The documentation and process conversion measures necessary to comply with this revision shall be completed by 22 November 1994

INCH-POUND

MIL-S-19500/463D
22 November 1993
SUPERSEDING
MIL-S-19500/463D
20 August 1990

MILITARY SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE, SILICON, CURRENT REGULATOR,
TYPES 1N5283-1 THROUGH 1N5314-1, AND 1N5283UR-1 THROUGH 1N5314UR-1
JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for 100 volt, silicon, current regulator diodes. Four levels of product assurance are provided for each encapsulated device type as specified in MIL-S-19500. Two level of product assurance are provided each unencapsulated device type.

1.2 Physical dimensions. See 3.3 (DO-7 and DO-213AB).

1.3 Maximum ratings. Maximum ratings are as shown in table II herein and as follows:

P_T = 500 mW (DO-7) at T_L = +50°C, L = .375 (9.53 mm); both ends of case or diode body to heat sink at L = .375 (9.53 mm). (Derate to 0 at +175°C).

P_T = 500 mW (DO-213AB) at T_{EC} = +125°C. (Derate to 0 at +175°C).

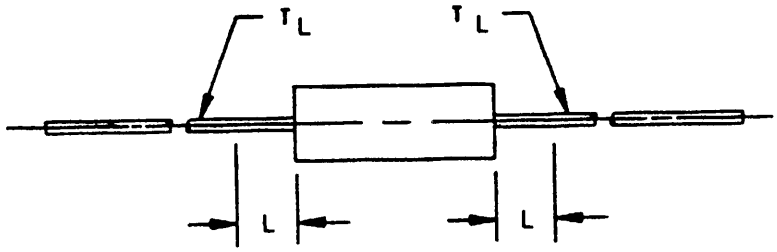
-65°C ≤ T_{op} ≤ +175°C; -65°C ≤ T_{STG} ≤ +175°C.

1.4 Primary electrical characteristics. Primary electrical characteristic are as shown in column 2 of table II herein (nominally 0.22 mA dc ≤ I_p ≤ 4.70 mA dc).

$R_{\theta JL}$ = 250°C/W (maximum) at L = .375 inch (9.53 mm) (DO-7), (DO-14)

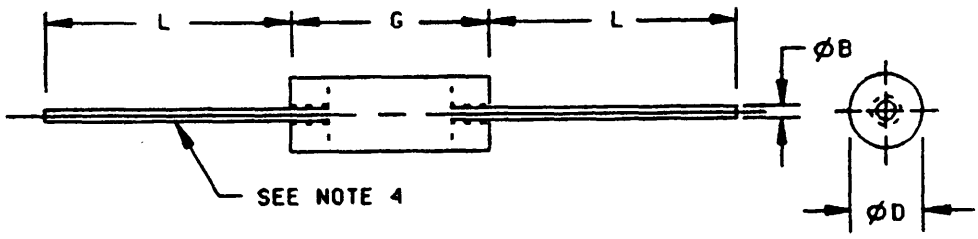
$R_{\theta JEC}$ = 100°C/W (maximum) junction to endcaps (DO-213AB).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Rome Laboratory ATTN: RL/ERSS 525 Brook Road Griffiss AFB, NY 13441-4505, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.



NOTE: See 3.2.1 and 3.2.2.

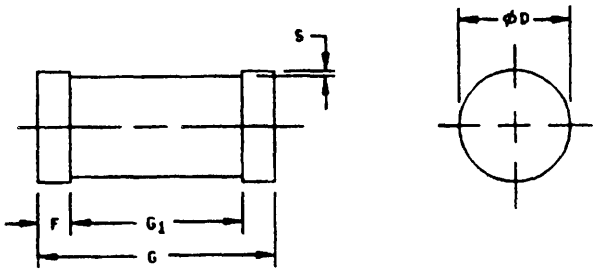
FIGURE 1. Lead thermal path length, L.



Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
ØB	.018	.022	0.46	0.56	3, 4
ØD	.085	.107	2.16	2.72	5
G	.230	.300	5.84	7.62	
L	1.000	1.300	25.4	38.1	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The specified lead diameter applies in the zone between .050 (1.27 mm) and 1.00 (25.4 mm) from the diode body. Outside of this zone the lead diameter is not controlled.
4. Both leads shall be within the specified dimension.
5. The minimum body diameter shall be maintained over 0.15 (0.38 mm) inch of body length.

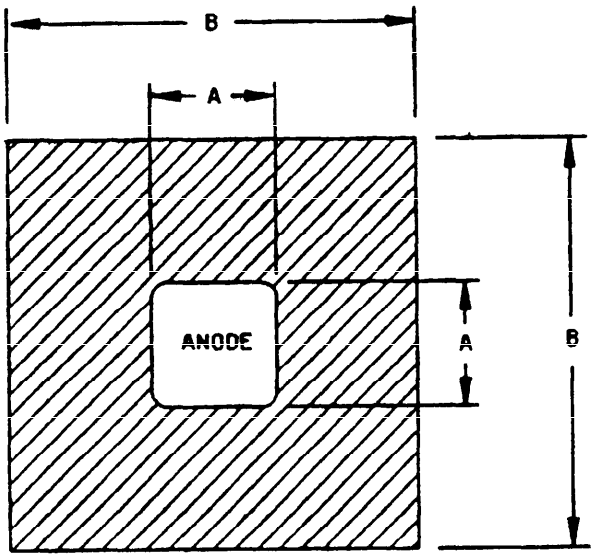
FIGURE 2. Physical dimensions (1N5283-1 through 1N5314-1).



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
ϕD	.094	.105	2.39	2.67
F	.016	.022	0.41	0.55
G	.189	.205	4.80	5.21
G_1	.159 ref		4.11 ref	
S	.001 min		0.03 min	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 3. Physical dimensions (1N5283UR-1 through 1N5314UR-1).



Design data

Metalization:
Top: (Anode) ..... Al
Back: (Cathode) ..... Au
Al thickness ..... 25000 Å Min.
Gold thickness ..... 4000 Å Min.
Chip thickness ..... .010 ±.002 inch.

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.012	.014	.305	.355
B	.026	.030	.660	.762

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 4. Physical dimensions, JANHCA and JANKCA die.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

MILITARY

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

STANDARD

MILITARY

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

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Associated detail specification. The individual item requirements shall be in accordance with MIL-S-19500, and as specified herein.

3.2 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions shall be as specified in MIL-S-19500.

3.2.1 L - Lead thermal path length (see figure 1). 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.)

3.2.2 T_L - Lead temperature (see figure 1). 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 will be $T_{end-cap}$ for "UR" devices.

3.2.3 I_p - Pinch-off current. Pinch-off current is defined as the regular current at specified test voltage, V_S.

3.2.4 V_{POV} - Peak operating voltage. Peak operating voltage is the maximum voltage that shall be applied to the device.

3.2.5 P_D - Steady-state power dissipation.

3.3 Design, construction, and physical dimensions. Design, construction, and physical dimensions shall be as specified in MIL-S-19500, and figure 2 (DO-7, DO-14), figure 3 (DO-213AB), and figure 4 (JANHC and JANKC).

3.3.1 Lead finish. Lead finish shall be solderable in accordance with MIL-STD-750 and MIL-S-19500, MIL-STD-750, and herein.

3.3.2 Dash one construction. These devices shall be of double plug construction utilizing high temperature metallurgical bonding between both sides of the silicon die and terminal pins.

3.3.3 JANS construction. Construction shall be dash one, category I or II metallurgical bond in accordance with MIL-S-19500, appendix A, 30.14.2 and 30.14.4.

3.4 Marking. Marking shall be in accordance with MIL-S-19500.

3.4.1 Marking of UR version devices. For UR version devices only, all marking (except polarity) may be omitted from the body, but shall be retained on the initial container.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2.1 Group E inspection. Qualification inspection shall be in accordance with MIL-S-19500 and 4.4.1 herein.

4.2.2 JANHC and JANKC devices. Qualification for shall be in accordance with appendix H of MIL-S-19500.

4.3 Screening (JAN, JANTXV, JANTX, and JANS levels only). Screening shall be in accordance with MIL-S-19500 (table II), 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 II of MIL-S-19500)	Measurement		
	JANS	JANTX and JANTXV levels	JAN Level
3a	Temperature cycling	Temperature cycling	Temperature cycling (in accordance with MIL-S-19500 JANTX level)
3c 1/	Thermal impedance (see 4.5.4)	Thermal impedance (see 4.5.4)	Thermal impedance (see 4.5.4)
9	I_{P1}	Not applicable	Not applicable
10	V_{POV} = 100 V dc at T_A = +25°C	V_{POV} = 100 V dc at T_A = +25°C	
11	I_{P1} ; ΔI_{P1} ≤ 5% of initial value	I_{P1}	
12	See 4.3.2	See 4.3.2	
13 2/	Subgroup 2 of table I herein; ΔI_{P1} ≤ 5% of initial value.	Subgroup 2 of table I herein; ΔI_{P1} ≤ 5% of initial value.	

1/ Thermal impedance may be performed any time after sealing provided temperature cycling is performed in accordance with MIL-S-19500, screen 3 prior to this thermal test.

4.3.2 Screening (JANHC or JANKC). Screening of die shall be in accordance with MIL-S-19500, appendix H. As a minimum, die shall be 100-percent probed in accordance with group A, subgroup 2.

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 MIL-STD-750, method 1038, test condition B, TEC = +75°C to +125°C for surface mount devices. T_A = Room ambient as defined in the general requirements of MIL-STD-750, 4.5.

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with MIL-S-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 IIa (JANS) and IIb (JAN, JANTX and JANTXV) of MIL-S-19500, and as follows. Electrical measurements (endpoints) and delta requirements shall be in accordance group A, subgroup 2 herein.

4.4.2.1 Group B inspection, table IVa (JANS) of MIL-S-19500.

Subgroup	Method	Condition
B4	1037	Test conditions in accordance with 4.3.2; $t_{on} = t_{off}$ = 3 minutes minimum for 2,000 cycles.
B5	1027	I_R = 200 mA dc, T_A = +125°C or adjusted as required to give an average lot T_J = +175°C. Marking legibility requirements shall not apply.
B6	3101 or 4081	$R_{\theta JL}$ = 250°C/W .375 inch (9.52 mm) lead length (non surface mount). $R_{\theta JEC}$ = 100°C/W (surface mount).

4.4.2.2 Group B inspection, table IVb (JAN, JANTX, and JANTXV) of MIL-S-19500.

Subgroup	Method	Condition
B3	1027	V_{POV} = 100 V dc; T_A = +25°C; L = 3/8 inch (non surface mount), L = 0" for surface mount.
B4 and B5	----	Not applicable.
B6	1052	T_A = +175°C.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table V of MIL-S-19500, and as follows. Electrical measurements (end-points) and delta requirements shall be in accordance with table I, group A, subgroup 2 herein.

Subgroup	Method	Condition
C2	2036	(Not applicable to surface mount devices); Lead fatigue conditions: Test condition E; .062 inch (1.57 mm) lead restriction from case. Tension conditions: Test condition A; 4 pounds, 15 seconds.
C6	1026	V_{POV} = 100 V dc; T_A = +25°C; L = 3/8 inch (non surface mount), L = 0" for surface mount.
C7	----	See 4.6

4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-S-19500. Electrical measurements (end points) and delta requirements shall be in accordance with the applicable steps and footnotes of table I, group A, subgroup 2 herein.

4.4.4.1 Group E inspection, table VII of MIL-S-19500.

Subgroup	Method	Condition	Sampling plan
E1	1051	500 cycles	45 devices, c = 0
E2	1037	6,000 cycles(see 4.3.1)	45 devices, c = 0
E3	----	Not Applicable	
E4	3101 or 4081	$R_{\theta JEC}$ = 100°C/W (maximum) at zero lead length. +25°C ≤ T_R ≤ +35°C, (see 4.5.5), at T_H ≥ 30 s. (surface mount only)	22 devices, c = 0
E4	3101 or 4081	$R_{\theta JL}$ = 250°C/W (maximum) at .375 inches lead length +25°C ≤ T_R ≤ +35°C (see 4.5.5), at T_H ≥ 30 s in still air (non surface mount only)	22 devices, c = 0

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

4.5.1 Knee ac impedance (z_k) at test voltage V_K. To test for z_k , a 90 Hz signal V_K (mod) with rms value equal to 10 percent of test voltage, V_K , is superimposed on the test voltage (see figure 6).

4.5.2 Regulator impedance (z_s) at test voltage V_S. To test for z_s , a 90 Hz signal V_S (mod) with rms value equal to 10 percent of test voltage, V_S , is superimposed on the test voltage (see figure 7).

4.5.3 Temperature coefficient of regulator current (αI_s). Temperature coefficient of regulator current shall be calculated as follows:

$$\alpha I_s = \frac{I_P (T_{L2}) - I_P (T_{L1})}{I_P (T_L = +25°C)} \times \frac{100}{\Delta T_L}$$

4.5.4 Thermal impedance $Z_{\theta JX}$ measurements for screening. The $Z_{\theta JX}$ measurements shall be performed in accordance with MIL-STD-750, method 3101 (V_R to be used in lieu of V_F). The maximum limit (not to exceed the group A, subgroup 2 limit) for $Z_{\theta JX}$ in screening (table II of MIL-S-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_H 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 µs maximum.

4.5.4.1 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). Twenty-two serialized devices shall be sent to the qualifying activity for test correlation.

4.5.5 Thermal resistance. Thermal resistance measurement shall be in accordance with MIL-STD-750, method 3101. 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 $R_{\theta JL}$ (max) = 250°C/W or $R_{\theta JEC}$ = 100°C/W. The following conditions shall apply:

a. I_M - 1 mA to 10 mA
b. I_H - 200 mA to 400 mA
c. t_H - 30 seconds minimum
d. t_{MD} - 70 µs maximum

LS = Lead spacing = 3/8 inch for non surface mount and 0 inch for surface mount (see figure 5 below):

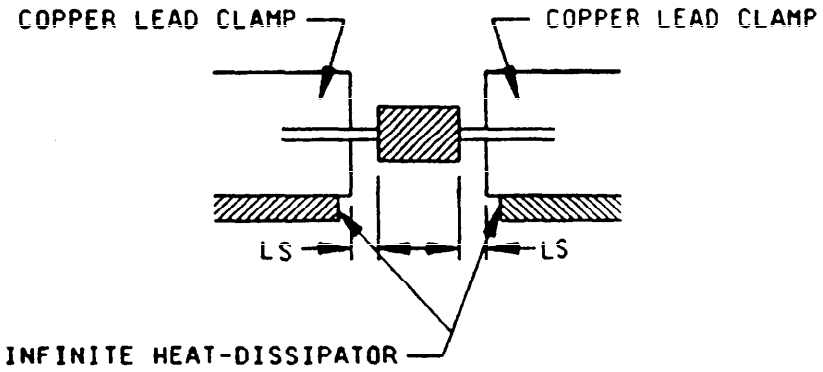


FIGURE 5. Mounting conditions.

4.5.5.1 For initial qualifications and requalifications. Read and record data in accordance with group E 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 V dc, T_{L1} = -55°C, T_{L2} = +25°C, L = 3/8 inch (nonsurface mount), L = 0" (surface mount) (see 3.2.2 and 4.5.3) with the maximum limit per column 8 of table II.

Test 2: V_S = 25 V dc, T_{L1} = +25°C, T_{L2} = +150°C, L = 3/8 inch (nonsurface mount), L = 0" (surface mount) (see 3.2.2 and 4.5.3) with the maximum limit per column 9 of table II.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	2/ Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Regulator current (see 4.5.2)		V_S = 25 V dc, t = 90 s or thermal equilibrium, T_L = +30°C ±3°C (see figure 6)	I_{P1}	Column 3	Column 4	mA dc
Limiting voltage		I_L = 0.8 I_D (min) col. 3 of table II (see figure 7)	V_L		Column 7	V dc
Regulator current		V_S = 100 V dc (pulsed)	I_{P2}		Column 10	mA dc
Reverse voltage		I_R = 200 mA	V_R		2.5	V dc
Thermal impedance	3101	See 4.5.4	$Z_{\theta JX}$		25	°C/W
Subgroup 3						
Not applicable						
Subgroup 4						
Regulator impedance		V_S = 25 V dc; (see figure 8 and 4.5.2)	Z_S	Column 5		MΩ
Knee impedance		V_K = 6.0 V dc (see figure 9 and 4.5.1)	Z_K	Column 6		MΩ
Subgroups 5, 6, and 7						
Not applicable						

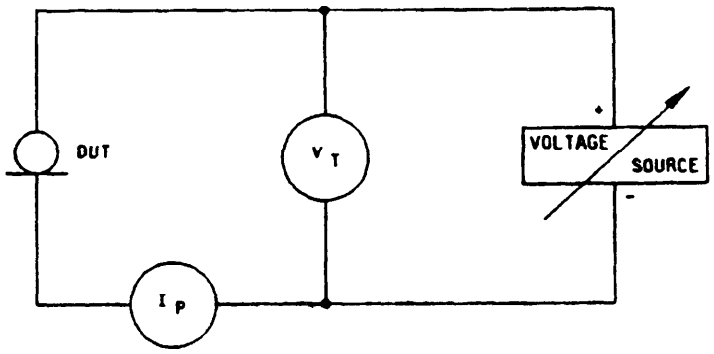
1/ For sampling plan, see MIL-S-19500
2/ Column references are to table II herein.

shipping containers or electrolyte shall in accordance with

TABLE II. Electrical characteristics.

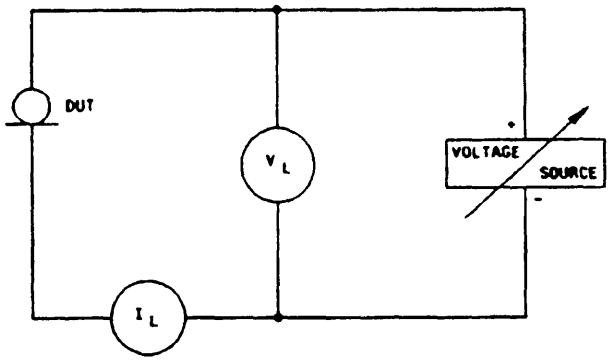
Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8		Col 9		Col 10
Type 1/	I_{P1} Regulator current (mA) at V_S = 25 V			Z_s Minimum regulator impedance at V_S = 25 V	Z_k minimum knee impedance at V_K = 6 V	V_L maximum limiting voltage at I_L = 0.8 I_P (min) Volts	αI_S Maximum regulator current T_C at V_S = 25 V -55°C +25°C (%/°C)		αI_S Maximum regulator current T_C at V_S = 25 V +25°C +150°C (%/°C)		I_{P2} Regulator current (mA) at V_S = 100 V
	Nom	Min	Max	MΩ	MΩ		Min	Max	Min	Max	Max
1N5283-1	0.22	0.198	0.242	25.0	2.75	1.00	- .20	1.15	- .16	0.60	.27
1N5284-1	0.24	0.216	0.264	19.0	2.35	1.00	- .20	1.05	- .20	0.56	.30
1N5285-1	0.27	0.243	0.297	14.0	1.95	1.00	- .30	0.95	- .22	0.48	.33
1N5286-1	0.30	0.270	0.330	9.0	1.60	1.00	- .35	0.85	- .25	0.42	.36
1N5287-1	0.33	0.297	0.363	6.6	1.35	1.00	- .40	0.75	- .26	0.37	.40
1N5288-1	0.39	0.351	0.429	4.10	1.00	1.05	- .50	0.62	- .30	0.28	.47
1N5289-1	0.43	0.387	0.473	3.30	0.870	1.05	- .52	0.55	- .32	0.23	.52
1N5290-1	0.47	0.423	0.517	2.70	0.750	1.05	- .55	0.50	- .33	0.18	.57
1N5291-1	0.56	0.504	0.616	1.90	0.560	1.10	- .60	0.35	- .36	0.10	.60
1N5292-1	0.62	0.558	0.682	1.55	0.470	1.13	- .62	0.25	- .37	0.05	.75
1N5293-1	0.68	0.612	0.748	1.35	0.400	1.15	- .65	0.20	- .38	0.02	.82
1N5294-1	0.75	0.675	0.825	1.15	0.335	1.20	- .70	0.15	- .40	- .03	.91
1N5295-1	0.82	0.738	0.902	1.00	0.290	1.25	- .72	0.07	- .41	- .07	.99
1N5296-1	0.91	0.819	1.001	0.880	0.240	1.29	- .76	0.0	- .42	- .10	1.10
1N5297-1	1.00	0.900	1.100	0.800	0.205	1.35	- .78	-0.05	- .44	- .10	1.21
1N5298-1	1.10	0.990	1.210	0.700	0.180	1.40	- .80	- .10	- .46	- .10	1.33
1N5299-1	1.20	1.08	1.32	0.640	0.155	1.45	- .83	- .15	- .47	- .10	1.45
1N5300-1	1.30	1.17	1.43	0.580	0.135	1.50	- .85	- .20	- .48	- .10	1.57
1N5301-1	1.40	1.26	1.54	0.540	0.115	1.55	- .88	- .20	- .49	- .10	1.69
1N5302-1	1.50	1.35	1.65	0.510	0.105	1.60	- .90	- .20	- .50	- .10	1.81
1N5303-1	1.60	1.44	1.76	0.475	0.092	1.65	- .90	- .20	- .50	- .10	1.92
1N5304-1	1.80	1.62	1.98	0.420	0.074	1.75	- .92	- .20	- .51	- .10	2.18
1N5305-1	2.00	1.80	2.20	0.395	0.061	1.85	- .95	- .20	- .52	- .10	2.42
1N5306-1	2.20	1.98	2.42	0.370	0.052	1.95	- .96	- .20	- .52	- .10	2.66
1N5307-1	2.40	2.16	2.64	0.345	0.044	2.00	- .98	- .20	- .53	- .10	2.90
1N5308-1	2.70	2.43	2.97	0.320	0.035	2.15	-1.0	- .20	- .53	- .10	3.27
1N5309-1	3.00	2.70	3.30	0.300	0.029	2.25	-1.01	- .20	- .53	- .10	3.63
1N5310-1	3.30	2.97	3.63	0.280	0.024	2.35	-1.02	- .20	- .54	- .10	3.99
1N5311-1	3.60	3.24	3.96	0.265	0.020	2.50	-1.03	- .20	- .54	- .10	4.36
1N5312-1	3.90	3.51	4.29	0.255	0.017	2.60	-1.04	- .20	- .55	- .10	4.72
1N5313-1	4.30	3.87	4.73	0.245	0.014	2.75	-1.05	- .20	- .55	- .10	5.20
1N5314-1	4.70	4.23	5.17	0.235	0.012	2.90	-1.06	- .20	- .55	- .10	5.69

1/ Electrical characteristics for "UR" and "-1" suffix devices are identical.



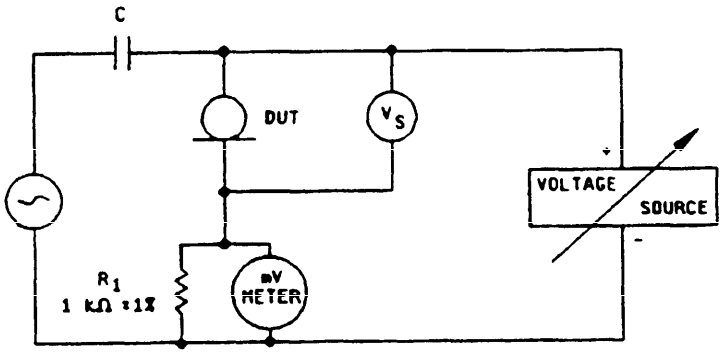
NOTES:
1. Adjust voltage source so that V_S = 25 V dc.
2. Measure current I_P.
3. The device is acceptable if the current falls within the limits specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 6. Regulator current test circuit.



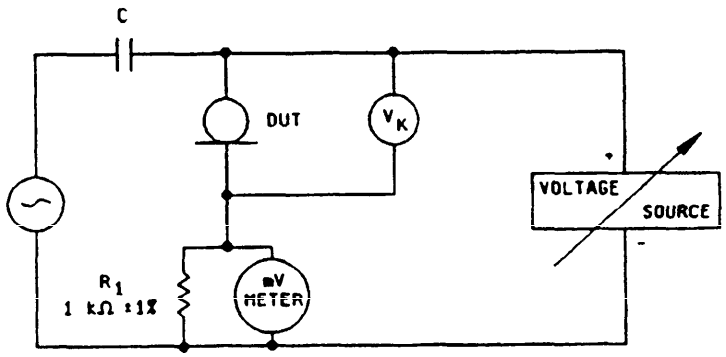
NOTES:
1. Adjust current source to I_L of table V, column 7.
2. Measure voltage V_L.
3. The device is acceptable, if the voltage is less than the limits specified.
4. The ammeter shall represent essentially a short-circuit to the terminals between which the current is being measured. If not, the voltmeter reading shall be corrected for the drop across the ammeter.

FIGURE 7. Limiting voltage test circuit.



NOTES:
1. Adjust voltage source so that V_S = 25 V dc.
2. Apply an ac signal of 2.5 V rms at 90 Hz through an isolating capacitor C.
3. Measure the ac rms voltage.
4. z_s = V_S mod x (R_1 + V ac) where V_S mod equals ac signal for note 2 and V 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 V dc.
2. Apply an ac signal of 0.6 V rms at 90 Hz through an isolating capacitor C.
3. Measure the ac rms voltage.
4. z_K = V_K mod x (R_1 + V ac) where V_K mod equals ac signal for note 2 and V ac equals the voltage across R_1.
5. Device is acceptable if the knee impedance meets the specified minimum limits.

FIGURE 9. Knee impedance test circuit.

5. PACKAGING

5.1 Packaging requirements. Packaging shall be in accordance with MIL-S-19500.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Notes. The notes specified in MIL-S-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Issue of DODISS to be cited in the solicitation.
b. Lead finish (see 3.3.1).
c. For die acquisition, the JANHC or JANKC designation should be specified (see figure 4).
d. Product assurance level and type designation.

6.3 Suppliers of die. The qualified die suppliers with the applicable letter version (example JANHCA1N5283) will be identified on the QPL.

JANC ordering information	
	Manufacturer
PIN	55801
1N5283-1 through 1N5314-1	JANHCA1N5283 through JANHCA1N5314
1N5283-1 through 1N5314-1	JANKCA1N5283 through JANKCA1N5314

6.4 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

6.5 Substitutability. 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. Devices in stock are acceptable provided the date code does not exceed the implementation date of this specification. Existing supplies of the non dash-one parts may be used until exhausted.

CONCLUDING MATERIAL

Custodians:
Army - ER
Navy - EC
Air Force - 17
NASA - NA

Review activities:
Army - AR, MI, SM
Navy - AS, CG, MC
Air Force - 19, 85, 99
DLA - ES

Preparing activity:
Air Force - 17

Agent:
DLA - ES

(Project 5961-1491)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

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NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-S-19500/463D	2. DOCUMENT DATE (YYMMDD) 22 November 1993

3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, DIODE, SILICON, CURRENT REGULATOR, TYPES 1N5283-1 THROUGH 1N5314-1, AND 1N5283UR-1 THROUGH 1N5314UR-1 JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME Alan Barone	b. TELEPHONE (Include Area Code) (1) Commercial: 513-296-6048 (2) AUTOVON: 986-6048
c. ADDRESS (Include Zip Code) SC-ECT yton, OH 45444-5270	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340