

The documentation and process conversion measures necessary to comply with this revision shall be completed by 19 November 2003.

INCH POUND

MIL-PRF-19500/144K
 19 August 2003
 SUPERSEDING
 MIL-PRF-19500/144J
 20 July 1999

PERFORMANCE SPECIFICATION

* SEMICONDUCTOR DEVICE, DIODE, SILICON, SWITCHING TYPES 1N4454-1, 1N4454UR-1, 1N4454UB, 1N4454UB2, 1N4454UBCA, 1N4454UBCC, 1N4454UBD, 1N4532, 1N4532UB, 1N4532UB2, 1N4532UBCA, 1N4532UBCC, 1N4532UBD, 1N3064, 1N3064UR, 1N3064UB, 1N3064UB2, 1N3064UBCA, 1N3064UBCC, 1N3064UBD, JAN, JANTX, AND JANTXV

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 performance requirements for silicon, diffused, switching diodes. Three levels of product assurance are provided for each device type as specified in MIL-PRF-19500.

* 1.2 Physical dimensions. See figures 1 (axial), 2 (DO-213AA), 3 (UB), and 4 (UB2).

* 1.3 Maximum ratings.

Type	V _{BR}	V _{RWM}	I _o T _A = 25°C	I _{FSM} (1 sec)	I _{FSM} (1 μs)	T _J & T _{STG}	Z _{θJX}	R _{θJL} L = 3/8 inch	R _{θJEC}	R _{θJSP}
	V dc	V (pk)	mA	mA (pk)	A (pk)	°C	°C/W	°C/W	°C/W	°C/W
1N4454-1, 1N4454UR-1	75	50	200 (1)	1000	4	-55 to +175	70	250 (lead)	100 (UR)	150 (UB)
1N4454UB, 1N4454UB2, 1N4454UBCA, 1N4454UBCC, 1N4454UBD			200 (1)	1000	4					
1N3064, 1N3064UR			75 (2)	500	2			250 (lead)	100 (UR)	
1N3064UB, 1N3064UB2, 1N3064UBCA, 1N3064UBCC, 1N3064UBD								2		
1N4532			125 (3)	500	2			250 (lead)		
1N4532UB, 1N4532UB2, 1N4532UBCA, 1N4532UBCC, 1N4532UBD	2									

- (1) Derate linearly 1.33 mA/°C above T_A = +25°C.
- (2) Derate linearly 0.5 mA/°C above T_A = +25°C.
- (3) Derate linearly 0.883 mA/°C above T_A = +25°C.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center, Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

1.4 Primary electrical characteristics at $T_A = +25^\circ\text{C}$, unless otherwise indicated.

Limits	V_{F1} $I_F = 10 \text{ mA dc}$	I_{R1} $V_R = 50 \text{ V dc}$	C_O $V_R = 0$ $f = 1 \text{ MHz}$	t_{rr} $I_F = I_R = 10 \text{ mA dc}$ $R_L = 100 \Omega$	t_{fr} $V_{fr} = 5.0 \text{ V(pk)}$ $I_F = 100 \text{ mA dc}$
Min Max	1.0 V dc	0.1 $\mu\text{A dc}$	2 pF	4.0 ns	30 ns

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 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 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

DEPARTMENT OF DEFENSE

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

STANDARD

DEPARTMENT OF DEFENSE

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

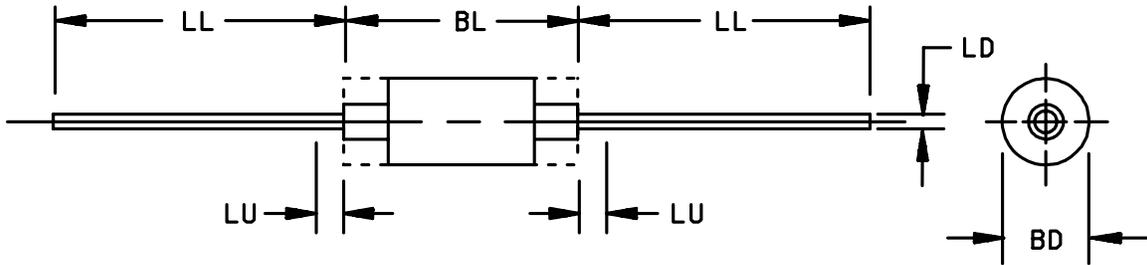
(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automation and Production Services (DAPS), Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. 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).

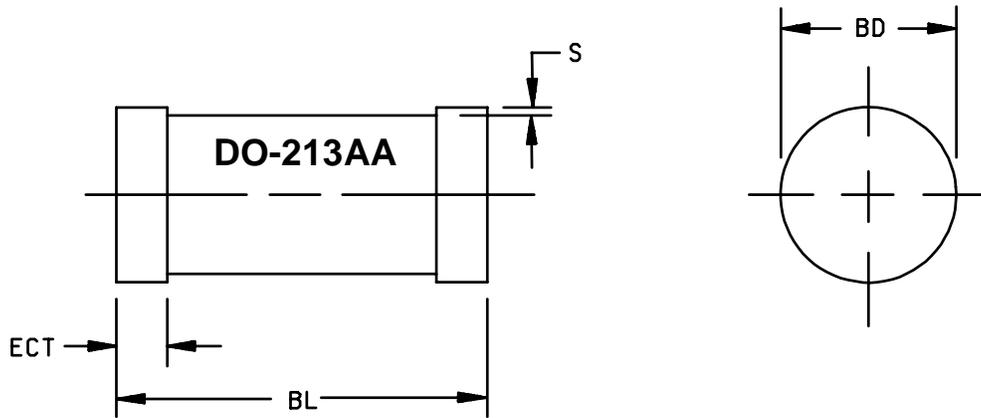


Types	Symbol	Dimensions				Notes
		Inches		Millimeters		
		Min	Max	Min	Max	
1N4454-1 (DO-35)	BD	.056	.075	1.42	1.91	3,4
	BL	.140	.180	3.56	4.57	
	LD	.018	.022	0.46	0.56	6
	LL	1.000	1.500	25.40	38.10	
	LU		.050		1.27	6
1N3064 (DO-7)	BD	.078	.107	1.98	2.72	3,4
	BL	.195	.300	4.96	7.62	
	LD	.018	.022	0.46	0.56	7
	LL	1.000	1.500	25.40	38.10	
	LU		.050		1.27	6
1N4532 (DO-34)	BD	.050	.075	1.27	1.91	3,4
	BL	.080	.120	2.03	3.05	
	LD	.018	.022	0.46	0.56	6
	LL	1.000	1.500	25.40	38.10	
	LU		.050		1.27	6

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The maximum dimension of BD shall apply for dimension BL.
4. The minimum dimension of BD shall apply over at least .075 (1.91 mm) of dimension BL.
5. Ferrule is optional for dimension BL.
6. Within LU lead diameter may vary to allow for flash, lead finish build-up, and minor irregularities other than heat slugs. The specified lead diameter applies in the zone between .050 (1.27 mm) for 1N3064 and 1N4454-1 and .010 (25 mm) for 1N4532 from the diode body to the end of the lead. Outside this zone, the lead diameter shall not exceed BD.
7. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions.



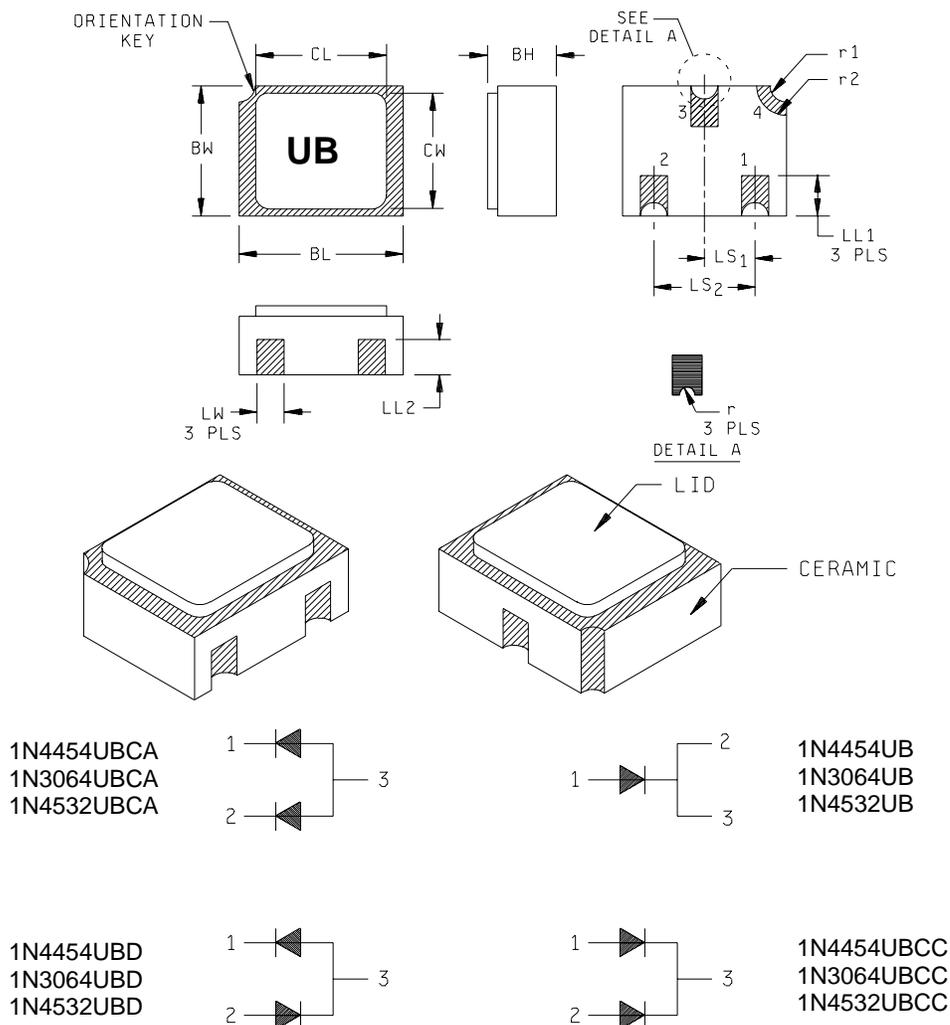
Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	.063	.067	1.60	1.70
BL	.130	.146	3.30	3.70
ECT	.016	.022	0.41	0.55
S	.001 min		0.03 min	

NOTES:

1. Dimensions are in inches.
2. Metric equivalent are given for general information only.
3. Dimensions are pre-solder dip.
4. Referencing to dimension S, minimum clearance of glass body to mounting surface on all orientations.
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology

FIGURE 2. Physical dimensions for type 1N4454UR-1 (DO-213AA).

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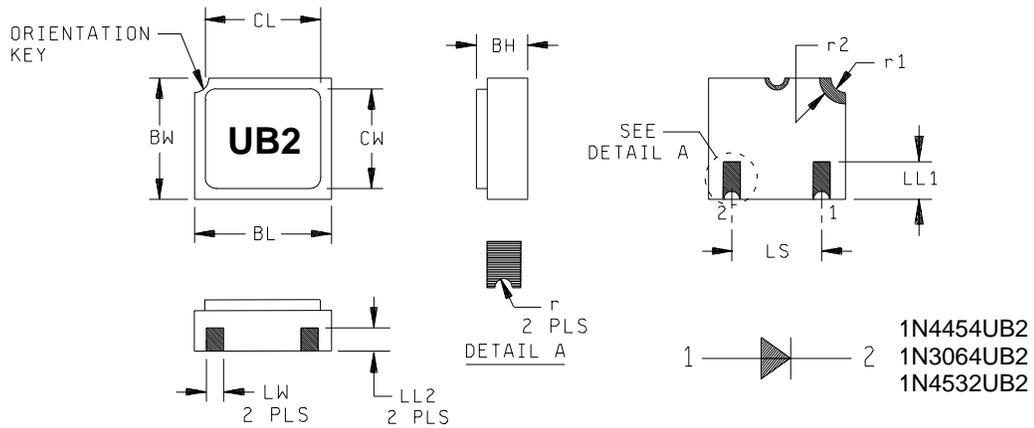


Symbol	Dimensions				Symbol	Dimensions			
	Inches		Millimeters			Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
BH	.046	.056	1.17	1.42	LS1	.035	.040	0.89	1.02
BL	.115	.128	2.92	3.25	LS2	.071	.079	1.80	2.01
BW	.085	.108	2.16	2.74	LW	.016	.024	0.41	0.61
CL		.128		3.25	r		.008		0.20
CW		.108		2.74	r1		.012		0.31
LL1	.022	.038	0.56	0.96	r2		.022		0.56
LL2	.017	.035	0.43	0.89					

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Ceramic package only.

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



Symbol	Dimensions				Symbol	Dimensions			
	Inches		Millimeters			Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
BH	.046	.056	1.17	1.42	LL2	.017	.035	0.43	0.89
BL	.115	.128	2.92	3.25	LS	.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		0.30
LL1	.022	.038	0.56	0.96	r2		.022		0.56

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Ceramic package only.

* FIGURE 4. Physical dimensions, surface mount (2 pin UB version).

3.3 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-PRF-19500 and as follows.

- LS Lead spacing distance between device body and electrical/mechanical contact on lead.
- UB Hermetic unleaded 3 terminal (LCC, Leadless Chip Carrier) package type.
- UB2 Hermetic unleaded 2 terminal (LCC, Leadless Chip Carrier) package type.
- UR Unleaded round package type designation.
- V_{fr} Forward recovery voltage. Specified maximum forward voltage used to determine forward recovery time.

3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500, and figure 1 (DO-35, DO-7, and DO-34), and figure 2 (DO-213AA), figures 3 (UB), and 4 (UB2) herein. The UR version devices shall be structurally identical to the leaded devices, except for lead termination.

3.4.1 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).

* 3.4.2 Diode construction. All devices (except UB version) shall be metallurgically bonded, double plug construction in accordance with the requirements of MIL-PRF-19500. All glass diodes shall be designed with sufficient thermal compensation in the axial direction to optimize tensile and compressive stresses. Dimensional analysis is required of all materials used to achieve axial thermal compensation. Dimensional tolerances and corresponding coefficient of thermal expansion (CTE) shall be documented on the DSCC Design and Construction Form 36D and shall be approved by the qualifying activity to maintain qualification. Dimensional tolerances shall be sufficiently tight enough to prevent excessive stresses due to the inherent CTE mismatch. The UB devices shall be eutectically mounted and wire bonded in a ceramic package.

* 3.5 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 will be permitted. Initial container package marking shall be in accordance with MIL-PRF-19500.

* 3.5.1 UR devices. For surface mount (UR) devices, a minimum of three evenly spaced contrasting color dots around the periphery of the cathode end may be used.

* 3.5.2 UB and UB2 devices. The part number may be reduced to J4454, JX4454, or JV4454. Manufacturers identification and date code shall be marked on the devices. UB and UB2 packages do not require polarity marking.

3.6 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in 1.3, 1.4, and table I.

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).

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 associated specification that did not request the performance of table II tests, the tests specified in table II herein shall be performed by the first inspection lot of this revision to maintain qualification.

* 4.3 Screening (JAN, JANTX, and JANTXV levels only). Screening shall be in accordance with table 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 IV of MIL-PRF-19500)	Measurement	
	JAN level	JANTX and JANTXV levels
3a	Temperature cycling in accordance with MIL-PRF-19500, TX level.	Temperature cycling
(1) 3c	Thermal impedance (see 4.3.2)	Thermal impedance (see 4.3.2)
9	Not applicable	Not applicable
(2) 10	Not applicable	Method 1038 of MIL-STD-750 , condition A, t = 48 hours
11	Not applicable	I_{R1} and V_{F1}
12	Not applicable	See 4.3.1, t = 48 hours
(3) (4) 13	Not applicable	Subgroup 2 of table I herein; ΔI_{R1} = 100 percent of initial reading or 15 nA, whichever is greater; ΔV_{F1} = 25 mV dc

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

* (2) Test within 24 hours after removal from test.

(3) When thermal impedance is performed prior to screen 13, it is not required to be repeated in screen 13.

(4) PDA \leq 5%.

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* 4.3.1 Power burn-in conditions. All devices shall be operated under one of the following conditions: T_A = Room ambient as defined in the general requirements of MIL-STD-750 (see 4.5).

Type	AC option $V_R = 50 \text{ V(pk)}$ $f = 50 - 60 \text{ Hz}$, (see 4.5.2)	DC option
1N4454 and 1N4454-1	$I_O = 200 \text{ mA}$	$I_F = 200 \text{ mA}$
1N3064	$I_O = 75 \text{ mA}$	$I_F = 75 \text{ mA}$
1N4532	$I_O = 125 \text{ mA}$	$I_F = 125 \text{ mA}$

Option 1: Adjust I_O or I_F to achieve $T_J = 125^\circ\text{C}$ minimum for 96 hours.

* 4.3.2 Thermal impedance ($Z_{\theta JX}$ measurements). Thermal impedance measurements shall be in accordance method 3101 MIL-STD-750, and as follows.

- a. $I_H = 300 \text{ mA}$ to 500 mA .
- b. $t_H = 10 \text{ ms}$.
- c. $I_M = 1 \text{ mA}$ to 10 mA .
- d. $t_{MD} = 70 \mu\text{s}$ maximum.

The maximum limit for $Z_{\theta JX}$ under these test conditions is $Z_{\theta JX} = 70^\circ\text{C/W}$.

* 4.3.2.1 Thermal impedance ($Z_{\theta JX}$ measurements) for initial qualification or requalification. The $Z_{\theta JX}$ measurements shall be performed in accordance with MIL-STD-750, method 3101 (read and record date $Z_{\theta JX}$). $Z_{\theta JX}$ shall be supplied on one lot (500 devices minimum and a thermal response curve shall be submitted). Twenty two of these samples shall be serialized and provided to the qualifying activity for correlation prior to shipment of parts. Measurements conditions shall be in accordance with 4.4.1.

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. 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 VIb (JANTX and JANTXV) of MIL-PRF-19500 and as specified herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein except for the thermal impedance test.

* 4.4.2.1 Group B inspection, table VIb (JAN, JANTX, JANTXV) of MIL-PRF-19500.

<u>Subgroup</u>	<u>Method</u>	<u>Conditions</u>
B2	1056	-55°C to +100°C, 15 cycles, n = 22, c = 0.
B2	1051	-55°C to +175°C, 20 cycles, n = 22, c = 0.
B2	2005	$I_F = 100$ mA, axial tensile stress = 8 lbs, $T_A = +150^\circ\text{C}$; (not applicable to UR or UB package). (This test shall be performed as the first test of subgroup 2).
B3	1027	See 4.5.2; $V_R = 50$ V(pk); $f = 50$ -60 Hz; $I_O = I_O$ rated minimum (see 1.3), adjust I_O or T_A to achieve $T_J = 150^\circ\text{C}$ minimum.
B4	2075	See 4.5.4.

* 4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-PRF-19500, and as follows. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein except for the thermal impedance test.

<u>Subgroup</u>	<u>Method</u>	<u>Conditions</u>
C2	1056	-55°C to +100°C, 15 cycles, n = 22, c = 0.
C2	1051	-55°C to +175°C, 20 cycles, n = 22, c = 0.
C2	2036	Tension: Test condition A, t = 15 seconds, weight = 10 pounds. Lead fatigue: Test condition E. Terminal strength and lead fatigue not applicable to UB or UR devices.
C5	3101 or 4081	$R_{\theta JL} = 250^\circ\text{C/W}$ (maximum) (See 4.5.5). $R_{\theta JEC} = 100^\circ\text{C/W}$ (maximum) at zero lead length (for UR). $R_{\theta JSP} = 150^\circ\text{C/W}$ (maximum) (for UB).
C6	1026	$T_A = +30^\circ\text{C} \pm 5^\circ\text{C}$, $V_{RWM} = 50$ V(pk), $f = 50$ -60 Hz (see 4.5.2) for: 1N3064 $I_O = 75$ mA. 1N4532 $I_O = 125$ mA. 1N4454-1 $I_O = 200$ mA.

* 4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the tests and conditions specified for subgroup testing in table IX of MIL-PRF-19500, and table II herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein.

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

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

4.5.2 Burn in life tests. AC tests shall be conducted with a half-sine wave of the peak voltage specified herein impressed across the diode in the reverse direction, followed by a half-sine waveform of the average rectified current specified herein. The forward conduction angle of the rectified current shall be not greater than 180 degrees nor less than 150 degrees.

* 4.5.2.1 Free air burn-in. Deliberate heat sinking, baffles to create an oven, or forced air cooling is prohibited unless otherwise approved by the qualifying activity. The use of a current limiting or ballast resistor is permitted provided that each device under test still sees the full P_t (minimum) and that the minimum applied voltage, where applicable, is maintained throughout the burn-in period.

4.5.3 Forward recovery voltage and time. Forward recovery time shall be measured as the time interval between zero time and the point where the pulse has decreased to 110 percent of the steady-state value of V_F when $I_F = 50$ mA dc. The maximum rise time of the response detector shall be 1 ns.

4.5.4 Decap internal visual scribe and break (not applicable to UB package). Scratch glass at cavity area with diamond scribe. Carefully snap open. Using 30X magnification examine the area where die was in contact with the plugs, verify footprint for minimum of 15 percent metallurgical bonding area. In addition, a cross sectional view may be used to verify consistency of construction. A cross sectional view shall be used exclusively for construction verification and shall not be used to verify bond integrity. The UB package shall employ the manufacturers' normal delidding procedures.

* 4.5.5 Thermal resistance. Thermal resistance measurement shall be performed in accordance with MIL-STD-750, method 3101 or 4081. Forced moving air or draft shall not be permitted across the devices during test. The maximum limit for $R_{\theta J L}$, $R_{\theta E C}$, and $R_{\theta S P}$ shall be as as specified in 1.3. The following conditions shall apply:

- a. $I_H = 75$ mA to 300 mA.
- b. $t_H = 25$ seconds minimum.
- c. $I_M = 1$ mA to 10 mA.
- d. $t_{MD} = 70$ μ s maximum.

* 4.5.5.1 Lead spacing for leaded devices: $LS =$ Lead spacing = .375 inch (9.53 mm) as defined on figure 6.

* 4.5.5.2 Temperature reference (T_r) unleaded devices (UB, UR suffix). The temperature reference point shall be the hottest portion of the external surface. As an alternate, the temperature of a stream of liquid used to cool the device during the test may be used as the temperature reference point.

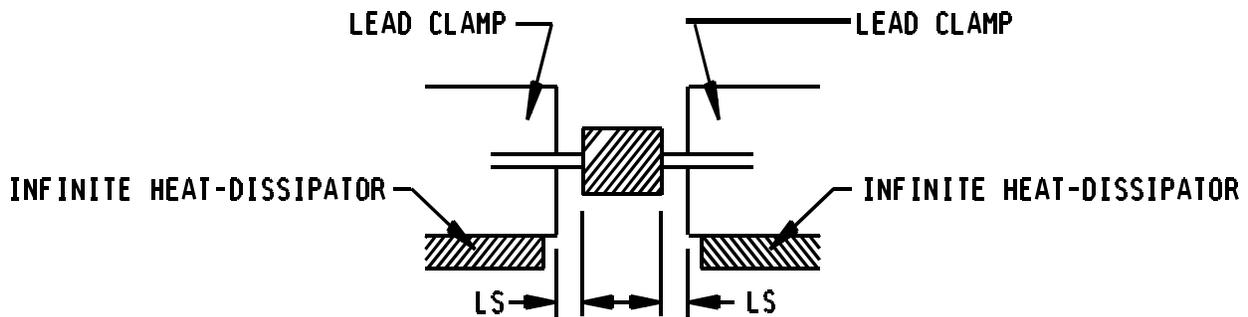


FIGURE 6. Mounting conditions.

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* TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u> Visual and mechanical examination	2071					
<u>Subgroup 2</u> Thermal impedance	3101	See 4.3.2	$Z_{\theta JX}$		70	$^{\circ}\text{C}/\text{W}$
Forward voltage	4011	$I_F = 10 \text{ mA dc}$	V_{F1}		1.0	V dc
Reverse current	4016	DC method, $V_R = 50 \text{ V dc}$	I_{R1}		0.1	$\mu\text{A dc}$
Breakdown voltage	4021	$I_R = 5.0 \mu\text{A dc}$	$V_{(BR)1}$	75		V dc
<u>Subgroup 3</u> High temperature operation		$T_A = 150^{\circ}\text{C}$				
Reverse current	4016	DC method, $V_R = 50 \text{ V dc}$	I_{R2}		100	$\mu\text{A dc}$
Forward voltage	4011	$I_F = 10 \text{ mA dc}$	V_{F2}		0.7	V dc
Low temperature operation	4021					
Breakdown voltage		$T_A = -55^{\circ}\text{C}$ $I_R = 10 \mu\text{A dc}$	$V_{(BR)2}$	75		V dc
<u>Subgroup 4</u> Capacitance	4001	$V_R = 0 \text{ V dc}$, $f = 1 \text{ MHz}$ $V_{\text{sig}} = 50 \text{ mV (pk to pk)}$, maximum	C_O		2.0	pf
Reverse recovery time	4031	Condition A; $I_F = I_R = 10 \text{ mA dc}$, $I_{R(\text{REC})} = 1.0 \text{ mA}$, $C \geq 1 \text{ nF}$ $R \geq 1,000 \Omega$, $R_L = 100 \Omega$	t_{rr}		4.0	ns
<u>Subgroups 5</u> Not applicable						
<u>Subgroups 6</u> <u>Surge Current</u>	4066	$I_F = 50 \text{ mA dc}$; $T_A = 25^{\circ}\text{C}$; I_{FSM} = see 1.3; ten 1 us surges, 1 surge/minute see table I, subgroup 2 herein.				
<u>Subgroup 7</u> Forward recovery voltage and time	4026	$I_F = 100 \text{ mA dc}$, $t_r \leq 0.4 \text{ ns}$, see 4.5.3	V_{fr} t_{fr}		5.0 30	V(pk) ns

1/ For sampling plan, see MIL-PRF-19500.

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

Inspection <u>1/</u>	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 1</u>			45 devices c = 0
Thermal shock (glass strain)	1056	100 cycles minimum, -55°C to +100°C	
Temperature cycling	1051	500 cycles minimum, -55°C to +175°C	
Electrical measurements		See table I subgroup 2	
<u>Subgroup 2</u>			45 devices c = 0
Intermittent operating life	1037	10,000 cycles	
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 3</u>			3 devices, c = 0
DPA	2101	Cross section; scribe and break	
<u>Subgroup 4</u>			
Thermal impedance curves		Each supplier shall submit their (typical) design thermal impedance curves. In addition, test conditions and $Z_{\theta JX}$ limit shall be provided to the qualifying activity in the qualification report.	
<u>Subgroup 5</u>			
Not applicable			
<u>Subgroup 6</u>			
ESD	1020		3 devices, c = 0
Monitored mission temperature cycling	1055	Not required for UB suffix devices.	22 devices c = 0
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 7</u>			22 devices c = 0
Soldering heat	2031	1 cycle	

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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.)

6.1 Intended use. The notes specified in MIL-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DoDISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2.1).
- c. Packaging requirements (see 5.1).
- d. Lead finish (see 3.4.1).
- e. Type designation and product assurance level.

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) 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 Defense Supply Center, Columbus, ATTN: DSCC/VQE, P.O. Box 3990, Columbus, OH 43216-5000.

6.4 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.

MIL-PRF-19500/144K

Custodians:

Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity
DLA - CC

(Project 5961-2744)

Review activities:

Army - AR, MI, SM
Navy - AS, MC
Air Force - 19

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. 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.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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-PRF-19500/144K	2. DOCUMENT DATE 19 August 2003
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3. **DOCUMENT** SEMICONDUCTOR DEVICE, DIODE, SILICON, SWITCHING TYPES 1N4454-1, 1N4454UR-1, 1N4454UB, 1N4454UB2, 1N4454UBCA, 1N4454UBCC, 1N4454UBD, 1N4532, 1N4532UB, 1N4532UB2, 1N4532UBCA, 1N4532UBCC, 1N4532UBD, 1N3064, 1N3064UR, 1N3064UB, 1N3064UB2, 1N3064UBCA, 1N3064UBCC, 1N3064UBD, JAN, JANTX, AND JANTXV

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)	7. DATE SUBMITTED	
	COMMERCIAL DSN FAX EMAIL		

8. PREPARING ACTIVITY

a. Point of Contact Alan Barone	b. TELEPHONE			
	Commercial	DSN	FAX	EMAIL
	614-692-0510	850-0510	614-692-6939	alan.barone@dla.mil
c. ADDRESS Defense Supply Center, Columbus ATTN: DSCC-VAC P.O. Box 3990 Columbus, OH 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman, Suite 2533 Fort Belvoir, VA 22060-6221 Telephone (703) 767-6888 DSN 427-6888			