

The documentation and process conversion measures necessary to comply with this revision shall be completed by 9 December 2011.

INCH-POUND

MIL-PRF-19500/114H
9 September 2011
SUPERSEDING
MIL-PRF-19500/114G
20 September 2007

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, DIODE, SILICON, VOLTAGE REGULATOR, 1N2804B THROUGH 1N2811B, 1N2813B, 1N2814B, 1N2816B, 1N2818B THROUGH 1N2820B, 1N2822B THROUGH 1N2827B, 1N2829B, 1N2831B THROUGH 1N2838B, 1N2840B THROUGH 1N2846B, AND RB TYPES, 1N4557B THROUGH 1N4562B, AND RB TYPES, JAN, JANTX, JANTXV, AND JANS

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

The requirements for acquiring the product described herein shall consist of this specification sheet and [MIL-PRF-19500](#).

1. SCOPE

1.1 Scope. The specification covers the performance requirements for 50 watt silicon voltage regulator diodes. Forty-two devices, each with standard (B types) and reverse (RB types) polarity are addressed by this specification. Four levels of product assurance are provided for each device type as specified in [MIL-PRF-19500](#).

1.2 Physical dimensions. See [figure 1](#) (TO-3).

1.3 Maximum ratings. Maximum ratings are as shown in columns 3, 7, and 9 of the [characteristics and ratings](#) table herein and as follows:

- a. $P_T = 50 \text{ W}$ at the case temperature (T_C) $\geq +75^\circ\text{C}$; Derate at $0.5 \text{ W}/^\circ\text{C}$ at $T_C \geq +75^\circ\text{C}$.
- b. $-65^\circ\text{C} \leq T_J \leq +175^\circ\text{C}$; $-65^\circ\text{C} \leq T_{STG} \leq +200^\circ\text{C}$.

1.4 Primary electrical characteristics. Primary electrical characteristics are as shown in columns 1, 8, 11, and 12 of the [characteristics and ratings](#) characteristics and ratings table and as follows: Thermal resistance ($R_{\theta JC}$): $2.0^\circ\text{C}/\text{W}$ maximum.

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to semiconductor@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

2. APPLICABLE DOCUMENTS.

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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, 4, or 5 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://assist.daps.dla.mil/quicksearch> or <https://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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) before contract award (see 4.2 and 6.3).

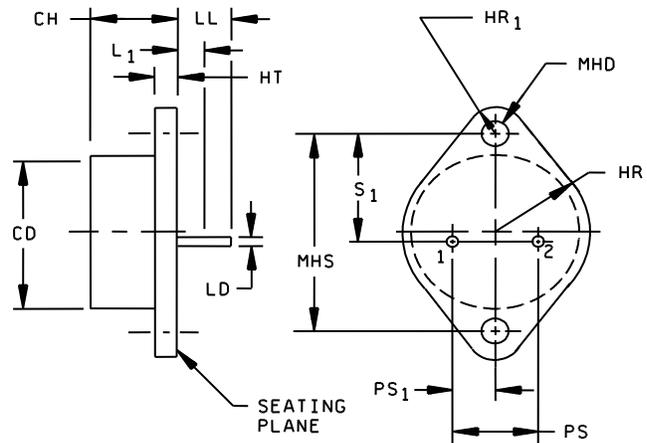
3.3 Acronyms, symbols, and definitions. The acronyms, symbols, and definitions used herein shall be as specified in [MIL-PRF-19500](#). The symbols used herein are listed in 6.4.

3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500 and herein. Current density of internal conductors shall be as specified in MIL-PRF-19500.

3.4.1 Polarity. Standard units (B) shall have the anode connected to the case. The two pins shall be connected internally. Reversed units (RB) shall have the cathode connected to the case.

3.4.2 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).

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CH	.270	.380	6.86	9.65	
LD	.048	.053	0.97	1.35	
CD		.875		22.23	
PS	.420	.440	10.67	11.18	2
PS ₁	.205	.225	5.21	5.72	2
HT	.060	.135	1.52	3.43	
LL	.312	.500	7.92	12.70	
L ₁		.050		1.27	
MHD	.151	.165	3.84	4.09	
MHS	1.177	1.197	29.90	30.40	
HR	.495	.525	12.57	13.34	
HR ₁	.131	.188	3.33	4.78	
S ₁	.655	.675	16.64	17.15	



NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. These dimensions should be measured at points .050 inch (1.27 mm) +.005 inch (+0.13 mm) -.000 inch (-0.00 mm) below seating plane.
3. The seating plane of the header shall be flat within .001 inch (0.03 mm) concave to .004 inch (0.10 mm) convex .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.
4. Pins 1 and 2 are internally connected with an internal jumper.
5. Devices with RB suffix (reverse polarity) have the cathode internally connected to the case.
6. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

FIGURE 1. Physical dimensions (TO-3).

3.4.3 RB types. Reversed polarity (cathode to case) units shall be marked with an "R" preceding the "B" in the type designation.

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 [1.3](#), [1.4](#), and [table I](#) herein.

3.7 Electrical test requirements. The electrical test requirements shall be the subgroups specified in [table I](#) 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, II, and III](#)).

4.1.1 Sampling and inspection. Sampling and inspection shall be in accordance with [MIL-PRF-19500](#), and as specified herein. Lot accumulation period shall be 6 months in lieu of 6 weeks.

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

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

Screen (see table E-IV of MIL-PRF-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
9	I_{R1} and V_Z (for devices with $V_{Z(nom)} \geq 10$ V dc; see column 1 of table III herein)	Not applicable
11	I_{R1} and V_Z ; $\Delta I_{R1} = 100$ percent of initial value or 2 μ A dc, whichever is greater; $\Delta V_Z = \pm 1$ percent of initial value (for devices with $V_{Z(nom)} \geq 10$ V dc; see column 1 of table III herein)	I_{R1} and V_Z
12	See 4.3.1	See 4.3.1
13	Subgroup 2 (except forward voltage test) and subgroup 3 of table I herein; $\Delta I_{R1} = 100$ percent of initial value or 2 μ A dc, whichever is greater, $\Delta V_Z = \pm 1$ percent of initial value	Subgroup 2 (except forward voltage test) of table I herein; $\Delta I_{R1} = 100$ percent of initial value or 2 μ A dc, whichever is greater, $\Delta V_Z = \pm 1$ percent of initial value

4.3.1 Power burn-in conditions. The power burn-in conditions shall be as follows: I_Z (column 4 of [table III](#) herein) at $T_J = 150^\circ\text{C}$ minimum and $T_C = 30^\circ\text{C}$.

4.4 Conformance inspection. Conformance inspection shall be in accordance with [MIL-PRF-19500](#) and as specified herein. Group A inspection shall be performed on each subplot.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with [MIL-PRF-19500](#), and [table I](#) herein. Electrical measurements (end-points) shall be in accordance with [table I](#), subgroup 2 herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the tests and conditions specified for subgroup testing in table E-VIa (JANS) and table E-VIb (JAN, JANTX, and JANTXV) of [MIL-PRF-19500](#) and herein. Electrical measurements (end-points) shall be in accordance with [table I](#), subgroup 2 herein. Delta measurements shall be in accordance with [table II](#) herein.

4.4.2.1 Product assurance level JANS (table E-VIa of [MIL-PRF-19500](#)).

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B4	1037	2,000 cycles. See Paragraph 4.5.8.
B5	1027	I_Z = column 7 (I_{ZM}) of table III herein for 96 hours, $T_A = +125^\circ\text{C}$ or adjusted, as required, to give an average lot $T_J = +225^\circ\text{C}$.
B6	4081	$R_{\theta JC} = 2.0^\circ\text{C/W}$ maximum $T_C = 30 \pm 3^\circ\text{C}$. For purposes of this test "junction to case" shall be used in lieu of "junction to lead" and $R_{\theta JC}$ shall be used in lieu of $R_{\theta JL}$. The case shall be the reference point for calculation of junction to case thermal resistance ($R_{\theta JC}$). The mounting arrangement shall be with heat sink to case.

4.4.2.2 Product assurance levels JAN, JANTX, and JANTXV (table E-VIb of [MIL-PRF-19500](#)).

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B2	4066	I_{ZSM} = column 9 of table III herein. Subgroup 2 (except forward voltage test) and subgroup 3 of table I herein; $\Delta I_{R1} = 100$ percent of initial value or $2 \mu\text{A}$ dc, whichever is greater, $\Delta V_Z = \pm 1$ percent of initial value.
B3	1027	I_Z = column 4 of table III herein, adjust T_A , mounting, or both to achieve $T_C = 150 \pm 5^\circ\text{C}$.
B3	1037	2,000 cycles. See paragraph 4.5.8.
B5	4081	$R_{\theta JC} = 2.0^\circ\text{C/W}$ maximum $T_C = 30 \pm 3^\circ\text{C}$. For purposes of this test "junction to case" shall be used in lieu of "junction to lead" and $R_{\theta JC}$ shall be used in lieu of $R_{\theta JL}$. The case shall be the reference point for calculation of junction to case thermal resistance ($R_{\theta JC}$). The mounting arrangement shall be with heat sink to case.

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 in accordance with table I, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

Subgroup	Method	Condition
C5		Not applicable.
C6	1027	I_Z = column 4 of table III herein. Adjust T_A , mounting, or both to achieve $T_C = 150^\circ\text{C} \pm 5^\circ\text{C}$.
C6	1037	6,000 cycles. See paragraph 4.5.8 (separate samples may be used).
C8	4071	α_{VZ} JAN, JANTX, and JANTXV levels only, column 12 (α_{VZ}) of table III herein. I_Z = column 4 of table III herein; $T_1 = 30 \pm 3^\circ\text{C}$, $T_2 = T_1 + 100^\circ\text{C}$ each subplot. $n = 22$, $c = 0$
C9		Voltage regulation (see 4.5.2), each subplot, column 8 ($V_{Z(\text{reg})}$) of table III herein. $n = 22$, $c = 0$

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

4.5.1 Surge current I_{ZSM} . The currents specified in column 9 (I_{ZSM}) of table III herein shall be applied in the reverse direction and shall be superimposed on the current of I_Z (column 4 of table III herein) a total of five surges at 1 minute intervals. Each individual surge shall be a one-half square wave pulse of 1/120 second duration or a one-half sine wave with the same effective (rms) current. During this test, the T_C of the diode shall be equal to $30 \pm 3^\circ\text{C}$.

4.5.2 Voltage regulation $V_{Z(\text{reg})}$. A current at 10 percent of I_Z (column 7 (I_{ZM}) of table III herein) shall be maintained until thermal equilibrium is obtained and the V_Z shall be noted. The current shall then be increased to a level of 50 percent of I_Z (column 7 (I_{ZM}) of table III herein) and maintained at this level until thermal equilibrium is obtained, at which time the voltage change shall not exceed column 8 ($V_{Z(\text{reg})}$) of table III herein. During this test, the T_C of the diode shall be equal to $30 \pm 3^\circ\text{C}$.

4.5.3 Regulator voltage. The test current I_Z (column 4 of table III herein) shall be applied until thermal equilibrium is obtained. During this test, the T_C of the diode shall be equal to $30 \pm 3^\circ\text{C}$.

4.5.4 Temperature coefficient of regulator voltage (α_{VZ}). The device shall be temperature stabilized with current applied prior to reading regulator voltage at the specified case temperatures.

4.5.5 Inspection condition. Unless otherwise specified herein, all inspections shall be made at T_C of $30 \pm 3^\circ\text{C}$.

4.5.6 Test ratings. Test ratings shall be as shown in table III herein. Type numbers with the suffix "RB" shall have identical requirements as shown in table III herein for the corresponding B type except the polarity shall be as specified in 3.4.1 herein.

4.5.7 Reverse current. The specified reverse voltage shall be applied between the case and pins 1 and 2 separately and the reverse current measured at each of pins 1 and 2.

4.5.8 DC intermittent operation life. 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 $+85^{\circ}\text{C} +15^{\circ}\text{C}$, -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 and "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. Alternately, I_Z may be used to achieve heating. 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.

TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits <u>2/</u>		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical Inspection	2071					
<u>Subgroup 2</u>						
Forward voltage	4011	$I_F = 10 \text{ A dc}$	V_F		1.5	V dc
Reverse current	4016	$V_R =$ column 10 of table III ; DC method (see 4.5.7)	I_{R1}		Col 11	$\mu\text{A dc}$
Regulator voltage	4022	$I_Z =$ column 4 of table III herein <u>3/</u>	V_Z	Col 2	Col 3	V dc
<u>Subgroup 3</u>						
High temperature operation:		$T_A = 150^\circ\text{C}$				
Reverse current	4016	$V_R =$ column 10 of table III herein; DC method	I_{R2}		Col 13	$\mu\text{A dc}$
<u>Subgroup 4</u>						
Small-signal breakdown impedance	4051	$I_Z =$ column 4 of table III herein; <u>3/</u> $I_{\text{sig}} = 10 \text{ percent of } I_Z$	Z		Col 5	ohms
Knee impedance	4051	$I_{ZK} = 5 \text{ mA dc};$ $I_{\text{sig}} = 10 \text{ percent of } I_Z$	Z_K		Col 6	ohms
<u>Subgroup 5</u>						
Not applicable						
<u>Subgroup 6</u>						
Surge current (see 4.5.1)	4066	JANS level only $I_{ZSM} =$ column 9 of table III herein				
End point electrical measurements		See table I , subgroup 2 herein				
<u>Subgroup 7</u>						
Voltage regulation (see 4.5.2)		JANS level only $n = 22, c = 0$	$V_{Z(\text{reg})}$		Col 8	V dc
Temperature coefficient of regulator voltage (see 4.5.4)	4071	$I_Z =$ column 4 of table III herein; $T_1 = 30 \pm 3^\circ\text{C}, T_2 = T_1 + 100^\circ\text{C}$	αV_Z		Col 12	$\% / ^\circ\text{C}$

1/ For JANS, all devices required by the specified sampling plan shall be subjected to subgroups 2, 3, and 4 combined.

2/ Column references are for [table III](#) herein.

3/ During this test, the T_C of the diode shall be equal to $30 \pm 3^\circ\text{C}$.

TABLE II. Groups A, B, and C delta electrical measurements. 1/ 2/

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1	Forward voltage	4011	$I_F = 10 \text{ A dc}$	ΔV_F 3/		$\pm 50 \text{ mV dc}$ change from previously measured value.	

- 1/ The delta electrical measurements for table E-VIa (JANS) of MIL-PRF-19500 shall be as follows:
- In addition to the measurements specified for subgroup 3, the measurements of step 1 of this table shall also be taken.
 - In addition to the measurements specified for subgroup 4, the measurements of step 1 of this table shall also be taken.
 - In addition to the measurements specified for subgroup 5, the measurements of steps 1 of this table shall also be taken.
- 2/ The delta electrical measurements for table E-VII of MIL-PRF-19500 shall be as follows:
- In addition to the measurements specified for subgroup 2, the measurements of step 1 (JANS) of this table shall also be taken.
 - In addition to the measurements specified for subgroup 3, the measurements of step 1 (JANS) of this table shall also be taken.
 - In addition to the measurements specified for subgroup 6, the measurements of step 1 of this table shall also be taken.
- 3/ Devices which exceed the group A limits for this test shall not be accepted.

TABLE III. Characteristics and ratings.

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13
Device type	V _Z Nom	V _Z Min	V _Z Max	I _Z <u>1/</u>	Z Imped- ance	Z _K Knee impedance	I _{ZM} <u>1/</u>	V _Z (reg) Voltage regulation	I _{ZSM} <u>1/</u>	V _R Reverse voltage	I _{R1} Reverse current	αV _Z	I _{R2} T _A = 150°C
	Volts	volts	volts	mA dc	ohms	ohms	mA dc	volts	A dc	volts	μA dc	%/°C	μA dc
1N4557B, RB	3.9	3.70	4.09	3,200	0.16	400	10,000	0.66	40.0	0.5	150	-.050	<u>2/</u>
1N4558B, RB	4.3	4.08	4.51	2,900	0.16	500	9,000	0.58	38.0	0.5	150	-.035	<u>2/</u>
1N4559B, RB	4.7	4.46	4.93	2,650	0.12	600	8,000	0.40	35.0	1.0	100	±.015	<u>2/</u>
1N4560B, RB	5.1	4.84	5.35	2,450	0.12	650	7,500	0.36	32.0	1.0	20	.035	<u>2/</u>
1N4561B, RB	5.6	5.32	5.88	2,250	0.12	900	7,000	0.34	30.0	1.0	20	.050	<u>2/</u>
1N4562B, RB	6.2	5.89	6.51	2,000	0.14	1,000	6,500	0.36	25.0	2.0	20	.055	<u>2/</u>
1N2804B, RB	6.8	6.46	7.14	1,850	0.2	70	7,000	0.4	37.0	4.5	150	.057	1,000
1N2805B, RB	7.5	7.13	7.87	1,700	0.3	70	6,360	0.5	33.0	5.0	100	.067	750
1N2806B, RB	8.2	7.79	8.61	1,500	0.4	70	5,800	0.6	29.0	5.4	50	.070	500
1N2807B, RB	9.1	8.65	9.55	1,370	0.5	70	5,240	0.7	26.5	6.1	25	.075	400
1N2808B, RB	10	9.50	10.50	1,200	0.6	80	4,760	0.9	24.0	6.7	25	.081	300
1N2809B, RB	11	10.45	11.55	1,100	0.8	80	4,330	1.0	21.5	8.4	10	.085	200
1N2810B, RB	12	11.40	12.60	1,000	1.0	80	3,970	1.1	20.0	9.1	10	.079	200
1N2811B, RB	13	12.35	13.65	960	1.1	80	3,750	1.2	18.5	9.9	10	.080	200
1N2813B, RB	15	14.25	15.75	830	1.4	80	3,170	1.5	15.5	11.4	10	.082	200
1N2814B, RB	16	15.20	16.80	780	1.6	80	2,970	1.6	14.75	12.2	10	.083	200
1N2816B, RB	18	17.10	18.90	700	2.0	80	2,640	1.9	12.75	13.7	10	.085	200
1N2818B, RB	20	19.00	21.00	630	2.4	80	2,380	2.3	11.75	15.2	10	.086	200
1N2819B, RB	22	20.90	23.10	570	2.5	80	2,160	2.5	10.5	16.7	10	.087	200
1N2820B, RB	24	22.80	25.20	520	2.6	80	1,980	2.6	9.75	18.2	10	.088	200

See footnotes at end of table.

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TABLE III. Characteristics and ratings – Continued.

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13
Device type	V _Z Nom	V _Z Min	V _Z Max	I _{ZT} 1/	Z Imped- ance	Z _K Knee impedance	I _{ZM} 1/	V _Z (reg) Voltage regulation	I _{ZSM} 1/	V _R Reverse voltage	I _{R1} Reverse curent	α _{VZ}	I _{R2} T _A = 150°C
	Volts	volts	volts	mA dc	ohms	ohms	mA dc	volts	A dc	volts	μA dc	%/°C	μA dc
1N2822B, RB	27	25.65	28.35	460	2.8	90	1,760	2.9	8.25	20.6	10	.090	200
1N2823B, RB	30	28.50	31.50	420	3.0	90	1,590	3.0	7.75	22.8	10	.091	200
1N2824B, RB	33	31.35	34.65	380	3.2	90	1,440	3.2	7.25	25.1	10	.092	200
1N2825B, RB	36	34.20	37.80	350	3.5	90	1,320	3.4	6.5	27.4	10	.093	200
1N2826B, RB	39	37.10	40.90	320	4.0	90	1,220	3.6	5.88	29.7	10	.094	200
1N2827B, RB	43	40.90	45.10	290	4.5	90	1,000	3.8	5.38	32.7	10	.095	200
1N2829B, RB	47	44.65	49.35	270	5.0	100	1,020	4.0	4.90	35.8	10	.095	200
1N2831B, RB	51	48.45	53.55	245	5.2	100	930	4.4	4.63	38.8	10	.096	200
1N2832B, RB	56	53.20	58.80	220	6.0	110	850	4.75	4.13	42.6	10	.096	200
1N2833B, RB	62	58.90	65.10	200	7.0	120	770	5.0	3.68	47.1	10	.097	200
1N2834B, RB	68	64.60	71.40	180	8	140	700	5.5	3.35	51.7	10	.097	200
1N2835B, RB	75	71.25	78.75	170	9	150	640	5.75	3.00	56.0	10	.098	200
1N2836B, RB	82	77.90	86.10	150	11	160	580	6.25	2.75	62.2	10	.098	200
1N2837B, RB	91	86.45	95.55	140	15	180	530	6.75	2.35	69.2	10	.099	200
1N2838B, RB	100	95.0	105.0	120	20	200	480	7.5	2.25	76.0	10	.100	200
1N2840B, RB	110	104.5	115.5	110	30	220	430	9.0	2.05	83.6	10	.100	200
1N2841B, RB	120	114.0	126.0	100	40	240	400	9.5	1.88	91.2	10	.100	200
1N2842B, RB	130	123.5	136.5	95	50	275	370	10.0	1.73	98.8	10	.100	200
1N2843B, RB	150	142.5	157.5	85	75	400	320	12.0	1.50	114.0	10	.100	200
1N2844B, RB	160	152.0	168.0	80	80	450	300	13.0	1.43	121.6	10	.100	200
1N2845B, RB	180	171.0	189.0	68	90	525	260	14.5	1.25	136.8	10		200
1N2846B, RB	200	190.0	210.0	65	100	600	240	16.0	1.10	152.0	10	.100	200

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1/ Unless otherwise specified herein, all inspections shall be made at T_C of 30 ±3°C.

2/ This test is not applicable for devices 1N4557B, RB through 1N4562B, RB.

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 sheet.)

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 [3.4.2](#)).
- d. Product assurance level and type designator.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List (QML 19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DLA Land and Maritime, ATTN: VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail vqe.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.daps.dla.mil>.

6.4 Symbols used in this specification sheet. The following symbols are used in this specification sheet. The definition associated with the symbol shall be as defined in [MIL-PRF-19500](#) or herein.

α_V	Temperature coefficient.
I_F	Forward current, DC value, no alternating component.
I_{R1}	Reverse current.
I_{R3}	Reverse current, dc max (after life test).
I_{sig}	Detector signal current.
I_Z	Maximum dc current.
I_{ZK}	Regulator or reference current, dc near breakdown knee.
I_{ZM}	Maximum zener current.
I_{ZSM}	Maximum zener surge current.
I_{ZT}	Zener test current.
P_T	Total power dissipation, all terminals.
$R_{\theta JC}$	Thermal resistance.
T_A	Ambient or free air temperature.
T_C	Case temperature.
T_J	Junction temperature.
T_{STG}	Storage temperature.
ΔV_F	Forward voltage.
V_R	Reverse voltage.
V_Z	Regulator voltage.
$V_{z(reg)}$	Voltage regulation.
Z	Impedance.
Z_K	Knee impedance.

6.5 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:
 Army – CR
 Navy – EC
 Air Force – 85
 DLA – CC

Preparing activity:
 DLA-CC
 (Project 5961-2009-076)

Review activities:
 Army – AR, MR, SM
 Navy – AS, MC, SH
 Air Force – 19

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.daps.dla.mil>.