

The documentation and process conversion measures necessary to comply with this revision shall be completed by 29 July 2016.

INCH-POUND

MIL-PRF-19500/576E
29 April 2016
SUPERSEDING
MIL-PRF-19500/576D
6 October 2006

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, HIGH VOLTAGE POWER RECTIFIER,
FAST RECOVERY, TYPES 1N6520 THROUGH 1N6527,
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 outlines are as follows: Axial, similar to DO-7, in accordance with figure 1, surface mount version US, in accordance with figure 2.

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 inch (6.35 mm)	$R_{\theta JEC}$
	<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>	<u>°C/W</u>
1N6520, 1N6520US	1,500	500 (1)	250 (1)	25	70	-65	-65	28.5	8
1N6521, 1N6521US	2,000	500 (1)	250 (1)	25	70	to	to	28.5	8
1N6522, 1N6522US	2,500	250 (2)	125 (2)	15	70	+200	+175	28.5	8
1N6523, 1N6523US	3,000	250 (2)	125 (2)	15	70			28.5	8
1N6524, 1N6524US	4,000	150 (3)	75 (3)	10	70			28.5	9
1N6525, 1N6525US	5,000	150 (3)	75 (3)	10	70			28.5	9
1N6526, 1N6526US	7,500	100 (4)	50 (4)	5	70			28.5	9
1N6527, 1N6527US	10,000	100 (4)	50 (4)	5	70			28.5	9

- (1) Derate I_O linearly 5.56 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 3.33 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .
- (2) 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 .
- (3) Derate I_O linearly 1.67 mA/°C for $T_A = +55^\circ\text{C}$ to $+100^\circ\text{C}$, and 1.00 mA/°C for $T_A = +100^\circ\text{C}$ to 175°C .
- (4) 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 .

* Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: DSCC-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°C	I _{R1} T _A = +25°C	V _{F1} at I _O	C at V _R = 50 V F _O = 1 kHz	Barometric pressure (reduced) t = 1 minute (minimum)
	V dc	mA dc	μA dc	V (pk)	pF	mm Hg
1N6520, 1N6520US	1,500	500	0.5	3.0	8	8
1N6521, 1N6521US	2,000	500	0.5	3.0	8	8
1N6522, 1N6522US	2,500	250	0.5	5.0	4	8
1N6523, 1N6523US	3,000	250	0.5	5.0	4	8
1N6524, 1N6524US	4,000	150	0.5	7.0	3	8
1N6525, 1N6525US	5,000	150	0.5	7.0	3	8
1N6526, 1N6526US	7,500	100	0.5	12.0	2	8
1N6527, 1N6527US	10,000	100	0.5	12.0	2	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.

* 1.5.1 JAN certification mark and quality level. The JAN certification mark and 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 transistors covered by this specification sheet are as follows.

* 1.5.2.1 First number and first letter symbols. The semiconductor devices 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 semiconductor devices covered by this specification sheet are as follows: "6520", "6521", "6522", "6523", "6524", "6525", "6526", and "6527".

* 1.5.3 Suffix symbols. The suffix letters "US" is used on surface mount devices with square endcaps.

* 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

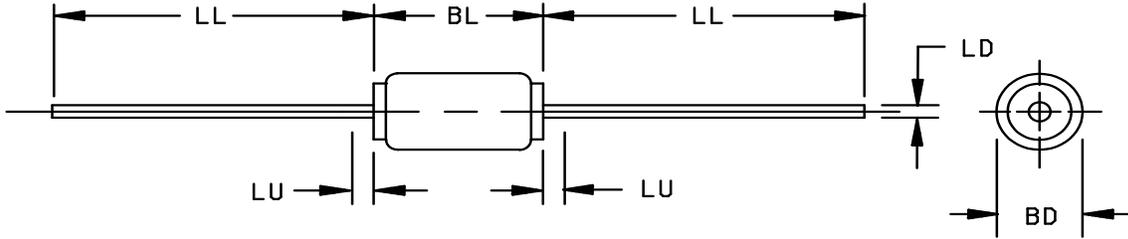
MIL-PRF-19500 - Semiconductor Devices, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

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

* (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.

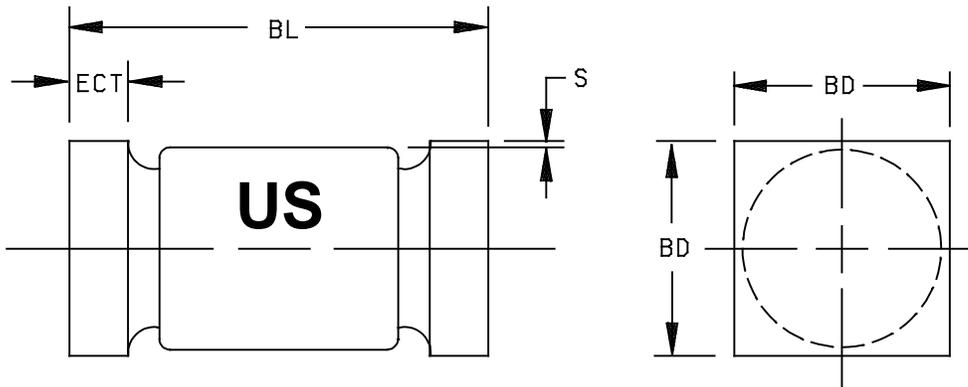


Part number	Dimensions															
	BD				BL				LD				LL			
	Inches		Millimeters		Inches		Millimeters		Inches		Millimeters		Inches		Millimeters	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1N6520	.100	.170	2.54	4.32	.160	.220	4.06	5.59	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6521	.100	.170	2.54	4.32	.160	.220	4.06	5.59	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6522	.100	.170	2.54	4.32	.180	.240	4.57	6.10	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6523	.100	.170	2.54	4.32	.180	.240	4.57	6.10	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6524	.100	.170	2.54	4.32	.200	.260	5.08	6.60	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6525	.100	.170	2.54	4.32	.200	.260	5.08	6.60	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6526	.100	.170	2.54	4.32	.260	.320	6.60	8.13	.027	.033	0.69	0.84	1.0	1.3	25.4	33.0
1N6527	.100	.170	2.54	4.32	.260	.320	6.60	8.13	.027	.033	0.69	0.84	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 ϕ x symbology.

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



Part number	Dimensions											
	BD				BL				ECT			
	Inches		Millimeters		Inches		Millimeters		Inches		Millimeters	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1N6520US	.120	.130	3.05	3.30	.225	.275	5.72	6.99	.017	.036	0.66	0.91
1N6521US	.120	.130	3.05	3.30	.225	.275	5.72	6.99	.017	.036	0.66	0.91
1N6522US	.120	.130	3.05	3.30	.245	.290	6.22	7.37	.017	.036	0.66	0.91
1N6523US	.120	.130	3.05	3.30	.245	.290	6.22	7.37	.017	.036	0.66	0.91
1N6524US	.120	.130	3.05	3.30	.265	.310	6.73	7.87	.017	.036	0.66	0.91
1N6525US	.120	.130	3.05	3.30	.265	.310	6.73	7.87	.017	.036	0.66	0.91
1N6526US	.120	.130	3.05	3.30	.325	.365	8.26	9.27	.017	.036	0.66	0.91
1N6527US	.120	.130	3.05	3.30	.325	.365	8.26	9.27	.017	.036	0.66	0.91

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Dimensions are pre-solder dip.
4. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

FIGURE 2. Physical dimensions (surface mount devices).

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 manufacturers 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. Interface and physical dimensions shall be as specified in MIL-PRF-19500, and on figures 1 (axial leads) and 2 (square end surface mount). Plastic packages are prohibited.

* 3.4.1 Lead material and finish. 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.

3.4.2.1 Surface mount. The surface mount (US) version shall be considered structurally identical to the non-surface mount version except for lead attachment.

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 J6520, JX6520, JV6520 or JS6520. No color coding will be permitted for part numbering.

3.5.1 Marking for surface mount (US) devices. For 'US' version devices only, all marking, except polarity may be omitted from the body, but shall be retained on the initial container. Polarity marking of 'US' devices shall consist as a minimum, a band or three contrasting dots spaced equally around the periphery of the cathode. Initial container package marking shall be in accordance with MIL-PRF-19500.

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

3.7 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table I, group A 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. 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	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 herein. I_{R1} and V_{F1} . Scope display evaluation (see 4.5.4)	Subgroup 2 of table I herein; ΔI_{R1} , ΔV_{F1} see table III herein. 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 in [4.5](#) of MIL-STD-750, V_R = 1,000 V dc; f = 60 Hz.

Types	I_O (mA dc)
1N6520, 1N6520US, 1N6521, 1N6521US	500
1N6522, 1N6522US, 1N6523, 1N6523US	250
1N6524, 1N6524US, 1N6525, 1N6525US	150
1N6526, 1N6526US, 1N6527, 1N6527US	100

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

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. Electrical measurements (end-points) and delta requirements shall be in accordance with the applicable steps of [table III](#) herein.

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

	<u>Subgroup</u>	<u>Method</u>	<u>Condition</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, $V_{RWM} = 0$ V.
	B4	1037	See 4.3.1 , $t_{on} = t_{off} = 3$ 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 $V_{RWM} = 1,000$ 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); $R_{\theta JEC} = \text{rated } R_{\theta JEC}$ (see 1.3).
*	B8	4065	Peak reverse power, see table II , subgroup 8 herein. $P_{RM} \geq 636$ W for square wave in accordance with method 4065 of MIL-STD-750, ($P_{RM} \geq 1000$ W for half-sine wave). Test shall be performed on each subplot; sampling plan $n = 10$, $c = 0$, end-points, see 4.4.2 .

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

	<u>Subgroup</u>	<u>Method</u>	<u>Condition</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 $T_J \geq +125^\circ\text{C}$, $V_{RWM} = 1,000$ 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); $R_{\theta JEC} = \text{rated } R_{\theta JEC}$ (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. Electrical measurements (end-points) and delta requirements 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>Condition</u>
*	C2	2036	Axial devices – Tension: Condition A, 12 pounds, $t = 15$ s. Fatigue: Condition E for all types.
*	C2	2036	US devices – Tension: Condition B, 12 pounds, $t = 15$ s. (Lead fatigue is not applicable to US suffix types).
	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 $T_J \geq +125^\circ\text{C}$, $V_{RWM} = 1,000$ 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. Electrical measurements (end-points) shall be in accordance with [table I](#), subgroup 2 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 $T_A = +25^\circ\text{C} \pm 3^\circ\text{C}$.

* 4.5.3 Reverse recovery time. The recovery conditions shall be 125 mA forward current to 250 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 -63 mA. The point of contact on the leads shall be no less than .375 inch (9.52 mm) from the diode body for leaded devices. Point of contact shall be the mounting surface for surface mounted devices with 'US' suffixes.

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 evaluation	2071					
<u>Subgroup 2</u>						
* Forward voltage 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4011	Condition B $I_F = 500 \text{ mA}$ $I_F = 250 \text{ mA}$ $I_F = 150 \text{ mA}$ $I_F = 100 \text{ mA}$	V_{F1}		3.0 5.0 7.0 12.0	V dc
Reverse current leakage	4016	DC method; $V_R =$ rated V_{RWM} (see 1.3)	I_{R1}		0.5	$\mu\text{A dc}$
Breakdown voltage 1N6520, 1N6520US 1N6521, 1N6521US 1N6522, 1N6522US 1N6523, 1N6523US 1N6524, 1N6524US 1N6525, 1N6525US 1N6526, 1N6526US 1N6527, 1N6527US	4021	$I_R = 50 \mu\text{A}$	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}		150	$\mu\text{A dc}$
Low temperature operation:		$T_A = -55^\circ\text{C}$				
* Forward voltage 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4011	Condition B $I_F = 500 \text{ mA}$ $I_F = 250 \text{ mA}$ $I_F = 150 \text{ mA}$ $I_F = 100 \text{ mA}$	V_{F2}		4.8 8.0 11.2 19.2	V dc

See footnote on next page.

TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 3 - Continued</u>						
Low temperature operation: Breakdown voltage 1N6520, 1N6520US 1N6521, 1N6521US 1N6522, 1N6522US 1N6523, 1N6523US 1N6524, 1N6524US 1N6525, 1N6525US 1N6526, 1N6526US 1N6527, 1N6527US	4021	$I_R = 50 \mu A$	V_{BR}	1,650 2,200 2,750 3,300 4,400 5,500 8,250 11,000		V dc
<u>Subgroup 4</u>						
* Reverse recovery time	4031	Condition B1, See 4.5.3	t_{rr}		70	ns
Scope display evaluation	4023	Method 4203 of MIL-STD-750, figures 4023-3, -7, -9, -10 only.				
Capacitance 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4001	$V_R = 50 \text{ V dc};$ $1 \text{ kHz} \leq f \leq 100 \text{ kHz}$	C		8 4 3 2	pF
<u>Subgroups 5, 6, and 7</u>						
Not applicable						

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

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

Inspection	MIL-STD-750		Sampling plan
	Method	Conditions	
* <u>Subgroup 1</u>			45 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>			45 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 resistance	4081	T _A = +25°C; R _{θJL} = rated R _{θJL} (see 1.3); R _{θJEC} = rated R _{θJEC} (see 1.3).	
<u>Subgroup 5</u>			3 devices, c = 0
Barometric pressure	1001	V _R = rated V _R (see 1.3), pressure = 8mm Hg, t = 1 minute (minimum). Dielectric fluid may be used.	
* <u>Subgroup 8 1/</u>			n = 45
Peak reverse power	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.	

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

TABLE III. Screening, groups B, C, and E electrical and delta measurements. 1/ 2/ 3/ 4/

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
* 1.	Forward voltage 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4011	Condition B, Pulsed (see 4.5.1) $I_F = 500 \text{ mA}$ $I_F = 250 \text{ mA}$ $I_F = 150 \text{ mA}$ $I_F = 100 \text{ mA}$	V_{F1}		3.0 5.0 7.0 12.0	V (pk)
2.	Reverse current	4016	DC method; $V_R =$ rated V_{RWM} (see 1.3)	I_{R1}		0.5	$\mu\text{A dc}$
3.	Reverse recovery time		See 4.5.3	t_{rr}		70	ns
4.	Capacitance 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4001	$V_R = 50 \text{ V dc};$ $1 \text{ kHz} \leq f \leq 100 \text{ kHz}$	C		8 4 3 2	pF
* 5.	Forward voltage 1N6520, 1N6520US, 1N6521, 1N6521US 1N6522, 1N6522US, 1N6523, 1N6523US 1N6524, 1N6524US, 1N6525, 1N6525US 1N6526, 1N6526US, 1N6527, 1N6527US	4011	Condition B, Pulsed (see 4.5.1) $I_F = 500 \text{ mA}$ $I_F = 250 \text{ mA}$ $I_F = 150 \text{ mA}$ $I_F = 100 \text{ mA}$	ΔV_{F1}		± 0.2 ± 0.4 ± 0.8 ± 1.2	V (pk)
6.	Reverse current	4016	DC method	ΔI_{R1}		150 nA dc or ± 100 percent, whichever is greater.	

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

- Subgroup 3, see table III herein, steps 1, 2, 3, 4, 5, and 6.
- Subgroup 4, see table III herein, steps 1, 2, 3, 4, 5, and 6.
- Subgroup 5, see table III herein, steps 1, 2, 3, 4, 5, and 6.

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

- Subgroup 2, see table III herein, steps 1, 2, and 3.
- Subgroup 3, see table III herein, steps 1, 2, 3, and 4.
- Subgroup 6, see table III herein, steps 1, 2, 3, and 4.

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

- Subgroup 2, see table III herein, steps 1, 2, 3, 4, 5, and 6 (JANS); and steps 1, 2, and 3 (JANTX and JANTXV).
- Subgroup 3, see table III herein, steps 1, 2 and 3.
- Subgroup 6, see table III herein, steps 1, 2, 3, 4, 5, and 6 (JANS); and steps 1, 2, 3, 4, and 5 (JANTX and JANTXV).

4/ The delta measurements for table E-IX of MIL-PRF-19500 are subgroups 1 and 2, see table III herein, steps 1, 2, 3, 4, and 5.

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.)

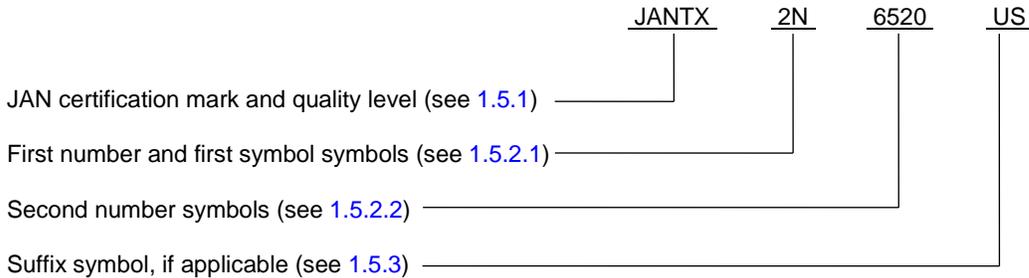
* 6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

* 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 material and finish (see 3.4.1).
- d. The complete Part or Identifying Number (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, Columbus, ATTN: DSCC/VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail vqe.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.dla.mil>.

* 6.4 PIN construction example. 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 for devices in a axial package			
JAN1N6520	JANTX1N6520	JANTXV1N6520	JANS1N6520
JAN1N6521	JANTX1N6521	JANTXV1N6521	JANS1N6521
JAN1N6522	JANTX1N6522	JANTXV1N6522	JANS1N6522
JAN1N6523	JANTX1N6523	JANTXV1N6523	JANS1N6523
JAN1N6524	JANTX1N6524	JANTXV1N6524	JANS1N6524
JAN1N6525	JANTX1N6525	JANTXV1N6525	JANS1N6525
JAN1N6526	JANTX1N6526	JANTXV1N6526	JANS1N6526
JAN1N6527	JANTX1N6527	JANTXV1N6527	JANS1N6527

PINs for devices in a US package			
JAN1N6520US	JANTX1N6520US	JANTXV1N6520US	JANS1N6520US
JAN1N6521US	JANTX1N6521US	JANTXV1N6521US	JANS1N6521US
JAN1N6522US	JANTX1N6522US	JANTXV1N6522US	JANS1N6522US
JAN1N6523US	JANTX1N6523US	JANTXV1N6523US	JANS1N6523US
JAN1N6524US	JANTX1N6524US	JANTXV1N6524US	JANS1N6524US
JAN1N6525US	JANTX1N6525US	JANTXV1N6525US	JANS1N6525US
JAN1N6526US	JANTX1N6526US	JANTXV1N6526US	JANS1N6526US
JAN1N6527US	JANTX1N6527US	JANTXV1N6527US	JANS1N6527US

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

PIN	Manufacturer's CAGE code	Manufacturer's and user's PIN
1N6520	58260	1801342
	53711	7009978-15
		7011518-15
	30003	1621AS176
	94117	104078P3
	97942	581R887-H01
	60211	RX204 X15UFG X15FG RX129 RX133
1N6521	80782	532124
	53711	7009978-20 7011518-20 8508419-320
	73293	C5001049-1
	97942	581R887-H02
	60211	RX184 X20FG X20UFG RX174 RX152 RX190 RX134
1N6522	53711	7009978-25 7011518-25
	97942	581R887-H03
	60211	RX107 X25UFG X25FG RX125 RX135

6.6 Supersession information - Continued.

PIN	Manufacturer's CAGE code	Manufacturer's and user's PIN
1N6523	91417	2614086
	53711	7009978-30 7011518-30
	64597	089056
	97942	581R887-H04
	60211	X30UFG X30FG RX159 RX136
1N6524	53711	7009978-40 7011518-40
	64597	089056
	97942	581R887-H05
	60211	X40UFG X40FG RX137
1N6525	53711	7009978-50 7011518-50
	28527	3130552
	64597	206828 086023-2
	96214	2691653-1
	60211	RX154 X50UFG RX145 RX153 X50FG RX140

6.6 Supersession information - Continued.

PIN	Manufacturer's CAGE code	Manufacturer's and user's PIN
1N6526	53711	7009978-60 7011518-60 8001699-505
	64597	086023-3
	60211	RX120 X60UFG X60FG
1N6527	98675	6129215
	53711	7009978-80 7009978-100 8001699-506
	60211	7011518-80 7011581-100 8508419-300
	73293	DB20566101
	28527	3130551
	96214	2691653-2
	60211	RX194 X100UFG RX121 RX173 RX124 RX147 RX141 X80FG X100FG

* 6.7 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 5961-2016-046)

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

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