
FIGURE 34. Thermal impedance curve for axial-leaded devices.



$Z_{\theta JX} = 4^{\circ}\text{C/W}$ at 10 ms.

$R_{\theta JEC} = 13^{\circ}\text{C/W}$

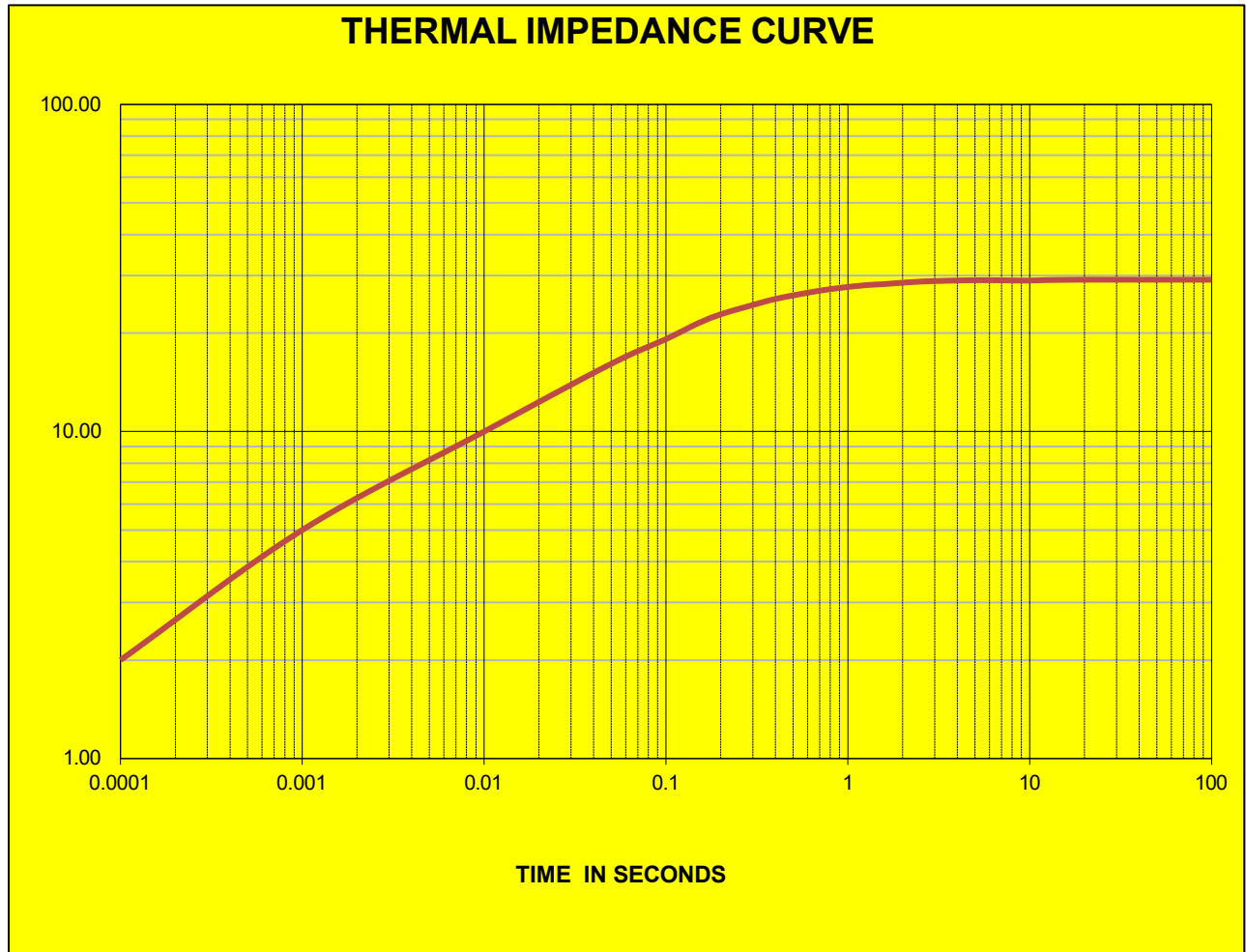
FIGURE 4.5. Thermal impedance curve surface mount devices.



$Z_{\theta JX} = 10^{\circ}\text{C/W}$ at 10 ms.

$R_{\theta JA} = 64.4^{\circ}\text{C/W}$

* FIGURE 6. Thermal impedance curve ($R_{\theta JA}$) for UDA package.



$Z_{\theta JX} = 10^{\circ}\text{C/W}$ at 10 ms.

$R_{\theta JSP} = 29.1^{\circ}\text{C/W}$

* FIGURE 7. Thermal impedance curve ($R_{\theta JSP}$) for UDA package.

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 3.4.1).
- d. The complete PIN, see 1.5.

* 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 DLA [Land and Maritime Weapons Support](#), ATTN: 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://qpldocs.dla.mil>.

6.4 Substitution of devices. The US version is substitutable for the U version and the U version is substitutable for the US version.

6.5 Application data.

6.5.1 Half-sine-wave application for the worst-case (highest voltage) 1N6625. For a PCB mounting with FR4 material where the full 1.0 amp I_O rating (half-sine wave) is used at a T_J of +150°C and ambient temperature of +25°C as shown in 1.3.2 herein, the following steps guide the user in what the PCB pad size will need to be with 1 ounce, 2 ounce, and 3 ounce copper. For axial-leaded, the lead length for mounting will be .187 inch (4.76 mm) or less from body to entry point on PCB surface.

- a. Use the I_O versus P_O curve on ~~figure 6~~ figure 8 to look up 1.0 amp (X-axis) and follow up to the T_J = +150°C curve (lower) for 2.28 watts.
- b. Calculate maximum thermal resistance needed $(+150^\circ\text{C to } +25^\circ\text{C}) / 2.28 \text{ W} = +55^\circ\text{C/W}$.
- c. Look up thermal resistance of +55°C/W on Y-axis using a thermal resistance versus pad area plot on one of the three curves on ~~figure 7~~ figure 9 for different weights of copper cladding and then intersect curve horizontally to get answer. These curves assume still air, horizontal position.
- * d. In this example, the answer is: 1 ounce PCB = 1.20 in² (774 mm²), 2 ounce PCB = .65 in² (419 mm²), 3 ounce PCB = .43 in² (277 mm²) for each pad.
- e. Add a conservative guard-band to the pad size (larger) to keep T_J below +150°C.

6.5.2 Square-wave application with 1N6620 through 1N6625. For a PCB mounting example with FR4 material to support a 0.5 amp I_O square-wave switching at a 0.50 duty factor (50 percent duty cycle) at T_J = +125°C and ambient temperature of +55°C, the following steps guide the user in what the PCB pad size will need to be with 1 ounce, 2 ounce, and 3 ounce copper.

- a. Find size of copper pads on standard FR4 PCB to support operation at 0.5 amp I_O square wave switching at a 0.50 duty factor (50 percent duty cycle) at T_J = +125°C with T_A = +55°C.
- b. Calculate peak I_F = 0.5A / 0.50 duty factor = 1 amp.
- c. Use the V_F versus I_F curve in ~~figure 8~~ figure 10 to look up I_F = 1 A (Y-axis) and follow across to the T_J = +125°C curve for V_F = 1.75 V.
- d. Calculate power = $I_F \times V_F \times \text{duty factor} = 1 \times 1.75 \times 0.50 = 0.875 \text{ watts}$.
- e. Calculate maximum thermal resistance needed $(125^\circ\text{C to } 55^\circ\text{C}) / 0.875 \text{ W} = 80^\circ\text{C/W}$.
- f. Look up thermal resistance of 80°C/W on the Y-axis using a thermal resistance versus pad area plot on one of the three curves on ~~figure 6~~ figure 8 for different weights of copper cladding and then intersect curve horizontally to get answer. Curves assume still air, horizontal position.
- * g. In this example, the answer is: 1 ounce PCB = .20 in² (129 mm²), 2 ounce PCB = .12 in² (77 mm²), 3 ounce PCB = .08 in² (52 mm²) for each pad.
- h. A conservative pad guard-band is optional since T_J is only +125°C. NOTE: Multilayer PCBs, forced air cooling will improve performance. Closed confinement of the PCB will do the opposite. Use sound thermal management.

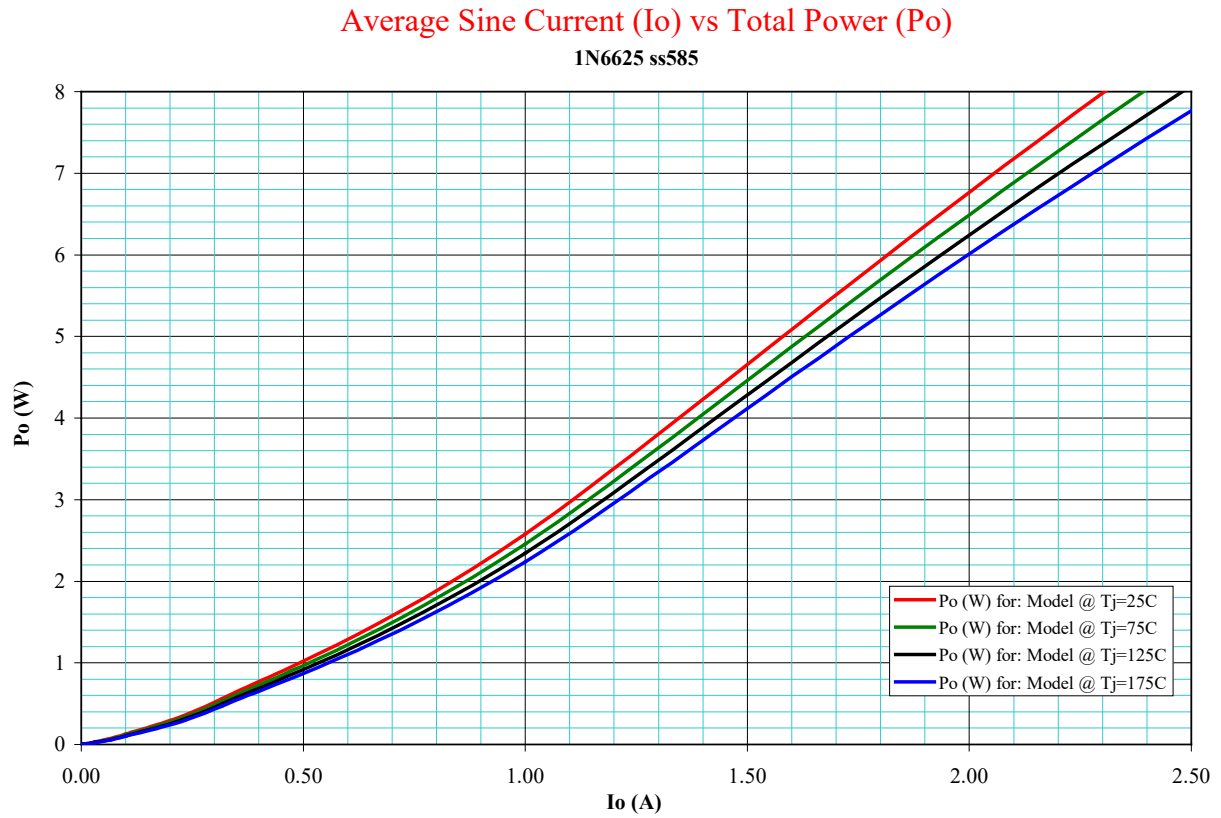


FIGURE 6 8. Rectifier power versus I_o (average forward current for 1N6620 through 1N6625).

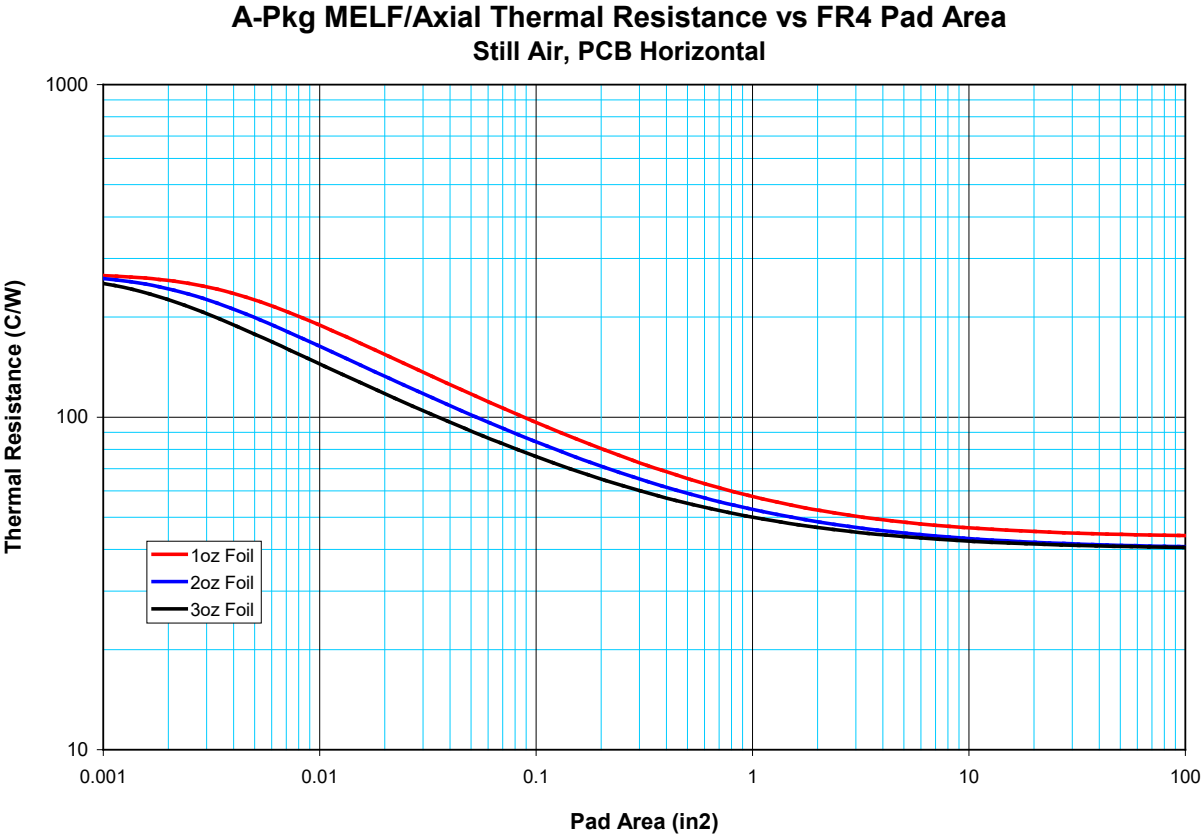


FIGURE 7-9. Thermal resistance versus pad area (for each pad) with 1, 2, and 3 ounce copper for 1N6620 through 1N6625.

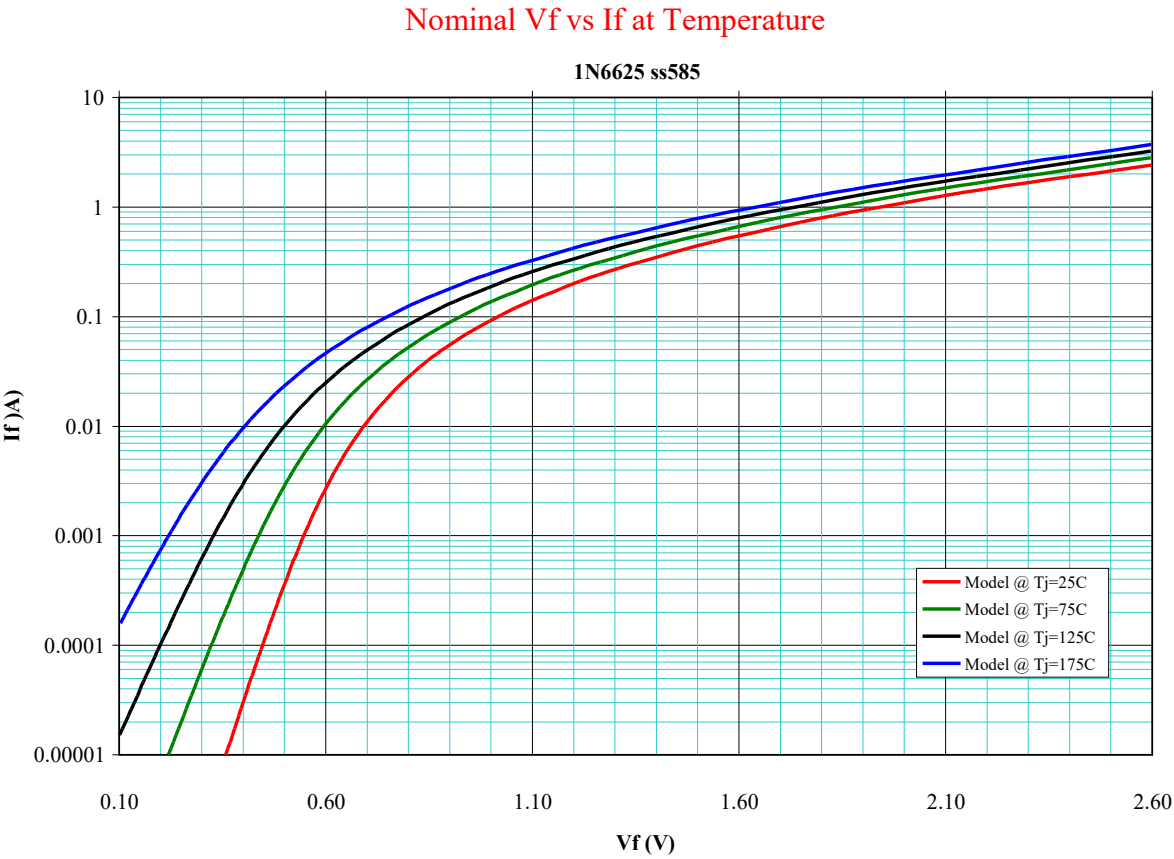


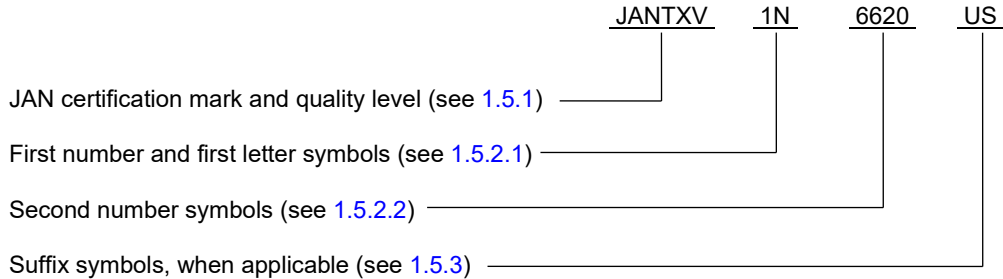
FIGURE 8 10. Forward voltage versus forward current for 1N6620 through 1N6625.

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6.6 PIN construction example.

6.6.1 Encapsulated devices The PINs for encapsulated devices are constructed using the following form.



* 6.7 List of PINs. The following is a list of possible PINs available on this specification sheet.

PINs for types 1N6620, 1N6621, 1N6622, 1N6623, 1N6624, AND 1N6625.			
JAN1N6620	JANTX1N6620	JANTXV1N6620	JANS1N6620
JAN1N6621	JANTX1N6621	JANTXV1N6621	JANS1N6621
JAN1N6622	JANTX1N6622	JANTXV1N6622	JANS1N6622
JAN1N6623	JANTX1N6623	JANTXV1N6623	JANS1N6623
JAN1N6624	JANTX1N6624	JANTXV1N6624	JANS1N6624
JAN1N6625	JANTX1N6625	JANTXV1N6625	JANS1N6625
JAN1N6620U	JANTX1N6620U	JANTXV1N6620U	JANS1N6620U
JAN1N6621U	JANTX1N6621U	JANTXV1N6621U	JANS1N6621U
JAN1N6622U	JANTX1N6622U	JANTXV1N6622U	JANS1N6622U
JAN1N6623U	JANTX1N6623U	JANTXV1N6623U	JANS1N6623U
JAN1N6624U	JANTX1N6624U	JANTXV1N6624U	JANS1N6624U
JAN1N6625U	JANTX1N6625U	JANTXV1N6625U	JANS1N6625U
JAN1N6620US	JANTX1N6620US	JANTXV1N6620US	JANS1N6620US
JAN1N6621US	JANTX1N6621US	JANTXV1N6621US	JANS1N6621US
JAN1N6622US	JANTX1N6622US	JANTXV1N6622US	JANS1N6622US
JAN1N6623US	JANTX1N6623US	JANTXV1N6623US	JANS1N6623US
JAN1N6624US	JANTX1N6624US	JANTXV1N6624US	JANS1N6624US
JAN1N6625US	JANTX1N6625US	JANTXV1N6625US	JANS1N6625US
JAN1N6620UDA	JANTX1N6620UDA	JANTXV1N6620UDA	JANS1N6620UDA
JAN1N6621UDA	JANTX1N6621UDA	JANTXV1N6621UDA	JANS1N6621UDA
JAN1N6622UDA	JANTX1N6622UDA	JANTXV1N6622UDA	JANS1N6622UDA
JAN1N6623UDA	JANTX1N6623UDA	JANTXV1N6623UDA	JANS1N6623UDA
JAN1N6624UDA	JANTX1N6624UDA	JANTXV1N6624UDA	JANS1N6624UDA
JAN1N6625UDA	JANTX1N6625UDA	JANTXV1N6625UDA	JANS1N6625UDA

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* 6.8 Request for new types and configurations. Requests for new device types or configurations for inclusions in this specification sheet should be submitted to: DLA Weapons Support, ATTN: VAC, Post Office Box 3990, Columbus, OH 43218-3990 or by electronic mail at Semiconductor@dla.mil.

6.8 6.9 Amendment notations. The margins of this specification are marked with asterisks to indicate modifications generated by this amendment. 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.

CONCLUDING MATERIAL

Custodians:
Army - CR
* Navy - SH
Air Force - 85
NASA - NA
DLA - CC

Preparing activity:
DLA - CC

(Project 5961-2026-079)

Review activities:
Army - AR, MI, SM
Navy - AS, MC
Air Force - 19

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.dla.mil>.