1N4148UB, UBCA, UBCC, UBD, UB2, UB2R

Silicon Switching Diode

Rev. V1

Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/116
- Low Capacitance
- Fast Switching Speed
- Available in Unidirectional, Doubler, Common Anode and Common Cathode Polarities

Maximum Ratings

Operating & Storage Temperature: -65°C to +200°C
Operating Current: 200 mA @ T_A = +75°C
Derating Factor: 2.0 mA/°C above T_A = +25°C
Surge Current 2 A (pk)

Electrical Specifications @ T_A = +25°C (unless otherwise specified)

JEDEC TYPE#	V_{BR} @ 100 µA	V_{RWM}	I_O	V_{F1} I_F = 10 mA dc	V_{F2} I_F = 100 mA dc	T_{rr} [1]	I_{R1} @ 20 Vdc	I_{R2} @ 75 Vdc	I_{R3} @ 20 Vdc T_A =150°C	I_{R4} @ 75 Vdc T_A =150°C	Capacitance @ 0 V	Capacitance @1.5 V
	Volts	Volts (pk)	mA	V dc	V dc	nsec	nA	nA	µA	µA	pF	pF
1N4148UB	100	75	200	0.8	1.2	5	25	500	35	75	4.0	2.8

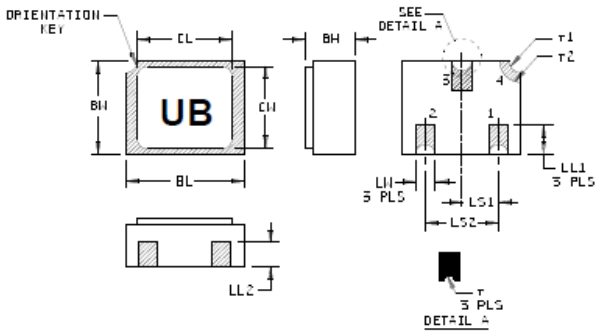
1. C ≥ 1 nF, I_F = I_R = 10 mA dc, R_L = 100 Ω, ± 5%, $I_{R(REC)}$ = 1.0 mA dc, R ≥ 1,000 Ω

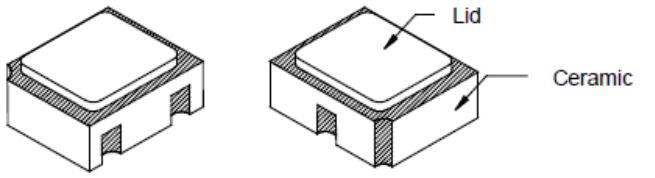
Thermal Characteristics (T_A = +25°C unless otherwise specified)

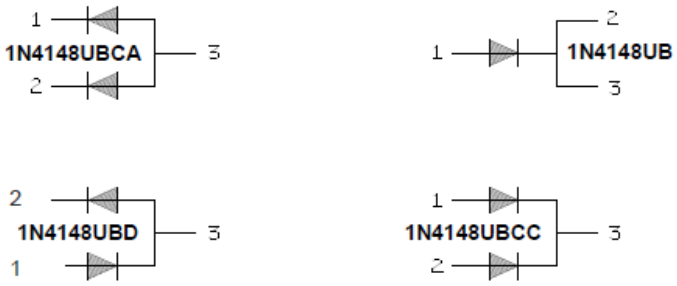
Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Ambient (2)	$R_{\theta JA(PCB)}$	325°C/W (4)
Thermal Resistance, Junction to Solder Pad (3)	$R_{\theta JSP}$	120°C/W

(2) See figures 11, 12, and 13 of MIL-PRF-19500/116 for thermal impedance curves
(3) $R_{\theta JSP}$ refers to thermal resistance from junction to the solder pads of the UB package

Outline Drawing (UB)





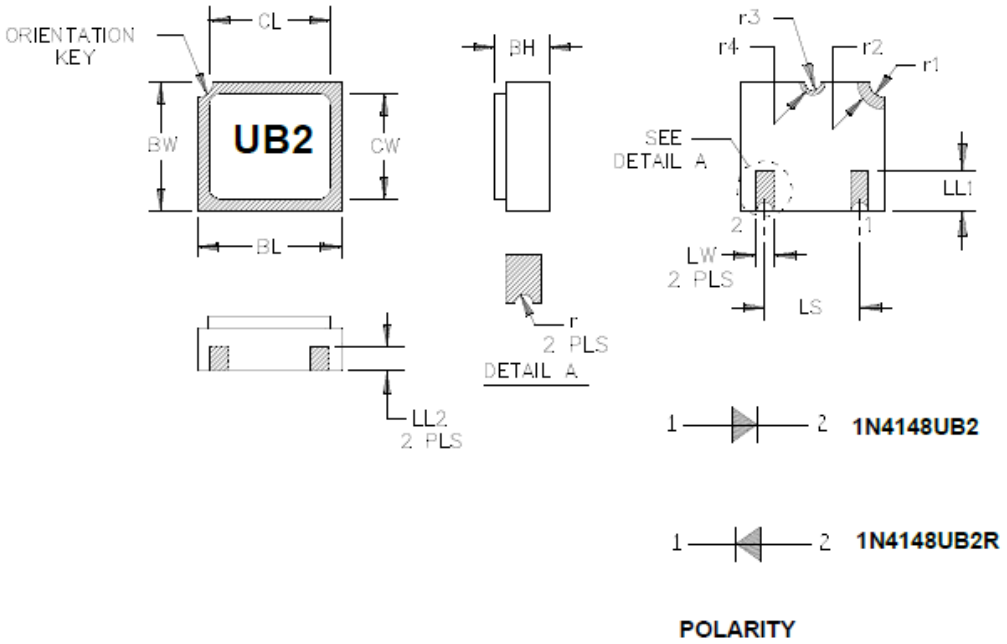


Symbol	Dimensions				Symbol	Dimensions			
	Inches		Millimeters			Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
BH	.046	.056	1.17	1.42	LS_1	.035	.039	0.89	0.99
BL	.115	.128	2.92	3.25	LS_2	.071	.079	1.80	2.01
BW	.085	.108	2.16	2.74	LW	.016	.024	0.41	0.61
CL		.128		3.25	R		.008		0.20
CW		.108		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. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

FIGURE 3. Physical dimensions, surface mount (UB versions).

Outline Drawing (UB2)

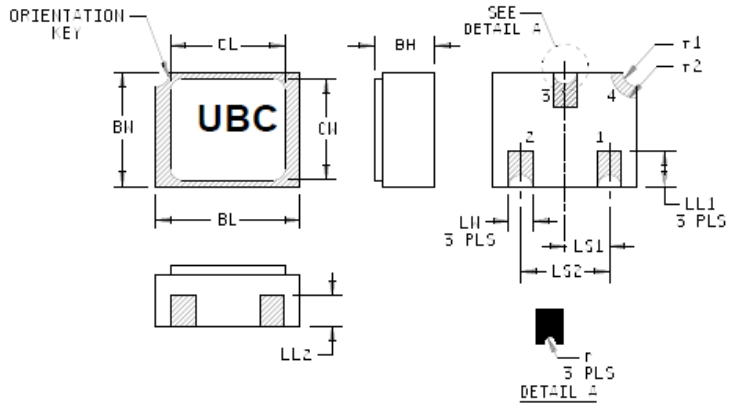


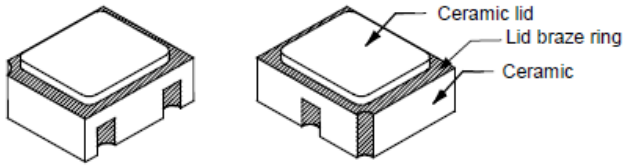
Symbol	Dimensions				Symbol	Dimensions			
	Inches		Millimeters			Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
BH	.046	.056	1.17	1.42	LS	.071	.079	1.80	2.01
BL	.115	.128	2.92	3.25	LW	.016	.024	0.41	0.61
BW	.085	.108	2.16	2.74	r	.008 TYP		0.20 TYP	
CL		.128		3.25	r1	.012 TYP		0.31 TYP	
CW		.108		2.74	r2	.022 TYP		0.56 TYP	
LL1	.022	.038	0.56	0.96	r3	.008 TYP		0.20 TYP	
LL2	.017	.035	0.43	0.89	r4	.012 TYP		0.31 TYP	

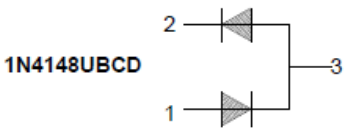
NOTES:
1. Dimensions are in inches. Millimeters are given for general information only.
2. Ceramic package only.
3. Hatched areas on package denote metallized areas. Pad 4 = shielding, connected to the lid.
4. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

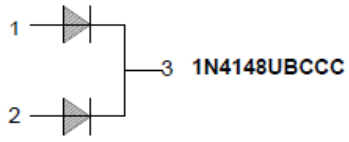
FIGURE 4. Physical dimensions, surface mount (2 pin UB versions).

Outline Drawing (UBC)







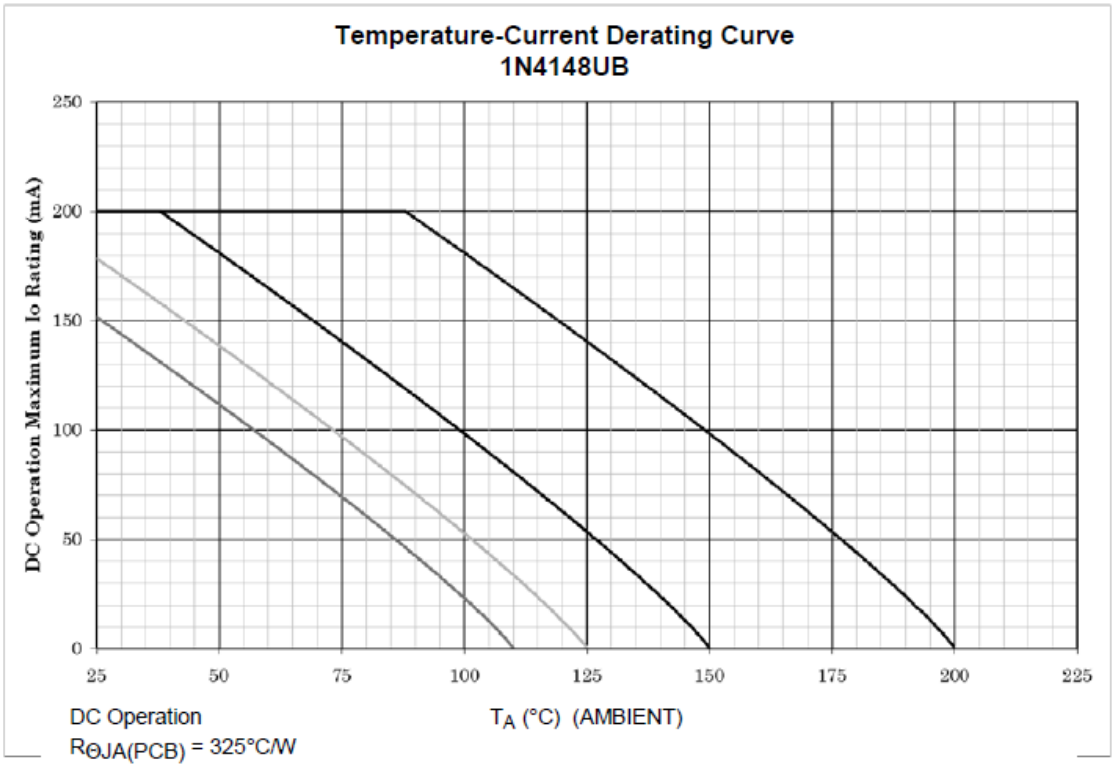


Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BH	.046	.071	1.17	1.80
BL	.115	.128	2.92	3.25
BW	.085	.108	2.16	2.74
CL		.128		3.25
CW		.108		2.74
LL1	.022	.038	0.56	0.96
LL2	.017	.035	0.43	0.89

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
LS_1	.036	.040	0.91	1.02
LS_2	.071	.079	1.81	2.01
LW	.016	.024	0.41	0.61
r		.008		.203
r1		.012		.305
r2		.022		.559

NOTES:
1. Dimensions are in inches. Millimeters are given for general information only.
2. Hatched areas on package denote metallized areas.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.
4. Pin 4 is connected to lid braze ring.

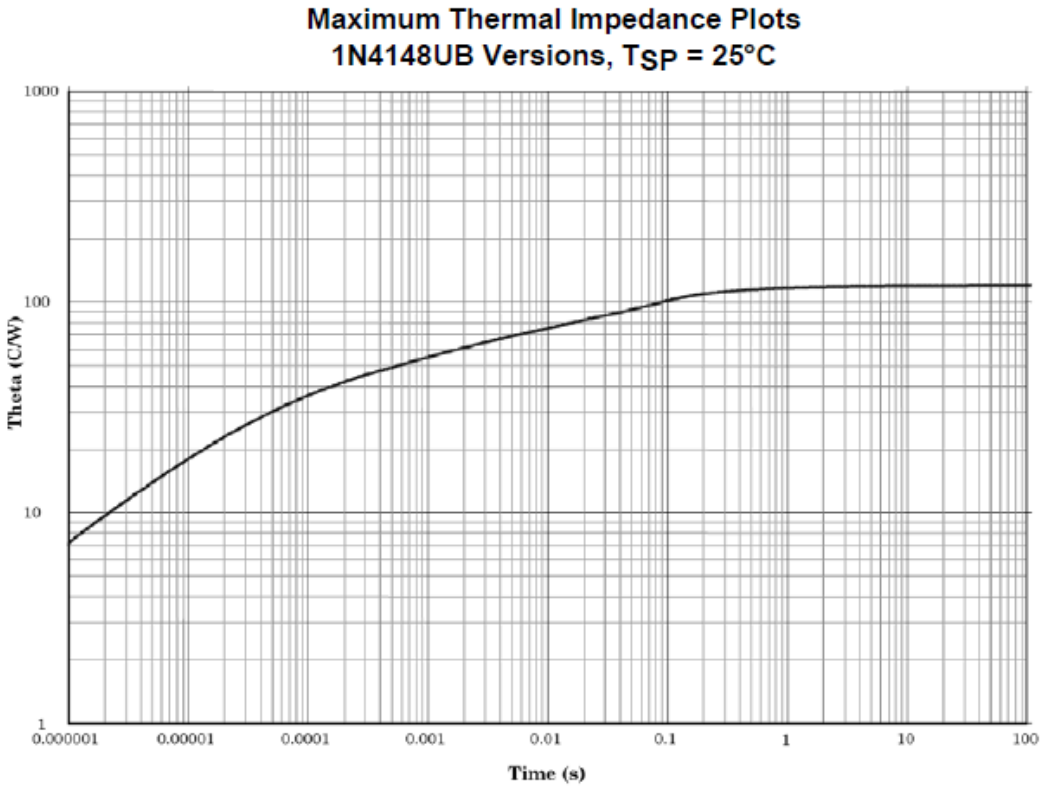
FIGURE 5. Physical dimensions, surface mount (UBC version, ceramic lid).



NOTES:

1. This is the true inverse of the worst case thermal resistance value. All devices are capable of operating at ≤ T_J specified on this curve. Any parallel line to this curve will intersect the appropriate current for the desired maximum T_J allowed.
2. Derate design curve constrained by the maximum junction temperature (T_J ≤ +200°C) and current rating specified. (See 1.3.)
3. Derate design curve chosen at T_J ≤ +150°C, where the maximum temperature of electrical test is performed.
4. Derate design curves chosen at T_J ≤ +125°C, and +110°C to show current rating where most users want to limit T_J in their application.

FIGURE 10. Temperature-current derating graph.



$R_{\theta JSP}$ = 120°C/W

NOTE: $Z_{\theta JX}$ = 75°C/W maximum at t_H = 10ms.

FIGURE 13. Thermal impedance (UB versions).