

The documentation and process conversion measures necessary to comply with this revision shall be completed by 22 December 2016.

INCH-POUND

MIL-PRF-19500/577D
 22 September 2016
 SUPERSEDING
 MIL-PRF-19500/577C
 6 October 2006

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, POWER RECTIFIER, FAST RECOVERY,
 HIGH VOLTAGE, AXIAL LEAD, TYPES 1N6528 THROUGH 1N6535,
 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 silicon, high voltage, fast recovery power rectifier diodes. Four levels of product assurance are provided for each device as specified in [MIL-PRF-19500](#).

* 1.2 Package outlines. The device package for the encapsulated device type are as follows: Axial in accordance with [figure 1](#) (similar to DO-7).

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

| Types | V_{RWM} | I_O $T_A = +55^\circ\text{C}$ | I_O $T_A = +100^\circ\text{C}$ | I_{FSM} $t_p = 8.3 \text{ ms}$ | t_{rr} | T_{STG} | T_J | $R_{\theta JL}$ L = .25 (6.35 mm) |
|--------|-------------|------------------------------------|-------------------------------------|-------------------------------------|-----------|-----------|-----------|---|
| | <u>V dc</u> | <u>mA dc</u> | <u>mA dc</u> | <u>A (pk)</u> | <u>ns</u> | <u>°C</u> | <u>°C</u> | <u>°C/W</u> |
| 1N6528 | 1,500 | 250 (1) | 125 (1) | 10 | 70 | -65 | -65 | 50 |
| 1N6529 | 2,000 | 250 (1) | 125 (1) | 10 | 70 | to | to | 50 |
| 1N6530 | 2,500 | 100 (2) | 50 (2) | 8 | 70 | +200 | +175 | 50 |
| 1N6531 | 3,000 | 100 (2) | 50 (2) | 8 | 70 | | | 50 |
| 1N6532 | 4,000 | 50 (3) | 25 (3) | 4 | 70 | | | 50 |
| 1N6533 | 5,000 | 50 (3) | 25 (3) | 4 | 70 | | | 50 |
| 1N6534 | 7,500 | 25 (4) | 12.5 (4) | 2 | 70 | | | 50 |
| 1N6535 | 10,000 | 25 (4) | 12.5 (4) | 2 | 70 | | | 50 |

- (1) Derate I_O linearly 2.78 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 1.67 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .
- (2) Derate I_O linearly 1.11 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 0.67 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .
- (3) Derate I_O linearly 0.55 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 0.33 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .
- (4) Derate I_O linearly 0.28 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 0.17 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .

*

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, 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>.

AMSC N/A

FSC 5961



1.4 Primary electrical characteristics.

| Types | V_{RWM} | I_O $T_A = +55^\circ\text{C}$ | I_{R1} $T_A = +25^\circ\text{C}$ | V_{F1} at I_O | C at $V_R = 50\text{ V}$ $F_O = 1\text{ kHz}$ | Barometric pressure (reduced) $t = 1\text{ minute}$ (minimum) |
|--------|-------------|------------------------------------|---------------------------------------|-------------------------|---|---|
| | <u>V dc</u> | <u>mA dc</u> | <u>$\mu\text{A dc}$</u> | <u>V (pk)</u> | <u>pF</u> | <u>mmHg</u> |
| 1N6528 | 1,500 | 250 | 0.10 | 3.0 | 4.0 | 8 |
| 1N6529 | 2,000 | 250 | 0.10 | 3.0 | 4.0 | 8 |
| 1N6530 | 2,500 | 100 | 0.10 | 7.0 | 2.0 | 8 |
| 1N6531 | 3,000 | 100 | 0.10 | 7.0 | 2.0 | 8 |
| 1N6532 | 4,000 | 50 | 0.10 | 9.0 | 1.0 | 8 |
| 1N6533 | 5,000 | 50 | 0.10 | 9.0 | 1.0 | 8 |
| 1N6534 | 7,500 | 25 | 0.10 | 14.0 | 0.5 | 8 |
| 1N6535 | 10,000 | 25 | 0.10 | 14.0 | 0.5 | 8 |

* 1.5 Part or Identifying Number (PIN). The PIN is in accordance with [MIL-PRF-19500](#), and as specified herein. See [6.4](#) for PIN construction example and [6.5](#) for a list of available PINs.

* n JAN certification mark and quality level.

* 1.5.1.1 Quality level designators 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: "6528", "6529", "6530", "6531", "6532", "6533", "6534", and "6535".

* 1.5.3 Suffix symbols. Suffix symbols are not applicable to this specification.

* 1.5.4 Lead finish. The lead finishes applicable to this specification sheet are listed on QPDSIS-19500.

2. APPLICABLE 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 of 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

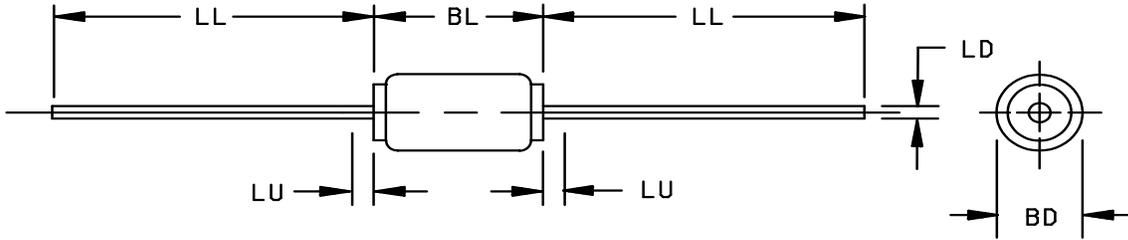
DEPARTMENT OF DEFENSE STANDARDS

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

[MIL-STD-1276](#) - Leads For Electronic Component Parts.

* (Copies of these documents are available online at <http://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.



| PIN | Dimensions | | | | | | | | | | | | | | | |
|--------|------------|------|-------------|------|--------|------|-------------|------|--------|------|-------------|------|--------|-----|-------------|------|
| | BD | | | | BL | | | | LD | | | | LL | | | |
| | Inches | | Millimeters | | Inches | | Millimeters | | Inches | | Millimeters | | Inches | | Millimeters | |
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| 1N6528 | .065 | .125 | 1.65 | 3.18 | .140 | .200 | 3.56 | 5.08 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6529 | .065 | .125 | 1.65 | 3.18 | .140 | .200 | 3.56 | 5.08 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6530 | .065 | .125 | 1.65 | 3.18 | .160 | .220 | 4.06 | 5.59 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6531 | .065 | .125 | 1.65 | 3.18 | .160 | .220 | 4.06 | 5.59 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6532 | .065 | .125 | 1.65 | 3.18 | .180 | .240 | 4.57 | 6.10 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6533 | .065 | .125 | 1.65 | 3.18 | .180 | .240 | 4.57 | 6.10 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6534 | .065 | .125 | 1.65 | 3.18 | .240 | .300 | 6.10 | 7.62 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |
| 1N6535 | .065 | .125 | 1.65 | 3.18 | .240 | .300 | 6.10 | 7.62 | .017 | .023 | 0.43 | 0.58 | 1.0 | 1.3 | 25.4 | 33.0 |

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The specified lead diameter applies in the zone between .05 inch (1.27 mm) from the body to the end of the lead. Outside of this zone lead shall not exceed the body diameter.
4. Dimension LU defines region of uncontrolled diameter .050 inch max (1.27 mm).
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

FIGURE 1. Physical dimensions (similar to DO-7).

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 [figure 1](#) herein. Plastic packages are prohibited.

3.4.1 Lead material and finish. Lead material shall be type C, 99.9 percent silver or copper in accordance with [MIL-STD-1276](#). Lead finish shall be in accordance with [MIL-PRF-19500](#) and [MIL-STD-750](#). Where a choice of lead 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. Metallurgical bond shall be in accordance with the requirements of category I in [MIL-PRF-19500](#).

3.5 Marking. Devices shall be marked as specified in [MIL-PRF-19500](#). Manufacturer's identification and date code shall be marked on the devices. The polarity shall be indicated with a contrasting color band to denote the cathode end. The prefixes JAN, JANTX, and JANTXV may be abbreviated as J, JX, and JV, respectively. The part number may be reduced to J6528, JX6528, JV6528 or JS6528. No color coding will be permitted for part numbering.

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 and [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](#)).

4.2 Qualification inspection. Qualification inspection shall be in accordance with [MIL-PRF-19500](#) and as specified herein.

4.2.1 Group E qualification. Group E 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 require 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 (JANS, JANTXV, and JANTX levels only). Screening shall be in accordance with table E-IV of MIL-PRF-19500 and as specified herein. Specified electrical measurements shall be made in accordance with table I herein. Devices that exceed the limits of table I herein shall not be acceptable.

| Screen (see table E-IV of MIL-PRF-19500) | Measurement | |
|--|--|---|
| | JANS level | JANTX and JANTXV levels |
| (1) | Surge, see 4.3.2. | Surge, see 4.3.2. |
| 9 | I_{R1} and V_{F1} | Not applicable |
| 11 | I_{R1} and V_{F1} ; ΔI_{R1} and ΔV_{F1} , see table III herein. | I_{R1} and V_{F1} |
| 12 | See 4.3.1 | See 4.3.1 |
| 13 | Subgroups 2 and 3 of table I herein: ΔI_{R1} and ΔV_{F1} , see table III. I_{R1} and V_{F1} . Scope display evaluation (see 4.5.4) | Subgroup 2 of table I herein: ΔI_{R1} and ΔV_{F1} , see table III. I_{R1} and V_{F1} . Scope display evaluation (see 4.5.4) |

(1) Surge screening shall be performed anytime after screen 3 and before screen 10.

4.3.1 Power burn-in conditions. Power burn-in conditions are as follows: Method 1038 of MIL-STD-750, condition B, T_A = room ambient as defined in the general requirements of 4 of MIL-STD-750; V_R = 1000 Vdc, f = 60Hz.

| Types | I_O (mA dc) |
|----------------|---------------|
| 1N6528, 1N6529 | 250 |
| 1N6530, 1N6531 | 100 |
| 1N6532, 1N6533 | 50 |
| 1N6534, 1N6535 | 25 |

4.3.2 Surge screening. Method 4066 of MIL-STD-750, T_A = +25°C, V_{RWM} = 0. Six surges. Apply 20 x I_O rated at T_A of 55°C, 8.3 ms.

* 4.3.3 Thermal impedance. The thermal impedance measurements shall be performed in accordance with method 3101 or 4081, as applicable, of MIL-STD-750 using the guidelines in that method for determining I_M , I_H , t_H , t_{SW} (V_C and V_H where appropriate). See group E, subgroup 4 herein.

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 table E-V of 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 table E-VIb (JANTX and JANTXV) of MIL-PRF-19500. Delta measurements shall be in accordance with the applicable steps of table III herein.

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

| | <u>Subgroup</u> | <u>Method</u> | <u>Conditions</u> |
|---|-----------------|---------------|--|
| * | B3 | 4066 | Condition A, I_O at $T_A = 55^\circ\text{C}$, $I_{FSM} = \text{rated } I_{FSM}$, see 1.3, one surge, 8.3 ms, $V_{RWM} = 0 \text{ V}$. |
| | B4 | 1037 | See 4.3.1, $t_{on} = t_{off} = 3 \text{ minutes minimum}$, 2,000 cycles. |
| * | B5 | 1027 | $T_A = +150^\circ\text{C}$ minimum, $I_O = \text{rated } I_O$ (see 1.3) or adjust I_O and T_A as required to achieve $T_J = +275^\circ\text{C}$ for a minimum of 96 hours at $V_{RWM} = 1,000 \text{ V}$. For irradiated devices, include t_{rr} as an end-point measurement. |
| | B6 | 4081 | $T_A = +25^\circ\text{C}$; $R_{\theta JL} = \text{rated } R_{\theta JL}$ (see 1.3). |

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

| | <u>Subgroup</u> | <u>Method</u> | <u>Conditions</u> |
|---|-----------------|---------------|---|
| * | B2 | 4066 | Condition A, $I_O = I_O$ at $T_A = 55^\circ\text{C}$ one surge, 8.3 ms; $I_{FSM} = \text{rated } I_{FSM}$ (see 1.3), $V_{RWM} = 0$ |
| * | B3 | 1027 | $T_A = \text{room ambient}$ as defined in the general requirements in 4.5 of MIL-STD-750 minimum, $I_O = \text{rated } I_O$ (see 4.3.1); adjust I_O or T_A as required to achieve $T_J \geq +125^\circ\text{C}$, $V_{RWM} = 1,000 \text{ V}$. For irradiated devices, include t_{rr} as an end-point measurement. |
| | B5 | 4081 | $T_A = +25^\circ\text{C}$; $R_{\theta JL} = \text{rated } R_{\theta JL}$ (see 1.3). |

* 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 and as follows. Delta measurements shall be in accordance with the applicable steps of table III herein.

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

| | <u>Subgroup</u> | <u>Method</u> | <u>Conditions</u> |
|---|-----------------|---------------|--|
| | C2 | 2036 | Test condition A, weight = 5 lbs, $t = 30\text{s}$. |
| * | C6 | 1027 | $T_A = +25^\circ\text{C}$ minimum, $I_O = \text{rated } I_O$ (see 4.3.1); adjust I_O or T_A as required to achieve $T_J \geq +125^\circ\text{C}$, $V_{RWM} = 1,000 \text{ V}$. For irradiated devices, include t_{rr} as an end-point measurement. |

* 4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the tests and conditions specified for subgroup testing in table E-IX of MIL-PRF-19500, and table II herein.

4.5 Methods of inspection. Methods of inspection shall be 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 Inspection of conditions. Unless otherwise specified, all inspections shall be conducted at an ambient temperature, $T_A = +25^\circ\text{C} \pm 3^\circ\text{C}$.

4.5.3 Reverse-recovery time. The reverse recovery time shall be measured in the circuit of [figure 2](#) or an equivalent circuit. The recovery conditions shall be 12.5 mA forward current to 25 mA reverse current. The reverse recovery time is defined as the time the rectifier begins to conduct in the reverse direction (crosses $I = 0$) until the reverse current decays to -6.3 mA. The point of contact on the leads shall be no less than .375 inch (9.52 mm) from the diode body.

4.5.4 Scope display test. Scope display test method 4023 of [MIL-STD-750](#) shall be performed with the following conditions: Test condition B, $I_{BR} = 50 \mu\text{A min.}$

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 examination | 2071 | | | | | |
| <u>Subgroup 2</u> | | | | | | |
| * Thermal impedance <u>2/</u> | 3101 | See 4.3.3 | $Z_{\theta JX}$ | | | °C/W |
| * Forward voltage 1N6528, 1N6529 1N6530, 1N6531 1N6532, 1N6533 1N6534, 1N6535 | 4011 | Condition B, $I_F = 25$ mA | V_{F1} | | 3.0 7.0 9.0 14.0 | V dc |
| Reverse current leakage | 4016 | DC method; $V_R =$ rated V_{RWM} (see 1.3) | I_{R1} | | 0.1 | μA dc |
| Breakdown voltage 1N6528 1N6529 1N6530 1N6531 1N6532 1N6533 1N6534 1N6535 | 4021 | $I_R = 50$ μA dc | V_{BR} | 1,650 2,200 2,750 3,300 4,400 5,500 8,250 11,000 | | V dc |
| <u>Subgroup 3</u> | | | | | | |
| High temperature operation: | | $T_A = 150^\circ\text{C}$ | | | | |
| Reverse current Leakage | 4016 | DC method; $V_R =$ rated V_{RWM} (see 1.3) | I_{R2} | | 50 | μA dc |
| Low temperature operation: | | $T_A = -55^\circ\text{C}$ | | | | |
| * Forward voltage 1N6528, 1N6529 1N6530, 1N6531 1N6532, 1N6533 1N6534, 1N6535 | 4011 | Condition B, $I_F = 25$ mA | V_{F2} | | 4.8 11.2 14.4 22.4 | V dc |

See footnote at end of table.

TABLE I. Group A inspection - Continued.

| Inspection ^{1/} | MIL-STD-750 | | Symbol | Limits | | Unit |
|-------------------------------|-------------|---|----------|--------|-----|------|
| | Method | Conditions | | Min | Max | |
| <u>Subgroup 3</u> - Continued | | | | | | |
| Low temperature operation: | | $T_A = -55^\circ\text{C}$ | | | | |
| Breakdown voltage | 4021 | $I_R = 50 \mu\text{A dc}$ | V_{BR} | | | V dc |
| 1N6528 | | | | 1,650 | | |
| 1N6529 | | | | 2,200 | | |
| 1N6530 | | | | 2,750 | | |
| 1N6531 | | | | 3,300 | | |
| 1N6532 | | | | 4,400 | | |
| 1N6533 | | | | 5,500 | | |
| 1N6534 | | | | 8,250 | | |
| 1N6535 | | | | 11,000 | | |
| <u>Subgroup 4</u> | | | | | | |
| * Reverse recovery | 4031 | See 4.5.3 and figure 2 | t_{rr} | | 70 | ns |
| Scope display evaluation | 4023 | Method 4203 of MIL-STD-750, figures 4023-3, -7, -9, -10 only. (see 4.5.4) | | | | |
| Capacitance | 4001 | $V_R = 50 \text{ V dc}, 1 \text{ kHz} \leq f \leq 100 \text{ kHz}$ | C | | | pF |
| 1N6528, 1N6529 | | | | | 4.0 | |
| 1N6530, 1N6531 | | | | | 2.0 | |
| 1N6532, 1N6533 | | | | | 1.0 | |
| 1N6534, 1N6535 | | | | | 0.5 | |
| <u>Subgroups 5, 6 and 7</u> | | | | | | |
| Not applicable | | | | | | |

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

- * ^{2/} This test required for the following end-point measurements only:
 Group B, subgroups 3, 4 and 5 (JANS).
 Group B, subgroups 2 and 3 (JAN, JANTX, JANTXV).
 Group C, subgroups 2 and 6.
 Group E, subgroup 1.

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

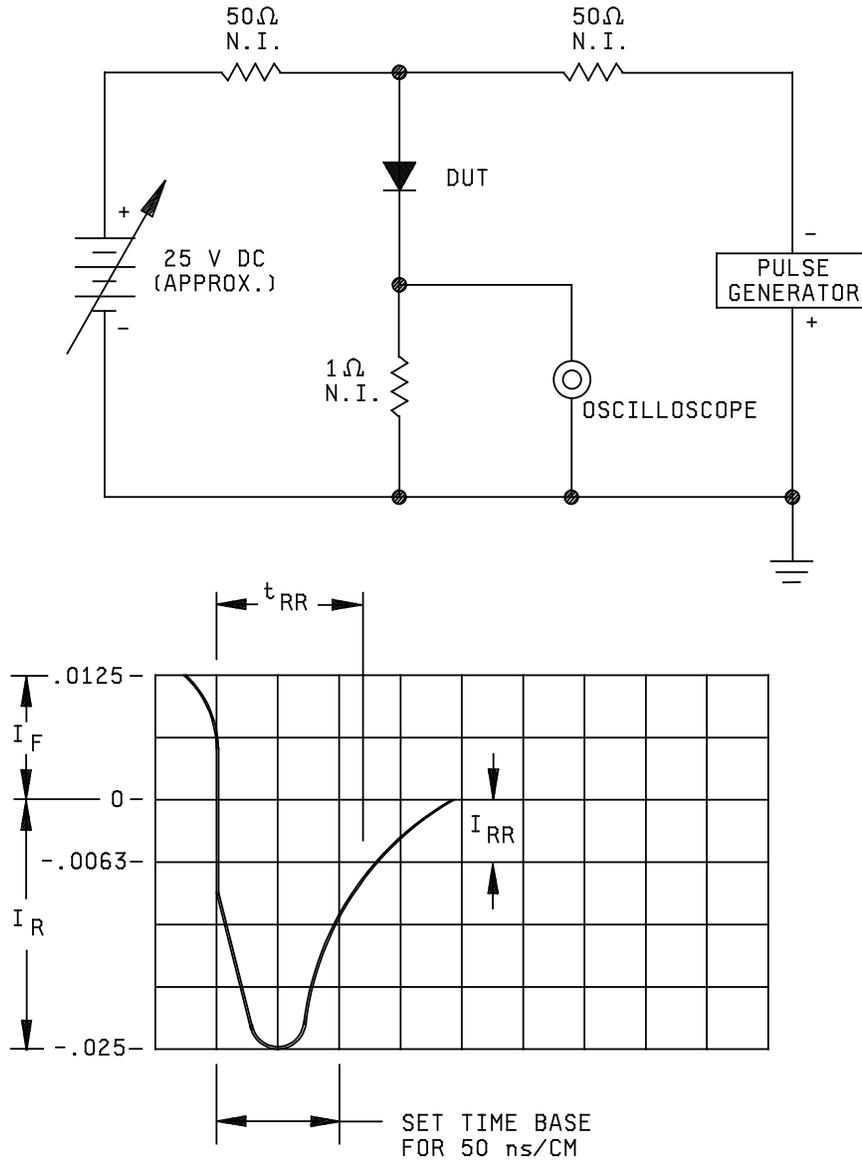
| Inspection | MIL-STD-750 | | Sampling plan |
|-------------------------------|-------------|--|---------------------|
| | Method | Conditions | |
| <u>Subgroup 1</u> | | | 22 devices, c = 0 |
| Temperature cycling | 1051 | 500 cycles, condition C | |
| Hermetic seal Gross leak | 1071 | | |
| Electrical measurements | | See table III , steps 1 and 2 | |
| <u>Subgroup 2</u> | | | 22 devices, c = 0 |
| Steady-state dc blocking life | 1038 | Condition A, t = 1,000 hours | |
| Electrical measurements | | See table III , steps 1 and 2 | |
| <u>Subgroup 3</u> | | | |
| Not applicable | | | |
| <u>Subgroup 4</u> | | | |
| * Thermal impedance curves | | See MIL-PRF-19500 . | Samples size N/A |
| Thermal resistance | 4081 | $T_A = +25^\circ\text{C}$; $R_{\theta JL} = \text{rated } R_{\theta JL}$ (see 1.3). | |
| <u>Subgroup 5</u> | | | |
| Barometric pressure | 1001 | $V_R = \text{rated } V_{RWM}$ (see 1.3), pressure = 8mm Hg, t = 1 minute (minimum). Dielectric fluid may be used. | 3 devices, c = 0 |

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* TABLE III. Screening, groups A, B, C, and E delta measurements. 1/ 2/ 3/

| Step | Inspection | MIL-STD-750 | | Symbol | Limits | | Unit |
|------|--|-------------|---|-----------------|---|------------------------------|--------|
| | | Method | Conditions | | Min | Max | |
| 1. | Forward voltage | 4011 | Condition B, Pulsed (see 4.5.1), I _F = 25 mA | ΔV_{F1} | | | V (pk) |
| | 1N6528, 1N6529 1N6530, 1N6531 1N6532, 1N6533 1N6534, 1N6535 | | | | | ±0.2 ±0.4 ±0.8 ±1.2 | |
| 2. | Reverse current | 4016 | DC method | ΔI_{R1} | 50 nA or ±100 percent of initial value, whichever is greater. | | |

- 1/ Devices which exceed the [table I](#) limits for this test shall not be accepted.
- 2/ The electrical measurements for group B inspections in table E-VIa (JANS) of [MIL-PRF-19500](#) are as follows: Subgroups 3, 4, and 5, see [table III](#) herein, steps 1 and 2.
- 3/ The electrical measurements for group B inspections in table E-VIb (JAN, JANTX, and JANTXV) of [MIL-PRF-19500](#) are as follows: Subgroup 3, see [table III](#) herein, steps 1 and 2.
- 4/ The electrical measurements for group C inspections in table E-VII (all quality levels) of [MIL-PRF-19500](#) are as follows: Subgroups 2 and 6, see [table III](#) herein, steps 1 and 2.
- 5/ The electrical measurements for group E inspections in table E-IX of [MIL-PRF-19500](#) are as follows: Subgroups 1 and 2, see [table III](#) herein, steps 1 and 2.



NOTES:

1. Oscilloscope-rise time ≤ 7 ns; input impedance = 1 megohm; 22 pF.
2. Pulse generator - rise time ≤ 10 ns; source impedance 50 ohms.
3. Recovery time shall be measured on the above circuit and with equipment as shown. The pulse generator shall have a pulse repetition frequency of 1 kHz and a pulse width of 200 ns. Recovery conditions: 12.5 A forward current to .25 mA reverse current. Recovery time measured when rectifier recovers to -6.3 mA.

FIGURE 2. Reverse recovery time test circuit and characteristic nomograph.

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.)

6.1 Intended use. The notes specified in MIL-PRF-19500 are applicable to this specification.

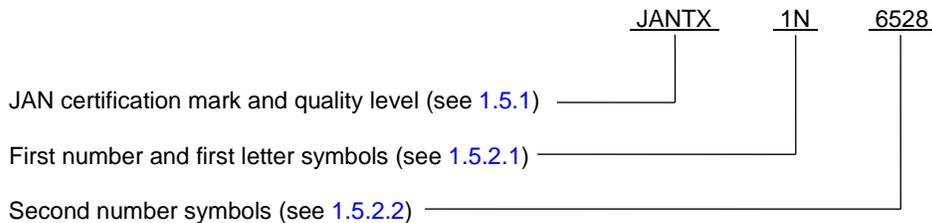
6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Packaging requirements (see 5.1).
- c. Lead material and finish (see 3.4.1).
- * d. The complete PIN, see 1.5.
- e. Destructive physical analysis when requested.

* 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, 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://assist.dla.mil>.

* 6.4 PIN construction example.

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



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

| | PINs | | | |
|------------------|-----------|-------------|--------------|------------|
| Axial Package | JAN1N6528 | JANTX1N6528 | JANTXV1N6528 | JANS1N6528 |
| | JAN1N6529 | JANTX1N6529 | JANTXV1N6529 | JANS1N6529 |
| | JAN1N6530 | JANTX1N6530 | JANTXV1N6530 | JANS1N6530 |
| | JAN1N6531 | JANTX1N6531 | JANTXV1N6531 | JANS1N6531 |
| | JAN1N6532 | JANTX1N6532 | JANTXV1N6532 | JANS1N6532 |
| | JAN1N6533 | JANTX1N6533 | JANTXV1N6533 | JANS1N6533 |
| | JAN1N6534 | JANTX1N6534 | JANTXV1N6534 | JANS1N6534 |
| | JAN1N6535 | JANTX1N6535 | JANTXV1N6535 | JANS1N6535 |

* 6.6 Substitution information. Devices covered by this specification are substitutable for the manufacturers' and users' Part or Identifying Number (PIN). This information in no way implies that manufacturers' PIN's are suitable as a substitute for the military PIN.

| PIN | Manufacturer's CAGE code | Manufacturer's and user's PIN |
|--------|----------------------------------|---|
| 1N6528 | 53711 60211 | 8502234-215 RM115 M15FG M15UFG |
| 1N6529 | 53711 49956 94117 60211 | 8502234-220 G339806 194087 RM116 RM135 RM140 M20FG M20UFG |
| 1N6530 | 53711 60211 | 8502234-225 RM117 M25FG M25UFG |
| 1N6531 | 53711 60211 | 4027428-103 4027428-113 8502234-230 4056502 RA352 RA643 RM118 RM123 M30FG M30UFG |
| 1N6532 | 53711 23426 60211 | 8502234-240 28005-12 RM119 RM130 M40FG M40UFG |

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| PIN | Manufacturer's CAGE code | Manufacturer's and user's PIN |
|--------|--|--|
| 1N6533 | 53711 60211 | 4027428-105 4027428-115 8502234-250 304-1-58A2 RA641 RA644 RM120 RM137 M50FG M50UFG |
| 1N6534 | 53711 23426 60211 | 4027428-106 4027428-116 8502234-260 28005-7 RA642 RA645 RM121 RM131 M60FG M60UFG |
| 1N6535 | 58260 53711 23426 60211 23426 60211 | 13084424 8502234-280 8502234-300 28005-8 M100FG RM122 RM109 RM132 M100UFG M80FG M80UFG |

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 5961-2016-095)

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

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>.