

The documentation and process conversion measures necessary to comply with this revision shall be completed by 6 September 2014.

INCH-POUND

MIL-PRF-19500/587E
6 June 2014
SUPERSEDING
MIL-PRF-19500/587D
6 December 2013

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, RECTIFIER,
TYPES 1N6661, 1N6662, 1N6663, 1N6661US, 1N6662US, AND 1N6663US,
JAN, JANTX, JANTXV, AND JANS

JANS1N645-1, JANS 1N647-1 and JANS 1N649-1 are non-preferred part numbers and are inactive for new design. The preferred part numbers are JANS1N6661, JANS1N6662, and JANS1N6663.

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 diodes. Four levels of product assurance are provided for each device type as specified in [MIL-PRF-19500](#).

1.2 Physical dimensions. See [figure 1](#) (axial lead) and [figure 2](#) (surface mount).

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

Type	V_{RWM}	I_{O2} (1) $T_A = +150^\circ\text{C}$	I_{O1} (1) (2) (3) (4) $T_A = +25^\circ\text{C}$	I_{FSM} $t_p = 1/120\text{s}$ $T_A = +25^\circ\text{C}$	T_J and T_{STG} (ambient temperature)	Barometric pressure reduced	$R_{\theta JL}$ at L = .375 inch (9.52 mm)	$R_{\theta JEC}$ at L = 0 inch (0 mm)
	<u>V(pk)</u>	<u>mA</u>	<u>mA</u>	<u>A</u>	<u>°C</u>	<u>mmHg</u>	<u>°C/W</u>	<u>°C/W</u>
1N6661, US	225	150	500	5	-65 to +175	8	160	35
1N6662, US	400	150	500	5	-65 to +175	8	160	35
1N6663, US	600	150	500	5	-65 to +175	8	160	35

- (1) No forced air or heat sinking shall be permitted for I_O ratings.
- (2) $T_{EC} = 110^\circ\text{C}$.
- (3) Devices with leads. Derate 2.8 mA/°C between 25°C and 150°C. Derate 6 mA/°C between 150°C and 175°C.
- (4) US suffix devices. Derate 8.75 mA/°C at T_{EC} between 110°C and 150°C. Derate 6 mA/°C at T_{EC} between 150°C and 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>.

1.4 Unless otherwise indicated, primary electrical characteristics at T_A = +25°C.

Type	V _F at I _F = 400 mA dc 2 percent duty cycle, 8.3 ms max pulse width	I _R at T _A = +25°C		I _R at T _A = +150°C	
	V dc (max)	μA dc (max)	at V _R	μA dc (max)	at V _R
1N6661, US	1.0	.050	225 V dc	15	225 V dc
1N6662, US	1.0	.050	400 V dc	15	400 V dc
1N6663, US	1.0	.050	600 V dc	25	600 V dc

2. APPLICABLE DOCUMENTS

* 2.1 General. The documents listed in this section are specified in sections 3 or 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 or 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.

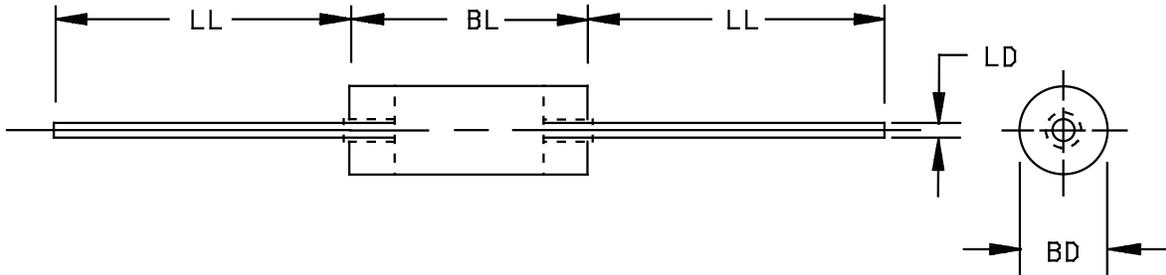
[MIL-PRF-19500](#) - Semiconductor Devices, General Specification for.

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.

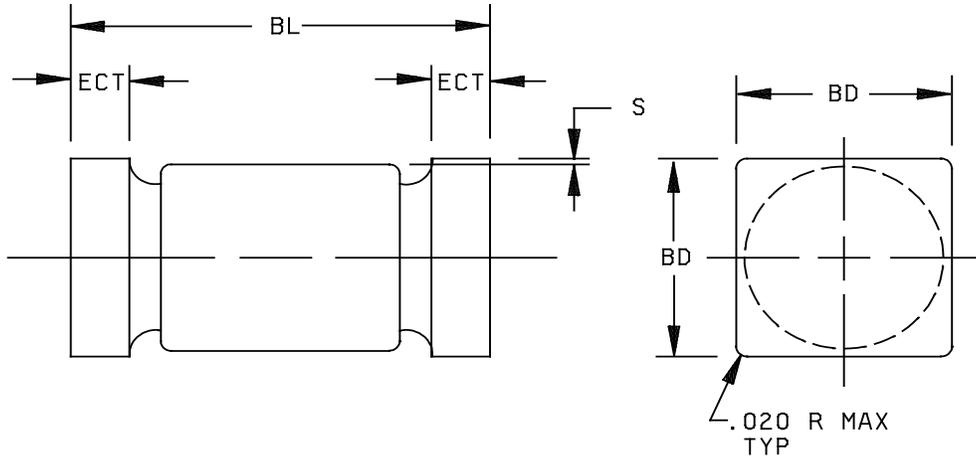


Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.060	.090	1.52	2.29	2
BL	.120	.200	3.05	5.08	
LD	.018	.022	0.46	0.56	3
LL	1.000	1.500	25.40	38.10	

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The specified lead diameters apply in the zone between .050 inch (1.27 mm) from the diode body to the end of the lead. Outside of this zone the lead diameter shall not exceed the maximum of dimension BD.
4. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions.



Symbol	Dimensions			
	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 Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 2. Physical dimensions of surface mount family.

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. The abbreviations, symbols, and definitions used herein are defined in [MIL-PRF-19500](#).

3.4 Interface and physical dimensions. The interface and physical dimensions shall be specified in [MIL-PRF-19500](#) and [figure 1](#) (DO-41) and [figure 2](#) (surface mount) 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 metallurgically bonded-thermally-matched-noncavity-double plug construction, utilizing a category I bond, in accordance with [MIL-PRF-19500](#), except for JANHC and JANKC. US version devices shall be structurally identical to the nonsurface mount version devices except for lead configuration.

3.5 Marking. Devices shall be marked in accordance with [MIL-PRF-19500](#).

3.5.1 Marking of US-suffix devices. For US-suffix devices, all marking (except as stated in [3.5.2](#)) may be omitted from the body, but shall be retained on the initial container.

3.5.2 Polarity. The polarity shall be indicated with a contrasting color band to denote the cathode end. No color coding will be permitted. For US-suffix devices the cathode end may be identified by three evenly spaced dots of a contrasting color or a solid band.

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 as specified in [table I](#) herein.

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

4. VERIFICATION

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

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

4.2 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 request the performance of [table II](#) tests, the tests specified in [table II](#) herein that were not performed in the prior revision shall be performed on the first inspection lot of this revision to maintain qualification.

4.3 Screening (JANS, JANTX, and JANTXV levels only). Screening shall be in accordance with appendix E, table E-IV of [MIL-PRF-19500](#) and as specified herein. The following measurements shall be made in accordance with [table I](#) herein. Devices that exceed the limits of [table I](#) herein shall not be acceptable.

Screen (see appendix E, table E-IV of MIL-PRF-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
(1) 3c	Thermal impedance (see 4.3.1)	Thermal impedance (see 4.3.1)
9	$V_{F1} I_{R1}$	Not applicable
11	$V_{F1} I_{R1} \Delta V_{F1} \Delta I_{R1}$	$V_{F1} I_{R1}$
12	See 4.3.2	See 4.3.2
(2) 13	Subgroups 2 and 3 of table I herein; $\Delta I_{R1} \leq 100$ percent of initial reading or ± 0.010 μA dc whichever is greater. $\Delta V_{F1} \leq \pm 25$ mV dc. Scope display (see 4.5.2).	Subgroup 2 of table I herein; $\Delta I_{R1} \leq 100$ percent of initial reading or ± 0.010 μA dc whichever is greater. $\Delta V_{F1} \leq 25$ mV dc. Scope display (see 4.5.2).

(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.

4.3.1 Thermal impedance. The thermal impedance measurements shall be performed in accordance with method 3101 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). Measurement delay time (t_{MD}) = 70 μs max. The limit will be statistically derived. See [table II](#), group E, subgroup 4 herein.

4.3.2 Power burn-in conditions (method 1038, condition B (a) of MIL-STD-750). All devices shall be operated under one of the following conditions (see [4.5.3](#)).

Type	$T_A = +125^\circ\text{C}$; f = 60 Hz	$T_A = +25^\circ\text{C}$; f = 60 Hz	$T_A = +25^\circ\text{C}$
1N6661, US	$V_R = 225$ V (pk); $I_O = 200$ mA	$V_R = 225$ V (pk); $I_O = 400$ mA	I_F (dc) = 400 mA
1N6662, US	$V_R = 400$ V (pk); $I_O = 200$ mA	$V_R = 400$ V (pk); $I_O = 400$ mA	I_F (dc) = 400 mA
1N6663, US	$V_R = 600$ V (pk); $I_O = 200$ mA	$V_R = 600$ V (pk); $I_O = 400$ mA	I_F (dc) = 400 mA

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 [MIL-PRF-19500](#), and [table I](#) herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table E-VIA (JANS) and table E-VIB (JANTX and JANTXV) of [MIL-PRF-19500](#). Electrical measurements (end-points) shall be in accordance with the applicable inspections of [table I](#), subgroup 2 herein. Delta requirements shall be in accordance with the applicable steps of [table III](#) herein.

4.4.2.1 Group B inspection, appendix E, table E-VIA (JANS) of [MIL-PRF-19500](#).

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B3	1056	0°C to +100°C, 25 cycles.
B3	1051	-55°C to +175°C, 100 cycles.
B3	4066	Condition A, $I_{FSM} = \text{rated } I_{FSM}$ (see 1.3); 10 surges of 8.3 ms each at 1 minute intervals, superimposed on $I_O = \text{rated}$, $V_{RWM} = \text{rated}$.
B4	1037	$I_O = 500 \text{ mA}$; $f = 60 \text{ Hz}$, $T_A = +25^\circ\text{C} \pm 3^\circ\text{C}$; $t_{ON} = t_{OFF} = 3 \text{ minutes}$ (minimum) for 2,000 cycles; mounting conditions in accordance with method 1026 of MIL-STD-750 (see 4.5.3). 1N6661, $US = V_{RM} = 225 \text{ V(pk)}$ 1N6662, $US = V_{RM} = 400 \text{ V(pk)}$ 1N6663, $US = V_{RM} = 600 \text{ V(pk)}$
B5	1027	$I_O = 500 \text{ mA}$ minimum, apply $V_R = \text{rated } V_{RWM}$ (see 1.3 and 4.5.3) adjust I_O to achieve T_J minimum; $f = 50\text{-}60 \text{ Hz}$. $T_A = + 55^\circ\text{C}$ max. $T_J = 175^\circ\text{C}$ minimum; $t = 1,000 \text{ hours}$. $n = 45$, $c = 0$.
B6		Not applicable.
B8	4065	Peak reverse power, $P_{RM} \geq 100 \text{ W}$ for square wave in accordance with test method 4065 of MIL-STD-750 (314 W for half-sine wave). Test shall be performed on each subplot; sampling plan $n = 10$, $c = 0$, end-points, see table I , subgroup 2 herein.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B2	1056	0°C to +100°C, 25 cycles.
B2	1051	-55°C to +175°C, 25 cycles.
B2	4066	Condition A, $T_A = +25^\circ\text{C}$, $I_{FSM} = 5\text{ A}$, ten 8.3 ms surges at 1 surge per minute intervals, superimposed on $I_O = \text{rated}$, $V_{RWM} = \text{rated}$. Mounting conditions are in accordance with method 1026 of MIL-STD-750.
B3	1027	$I_O = 150\text{ mA dc}$; $f = 60\text{ Hz}$; $T_J = +150^\circ\text{C}$ (see 4.5.3). 1N6661, $US = V_{RM} = 225\text{ V(pk)}$ 1N6662, $US = V_{RM} = 400\text{ V(pk)}$ 1N6663, $US = V_{RM} = 600\text{ V(pk)}$
B5		Not applicable
B6	1032	$T_A = +175^\circ\text{C}$ (nonoperating). (NOTE: Leaded samples from the same lot may be used in lieu of US suffix samples for all subgroups.).

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

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	1056	0°C to +100°C, 10 cycles.
C2	1051	-55°C to +175°C, 20 cycles.
*	C2	2036 Lead tension: Test condition A; weight = 6 pounds; $t = 15\text{ seconds}$. Lead fatigue: Condition E. NOTE: Not applicable to US-suffix devices.
*	C2	2038 US devices - Condition B, 6 pounds, $t = 15\text{ s}$.
	C3	Not applicable.
	C5	4081 See 4.5.4 $R_{\theta JL} = 160^\circ\text{C/W}$ maximum, $R_{\theta JEC} = 35^\circ\text{C/W}$ maximum.
	C6	1026 $T_J = +150^\circ\text{C}$; $f = 60\text{ Hz}$; $I_O = 150\text{ mA}$ (see 4.5.3). 1N6661, $US = V_{RM} = 225\text{ V(pk)}$ 1N6662, $US = V_{RM} = 400\text{ V(pk)}$ 1N6663, $US = V_{RM} = 600\text{ V(pk)}$ NOTE: Leaded devices from the same lot may be used in lieu of U-suffix devices.
	C7	Not applicable.

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. Electrical measurements (end-points) and delta limits shall be in accordance with table II herein; except, $Z_{\theta JX}$ need not to be performed.

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

4.5.1 Pulse measurements. Conditions of pulsed measurements shall be specified in section 4 of MIL-STD-750.

4.5.2 Scope display evaluation. The reverse breakdown characteristics shall be viewed on an oscilloscope with display calibration factors of 20 μA per division and 50 or 100 V per division as applicable. Reverse current over the knee shall be at least 100 μA and less than 200 μA . Any discontinuity or dynamic instability of the trace shall be cause for rejection of that device.

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 required T_J and I_O and that the minimum required voltage, where applicable, is maintained through out the burn-in period. Use method 3100 of MIL-STD-750 to measure T_J . $T_J = 135^\circ\text{C}$ minimum for screening and 150°C for life tests.

4.5.4 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 , t_{SW} and t_H (V_C and V_H where appropriate). Measurement delay time $t_{MD} = 70 \mu\text{s}$ max. See MIL-PRF-19500, table E-IX, subgroup 4. Forced moving air or draft shall not be permitted across the devices during test.

* TABLE I. Group A inspection.

Inspection 1/	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	3101	See 4.3.1	$Z_{\theta JX}$		20	°C /W
Forward voltage	4011	$I_F = 400$ mA dc; 2 percent duty cycle max, 8.3 ms max pulse width; (pulsed, see 4.5.1)	V_{F1}	0.8	1.0	V dc
Reverse current	4016	DC method	I_{R1}			
1N6661, US		$V_R = 225$ V dc			0.050	μA dc
1N6662, US		$V_R = 400$ V dc			0.050	μA dc
1N6663, US		$V_R = 600$ V dc			0.050	μA dc
Breakdown voltage	4021	$I_R = 100$ μA dc	V_{BR1}			
1N6661, US				270		V dc
1N6662, US				480		V dc
1N6663, US				720		V dc
<u>Subgroup 3</u>						
High temperature operation:		$T_A = +150^\circ\text{C}$				
Forward voltage	4011	$I_F = 400$ mA dc; 2 percent duty cycle max, 8.3 ms max pulse width; (pulses, see 4.5.1)	V_{F2}	0.70	0.95	V dc
Reverse current	4016	DC method	I_{R2}			
1N6661, US		$V_R = 225$ V dc			25	μA dc
1N6662, US		$V_R = 400$ V dc			25	μA dc
1N6663, US		$V_R = 600$ V dc			25	μA dc

See footnotes at end of table.

* TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 3</u> - Continued						
Low temperature operation:		$T_A = -55^\circ\text{C}$				
Forward voltage	4011	$I_F = 400\text{ mA dc}$; 2 percent duty cycle max, 8.3 ms max pulse width; (pulsed; see 4.5.1)	V_{F3}		1.2	V dc
<u>Subgroup 4</u>						
Capacitance	4001	$V_R = 4\text{ V dc}$; $f = 1\text{ MHz}$; $V_{\text{sig}} = 50\text{ mV p-p}$ maximum	C		20	pF
<u>Subgroup 5</u>						
Not applicable						
<u>Subgroup 6</u> <u>2/</u>						
* Surge current	4066	Condition A, mounting conditions in accordance with test method 1026 of MIL-STD-750; $T_A = 25^\circ\text{C}$; $I_{\text{FSM}} = 5\text{ A}$; ten 8.3 ms surges; 1 surge per minute				
Electrical measurements		See table I, subgroup 2.				

1/ For sampling plan, see MIL-PRF-19500.2/ All devices required by the specified sampling plan shall be randomly selected from the devices subjected to subgroup 2, 3, and 4.

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

Inspection <u>1/</u>	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 1A</u>			45 devices, c = 0
Thermal shock	1056	500 cycles	
Hermetic seal	1071		
Electrical measurements		See table I , subgroup 2.	
<u>Subgroup 2</u>			22 devices, c = 0
Burn-in (blocking life)	1038	$V_R = 80$ percent of rated V_{RWM} (see 1.3), Condition A $T_A = 150^\circ\text{C}$; $t = 1,000$ hours min.	
Electrical measurement		See table I , subgroup 2 and table III , step 2.	
<u>Subgroup 4</u>			
Thermal impedance curves		See MIL-PRF-19500 .	
<u>Subgroup 5</u>			15 devices, c = 0 each type
* Barometric pressure, reduced (altitude operation)	1001	Test condition D, 8 mmHg; $t = 60$ s	
Measurement during test:			
Reverse current	4016	DC method	
1N6661, US		$V_R = 225$ V dc; $I_R = .050$ μA dc maximum.	
1N6662, US		$V_R = 400$ V dc; $I_R = .050$ μA dc maximum.	
1N6663, US		$V_R = 600$ V dc; $I_R = .100$ μA dc maximum.	

See footnote at end of table.

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

Inspection ^{1/}	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 8</u> 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> Resistance to glass cracking	1057	Test condition B. Step stress to destruction by increasing cycles or up to a maximum of 25 cycles.	
<u>Subgroup 10</u> Forward surge Electrical measurement	4066	Condition A, I_{FSM} = rated I_{FSM} (see 1.3); ten surges of 8.3 ms each at 1 minute intervals, I_O = rated (see 1.3), V_{RWM} = rated (see 1.3). See table I , subgroup 2.	22 devices, c = 0

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

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

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Reverse current 1N6661, US 1N6662, US 1N6663, US	4016	DC method $V_R = 225$ V dc $V_R = 400$ V dc $V_R = 600$ V dc	ΔI_{R1} 5/	100 percent of initial value or ± 0.10 μ A dc, whichever is greater.		
2.	Forward voltage	4011	$I_F = 400$ mA dc (pulsed) 2 percent duty cycle max; 8.3 ms max pulse width	ΔV_{F1} 5/	± 25 mV dc change from previously measured value.		

- 1/ The delta measurements for appendix E, table E-VIA (JANS) of MIL-PRF-19500 are as follows:
- Subgroup 4, see table III herein, steps 1 and 2.
 - Subgroup 5, see table III herein, steps 1 and 2.
- 2/ The delta measurements for appendix E, table E-VIB (JANTX and JANTXV) of MIL-PRF-19500 are as follows:
- Subgroup 3, see table III herein, steps 1 and 2.
 - Subgroup 6, see table III herein, step 1.
- 3/ The delta measurements for appendix E, table E-VII of MIL-PRF-19500 are as follows: Subgroup 6, see table III herein, steps 1 and 2 (JANS); step 1 (JANTX and JANTXV).
- 4/ The delta measurements for appendix E, table E-IX of MIL-PRF-19500 are as follows; subgroup 2, see table III herein, step 1.
- 5/ Devices which exceed the table I limits for this test shall not be accepted.

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 Part or Identifying Number (PIN), see title and section 1.

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 Cross reference substitution list. JANS level will no longer be built to [MIL-PRF-19500/240](#). Devices required for space flight applications are found herein.

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 5961–2014-083)

Review activities:

Army - AR, MI, SM
Navy - AS, MC
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>.