

The documentation and process conversion measures necessary to comply with this document shall be completed by 26 August 2026.

INCH-POUND

MIL-PRF-19500/553F
w/AMENDMENT 3
31 March 2026
SUPERSEDING
MIL-PRF-19500/553F
w/AMENDMENT 2
20 May 2020

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, SCHOTTKY BARRIER,
FAST RECOVERY, TYPE 1N6391, JAN, JANTX, JANTXV, JANS, AND JANHC

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, fast recovery, Schottky barrier diode, intended for use as a power rectifier in rectifier recovery circuits, or as a flyback diode in power switching applications. Four levels of product assurance (JAN, JANTX, and JANTXV) are provided for each encapsulated device type as specified in [MIL-PRF-19500](#). One level of product assurance (JANHC) is provided for each unencapsulated device type (die) as specified in [MIL-PRF-19500](#).

1.2 Physical dimensions. The device package styles are as follows: Stud mount case DO-203AA (formerly DO-4) in accordance with [figure 1](#) for device type 1N6391 and unencapsulated die in accordance with [figure 2](#) for device type JANHC.

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

Type	V_{RRM} and V_{RWM} (1)	V_{RSM}	V_R (1)	I_{FM} (2) $T_C = +125^{\circ}\text{C}$	I_O (3)	I_{FSM}	T_J and T_{STG}	Max $R_{\theta JC}$
					$T_C = +125^{\circ}\text{C}$			
1N6391	V(pk) 45	V(pk) 54	V dc 45	A dc 25	A dc 22.5	A (pk) 600	$^{\circ}\text{C}$ -55 to +175	$^{\circ}\text{C/W}$ 2.0

- (1) Full rated V_{RRM} and V_{RWM} is applicable over the range of $T_C = -55^{\circ}\text{C}$ to $+165^{\circ}\text{C}$ for $I_{FM} = 0$. Full rated V_R is applicable over the temperature range of $T_C = -55$ to $+155^{\circ}\text{C}$. When $V_R = 45$ V dc and $T_C = +155^{\circ}\text{C}$, then $T_J = +175^{\circ}\text{C}$.
- (2) Average current with a 50 percent duty cycle square wave including reverse amplitude equal to the magnitude of full rated V_{RWM} . Derate linearly at 0.625 A dc/ $^{\circ}\text{C}$ for $T_C > +125^{\circ}\text{C}$.
- (3) Full rated V_{RRM} is applicable over the range $T_C = -55^{\circ}\text{C}$ to $+169^{\circ}\text{C}$ $I_O = 0$ and $T_J = +175^{\circ}\text{C}$.
- (4) For temperature-current derating curves, see [figure 3](#).

Comments, suggestions, or questions on this document should be addressed to DLA 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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1.4 Primary electrical characteristics. Unless otherwise specified, at $T_c = +25^\circ\text{C}$.

Type	Max V_{FM1} $I_{FM} = 50 \text{ A (pk)}$	Max V_{FM2} $I_{FM} = 5 \text{ A (pk)}$	Max I_{RM} ; $V_{RM} = 45 \text{ V (pk)}$		Max C_T $V_R = 5 \text{ V dc}$
			$T_J = +25^\circ\text{C}$	$T_J = +175^\circ\text{C}$	
	<u>V (pk)</u>	<u>V (pk)</u>	<u>mA (pk)</u>	<u>mA (pk)</u>	<u>pF</u>
1N6391	0.8	0.53	1.5	220	2,000

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 brand and quality level indicator.

1.5.1.1 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".

1.5.1.2 JAN certification mark and quality level for unencapsulated devices (die). The quality level designators for unencapsulated devices (die) that are applicable for this specification sheet from the lowest to the highest level are as follows: "JANH C".

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

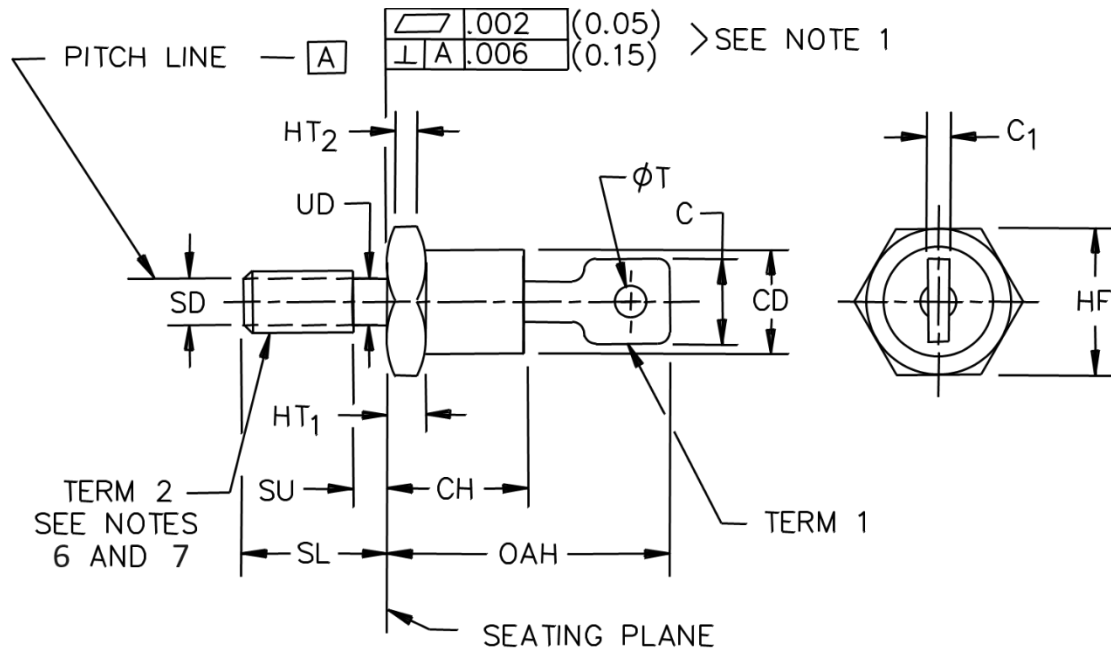
1.5.2.1 First number and first letter symbols. The semiconductors of this specification sheet use the first number and letter symbols "1N".

1.5.2.2 Second number symbols. The second number symbols for the semiconductors covered by this specification sheet are as follows: "6391".

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

1.5.4 Die identifiers for unencapsulated devices (manufacturers and critical interface identifiers). The manufacturer die identifier that is applicable for this specification sheet is "A".

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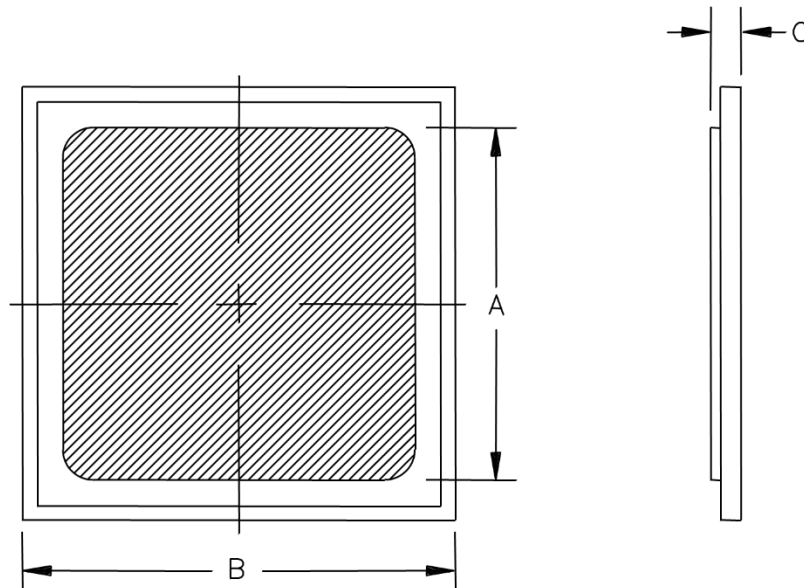


Symbol	Dimensions				Notes	Symbol	Dimensions				Notes
	in	in	mm	mm			in	in	mm	mm	
	Min	Max	Min	Max			Min	Max	Min	Max	
C		.250		6.35	3	OAH	.600	.800	15.24	20.32	
C ₁	.018	.065	0.46	1.65	3	SD					7
CD	.265	.424	6.73	10.77	4	SL	.422	.453	10.72	11.51	
CH	.300	.405	7.62	10.29		SU		.078		1.98	8
HF	.403	.438	10.24	11.13	5	UD	.163	.189	4.14	4.80	
HT ₁	.075	.175	1.91	4.45	6	ΦT	.060	.103	1.52	2.62	
HT ₂	.060		1.53		6						

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. See 3.4.2 for the polarity of the terminals.
3. The angular orientation and peripheral configuration of terminal 1 is undefined; however, the major surfaces over dimension C and C₁ shall be flat.
4. Dimension CD shall not exceed dimension HF.
5. A chamfer or undercut on one or both ends of the hex portion is optional; minimum base diameter at seating plane .403 inch (10.24 mm).
6. Device shall not be damaged by a torque of 15 inch-pounds applied to a 10-32 UNF-2B nut assembled on thread.
7. Threads are 10-32 UNF-2A in accordance with FED-STD-H28, "Screw-Thread Standards for Federal Services". Maximum pitch diameter (SD) of plated threads shall be basic pitch diameter .1697 inch (4.31 mm).
8. Length of incomplete or undercut threads of dimension UD.

FIGURE 1. Physical dimensions for stud mount DO-203AA package.



Letter	Dimensions			
	in	in	mm	mm
	Min	Max	Min	Max
A	.167	.177	4.24	4.50
B	.175	.185	4.45	4.70
C	.012	.013	0.305	0.330

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. The characteristics of the die are as follows:
Anode (front): Ag
Cathode (back): Ag

FIGURE 2. Physical dimensions for JANHC die (A version).

2. APPLICABLE PUBLICATIONS

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 <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.

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-19500) before contract award (see 4.2 and 6.3).

3.3 Abbreviations, symbols, and definitions. The 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, figures 1 (DO-203AA), and 2 (die) herein.

3.4.1 Lead finish. Lead finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750, and herein (see 6.2). Where a choice of lead finish is desired, it shall be specified in the acquisition document (see 6.2).

3.4.2 Polarity. Devices in DO-203AA package (see figure 1) shall have the anode connected to term 1 and the cathode connected to term 2. The polarity of unpackaged JANHC die shall be as identified on figure 2.

3.4.3 Diode construction. These devices shall be constructed in a manner and using material which enable the diodes to meet the applicable requirements of MIL-PRF-19500 and this document.

3.5 Marking. 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 paragraph 1.3, 1.4, and table I.

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3.7 Electrical test requirements. The electrical test requirements shall be 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](#)) and [tables I](#) and [II](#).
- d. Element evaluation (see [4.6](#)).

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

4.2.1 JANHC devices. Qualification for JANHC devices shall be in accordance with [MIL-PRF-19500](#).

4.2.2 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 to this revision to maintain qualification.

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4.3 Screening of packaged devices (quality levels JANS, JANTXV, and JANTX only). The screening of packaged devices 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	Measurements for JANS level	Measurements for JANTXV and JANTX levels
3a	Condition C	Condition C
3b (1)	Surge current, see 4.3.1	Surge current, see 4.3.1
3c (2)	Thermal impedance, see 4.3.2	Thermal impedance, see 4.3.2
4	Not applicable	Not applicable
9 (3)	Reverse energy test (see 4.5.3), followed by V_{FM1} and I_{RM1} of table I, subgroup 2.	Not applicable
10	Test method 1038 of MIL-STD-750, test condition A; $t = 48$ hrs.	Not applicable
11 (3)	V_{FM1} and I_{RM1} of table I, subgroup 2; $\Delta V_{FM1} = 0.05$ V(pk), $\Delta I_{RM1} = \pm 100$ percent or 5 mA dc, whichever is greater.	Reverse energy test (see 4.5.3), followed by V_{FM1} and I_{RM1} of table I, subgroup 2.
12	Burn-in, see 4.3.3.	Burn-in, see 4.3.3.
13 (4)	V_{FM1} and I_{RM1} of table I, subgroup 2; $\Delta V_{FM1} = 0.05$ V (pk), $\Delta I_{RM1} = \pm 100$ percent or 5 mA dc, whichever is greater. Scope display evaluation (see 4.5.5).	V_{FM1} and I_{RM1} of table I, subgroup 2; $\Delta V_{FM1} = 0.05$ V (pk), $\Delta I_{RM1} = \pm 100$ percent or 5 mA dc, whichever is greater. Scope display evaluation (see 4.5.5).

- (1) Surge current shall precede thermal response. These tests shall be performed anytime after screen 3a and before screen 10.
- (2) Thermal impedance shall be performed any time after sealing provided temperature cycling (screen 3a) is performed in accordance with MIL-PRF-19500, screen 3 prior to this thermal impedance. Quality levels JANTX and JANTXV do not need to be repeated in screening requirements.
- (3) I_{RM1} shall not be indicative of an open condition.
- (4) All devices shall be subjected to the scope display evaluation test and reverse energy test.

4.3.1 Surge current. Surge current shall be performed in accordance with test method 4066 of MIL-STD-750, with the following conditions: $I_{FSM} = 600$ A, 6 surges, $t_P = 8.3$ ms, 1/2 sine wave, or rectangular pulse of equivalent I_{RMS} , $I_O = 0$, $V_{RWM} = 0$, duty factor one percent minimum, $T_A = +25^\circ\text{C}$.

4.3.2 Thermal impedance. Thermal impedance measurements shall be performed in accordance with test method 3101 of MIL-STD-750. Read and record data shall be supplied to the qualifying activity on one lot (random sample of 500 devices minimum) prior to shipment. Twenty-two samples shall be serialized and provided to the qualifying activity for test correlation. The following conditions shall apply:

- a. $I_H \geq$ rated I_O .
- b. $t_H = 150$ to 400 ms.
- c. $I_M = 50$ mA to 250 mA.
- d. $t_{MD} = 50$ to 300 μs .

The maximum limit for thermal impedance under these test conditions is $Z_{\theta JC(\text{max})} = 2^\circ\text{C/W}$.

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4.3.3 Burn-in. Burn-in shall be performed in accordance with condition A of test method 1038 of [MIL-STD-750](#), with the following conditions: $T_J = +150^{\circ}\text{C}$ minimum, $V_R = 36\text{ V dc}$, $t = 48\text{ hrs}$.

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 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 (JAN, JANTX, and JANTXV) of [MIL-PRF-19500](#), and as follows. Electrical measurements (end-points) shall be V_{FM1} and I_{RM1} of [table I](#), subgroup 2-herein.

4.4.2.1 Quality level JANS (table E-VIA of [MIL-PRF-19500](#)).

<u>Subgroup</u>	<u>Method</u>	<u>Conditions</u>
B3	4066	Condition A, $I_{FSM} = 600\text{ A (pk)}$; six surges of $t_p = 8.3\text{ ms}$ each at 1 minute intervals; $I_O = 22.5\text{ A dc}$; $V_R = \text{rated}$ (see 1.3); $+100^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$; $T_J \leq +150^{\circ}\text{C}$.
B4	1037	2,000 cycles, 25 percent rated I_O (see 4.5.6).
B5	1027	$I_F = 20\text{ A}$ average at $T_C = +130^{\circ}\text{C}$, for 340 hours, $f = 60\text{ Hz}$, $V_R = V_{RWM}$ (see figure 3).
B6	4081	$R_{\theta JC} = 2.0^{\circ}\text{C/W}$; $t_H \geq 20\text{ seconds}$; $I_H \geq \text{rated } I_O$; $t_{MD} \leq 300\text{ }\mu\text{s}$; measurement current $50\text{ mA} \leq I_M \leq 250\text{ mA}$ (see 4.5.7).

4.4.2.2 Quality level JAN, JANTX, and JANTXV (table E-VIB of [MIL-PRF-19500](#)).

<u>Subgroup</u>	<u>Method</u>	<u>Conditions</u>
B2	4066	Condition A, $I_{FSM} = 600\text{ A (pk)}$; ten surges of $t_p = 8.3\text{ ms}$ each at 1 minute intervals; $I_O = 22.5\text{ A dc}$; $V_{RM} = 45\text{ V (pk)}$; $+100^{\circ}\text{C} < T_C < +125^{\circ}\text{C}$; $T_J \leq +150^{\circ}\text{C}$.
B3	1048	$T_J = +150^{\circ}\text{C}$ minimum, $V_R = 36\text{ V dc}$, $I_O = 0$, $t = 48\text{ hours}$.
B5	4081	See 4.5.7 .

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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) shall be V_{FM1} and I_{RM1} of table I, subgroup 2 herein.

Subgroup	Method	Conditions
C2	2036	Test condition A, 10 lbs (4.54 Kg), $t = 15$ s. Test condition F (method B), 5 pounds (2.27 Kg), $t = 15$ s. Test condition D1, 10 inch-ounce (0.070 newton meter), $t = 15$ s. Test condition D2, 15 inch-pound (1.69 newton meter), $t = 15$ s.
C5	4081	$R_{\theta JC} = 2.0^{\circ}\text{C/W}$ maximum in accordance with 4.5.7 except $t_H = 20$ s (minimum).
C6	1048	$T_J = 150^{\circ}\text{C}$ minimum, $V_R = 36$ V dc, $I_O = 0$.
C6	1037	Operational power cycling, $I_O = 20$ A dc, $T_{C(\text{low})} = +40^{\circ}\text{C} +0, -15^{\circ}\text{C}$; $T_{C(\text{high})} = +115^{\circ}\text{C} +5, -0^{\circ}\text{C}$; 6,000 cycles (may be continued from JANS group B, subgroup 4); (see 4.5.6).

4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-IX of MIL-PRF-19500 and as specified in 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 as specified in appropriate tables and as follows.

4.5.1 Pulse response measurements. The conditions for the pulse response measurements shall be as specified in section 4 of MIL-STD-750.

4.5.2 Inspection conditions. Unless otherwise specified in MIL-PRF-19500 or herein, all inspections shall be conducted at a T_c of $+25^{\circ}\text{C} \pm 3^{\circ}\text{C}$.

4.5.3 Peak reverse energy test. The peak reverse energy test shall be performed as specified on figure 4. The Schottky rectifier under test shall be capable of absorbing the reverse energy, as defined, and meet the electrical requirements of subgroup 4 of table I herein.

4.5.4 Reverse current at peak reverse voltage, alternate test. The reverse current at peak reverse voltage test requirement may be satisfied by performing the reverse energy test of 4.5.3 and measuring breakdown voltage to ensure $V_{BR} \geq 54$ V (pk) with $I_{RM} = 2.0$ A (pk).

4.5.5 Scope display evaluation. A curve trace visual display of the reverse characteristics (voltage versus current) shall be made using a calibration of 10 mA for each division vertical sensitivity, and 10 V for each division horizontal sensitivity. Increase the reverse voltage until the reverse current reaches 50 mA minimum to 70 mA maximum. Observe the curve characteristics. Any device with an erratic pattern, such as double trace, other than capacitance effects, intermittence, discontinuities other than zener noise at the knee of the curve, or shorts shall be removed from the lot. Time limit for this test shall be 5 seconds minimum. This test shall be the last test performed on the device in the 100 percent screening tests. The percent defective result for evaluation against the percent defective allowed (PDA) shall be determined prior to the results of this test.

4.5.6 DC intermittent operation life. DC intermittent operation life shall be performed in accordance with test method 1037 of [MIL-STD-750](#). A cycle shall consist of an "on" period, when forward current is applied suddenly, not gradually, to the device for the time necessary to achieve an increase (delta) case temperature of +85°C +15°C, -5°C followed by an "off" period, when the current is suddenly removed for cooling, the case through a similar delta temperature. Auxiliary (forced) cooling is permitted during the "off" period only. Forward current or "on" time, within specific limits, and "off" time may be adjusted to achieve the delta case temperature. Heat sinks shall only be used if, and to the degree necessary, to maintain test samples within the desired delta temperature tolerance. The heating time shall be such that $30 \text{ s} \leq t_{\text{heating}} \leq 180 \text{ s}$. The forward current may be steady-state dc, full-wave rectified dc, or the equivalent half-sine wave dc, of the specified value. The test duration shall be the specified number of cycles. Within the time interval of 50 cycles before and 500 cycles after the termination of the test, the sample units shall be removed from the specified test conditions and allowed to reach room ambient conditions. Specified end-point measurements for qualification and quality conformance inspections shall be completed within 96 hours after removal of sample units from the specified test conditions. Additional readings may be taken at the discretion of the manufacturer.

4.5.7 Thermal resistance. Thermal resistance measurement shall be performed in accordance with test method 4081 of [MIL-STD-750](#). Read and record data in accordance with [table II](#) herein shall be included in the qualification report.

- a. $I_H \geq \text{rated } I_O$.
- b. $t_H = 20 \text{ seconds minimum}$.
- c. $I_M = 50 \text{ mA to } 250 \text{ mA}$.
- d. $t_{MD} = 300 \mu\text{s maximum}$.

4.6 Element evaluation of unencapsulated die. The element evaluation of unencapsulated die shall be in accordance with appendix G of [MIL-PRF-19500](#).

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TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit	Limit	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Thermal impedance	3101	See 4.3.2	$Z_{\theta JC}$		2.0	°C/W
Forward voltage	4011	Condition B; $I_{FM} = 50$ A (pk), pulsed (see 4.5.1)	V_{FM1}		0.8	V (pk)
		Condition B; $I_{FM} = 5$ A (pk), pulsed (see 4.5.1)	V_{FM2}		0.53	V (pk)
Reverse current	4016	Condition A or B, $V_{RM} = 45$ V (pk) pulsed (see 4.5.1)	I_{RM1}		1.5	mA (pk)
<u>Subgroup 3</u>						
High temperature operation						
Reverse current leakage	4016	Condition A or B, $V_{RM} = 45$ V (pk) pulsed (see 4.5.1)				
		$T_J = +175^{\circ}\text{C}$	I_{RM2}		220	mA (pk)
		$T_J = +125^{\circ}\text{C}$	I_{RM3}		40	mA (pk)
Low temperature operation		$T_C = -55^{\circ}\text{C}$				
Reverse current leakage	4016	Condition A or B, $V_{RM} = 45$ V (pk) pulsed (see 4.5.1)	I_{RM4}		1.5	mA (pk)
Forward voltage	4011	Condition B; $I_F = 5$ A (pk) pulsed (see 4.5.1)	V_{FM3}		0.64	V (pk)
<u>Subgroup 4</u>						
Reverse current leakage at peak reverse voltage	4016	Peak reverse energy test (see 4.5.3), condition A or B. $V_{RSM} = 54$ V (pk); Alternate test (see 4.5.4).	I_{RM5}		2.0	A (pk)
Capacitance	4001	$V_R = 5$ V dc; $100\text{ KHz} \leq f \leq 1\text{ MHz}$	C_T		2,000	pF

See footnote at end of table.

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TABLE I. Group A inspection – Continued.

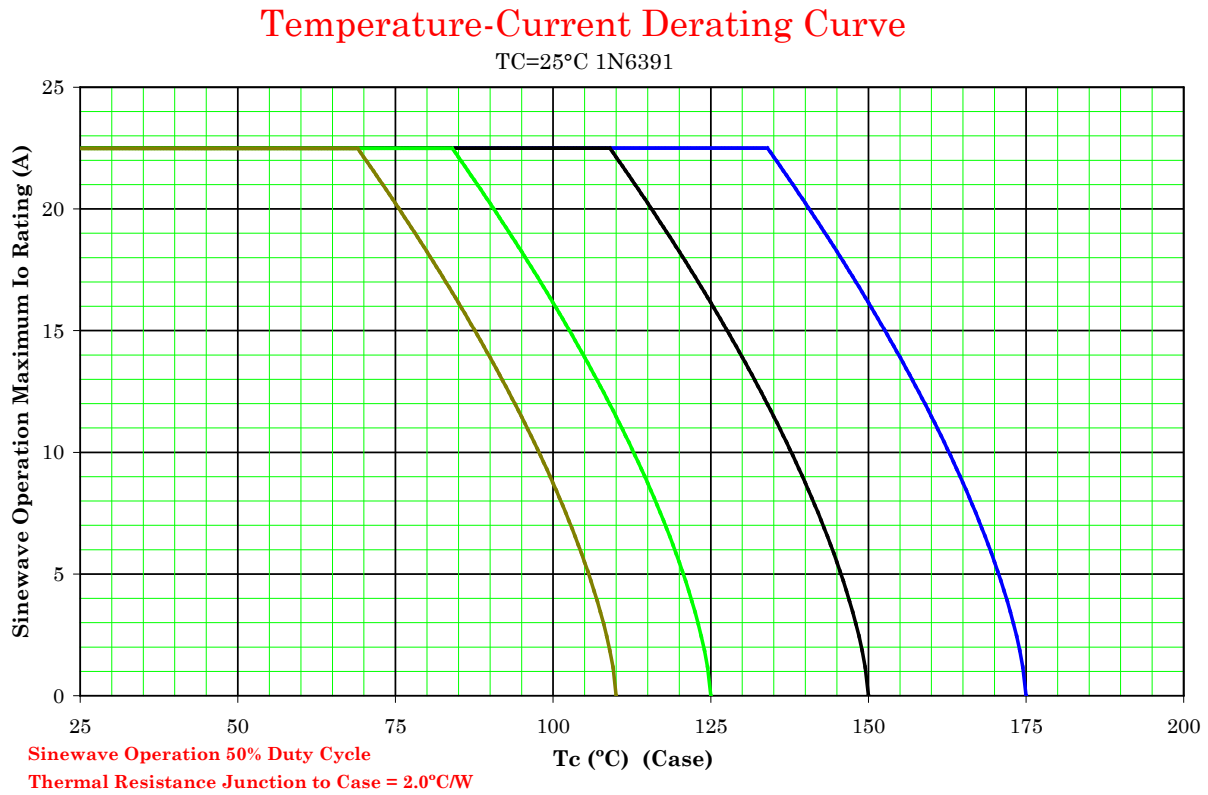
Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit	Limit	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 5</u>						
Not applicable						
<u>Subgroup 6</u>						
Forward surge current	4066	Condition A; $I_{FSM} = 600 \text{ A (pk)}$; 10 surges of $t_p = 8.3 \text{ ms}$ each at 1 minute intervals, superimposed on $I_O = 22.5 \text{ A dc}$; $V_{RWM} = \text{rated } V_{RWM}$ (see 1.3); $T_A = +100^\circ\text{C}$.				
Electrical measurements		See subgroup 2 of this table.				
<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.

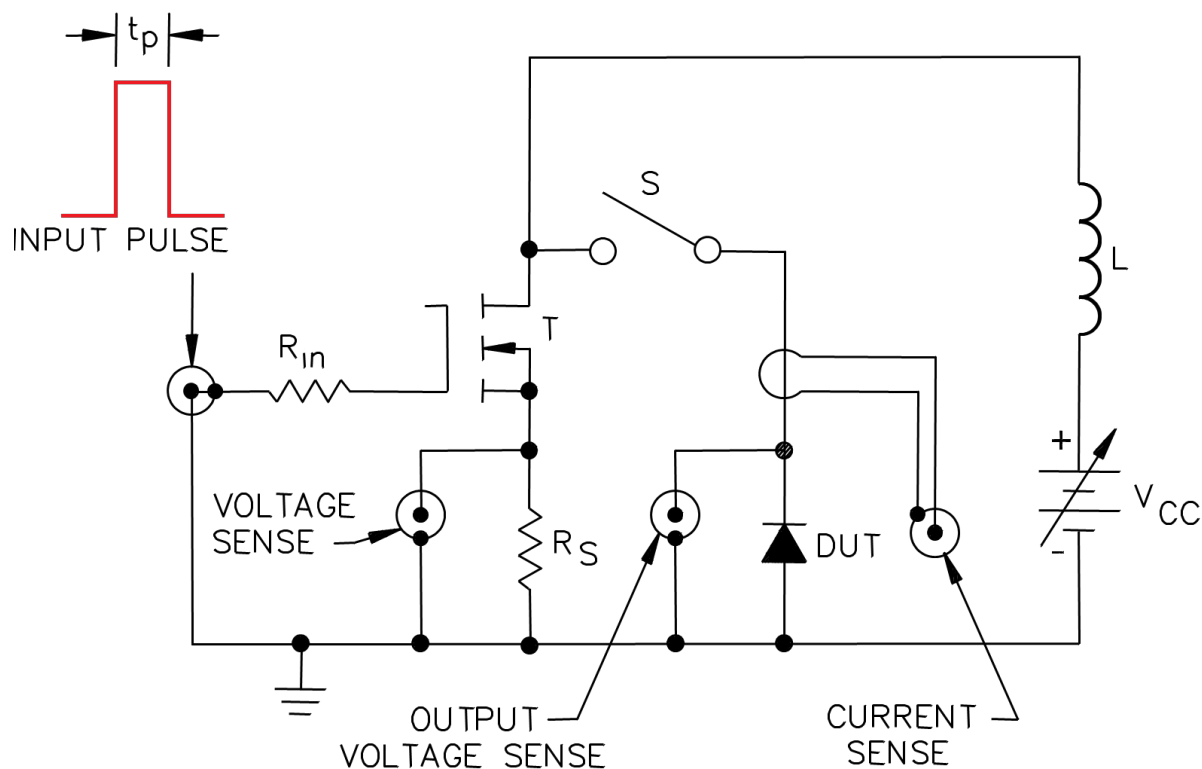
Inspection	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 1</u>			45 devices, c = 0
Thermal shock	1056	100 cycles, 0°C to 100°C.	
Hermetic seal	1071		
Electrical measurement		See table I , subgroup 2.	
<u>Subgroup 2</u>			45 devices, c = 0
Steady-state reverse bias	1038	Test condition A, t = 1,000 hours.	
Electrical measurement		See table I , subgroup 2.	
<u>Subgroup 4</u>			Sample size N/A
Thermal impedance curves		See MIL-PRF-19500 .	
<u>Subgroup 5</u>			
Not applicable			
<u>Subgroup 10</u>			22 devices, c = 0
Surge current	4066	Condition A; T _A = +25°C; I _{FSM} = 600 A, 100 surges.	
Electrical measurement		See table I , subgroup 2.	



NOTES:

1. All devices are capable of operating at $\leq T_J$ specified on this curve. Any parallel line to this curve will intersect the appropriate power for the desired maximum T_J allowed.
2. Derate design curve constrained by the maximum junction temperature ($T_J \leq 175^\circ\text{C}$) and current rating specified (see 1.3 herein.)
3. Derate design curves chosen at $T_J \leq 150^\circ\text{C}$, 125°C , and 110°C to show current rating where users want to limit T_J in their application.

FIGURE 3. Temperature current derating curve.



PROCEDURES:

1. With S open, adjust pulse width to test current of 2 amps across R_s .
2. Close S, verify test current with current sense.
3. Read peak output voltage (see 4.5.3).

NOTES:

- | | |
|---|--|
| 1. Input pulse | $R_{in} = 50 \text{ ohms, 1 watt}$ |
| 2. $V_G = 10 \text{ volts}$ | $R_s = 0.1 \text{ ohms, 1 watt}$ |
| 3. $R_G = 50 \text{ ohms}$ | $V_{CC} \approx 10 \text{ volts}$ |
| 4. Pulse width $\approx 30 \mu\text{s}$ | $L = 260 \mu\text{H}$ |
| 5. Duty cycle $\leq 1\text{percent}$ | $T = \text{IRF130/2N6756 or equivalent}$ |

FIGURE 4. Peak reverse energy test circuit.

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.

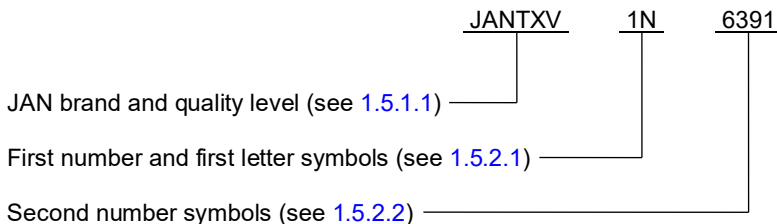
6.2 Acquisition requirements. Acquisition documents should specify the following:

- 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](#) and [6.5](#).

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 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 <http://qpldocs.dla.mil>.

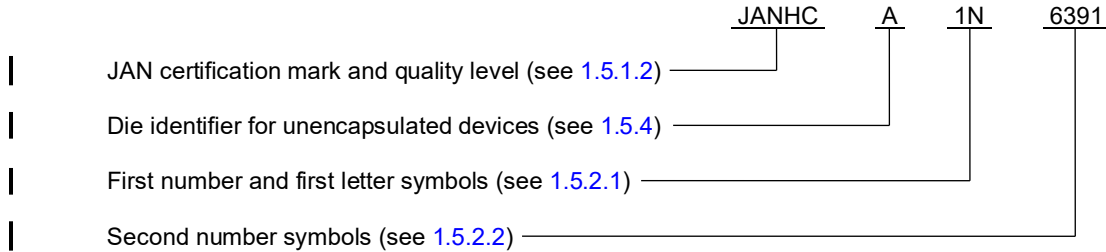
6.4 PIN construction example.

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



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6.4.2 Un-encapsulated devices. The PINs for un-encapsulated devices are constructed using the following form.



6.5 List of PINs.

6.5.1 List of PINs for encapsulated devices. The following is a list of possible PINs for encapsulated devices available on this specification sheet: JAN1N6391, JANTX1N6391, JANTXV1N6391, and JANS1N6391.

6.5.2 List of PINs and suppliers of unencapsulated devices. The following is a list of possible PINs for unencapsulated devices available on this specification sheet. The qualified JANHC suppliers with the applicable letter version will be identified on the QML. An example for unencapsulated die type JANHCA1N6391 is as follows:

Manufacturer CAGE 43611	
Encapsulated device PIN	JANHC die PIN
JAN1N6391	JANHCA1N6391

6.6 Amendment notations. The margins of this specification are marked with vertical lines 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:
Air Force – 85
NASA – NA
DLA – CC

Preparing activity:
DLA – CC

Review activities:
Air Force – 19

(Project 5961–2026–003)

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>.