

The documentation and process conversion measures necessary to comply with this revision shall be completed by 4 May 2016.

INCH-POUND

MIL-PRF-19500/463L  
4 February 2016  
SUPERSEDING  
MIL-PRF-19500/463K  
24 January 2014

## PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, CURRENT REGULATOR, ENCAPSULATED (THROUGH-HOLE AND SURFACE MOUNT PACKAGES), AND UN-ENCAPSULATED (DIE), TYPES 1N5283 THROUGH 1N5314, AND, 1N7048 THROUGH 1N7055, JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

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 100 volt, silicon, current regulator diodes. Four levels of product assurance (JAN, JANTX, JANTXV, and JANS) are provided for each encapsulated device type as specified in [MIL-PRF-19500](#). Two levels of product assurance (JANHC and JANKC) are provided for each unencapsulated device type.

\* 1.2 Package outlines and die topography. The device package for the encapsulated device types are as follows: DO-7 in accordance with [figure 1](#), surface mount version DO-213AB in accordance with [figure 2](#), and surface mount versions UB in accordance with [figure 3](#). The dimensions and topography for JANHC and JANKC unencapsulated die are as follows: A version die in accordance with [figure 4](#), B version die in accordance with [figure 5](#).

\* 1.3 Maximum ratings. Maximum ratings are as shown in maximum test ratings (see [3.10](#)) and as follows:

- a.  $P_T = 500 \text{ mW}$  (DO-7) at  $T_L = +50^\circ\text{C}$ ,  $L = .375 \text{ inch}$  (9.53 mm); both ends of case or diode body to heat sink at  $L = .375 \text{ inch}$  (9.53 mm). (Derate to 0 at  $+175^\circ\text{C}$ ).
- b.  $P_T = 500 \text{ mW}$  (DO-213AB) at  $T_{EC} = +125^\circ\text{C}$ . (Derate to 0 at  $+175^\circ\text{C}$ ).
- c.  $P_T = 500 \text{ mW}$  (UB) at  $T_{SP} = +125^\circ\text{C}$ . (Derate to 0 at  $+175^\circ\text{C}$ )
- d.  $-65^\circ\text{C} \leq T_J \leq +175^\circ\text{C}$ ;  $-65^\circ\text{C} \leq T_{STG} \leq +175^\circ\text{C}$ .  
For UB devices,  $-65^\circ\text{C} \leq T_J \leq +175^\circ\text{C}$ ;  $-65^\circ\text{C} \leq T_{STG} \leq +200^\circ\text{C}$ .

\* 1.4 Primary electrical characteristics. Primary electrical ratings are as shown in maximum test ratings (see [3.10](#)) and as follows, (nominally  $.22 \text{ mA dc} \leq I_S \leq 4.70 \text{ mA dc}$ , (symbol "I<sub>P</sub>" may be used in place of symbol "I<sub>S</sub>")):

- a.  $R_{\theta JL} = 250^\circ\text{C/W}$  (maximum) at  $L = .375 \text{ inch}$  (9.53 mm) (DO-7).
- b.  $R_{\theta JC} = 100^\circ\text{C/W}$  (maximum) junction to end-caps (DO-213AB).
- c.  $R_{\theta JSP(I_S)} = 100^\circ\text{C/W}$  (maximum) junction to solder pad (infinite sink) (UB).

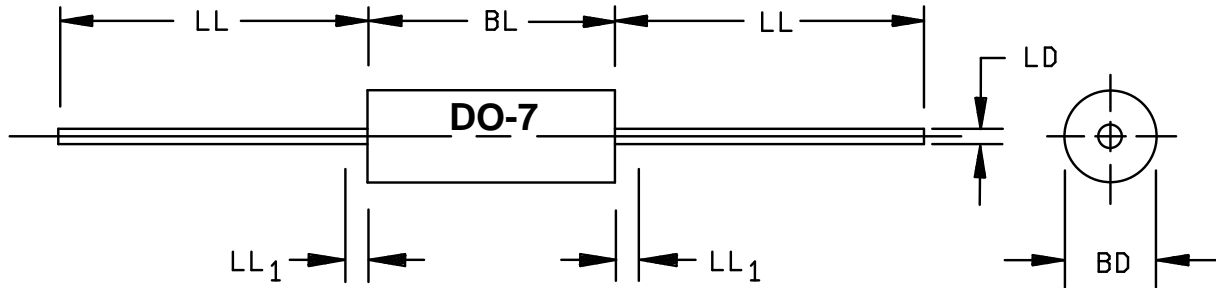
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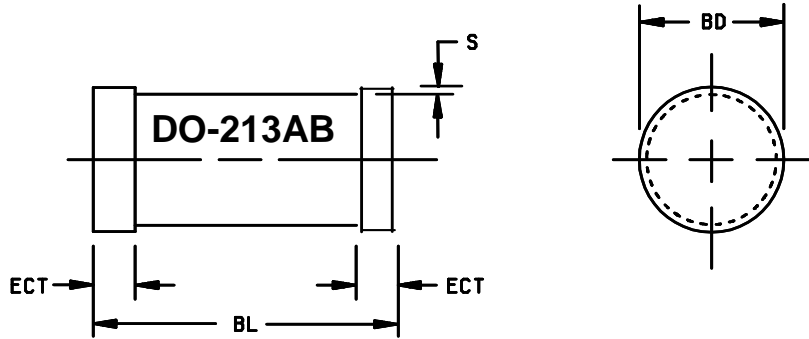


Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	.060	.107	1.52	2.72
BL	.120	.300	3.05	7.62
LD	.018	.023	0.46	0.58
LL	1.000	1.500	25.40	38.10
LL <sub>1</sub>		0.050		1.27

## NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The minimum body diameter shall be maintained over .15 inch (3.81 mm) inch of body length.
4. The specified lead diameter applies in the zone between .050 inch (1.27 mm) and the end of the lead. Outside of this zone the lead diameter shall not exceed LD.
5. Both leads shall be within the specified dimension.
6. See 3.3 for L and T<sub>L</sub> definitions.
7. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.

FIGURE 1. Physical dimensions (DO-7).

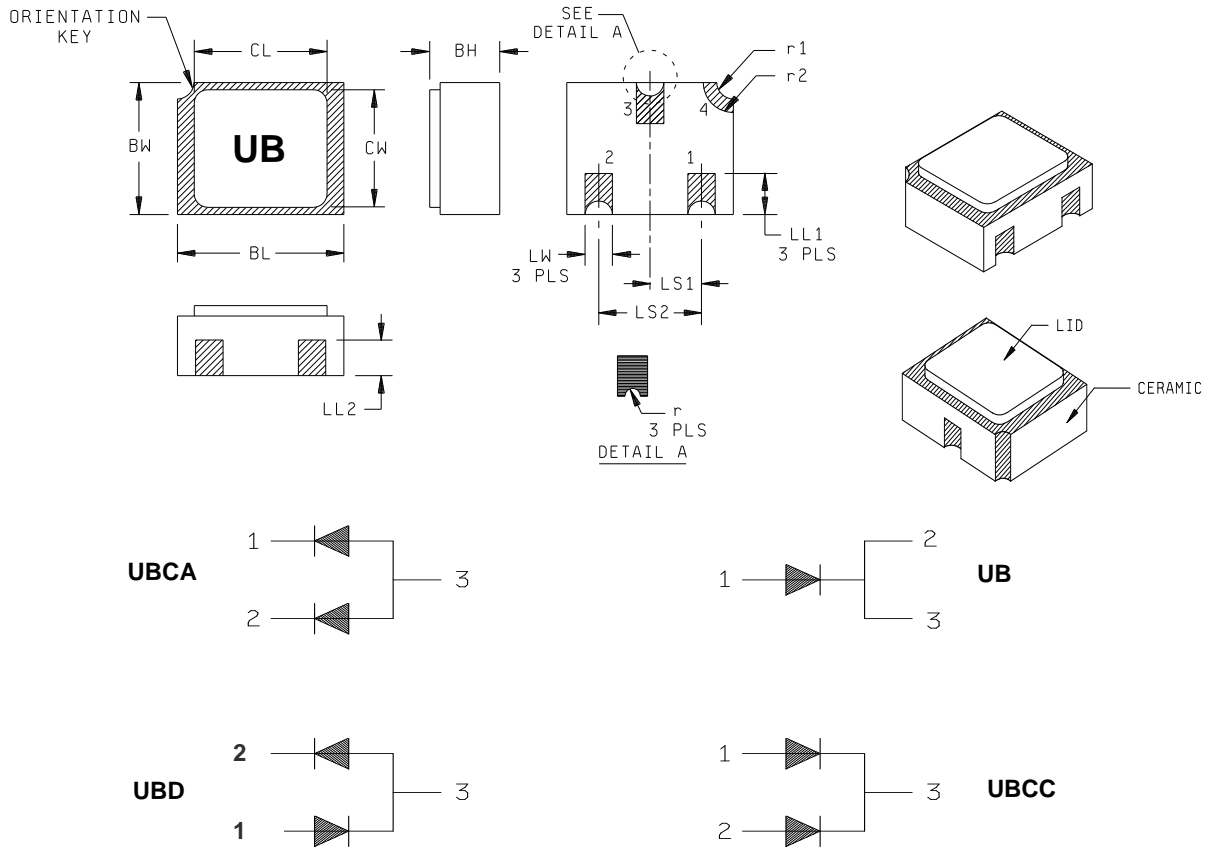


Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	.094	.105	2.39	2.67
BL	.189	.205	4.80	5.21
ECT	.016	.022	0.41	0.55
S	.001 min		0.03 min	

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  $\Phi$ x symbology.

FIGURE 2. Physical dimensions (DO-213AB).

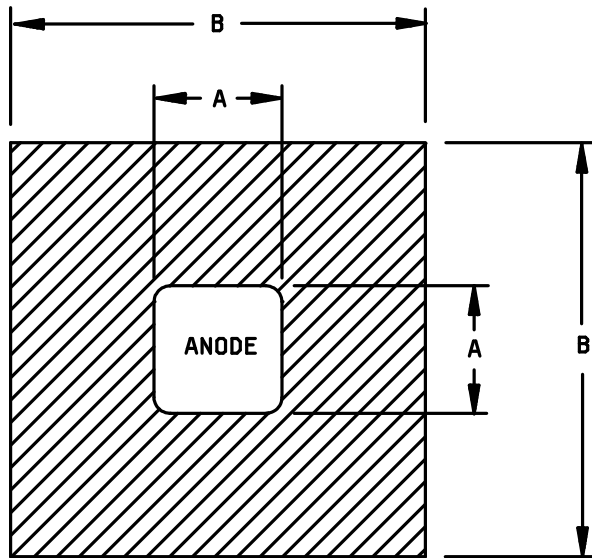


Symbol	Dimensions				Symbol	Dimensions			
	Inches		Millimeters			Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
BH	.046	.056	1.17	1.42	LS1	.035	.039	0.89	0.99
BL	.115	.128	2.92	3.25	LS2	.071	.079	1.80	2.01
BW	.085	.108	2.16	2.74	LW	.016	.024	0.41	0.61
CL		.128		3.25	r		.008		0.20
CW		.108		2.74	r1		.012		0.31
LL1	.022	.038	0.56	0.97	r2		.022		0.56
LL2	.017	.035	0.43	0.89					

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Ceramic package only.
3. Hatched areas on package denote metallized areas. Pad 4 = shielding, connected to the lid.
4. Dimensions are pre-solder dip.
5. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi x$  symbology.

\* FIGURE 3. Physical dimensions, surface mount (UB version).



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.012	.014	0.305	0.355
B	.026	.030	0.660	0.762

Design data

Metallization:

Top: (Anode) ..... Al

Back: (Cathode) .... Au

Al thickness ..... 25000 Å Min

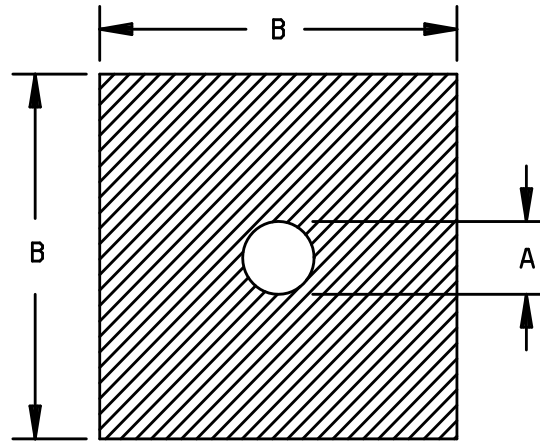
Gold thickness ..... 4000 Å Min

Chip thickness ..... .010 ±.002 inch (0.254 ±0.0508 mm)

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  $\Phi$ x symbology.

FIGURE 4. Physical dimensions, JANHCA and JANKCA die.



Ltr	Inches		Millimeters	
	Min	Max	Min	Max
A	.006	.007	0.152	0.178
B	.022	.026	0.559	0.660

Design data

Metallization:

Top: (Anode) ..... Al

Back: (Cathode) .... Au

Al thickness ..... 25000 Å Min

Gold thickness ..... 4000 Å Min

Chip thickness ..... .010 ±.002 inch (0.254 ±0.0508 mm)

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  $\Phi x$  symbology.

FIGURE 5. Physical dimensions, JANHCB and JANKCB die.

\* 1.5 Part or Identifying Number (PIN). The PIN is in accordance with [MIL-PRF-19500](#), and as specified herein. See [6.5](#) for PIN construction example and [6.6](#) for a list of available PINs.

\* 1.5.1 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".

\* 1.5.1.2 Quality level designators 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: "JANHC" and "JANKC".

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

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

\* 1.5.2.2 Second number symbols. The second number symbols covered by this specification sheet are as follows: "5283" through "5314", and "7048" through "7055".

1.5.3 Suffix symbols. The following suffix symbols are incorporated in the PIN as applicable.

UR	Indicates a surface mount, round endcap, package (see <a href="#">figure 2</a> ).
UB	Indicates a surface mount UB package (see <a href="#">figure 3</a> ). (UB, UBCA, UBCC, and UBDD)
-1	Indicates a high temperature metallurgical bond of a type I or II (see <a href="#">3.5</a> and <a href="#">6.4</a> herein).

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

\* 1.5.5 Die identifiers for unencapsulated devices (manufacturers and critical interface identifiers). The manufacturer die identifiers that are applicable for this specification sheet are "A" and "B" (see [figure 4](#), [figure 5](#) and [6.6.2](#)).

## 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

### 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 shall be as specified in [MIL-PRF-19500](#) and as follows:

$I_P$	Pinch-off current. $I_P$ pinch-off current is defined as the regulator current at specified test voltage, $V_S$ .
$\Delta I_P$	Regulator current variation.
$\alpha_{I_P}$	Temperature coefficient of regulator current.
$I_S$	Pinch-off current. $I_S$ pinch-off current is defined as the regulator current at specified test voltage, $V_S$ . $I_S$ is the preferred symbol however $I_P$ can still be used.
$\Delta I_S$	Regulator current variation.
$\alpha_{I_S}$	Temperature coefficient of regulator current.
$L$	Lead thermal path length. Lead thermal path length is the distance from the end of the diode body to the point of lead-temperature measurement. For purposes of this measurement, the same heat sinking at the same distance from the diode body shall be applied to each lead. No heat sinking shall occur between the diode body and the point of lead-temperature measurement. This measurement may be made from either end of the diode body. (The diode body includes slugs, if any, but does not include braze fillet, paint, etc., within the zone of uncontrollable lead diameter.)
$P_D$	Steady-state power dissipation. Power dissipated under steady-state conditions.
$T_L$	Lead temperature. Lead temperature is the temperature of the lead measured at the lead thermal path length, $L$ . Lead temperature shall be measured by means of a No. 30 copper-constantan thermocouple, or equivalent. All reference to $T_L$ is changed to $T_{EC}$ for end cap temperature on "UR" devices and $T_{SP}$ for solder pad temperature on "UB" devices.
$V_{POV}$	Peak operating voltage. Peak operating voltage is the maximum voltage that shall be applied to the device.

3.4 Interface and physical dimensions. Interface and physical dimensions shall be as specified in [MIL-PRF-19500](#), [figure 1](#) (DO-7), [figure 2](#) (DO-213AB), [figure 3](#) (UB), [figure 4](#) (JANHCA and JANKC die), and [figure 5](#) (JANKCB and JANKCB) herein.

\* 3.5 Diode construction. These devices shall be constructed in a manner and using materials which enable the diodes to meet the applicable requirements of [MIL-PRF-19500](#) and this document. For normal operation, the cathode is biased negative for normal operation as a current regulator (see [Figure 6](#)).

- The Dash one construction shall be of double plug construction utilizing 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 or II in appendix A of [MIL-PRF-19500](#).
- The 'UB' devices shall be eutectically mounted and wire bonded in a ceramic package.
- The 'UR' version shall be structurally identical to the axial leaded versions except for end-cap lead attachment.

\* 3.5.1 JANS construction. Construction shall be dash-one, category I or II metallurgical bond in accordance with appendix A of [MIL-PRF-19500](#). The 'UB' devices shall be eutectically mounted and wire bonded in a ceramic package.



3.5.2 Encapsulant material. In addition to those categories of hermetically sealed package requirements specified in [MIL-PRF-19500](#), fused-metal-oxide to metal shall also be acceptable.

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

\* 3.7 Marking. Marking shall be in accordance with [MIL-PRF-19500](#). Manufacturers 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. No color coding shall be permitted. Initial container package marking shall be in accordance with [MIL-PRF-19500](#). The prefixes JAN, JANTX, JANTXV, or JANS may be abbreviated as J, JX, JV, or JS, respectively. (For example: The part number may be reduced to JS5314). All marking which is omitted from the body of the device shall appear on the initial container. All device marking, except for polarity and serial numbers, shall also appear on the unit package used as the initial protection for delivery.

3.7.1 Marking of UR devices. UR devices shall be marked with a cathode band as a minimum; or a minimum of three evenly spaced contrasting color dots around the periphery of the cathode end may be used. At the option of the manufacturer, UR devices may include laser marking on an end-cap, to include part number and lot date code for all levels. JANS devices which are laser marked shall also include serialization. The prefixes JAN, JANTX, JANTXV, or JANS may be abbreviated as J, JX, JV, or JS, respectively. (For example: The part number may be reduced to JS5314). All marking which is omitted from the body of the device shall appear on the initial container. All device marking, except for polarity and serial numbers, shall also appear on the unit package used as the initial protection for delivery.

\* 3.7.2 UB devices. 'UB' packages do not require polarity marking.

3.8 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in [1.3](#), [1.4](#), and [table I](#) and the electrical characteristics table herein.

3.9 Electrical test requirements. The electrical test requirements shall be the subgroups specified in [table I](#) herein.

3.10 Maximum test ratings. Test ratings shall be as shown in the electrical characteristics table.

3.11 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 group E tests, the tests specified in [4.7.4](#) herein shall be performed on the first inspection lot to this revision to maintain qualification.

4.2.2 JANHC and JANKC devices. Qualification for unencapsulated die shall be in accordance with appendix G of [MIL-PRF-19500](#).

4.3 Screening (JAN, JANTXV, JANTX, and JANS levels). 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 (see table E-IV of MIL-PRF-19500)	Measurement		
	JANS	JANTX and JANTXV levels	JAN level (1)
3a	Temperature cycling	Temperature cycling	Temperature cycling (in accordance with MIL-PRF-19500, JANTX level)
(2) 3c	Thermal impedance (see 4.3.3)	Thermal impedance (see 4.3.3)	Thermal impedance (see 4.3.3)
9	$I_{S1}$ (3)	Not applicable	Not applicable
10	$V_{POV}$ = Col 11, table II at $T_A = +25^\circ\text{C}$ $t = 48$ hours	$V_{POV}$ = Col 11, table II at $T_A = +25^\circ\text{C}$ $t = 48$ hours	$V_{POV}$ = Col 11, table II at $T_A = +25^\circ\text{C}$ $t = 48$ hours
11	Subgroup 2 of table I herein; $\Delta I_{S1} \leq 5$ percent of initial value (4)	Subgroup 2 of table I herein	Subgroup 2 of table I herein
12	See 4.3.2	See 4.3.2	Not applicable
(5) 13	Subgroup 2 of table I herein; $\Delta I_{S1} \leq 5$ percent of initial value. (4)	Subgroup 2 of table I herein; $\Delta I_{S1} \leq 5$ percent of initial value. (4)	Not applicable

- (1) Screens 3a, 3c, 10, and 11 are the only screens required for JAN level product.
- (2) Shall be performed any time after temperature cycling, screen 3a; JANTX and JANTXV levels do not need to be repeated in screening requirements.
- (3) Symbol " $I_{P1}$ " may be used in place of " $I_{S1}$ ".
- (4) Symbol " $\Delta I_{P1}$ " may be used in place of " $\Delta I_{S1}$ ".
- (5) When thermal impedance is performed prior to screen 13, it is not required to be repeated in screen 13.

4.3.1 Screening (JANHC or JANKC). Screening of die shall be in accordance with appendix G of MIL-PRF-19500. As a minimum, die shall be 100-percent probed to ensure compliance with table I, subgroup 2 (with the exception of thermal impedance).

4.3.2 Power burn-in conditions. Power burn-in conditions are as follows:  $I_R = 200$  mA dc minimum; mounting and test conditions in accordance with method 1038 of MIL-STD-750, test condition B,  $T_{EC} = +75^\circ\text{C}$  to  $+125^\circ\text{C}$  for surface mount devices.  $T_A$  = room ambient as defined in the general requirements of 4.5 of MIL-STD-750.

4.3.3 Thermal impedance  $Z_{\theta JX}$  measurements for screening. The  $Z_{\theta JX}$  measurements shall be performed in accordance with method 3101 of [MIL-STD-750](#), ( $V_R$  to be used in lieu of  $V_F$ ). The maximum limit (not to exceed the [table I](#), subgroup 2 limit) for  $Z_{\theta JX}$  in screening ([table E-IV](#) of [MIL-PRF-19500](#)) shall be derived by each vendor by means of statistical process control. When the process has exhibited control and capability, the capability data shall be used to establish the fixed screening limit. In addition to screening, once a fixed limit has been established, monitor all future sealing lots using a random five piece sample from each lot to be plotted on the applicable X, R chart. If a lot exhibits an out of control condition, the entire lot shall be removed from the line and held for engineering evaluation and disposition.

- |    |                                 |                     |
|----|---------------------------------|---------------------|
| a. | $I_M$ measurement current       | 1 mA - 10 mA.       |
| b. | $I_H$ forward heating current   | .5 A - 1.0 A.       |
| c. | $t_H$ heating time              | 10 ms.              |
| d. | $t_{MD}$ measurement delay time | 70 $\mu$ s maximum. |

4.3.3.1 For initial qualification or requalification. Read and record data ( $Z_{\theta JX}$ ) 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.

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

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with [MIL-PRF-19500](#), and [table I](#) herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in [tables E-VIA \(JANS\)](#) and [E-VIB \(JAN, JANTX and JANTXV\)](#) of [MIL-PRF-19500](#), and as follows. Electrical measurements (end-points) and delta measurements shall be in accordance with [table I](#), subgroup 2 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>
B4	1037	2,000 cycles; test conditions in accordance with <a href="#">4.3.2</a> : $t_{on} = t_{off}$ 30 seconds minimum.
B5	1027	$I_R = 200$ mA dc, $T_A = +125^\circ\text{C}$ or adjusted as required to give an average lot $T_J = +175^\circ\text{C}$ . Marking legibility requirements shall not apply.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
*	B3	$V_{POV} = \text{Col 11}$ , <a href="#">table II</a> ; $T_A = +25^\circ\text{C}$ ; $L = .375$ inch (9.53 mm) (non-surface mount), $L = 0$ inch for surface mount (UR and UB).
	B5	Not applicable.
	B6	$T_A = +175^\circ\text{C}$ .

\* 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 measurements shall be in accordance with table I, subgroup 2 herein.

Subgroup	Method	Condition
C2	2036	Axial devices - Tension: test condition A; weight = 10 pounds (4.54 Kg), t = 15 s; lead fatigue = condition E (not applicable to 'UR' suffix types).
C5	3101 or 4081	$R_{\theta JL}$ at L = .375 inch (9.52 mm) $\leq 250^{\circ}\text{C/W}$ , $R_{\theta JEC}$ at L = 0 lead length $\leq 100^{\circ}\text{C/W}$ , see 4.5. $R_{\theta JEC} = 100^{\circ}\text{C/W}$ (maximum) at zero lead length (for UR). $R_{\theta JSP(IS)} = 100^{\circ}\text{C/W}$ (maximum) (for UB). $R_{\theta JSP(IS)}$ can be calculated but shall be measured once in the same package with a similar die size to confirm calculations (may apply to multiple specification sheets)
C6	1026	$V_{POV} = \text{Col 11, table II}$ ; $T_A = +25^{\circ}\text{C}$ ; L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch for surface mount (UR and UB).
* C8		See 4.6 and 4.7.3.

\* 4.5 Thermal resistance. Thermal resistance measurement shall be in accordance with method 3101 of MIL-STD-750. Forced moving air or draft shall not be permitted across the device during heat. The maximum limit for  $R_{\theta JL}$  under these test conditions shall be  $R_{\theta JL} (\text{max}) = 250^{\circ}\text{C/W}$ ,  $R_{\theta JEC} = 100^{\circ}\text{C/W}$  or  $R_{\theta JSP(IS)} = 100^{\circ}\text{C/W}$ . The following conditions shall apply:

- $I_H$  200 mA to 400 mA.
- $I_M$  1 mA to 10 mA.
- $t_H$  30 seconds minimum.
- $t_{MD}$  70  $\mu\text{s}$  maximum.

4.5.1 For initial qualifications and re-qualifications. Read and record data in accordance with 4.7.4 herein and shall be included in the qualification report.

4.6 Temperature coefficient of regulator current. The temperature coefficient of regulator current shall be tested under the following conditions: Sampling plan: 22 devices, c = 0.

- Test 1:  $V_S = 25 \text{ V dc}$ ,  $T_{L1} = -55^{\circ}\text{C}$ ,  $T_{L2} = +25^{\circ}\text{C}$ , L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch (surface mount) (see 3.3 and 4.7.3) with the maximum limit in accordance with column 8 of table II herein.
- Test 2:  $V_S = 25 \text{ V dc}$ ,  $T_{L1} = +25^{\circ}\text{C}$ ,  $T_{L2} = +150^{\circ}\text{C}$ , L = .375 inch (9.53 mm) (non-surface mount), L = 0 inch (surface mount) (see 3.3 and 4.7.3) with the maximum limit in accordance with column 9 of table II herein.

4.7 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows:

4.7.1 Regulator impedance ( $Z_S$ ) at test voltage  $V_S$ . To test for  $Z_S$ , a 90 Hz signal  $V_S (\text{mod})$  with rms value equal to 10 percent of test voltage,  $V_S$ , is superimposed on the test voltage (see the regulator impedance test circuit figure herein).

4.7.2 Knee ac impedance ( $Z_K$ ) at test voltage  $V_K$ . To test for  $Z_K$ , a 90 Hz signal  $V_K (\text{mod})$  with rms value equal to 10 percent of test voltage,  $V_K$ , is superimposed on the test voltage (see the knee impedance test circuit figure herein).

4.7.3 Temperature coefficient of regulator current ( $\alpha_{IS}$ ). Temperature coefficient of regulator current shall be calculated as follows:

$$\alpha_{IS} = \frac{IS(T_{L2}) - IS(T_{L1})}{IS(T_L = +25^\circ\text{C})\Delta T_L} \times 100$$

4.7.3.1 Alternate definition of temperature coefficient of regulator current ( $\alpha_{IS}$ ). Temperature coefficient of regulator current is allowed to also be calculated as follows:

$$\alpha_{IS} = \frac{IP(T_{L2}) - IP(T_{L1})}{IP(T_L = +25^\circ\text{C})\Delta T_L} \times 100$$

4.7.4 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](#). Electrical measurements (end-points) and delta measurements shall be in accordance with the applicable steps and footnotes of [table I](#), subgroup 2 herein.

4.7.4.1 Group E inspection, table E- IX of [MIL-PRF-19500](#).

Inspections	MIL-STD-750		Sample plan
	Method	Condition	
<u>Subgroup 1</u>  Temperature cycling (air to air)	1051	500 cycles.	45 devices, c = 0
<u>Subgroup 2</u>  Intermittent operating life	1037	6,000 cycles (see <a href="#">4.3.2</a> ) $t_{on} = t_{off} = 30$ seconds minimum.	45 devices, c = 0
<u>Subgroup 3</u>  <u>Subgroup 4</u>	2101	Cross section; scribe and break. Separate samples to be used for each test.	3 devices, c = 0
<u>Subgroup 6</u>  ESD	1020	See table E-IX of <a href="#">MIL-PRF-19500</a> , subgroup 4.  As applicable.	c = 0

\* TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit <u>2/</u>		Unit	
	Method	Conditions		Min	Max		
<u>Subgroup 1</u> Visual and mechanical examination	2071						
<u>Subgroup 2</u> Regulator current		$V_S = 25 \text{ V dc}$ , $t = 90 \text{ s}$ or thermal equilibrium, 1N5283-1 through 1N5314-1	$I_{S1}$ <u>3/</u>	Column 3	Column 4	mA dc	
Limiting voltage		$t = \text{pulse measurement}$ , 10 ms max 1N7048-1 through 1N7055-1, $T_L = +30^\circ\text{C} \pm 3^\circ\text{C}$ (see <a href="#">figure 6</a> )					
Reverse voltage		$I_L = .8 I_{S1}$ (min) <u>3/</u> , column 3 of <a href="#">table II</a> (see <a href="#">figure 7</a> )	$V_L$		Column 7	V dc	
Thermal impedance	3101	$I_R = 200 \text{ mA}$	$V_R$		2.5	V dc	
		See <a href="#">4.3.3</a>					
		Axial and US	$Z_{\theta JX}$			25	$^\circ\text{C/W}$
		UB	$Z_{\theta JX}$			40	$^\circ\text{C/W}$
<u>Subgroup 3</u> Not applicable							
<u>Subgroup 4</u> Regulator impedance		$V_S = 25 \text{ V dc}$ ; (see <a href="#">figure 8</a> and <a href="#">4.7.1</a> )	$Z_S$	Column 5		$\text{M}\Omega$	
Knee impedance		$V_K = 6.0 \text{ V dc}$ , (see <a href="#">figure 9</a> and <a href="#">4.7.2</a> )	$Z_K$	Column 6		$\text{M}\Omega$	
<u>Subgroups 5 and 6</u> Not applicable							
<u>Subgroup 7</u> Regulator current		$V_S = \text{column 11 of table II}$ , $t = 90 \text{ s}$ or thermal equilibrium, 1N5283-1 through 1N5314-1	$I_{S2}$ <u>4/</u>		Column 10	mA dc	
		$t = \text{pulse measurement}$ , 10 ms max 1N7048-1 through 1N7055-1, $T_L = +30^\circ\text{C} \pm 3^\circ\text{C}$ (see <a href="#">figure 6</a> )					

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

2/ Column references are to [table II](#) herein.

3/ Symbol " $I_{P1}$ " may be used in place of " $I_{S1}$ ".

4/ Symbol " $I_{P2}$ " may be used in place of " $I_{S2}$ ".

TABLE II. Electrical characteristics. 1/

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8		Col 9		Col 10
Type (Electrical characteristics for "UR" "UB", and "-1" suffix devices are identical.)	$I_{S1}$ regulator current (mA) at $V_S = 25\text{ V}$ <u>2/</u>			$Z_S$ minimum regulator impedance at $V_S = 25\text{ V}$	$Z_k$ minimum knee impedance at $V_K = 6\text{ V}$	$V_L$ maximum limiting voltage at $I_L = 0.8 I_{S1}$ (min) <u>2/</u>	$\alpha_{IS}$ maximum regulator current TC at $V_S = 25\text{ V}$		$\alpha_{IS}$ maximum regulator current TC at $V_S = 25\text{ V}$		re curr $V_S$
							-55°C	+25°C	+25°C	+150°C	
	Nom	Min	Max	MΩ	MΩ	Volts	(%/°C)		(%/°C)		
1N5283-1	0.22	0.198	0.242	25.0	2.75	1.00	-0.20	1.15	-0.16	0.60	
1N5284-1	0.24	0.216	0.264	19.0	2.35	1.00	-0.20	1.05	-0.20	0.56	
1N5285-1	0.27	0.243	0.297	14.0	1.95	1.00	-0.30	0.95	-0.22	0.48	
1N5286-1	0.30	0.270	0.330	9.0	1.60	1.00	-0.35	0.85	-0.25	0.42	
1N5287-1	0.33	0.297	0.363	6.6	1.35	1.00	-0.40	0.75	-0.26	0.37	
1N5288-1	0.39	0.351	0.429	4.10	1.00	1.05	-0.50	0.62	-0.30	0.28	
1N5289-1	0.43	0.387	0.473	3.30	0.870	1.05	-0.52	0.55	-0.32	0.23	
1N5290-1	0.47	0.423	0.517	2.70	0.750	1.05	-0.55	0.50	-0.33	0.18	
1N5291-1	0.56	0.504	0.616	1.90	0.560	1.10	-0.60	0.35	-0.36	0.10	
1N5292-1	0.62	0.558	0.682	1.55	0.470	1.13	-0.62	0.25	-0.37	0.05	
1N5293-1	0.68	0.612	0.748	1.35	0.400	1.15	-0.65	0.20	-0.38	0.02	
1N5294-1	0.75	0.675	0.825	1.15	0.335	1.20	-0.70	0.15	-0.40	-0.03	
1N5295-1	0.82	0.738	0.902	1.00	0.290	1.25	-0.72	0.07	-0.41	-0.07	
1N5296-1	0.91	0.819	1.001	0.880	0.240	1.29	-0.76	0.0	-0.42	-0.10	
1N5297-1	1.00	0.900	1.100	0.800	0.205	1.35	-0.78	0.05	-0.44	-0.10	
1N5298-1	1.10	0.990	1.210	0.700	0.180	1.40	-0.80	-0.10	-0.46	-0.10	
1N5299-1	1.20	1.08	1.32	0.640	0.155	1.45	-0.83	-0.15	-0.47	-0.10	
1N5300-1	1.30	1.17	1.43	0.580	0.135	1.50	-0.85	-0.20	-0.48	-0.10	
1N5301-1	1.40	1.26	1.54	0.540	0.115	1.55	-0.88	-0.20	-0.49	-0.10	
1N5302-1	1.50	1.35	1.65	0.510	0.105	1.60	-0.90	-0.20	-0.50	-0.10	

TABLE II. Electrical characteristics - Continued. 1/

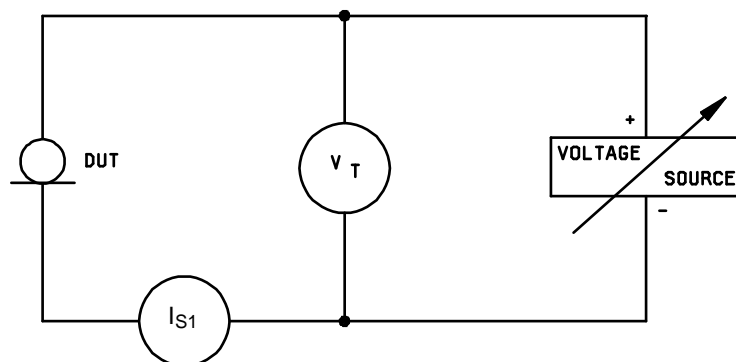
Col 1 Type (Electrical characteristics for "UR", "UB", and "-1" suffix devices are identical)	Col 2 $I_{S1}$ regulator current (mA) at $V_S = 25\text{ V}$ 2/			Col 3	Col 4	Col 5 $Z_S$ minimum regulator impedance at $V_S = 25\text{ V}$	Col 6 $Z_K$ minimum knee impedance at $V_K = 6\text{ V}$	Col 7 $V_L$ maximum limiting voltage at $I_L =$ $0.8 I_{S1}$ (min) 2/	Col 8 $\alpha_{IS}$ maximum regulator current $T_C$ at $V_S = 25\text{ V}$		Col 9 $\alpha_{IS}$ maximum regulator current $T_C$ at $V_S = 25\text{ V}$	
	-55°C		+25°C		+25°C		+150°C					
	(%/°C)		(%/°C)		(%/°C)		(%/°C)					
	Nom	Min	Max	MΩ	MΩ	Volts	Min	Max	Min	Max	Min	Max
1N5303-1	1.60	1.44	1.76	0.475	0.092	1.65	-0.90	-0.20	-0.50	-0.10		
1N5304-1	1.80	1.62	1.98	0.420	0.074	1.75	-0.92	-0.20	-0.51	-0.10		
1N5305-1	2.00	1.80	2.20	0.395	0.061	1.85	-0.95	-0.20	-0.52	-0.10		
1N5306-1	2.20	1.98	2.42	0.370	0.052	1.95	-0.96	-0.20	-0.52	-0.10		
1N5307-1	2.40	2.16	2.64	0.345	0.044	2.00	-0.98	-0.20	-0.53	-0.10		
1N5308-1	2.70	2.43	2.97	0.320	0.035	2.15	-1.0	-0.20	-0.53	-0.10		
1N5309-1	3.00	2.70	3.30	0.300	0.029	2.25	-1.01	-0.20	-0.53	-0.10		
1N5310-1	3.30	2.97	3.63	0.280	0.024	2.35	-1.02	-0.20	-0.54	-0.10		
1N5311-1	3.60	3.24	3.96	0.265	0.020	2.50	-1.03	-0.20	-0.54	-0.10		
1N5312-1	3.90	3.51	4.29	0.255	0.017	2.60	-1.04	-0.20	-0.55	-0.10		
1N5313-1	4.30	3.87	4.73	0.245	0.014	2.75	-1.05	-0.20	-0.55	-0.10		
1N5314-1	4.70	4.23	5.17	0.235	0.012	2.90	-1.06	-0.20	-0.55	-0.10		
1N7048-1	5.1	4.59	5.61	0.100	0.004	3.67	-1.06	-0.20	-0.55	-0.10		
1N7049-1	5.6	5.04	6.16	0.090	0.004	4.03	-1.06	-0.20	-0.55	-0.10		
1N7050-1	6.2	5.58	6.82	0.080	0.003	4.46	-1.06	-0.20	-0.55	-0.10		
1N7051-1	6.8	6.12	7.48	0.070	0.002	4.90	-1.06	-0.20	-0.55	-0.10		
1N7052-1	7.5	6.75	8.25	0.050	0.0015	5.40	-1.06	-0.20	-0.55	-0.10		
1N7053-1	8.2	7.38	9.02	0.030	0.0015	5.90	-1.06	-0.20	-0.55	-0.10		
1N7054-1	9.1	8.19	10.01	0.020	0.001	6.55	-1.06	-0.20	-0.55	-0.10		
1N7055-1	10.0	9.00	11.10	0.010	0.001	7.20	-1.06	-0.20	-0.55	-0.10		

1/ Electrical characteristics are for all package styles.

2/ Symbol " $I_{P1}$ " may be used in place of " $I_{S1}$ ".

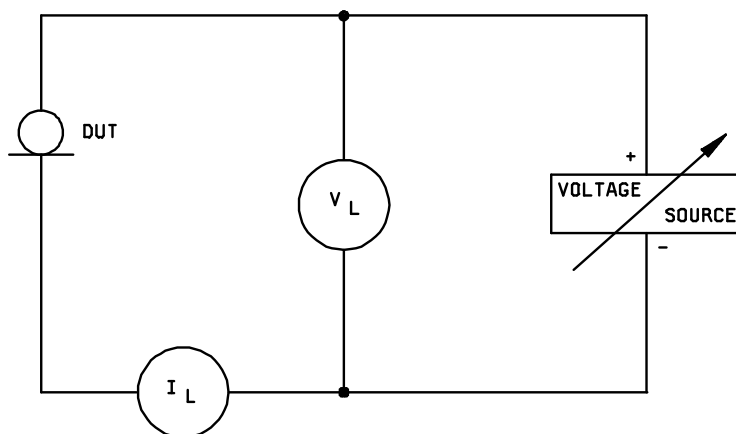
3/ Symbol " $I_{P2}$ " may be used in place of " $I_{S2}$ ".





## NOTES:

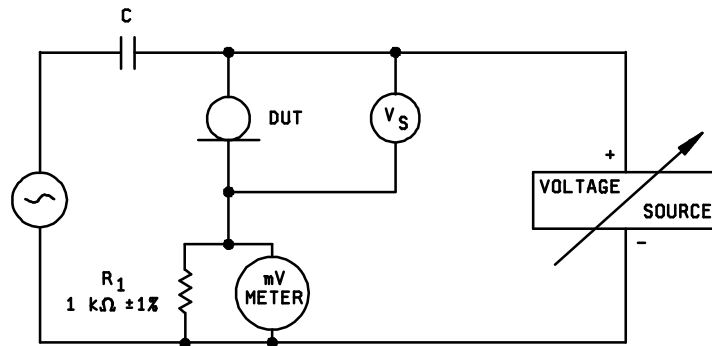
1. Adjust voltage source so that  $V_S = 25 \text{ V dc}$ .
2. Measure current  $I_{S1}$ . Symbol " $I_{P1}$ " may be used in place of " $I_{S1}$ ".
3. The device is acceptable if the current falls within the limits specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 6. Regulator current test circuit.

## NOTES:

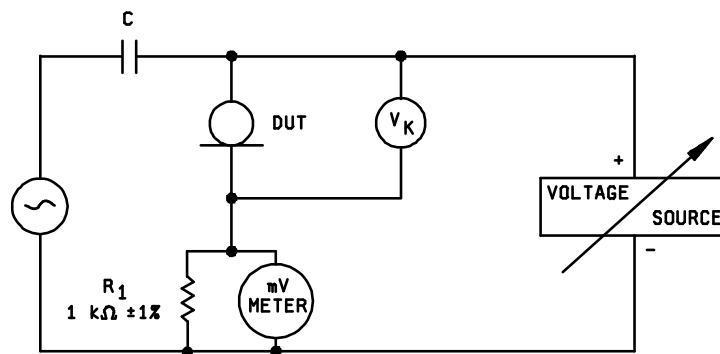
1. Adjust current source so that  $I_L = .8 I_{S1} \text{ (min)}$ . Symbol " $I_{P1}$ " may be used in place of " $I_{S1}$ ".
2. Measure voltage  $V_L$ .
3. The device is acceptable if the voltage is less than the limit specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 7. Limiting voltage test circuit.



## NOTES:

1. Adjust voltage source so that  $V_S = 25\text{ V dc}$ .
2. Apply an ac signal of  $2.5\text{ V rms}$  at  $90\text{ Hz}$  through an isolating capacitor C.
3. Measure the ac rms voltage.
4.  $Z_S = V_S \text{ mod } \times (R_1 \div V \text{ ac})$  where  $V_S \text{ mod}$  equals ac signal for note 2 and  $V \text{ ac}$  equals the voltage across  $R_1$ .
5. Device is acceptable if the regulator impedance meets the specified minimum limit.

FIGURE 8. Regulator impedance test circuit.

## NOTES:

1. Adjust voltage source so that  $V_K = 6.0\text{ V dc}$ .
2. Apply an ac signal of  $.6\text{ Vrms}$  at  $90\text{ Hz}$  through an isolating capacitor C.
3. Measure the ac rms voltage.
4.  $Z_K = V_K \text{ mod } \times (R_1 \div V \text{ ac})$  where  $V_K \text{ mod}$  equals ac signal for note 2 and  $V \text{ ac}$  equals the voltage across  $R_1$ . Device is acceptable if the knee impedance meets the specified minimum limit.

FIGURE 9. Knee impedance 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 devices 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 3.6).
- d. The complete PIN, see 1.5.

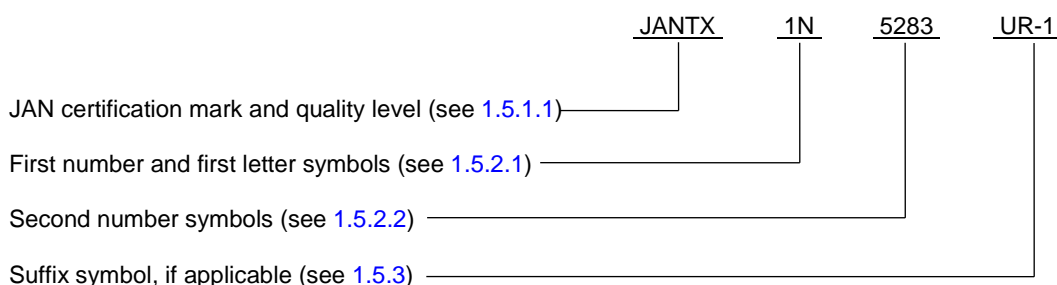
6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List (QML 19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DLA Land and Maritime, ATTN: VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail [vqe.chief@dla.mil](mailto: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 Substitutability of dash-one parts. Non-dash-one devices have been deleted from this specification. Dash-one devices are a direct substitute for non dash-one devices and are preferred.

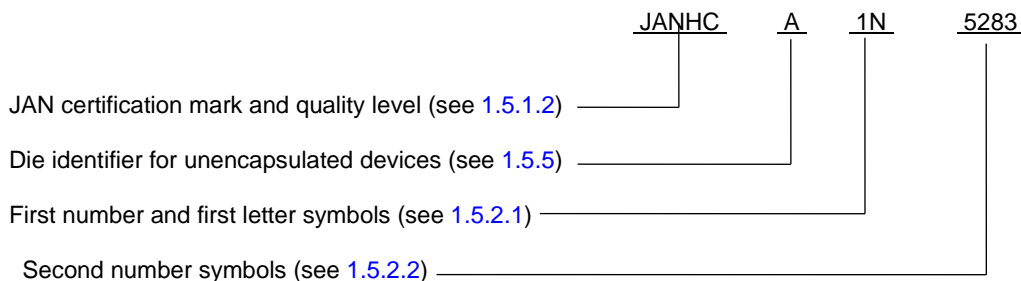
Superseded part number	Superseding part number	Superseded part number	Superseding part number	Superseded part number	Superseding part number
1N5283	1N5283-1	1N5294	1N5294-1	1N5305	1N5305-1
1N5283UR	1N5283UR-1	1N5294UR	1N5294UR-1	1N5305UR	1N5305UR-1
1N5284	1N5284-1	1N5295	1N5295-1	1N5306	1N5306-1
1N5284UR	1N5284UR-1	1N5295UR	1N5295UR-1	1N5306UR	1N5306UR-1
1N5285	1N5285-1	1N5296	1N5296-1	1N5307	1N5307-1
1N5285UR	1N5285UR-1	1N5296UR	1N5296UR-1	1N5307UR	1N5307UR-1
1N5286	1N5286-1	1N5297	1N5297-1	1N5308	1N5308-1
1N5286UR	1N5286UR-1	1N5297UR	1N5297UR-1	1N5308UR	1N5308UR-1
1N5287	1N5287-1	1N5298	1N5298-1	1N5309	1N5309-1
1N5287UR	1N5287UR-1	1N5298UR	1N5298UR-1	1N5309UR	1N5309UR-1
1N5288	1N5288-1	1N5299	1N5299-1	1N5310	1N5310-1
1N5288UR	1N5288UR-1	1N5299UR	1N5299UR-1	1N5310UR	1N5310UR-1
1N5289	1N5289-1	1N5300	1N5300-1	1N5311	1N5311-1
1N5289UR	1N5289UR-1	1N5300UR	1N5300UR-1	1N5311UR	1N5311UR-1
1N5290	1N5290-1	1N5301	1N5301-1	1N5312	1N5312-1
1N5290UR	1N5290UR-1	1N5301UR	1N5301UR-1	1N5312UR	1N5312UR-1
1N5291	1N5291-1	1N5302	1N5302-1	1N5313	1N5313-1
1N5291UR	1N5291UR-1	1N5302UR	1N5302UR-1	1N5313UR	1N5313UR-1
1N5292	1N5292-1	1N5303	1N5303-1	1N5314	1N5314-1
1N5292UR	1N5292UR-1	1N5303UR	1N5303UR-1	1N5314UR	1N5314UR-1
1N5293	1N5293-1	1N5304	1N5304-1		
1N5293UR	1N5293UR-1	1N5304UR	1N5304UR-1		

\* 6.5 PIN construction example.

\* 6.5.1 Encapsulated devices The PINs for encapsulated devices are constructed using the following form.



\* 6.5.2 Un-encapsulated devices. The PINs for un-encapsulated devices are constructed using the following form.



## \* 6.6 List of PINs.

\* 6.6.1 List of PINs for encapsulated devices. The following is a list of possible PINs for encapsulated devices available on this specification sheet.

PINs for devices of the base quality level (1)			PINs for devices of the "TX" quality level (1)		
JAN1N5283-1	JAN1N5283UR-1	JAN1N5283UB	JANTX1N5283-1	JANTX1N5283UR-1	JANTX1N5283UB
JAN1N5284-1	JAN1N5284UR-1	JAN1N5284UB	JANTX1N5284-1	JANTX1N5284UR-1	JANTX1N5284UB
JAN1N5285-1	JAN1N5285UR-1	JAN1N5285UB	JANTX1N5285-1	JANTX1N5285UR-1	JANTX1N5285UB
JAN1N5286-1	JAN1N5286UR-1	JAN1N5286UB	JANTX1N5286-1	JANTX1N5286UR-1	JANTX1N5286UB
JAN1N5287-1	JAN1N5287UR-1	JAN1N5287UB	JANTX1N5287-1	JANTX1N5287UR-1	JANTX1N5287UB
JAN1N5288-1	JAN1N5288UR-1	JAN1N5288UB	JANTX1N5288-1	JANTX1N5288UR-1	JANTX1N5288UB
JAN1N5289-1	JAN1N5289UR-1	JAN1N5289UB	JANTX1N5289-1	JANTX1N5289UR-1	JANTX1N5289UB
JAN1N5290-1	JAN1N5290UR-1	JAN1N5290UB	JANTX1N5290-1	JANTX1N5290UR-1	JANTX1N5290UB
JAN1N5291-1	JAN1N5291UR-1	JAN1N5291UB	JANTX1N5291-1	JANTX1N5291UR-1	JANTX1N5291UB
JAN1N5292-1	JAN1N5292UR-1	JAN1N5292UB	JANTX1N5292-1	JANTX1N5292UR-1	JANTX1N5292UB
JAN1N5293-1	JAN1N5293UR-1	JAN1N5293UB	JANTX1N5293-1	JANTX1N5293UR-1	JANTX1N5293UB
JAN1N5294-1	JAN1N5294UR-1	JAN1N5294UB	JANTX1N5294-1	JANTX1N5294UR-1	JANTX1N5294UB
JAN1N5295-1	JAN1N5295UR-1	JAN1N5295UB	JANTX1N5295-1	JANTX1N5295UR-1	JANTX1N5295UB
JAN1N5296-1	JAN1N5296UR-1	JAN1N5296UB	JANTX1N5296-1	JANTX1N5296UR-1	JANTX1N5296UB
JAN1N5297-1	JAN1N5297UR-1	JAN1N5297UB	JANTX1N5297-1	JANTX1N5297UR-1	JANTX1N5297UB
JAN1N5298-1	JAN1N5298UR-1	JAN1N5298UB	JANTX1N5298-1	JANTX1N5298UR-1	JANTX1N5298UB
JAN1N5299-1	JAN1N5299UR-1	JAN1N5299UB	JANTX1N5299-1	JANTX1N5299UR-1	JANTX1N5299UB
JAN1N5300-1	JAN1N5300UR-1	JAN1N5300UB	JANTX1N5300-1	JANTX1N5300UR-1	JANTX1N5300UB
JAN1N5301-1	JAN1N5301UR-1	JAN1N5301UB	JANTX1N5301-1	JANTX1N5301UR-1	JANTX1N5301UB
JAN1N5302-1	JAN1N5302UR-1	JAN1N5302UB	JANTX1N5302-1	JANTX1N5302UR-1	JANTX1N5302UB
JAN1N5303-1	JAN1N5303UR-1	JAN1N5303UB	JANTX1N5303-1	JANTX1N5303UR-1	JANTX1N5303UB
JAN1N5304-1	JAN1N5304UR-1	JAN1N5304UB	JANTX1N5304-1	JANTX1N5304UR-1	JANTX1N5304UB
JAN1N5305-1	JAN1N5305UR-1	JAN1N5305UB	JANTX1N5305-1	JANTX1N5305UR-1	JANTX1N5305UB
JAN1N5306-1	JAN1N5306UR-1	JAN1N5306UB	JANTX1N5306-1	JANTX1N5306UR-1	JANTX1N5306UB
JAN1N5307-1	JAN1N5307UR-1	JAN1N5307UB	JANTX1N5307-1	JANTX1N5307UR-1	JANTX1N5307UB
JAN1N5308-1	JAN1N5308UR-1	JAN1N5308UB	JANTX1N5308-1	JANTX1N5308UR-1	JANTX1N5308UB
JAN1N5309-1	JAN1N5309UR-1	JAN1N5309UB	JANTX1N5309-1	JANTX1N5309UR-1	JANTX1N5309UB
JAN1N5310-1	JAN1N5310UR-1	JAN1N5310UB	JANTX1N5310-1	JANTX1N5310UR-1	JANTX1N5310UB
JAN1N5311-1	JAN1N5311UR-1	JAN1N5311UB	JANTX1N5311-1	JANTX1N5311UR-1	JANTX1N5311UB
JAN1N5312-1	JAN1N5312UR-1	JAN1N5312UB	JANTX1N5312-1	JANTX1N5312UR-1	JANTX1N5312UB
JAN1N5313-1	JAN1N5313UR-1	JAN1N5313UB	JANTX1N5313-1	JANTX1N5313UR-1	JANTX1N5313UB
JAN1N5314-1	JAN1N5314UR-1	JAN1N5314UB	JANTX1N5314-1	JANTX1N5314UR-1	JANTX1N5314UB
JAN1N7048-1	JAN1N7048UR-1	JAN1N7048UB	JANTX1N7048-1	JANTX1N7048UR-1	JANTX1N7048UB
JAN1N7049-1	JAN1N7049UR-1	JAN1N7049UB	JANTX1N7049-1	JANTX1N7049UR-1	JANTX1N7049UB
JAN1N7050-1	JAN1N7050UR-1	JAN1N7050UB	JANTX1N7050-1	JANTX1N7050UR-1	JANTX1N7050UB
JAN1N7051-1	JAN1N7051UR-1	JAN1N7051UB	JANTX1N7051-1	JANTX1N7051UR-1	JANTX1N7051UB
JAN1N7052-1	JAN1N7052UR-1	JAN1N7052UB	JANTX1N7052-1	JANTX1N7052UR-1	JANTX1N7052UB
JAN1N7053-1	JAN1N7053UR-1	JAN1N7053UB	JANTX1N7053-1	JANTX1N7053UR-1	JANTX1N7053UB
JAN1N7054-1	JAN1N7054UR-1	JAN1N7054UB	JANTX1N7054-1	JANTX1N7054UR-1	JANTX1N7054UB
JAN1N7055-1	JAN1N7055UR-1	JAN1N7055UB	JANTX1N7055-1	JANTX1N7055UR-1	JANTX1N7055UB

## \* 6.6.1 List of PINs for encapsulated devices. Continued.

PINs for devices of the "TXV" quality level (1)			PINs for devices of the "S" quality level (1)		
JANTXV1N5283-1	JANTXV1N5283UR-1	JANTXV1N5283UB	JANS1N5283-1	JANS1N5283UR-1	JANS1N5283UB
JANTXV1N5284-1	JANTXV1N5284UR-1	JANTXV1N5284UB	JANS1N5284-1	JANS1N5284UR-1	JANS1N5284UB
JANTXV1N5285-1	JANTXV1N5285UR-1	JANTXV1N5285UB	JANS1N5285-1	JANS1N5285UR-1	JANS1N5285UB
JANTXV1N5286-1	JANTXV1N5286UR-1	JANTXV1N5286UB	JANS1N5286-1	JANS1N5286UR-1	JANS1N5286UB
JANTXV1N5287-1	JANTXV1N5287UR-1	JANTXV1N5287UB	JANS1N5287-1	JANS1N5287UR-1	JANS1N5287UB
JANTXV1N5288-1	JANTXV1N5288UR-1	JANTXV1N5288UB	JANS1N5288-1	JANS1N5288UR-1	JANS1N5288UB
JANTXV1N5289-1	JANTXV1N5289UR-1	JANTXV1N5289UB	JANS1N5289-1	JANS1N5289UR-1	JANS1N5289UB
JANTXV1N5290-1	JANTXV1N5290UR-1	JANTXV1N5290UB	JANS1N5290-1	JANS1N5290UR-1	JANS1N5290UB
JANTXV1N5291-1	JANTXV1N5291UR-1	JANTXV1N5291UB	JANS1N5291-1	JANS1N5291UR-1	JANS1N5291UB
JANTXV1N5292-1	JANTXV1N5292UR-1	JANTXV1N5292UB	JANS1N5292-1	JANS1N5292UR-1	JANS1N5292UB
JANTXV1N5293-1	JANTXV1N5293UR-1	JANTXV1N5293UB	JANS1N5293-1	JANS1N5293UR-1	JANS1N5293UB
JANTXV1N5294-1	JANTXV1N5294UR-1	JANTXV1N5294UB	JANS1N5294-1	JANS1N5294UR-1	JANS1N5294UB
JANTXV1N5295-1	JANTXV1N5295UR-1	JANTXV1N5295UB	JANS1N5295-1	JANS1N5295UR-1	JANS1N5295UB
JANTXV1N5296-1	JANTXV1N5296UR-1	JANTXV1N5296UB	JANS1N5296-1	JANS1N5296UR-1	JANS1N5296UB
JANTXV1N5297-1	JANTXV1N5297UR-1	JANTXV1N5297UB	JANS1N5297-1	JANS1N5297UR-1	JANS1N5297UB
JANTXV1N5298-1	JANTXV1N5298UR-1	JANTXV1N5298UB	JANS1N5298-1	JANS1N5298UR-1	JANS1N5298UB
JANTXV1N5299-1	JANTXV1N5299UR-1	JANTXV1N5299UB	JANS1N5299-1	JANS1N5299UR-1	JANS1N5299UB
JANTXV1N5300-1	JANTXV1N5300UR-1	JANTXV1N5300UB	JANS1N5300-1	JANS1N5300UR-1	JANS1N5300UB
JANTXV1N5301-1	JANTXV1N5301UR-1	JANTXV1N5301UB	JANS1N5301-1	JANS1N5301UR-1	JANS1N5301UB
JANTXV1N5302-1	JANTXV1N5302UR-1	JANTXV1N5302UB	JANS1N5302-1	JANS1N5302UR-1	JANS1N5302UB
JANTXV1N5303-1	JANTXV1N5303UR-1	JANTXV1N5303UB	JANS1N5303-1	JANS1N5303UR-1	JANS1N5303UB
JANTXV1N5304-1	JANTXV1N5304UR-1	JANTXV1N5304UB	JANS1N5304-1	JANS1N5304UR-1	JANS1N5304UB
JANTXV1N5305-1	JANTXV1N5305UR-1	JANTXV1N5305UB	JANS1N5305-1	JANS1N5305UR-1	JANS1N5305UB
JANTXV1N5306-1	JANTXV1N5306UR-1	JANTXV1N5306UB	JANS1N5306-1	JANS1N5306UR-1	JANS1N5306UB
JANTXV1N5307-1	JANTXV1N5307UR-1	JANTXV1N5307UB	JANS1N5307-1	JANS1N5307UR-1	JANS1N5307UB
JANTXV1N5308-1	JANTXV1N5308UR-1	JANTXV1N5308UB	JANS1N5308-1	JANS1N5308UR-1	JANS1N5308UB
JANTXV1N5309-1	JANTXV1N5309UR-1	JANTXV1N5309UB	JANS1N5309-1	JANS1N5309UR-1	JANS1N5309UB
JANTXV1N5310-1	JANTXV1N5310UR-1	JANTXV1N5310UB	JANS1N5310-1	JANS1N5310UR-1	JANS1N5310UB
JANTXV1N5311-1	JANTXV1N5311UR-1	JANTXV1N5311UB	JANS1N5311-1	JANS1N5311UR-1	JANS1N5311UB
JANTXV1N5312-1	JANTXV1N5312UR-1	JANTXV1N5312UB	JANS1N5312-1	JANS1N5312UR-1	JANS1N5312UB
JANTXV1N5313-1	JANTXV1N5313UR-1	JANTXV1N5313UB	JANS1N5313-1	JANS1N5313UR-1	JANS1N5313UB
JANTXV1N5314-1	JANTXV1N5314UR-1	JANTXV1N5314UB	JANS1N5314-1	JANS1N5314UR-1	JANS1N5314UB
JANTXV1N7048-1	JANTXV1N7048UR-1	JANTXV1N7048UB	JANS1N7048-1	JANS1N7048UR-1	JANS1N7048UB
JANTXV1N7049-1	JANTXV1N7049UR-1	JANTXV1N7049UB	JANS1N7049-1	JANS1N7049UR-1	JANS1N7049UB
JANTXV1N7050-1	JANTXV1N7050UR-1	JANTXV1N7050UB	JANS1N7050-1	JANS1N7050UR-1	JANS1N7050UB
JANTXV1N7051-1	JANTXV1N7051UR-1	JANTXV1N7051UB	JANS1N7051-1	JANS1N7051UR-1	JANS1N7051UB
JANTXV1N7052-1	JANTXV1N7052UR-1	JANTXV1N7052UB	JANS1N7052-1	JANS1N7052UR-1	JANS1N7052UB
JANTXV1N7053-1	JANTXV1N7053UR-1	JANTXV1N7053UB	JANS1N7053-1	JANS1N7053UR-1	JANS1N7053UB
JANTXV1N7054-1	JANTXV1N7054UR-1	JANTXV1N7054UB	JANS1N7054-1	JANS1N7054UR-1	JANS1N7054UB
JANTXV1N7055-1	JANTXV1N7055UR-1	JANTXV1N7055UB	JANS1N7055-1	JANS1N7055UR-1	JANS1N7055UB

(1) For UB suffix devices, UBCA, UBCC, and UBDD suffix devices are also available.

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\* 6.6.2 List of PINs for unencapsulated devices. The following is a list of possible PINs available on this specification sheet. The qualified die suppliers with the applicable letter version (e.g., JANHCA1N5283) will be identified on the QML.

JANC ordering information		
PIN	Manufacturer CAGE	
	43611 (1)	52GC4 (1)
1N5283-1	JANHCA1N5283	JANHCB1N5283
1N5284-1	JANHCA1N5284	JANHCB1N5284
1N5285-1	JANHCA1N5285	JANHCB1N5285
1N5286-1	JANHCA1N5286	JANHCB1N5286
1N5287-1	JANHCA1N5287	JANHCB1N5287
1N5288-1	JANHCA1N5288	JANHCB1N5288
1N5289-1	JANHCA1N5289	JANHCB1N5289
1N5290-1	JANHCA1N5290	JANHCB1N5290
1N5291-1	JANHCA1N5291	JANHCB1N5291
1N5292-1	JANHCA1N5292	JANHCB1N5292
1N5293-1	JANHCA1N5293	JANHCB1N5293
1N5294-1	JANHCA1N5294	JANHCB1N5294
1N5295-1	JANHCA1N5295	JANHCB1N5295
1N5296-1	JANHCA1N5296	JANHCB1N5296
1N5297-1	JANHCA1N5297	JANHCB1N5297
1N5298-1	JANHCA1N5298	JANHCB1N5298
1N5299-1	JANHCA1N5299	JANHCB1N5299
1N5300-1	JANHCA1N5300	JANHCB1N5300
1N5301-1	JANHCA1N5301	JANHCB1N5301
1N5302-1	JANHCA1N5302	JANHCB1N5302
1N5303-1	JANHCA1N5303	JANHCB1N5303
1N5304-1	JANHCA1N5304	JANHCB1N5304
1N5305-1	JANHCA1N5305	JANHCB1N5305
1N5306-1	JANHCA1N5306	JANHCB1N5306
1N5307-1	JANHCA1N5307	JANHCB1N5307
1N5308-1	JANHCA1N5308	JANHCB1N5308
1N5309-1	JANHCA1N5309	JANHCB1N5309
1N5310-1	JANHCA1N5310	JANHCB1N5310
1N5311-1	JANHCA1N5311	JANHCB1N5311
1N5312-1	JANHCA1N5312	JANHCB1N5312
1N5313-1	JANHCA1N5313	JANHCB1N5313
1N5314-1	JANHCA1N5314	JANHCB1N5314
1N7048-1	JANHCA1N7048	JANHCB1N7048
1N7049-1	JANHCA1N7049	JANHCB1N7049
1N7050-1	JANHCA1N7050	JANHCB1N7050
1N7051-1	JANHCA1N7051	JANHCB1N7051
1N7052-1	JANHCA1N7052	JANHCB1N7052
1N7053-1	JANHCA1N7053	JANHCB1N7053
1N7054-1	JANHCA1N7054	JANHCB1N7054
1N7055-1	JANHCA1N7055	JANHCB1N7055

(1) For JANKC level, replace "JANHC" with "JANKC".

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:

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Navy - EC  
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