



Switching Diode

Qualified per MIL-PRF-19500/116

Qualified Levels: JAN, JANTX, and JANTXV

DESCRIPTION

This 1N4148UBC switching/signal diode features ceramic body with ceramic lid 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 UBC package and is available in different polarities. Microsemi also offers a variety of other switching/signal diodes.



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 doubling and common cathode polarities are available.
- JAN, JANTX, and JANTXV qualification is available per MIL-PRF-19500/116. (See <u>part nomenclature</u> for all available options.)
- · RoHS compliant by design.

APPLICATIONS / BENEFITS

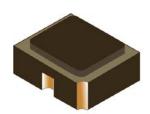
- High frequency data lines.
- Low-profile ceramic bodied surface mount package with a ceramic lid (see package illustration).
- RS-232 & RS-422 interface networks.
- Ethernet 10 Base T.
- Switching core drivers.
- LAN.
- Computers.

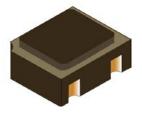
MAXIMUM RATINGS @ 25 °C

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 _{OJA}	325	°C/W
Thermal Resistance Junction-to-Solder Pad (1)	R _{OJSP}	120	°C/W
Maximum Breakdown Voltage	$V_{(BR)}$	100	V
Working Peak Reverse Voltage	V _{RWM}	75	V
Average Rectified Current @ T _A = 75 °C (2)	lo	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.





UBC Package

Also available in:

UB package (surface mount)
1N4148UB

UB2 package (2-Pin surface mount) 1N4148UB2

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

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

MSC - Lawrence

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MSC - Ireland

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Unidirectional



MECHANICAL and PACKAGING

- CASE: Ceramic with a ceramic lid.
- 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.

Doubler

• See Package Dimensions on last page.

PART NOMENCLATURE **UBC** JAN 1N4148 CC **Reliability Level Polarity** JAN = JAN level CC = Common Cathode JANTX = JANTX level D = Doubler JANTXV = JANTXV level Blank = Unidirectional Blank = Commercial grade **Ceramic Lid Surface Mount** JEDEC type number (see Electrical Characteristics table) 1N4148UBC 1N4148UBCD 3 1N4148UBCCC

Common Cathode

SYMBOLS & DEFINITIONS							
Symbol	Definition						
I _R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.						
Io	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 °C 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	μΑ	μΑ	μΑ	pF	pF

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

NOTE 2: $I_F = 50 \text{ mA}$. **NOTE 4:** $V_R = 1.5V$, f = 1 MHz, $V_{SIG} = 50 \text{ mV}$ (pk to pk).



GRAPHS

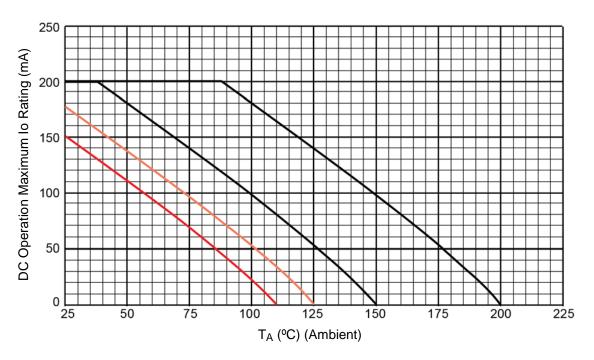


FIGURE 1 - Temperature - Current Derating

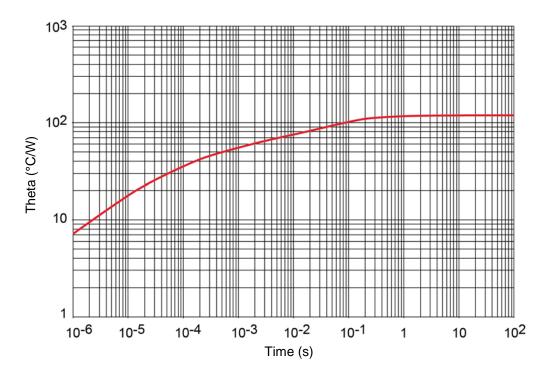
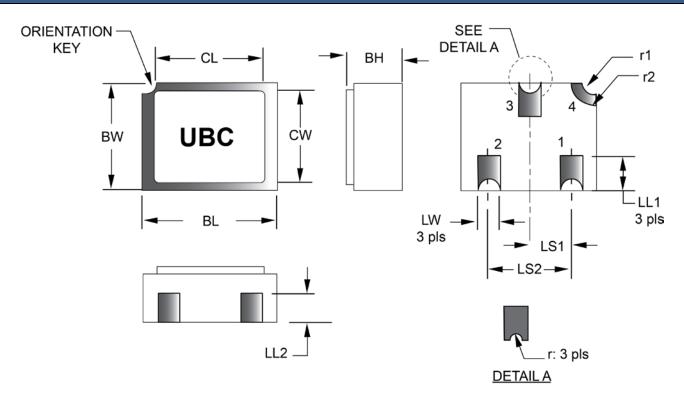


FIGURE 2 - Thermal Impedance



PACKAGE DIMENSIONS



	Dimensions						Dimensions				
Symbol	inch		millimeters		Note	Symbol	inch		millimeters		Note
	Min	Max	Min	Max			Min	Max	Min	Max	
BH	.046	.071	1.17	1.80		LS1	.036	.040	.091	1.02	
BL	.115	.128	2.92	3.25		LS2	.071	.079	1.81	2.01	
BW	.085	.108	2.16	2.74		LW	.016	.024	0.41	0.61	
CL		.128		3.25		r		.008		0.203	
CW		.108		2.74		r1		.012		0.305	
LL1	.022	.038	0.56	0.96		r2		.022		0.559	
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.