RoHS Compliant

Switching Diode

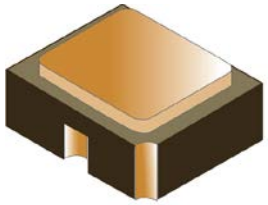
Qualified per MIL-PRF-19500/116

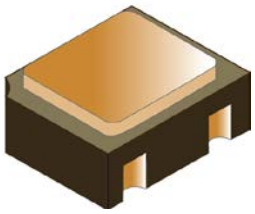
Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This 1N4148UB switching/signal diode features ceramic bodied construction for military grade products per MIL-PRF-19500/116. This small low capacitance diode, with very fast switching speeds, is featured in a surface mount UB package with various polarities available. Microsemi also offers a variety of other switching/signal diodes.

Important: For the latest information, visit our website http://www.microsemi.com.





UB Package

FEATURES

- Surface mount equivalent of popular JEDEC registered 1N4148 number.
- Very low capacitance.
- Very fast switching speeds with minimal reverse recovery times.
- Unidirectional as well as doubler, common anode and common cathode polarities are available.
- JAN, JANTX, and JANTXV qualification is available per MIL-PRF-19500/116.
  (See part nomenclature for all available options.)
- RoHS compliant by design.

APPLICATIONS / BENEFITS

- High frequency data lines.
- Low-profile ceramic surface mount package (see package illustration).
- RS-232 & RS–422 interface networks.
- Ethernet 10 Base T.
- LAN.
- Computers.

MAXIMUM RATINGS @ 25 ºC

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J & T_{STG}	-65 to +200	°C
Thermal Resistance Junction-to-Ambient (1)	$R_{\Theta JA}$	325	°C/W
Thermal Resistance Junction-to-Solder Pad (1)	$R_{\Theta JSP}$	120	°C/W
Maximum Breakdown Voltage	$V_{(BR)}$	100	V
Working Peak Reverse Voltage	V_{RWM}	75	V
Average Rectified Current @ T_A = 75 ºC (2)	I_O	200	mA
Non-Repetitive Sinusoidal Surge Current (tp = 8.3 ms)	I_{FSM}	2	A (pk)

NOTES: 1. See Figure 2 for thermal impedance curves.
2. See Figure 1 for derating.

Also available in:

UBC package
(Ceramic Lid surface mount)
1N4148UBC

UB2 package
(2-Pin surface mount)
1N4148UB2

DO-35 package
(axial-leaded)
1N4148-1

DO-213AA package
(MELF surface mount)
1N4148UR-1

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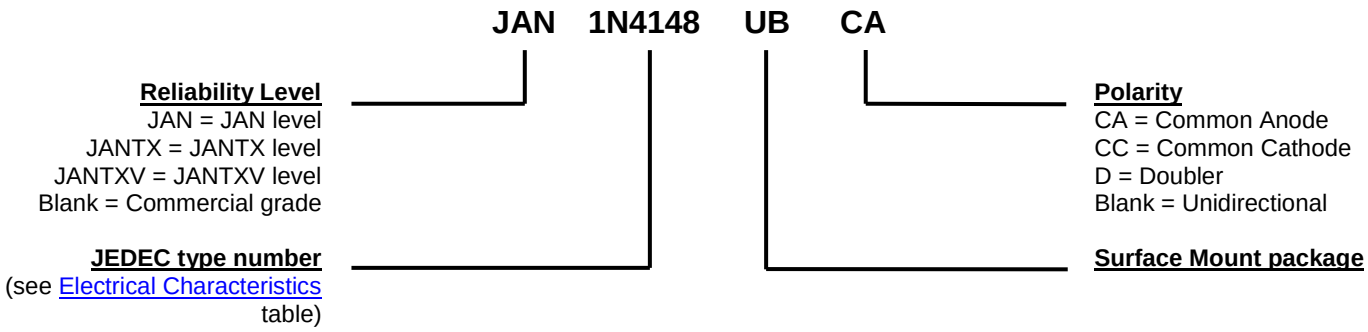
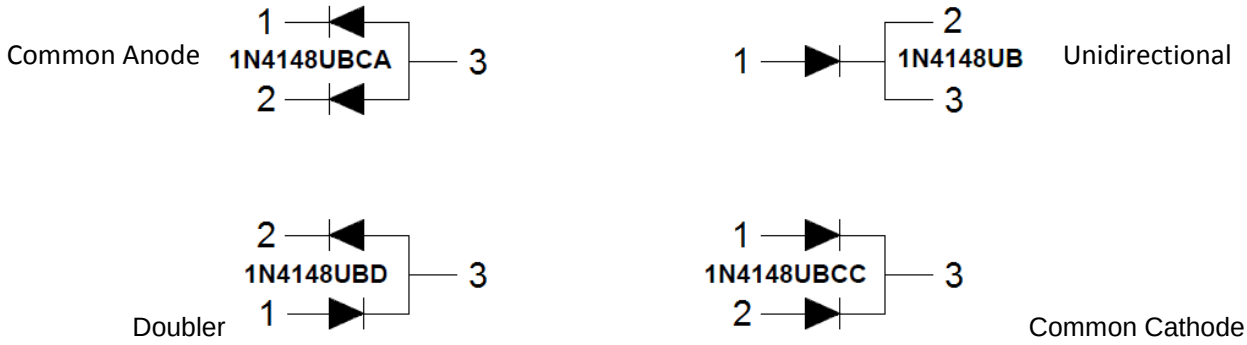
MECHANICAL and PACKAGING

- CASE: Ceramic.
- TERMINALS: Gold plating over nickel under plate.
- MARKING: Part number, date code, manufacturer's ID.
- TAPE & REEL option: Standard per EIA-418D. Consult factory for quantities.
- WEIGHT: < 0.04 Grams.
- See Package Dimensions on last page.

PART NOMENCLATURE





SYMBOLS & DEFINITIONS

Symbol	Definition
I_R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.
I_O	Average Rectified Forward Current: The output current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.
t_{rr}	Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified decay point after a peak reverse current occurs.
V_F	Forward Voltage: The forward voltage the device will exhibit at a specified current (typically shown as maximum value).
V_R	Reverse Voltage: The reverse voltage dc value, no alternating component.
V_{RWM}	Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV.

ELECTRICAL CHARACTERISTICS @ 25 ºC unless otherwise noted

FORWARD VOLTAGE V_{F1} @ I_F=10mA	FORWARD VOLTAGE V_{F2} @ I_F=100mA	REVERSE RECOVERY TIME t_{rr} (Note 1)	FORWARD RECOVERY TIME t_{fr} (Note 2)	REVERSE CURRENT I_{R1} @ 20 V	REVERSE CURRENT I_{R2} @ 75 V	REVERSE CURRENT I_{R3} @ 20 V T_A=150°C	REVERSE CURRENT I_{R4} @ 75 V T_A=150°C	CAPACI-TANCE C (Note 3)	CAPACI-TANCE C (Note 4)
V	V	ns	ns	nA	µA	µA	µA	pF	pF
0.8	1.2	5	20	25	0.5	35	75	4.0	2.8

NOTE 1: $I_F = I_R$ = 10 mA, R_L = 100 Ohms $\pm$ 5 %.
NOTE 2: I_F = 50 mA.
NOTE 3: V_R = 0 V, f = 1 MHz, V_{SIG} = 50 mV (pk to pk).
NOTE 4: V_R = 1.5V, f = 1 MHz, V_{SIG} = 50 mV (pk to pk).

GRAPHS

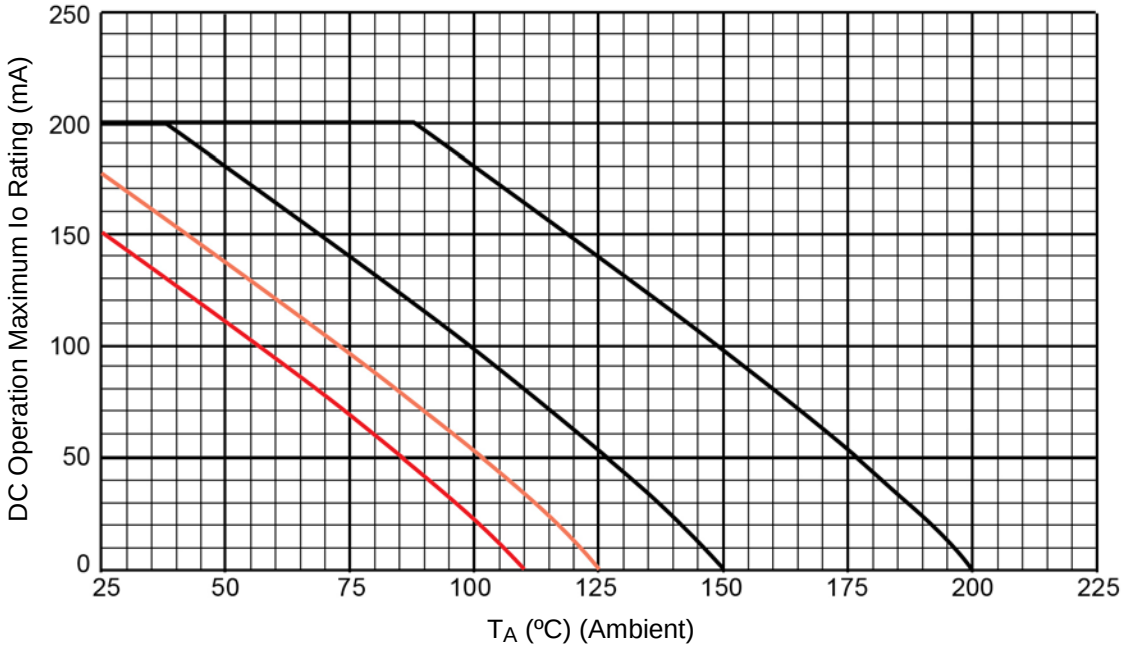


FIGURE 1 – Temperature – Current Derating

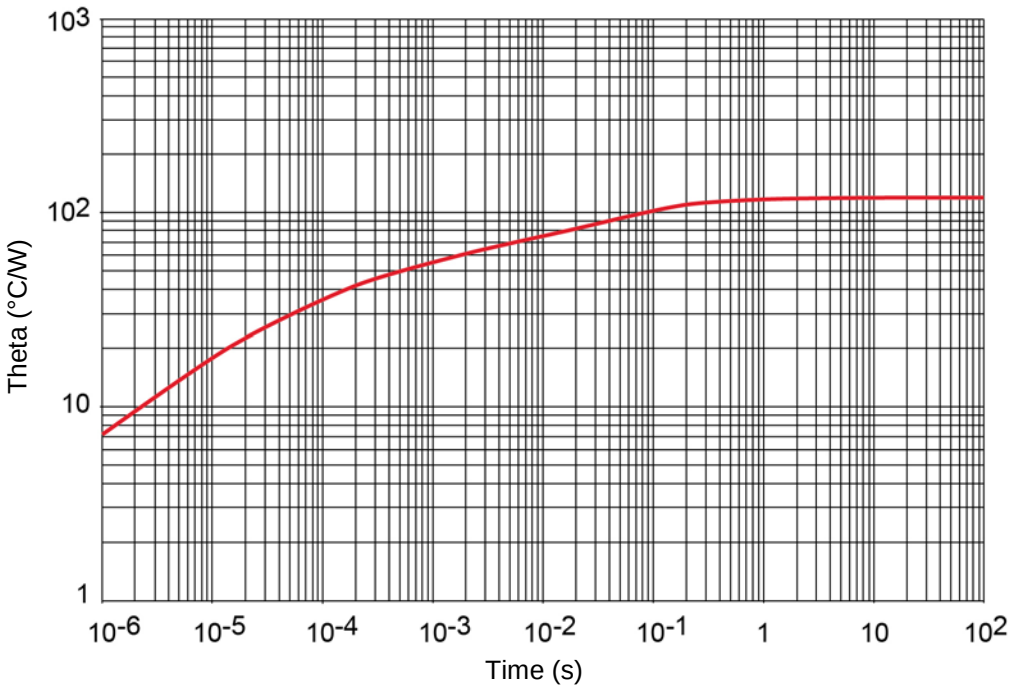
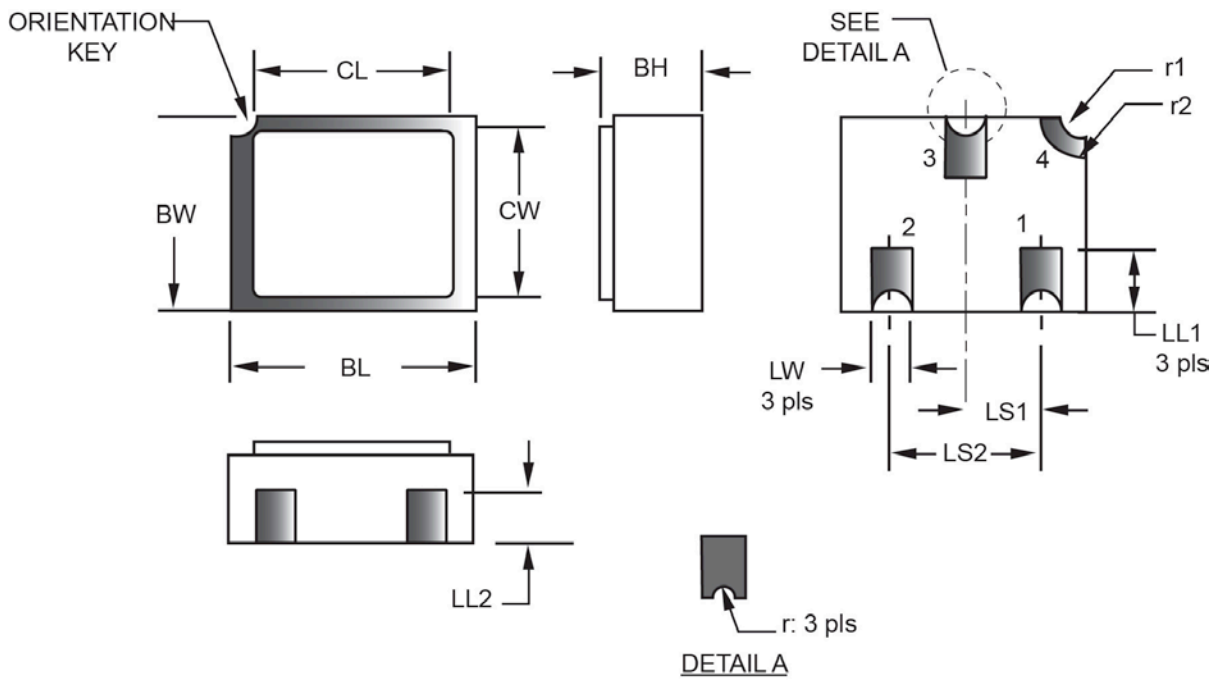


FIGURE 2 – Thermal Impedance

PACKAGE DIMENSIONS



Symbol	Dimensions				Note	Symbol	Dimensions				Note
	inch		millimeters				inch		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		.056	
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.
4. Pad 1 = Base, Pad 2 = Emitter, Pad 3 = Collector, Pad 4 = Shielding connected to the lid.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.