RoHS
Available on commercial versions

Glass MELF Switching Diode

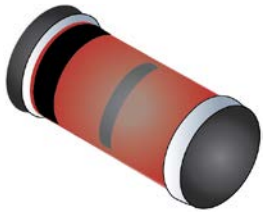
Qualified per MIL-PRF-19500/116

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This popular 1N4148UR-1 JEDEC registered switching/signal diode features internal metallurgical bonded construction for military grade products per MIL-PRF-19500/116. Previously listed as a CDLL4148 this small low capacitance diode, with very fast switching speeds, is hermetically sealed and bonded into a double-plug DO-213AA package. It may be used in a variety of very high speed applications including switchers, detectors, transient OR'ing, logic arrays, blocking, as well as low-capacitance steering diodes, etc. Microsemi also offers a variety of other switching/signal diodes.

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



DO-213AA Package

FEATURES

- Surface mount equivalent of popular JEDEC registered 1N4148 number.
- Hermetically sealed glass construction.
- Metallurgically bonded.
- Double plug construction.
- Very low capacitance.
- Very fast switching speeds with minimal reverse recovery times.
- JAN, JANTX, and JANTXV qualification is available per MIL-PRF-19500/116. (See part nomenclature for all available options.)
- RoHS compliant version available (commercial grade only).

APPLICATIONS / BENEFITS

- High frequency data lines.
- Small size for high density mounting using the surface mount method (see package illustration).
- RS-232 & RS–422 interface networks.
- Ethernet 10 Base T.
- Low capacitance steering or blocking.
- LAN.
- Computers.

MAXIMUM RATINGS @ 25 ºC

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J & T_{STG}	-65 to +175	°C
Thermal Resistance Junction-to-Ambient (1)	$R_{\Theta JA}$	325	°C/W
Thermal Resistance Junction-to-Endcap (2)	$R_{\Theta JEC}$	100	°C/W
Maximum Breakdown Voltage	$V_{(BR)}$	100	V
Working Peak Reverse Voltage	V_{RWM}	75	V
Average Rectified Current @ T_A = 75 ºC (3)	I_O	200	mA
Non-Repetitive Sinusoidal Surge Current (tp = 8.3 ms)	I_{FSM}	2	A (pk)

NOTES: 1. T_A = +75°C on printed circuit board (PCB), PCB = FR4 - .0625 inch (1.59 mm) 1-layer 1-Oz Cu, horizontal, in still air; pads = .061 inch (1.55 mm) x.105 inch (2.67 mm); $R_{\Theta JA}$ with a defined PCB thermal resistance condition included, is measured at I_O = 200 mA dc.
2. See Figure 2 for thermal impedance curves.
3. See Figure 1 for derating.

Also available in:

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

UB package
(surface mount)
1N4148UB

UB2 package
(2-Pin surface mount)
1N4148UB2

UBC package
(Ceramic Lid surface mount)
1N4148UBC

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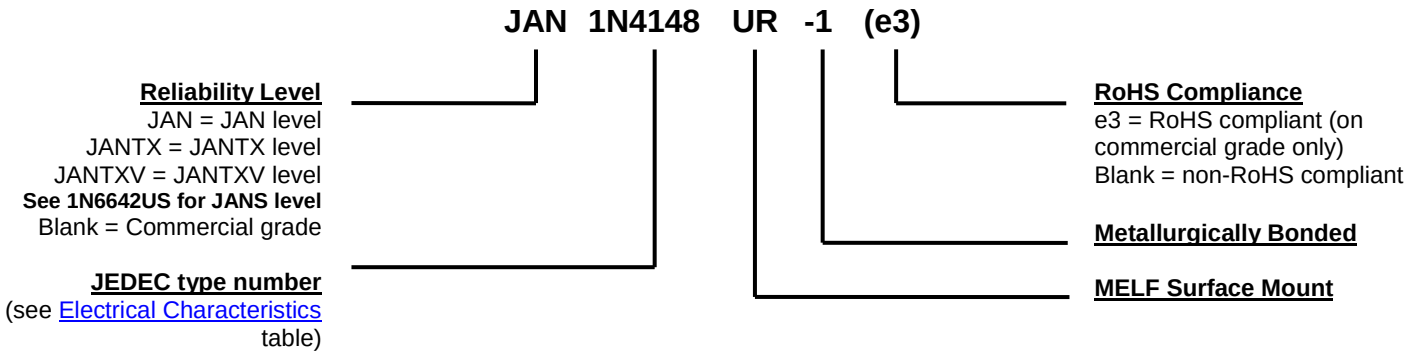
MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass case package.
- TERMINALS: Tin/lead plated or RoHS compliant matte-tin (on commercial grade only) over copper clad steel. Solderable per MIL-STD-750, method 2026.
- POLARITY: Cathode end is banded.
- MOUNTING: The axial coefficient of expansion (COE) of this device is approximately +6PPM/°C. The COE of the mounting surface system should be selected to provide a suitable match with this device.
- MARKING: Part number.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: 0.2 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 °C unless otherwise noted

FORWARD VOLTAGE V_{F1} @ I_F=10 mA	FORWARD VOLTAGE V_{F2} @ I_F=100 mA	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.
NOTE 2: $I_F = 50$ mA.
NOTE 3: $V_R = 0$ V, f = 1 MHz, $V_{SIG} = 50$ mV (pk to pk).
NOTE 4: $V_R = 1.5$V, f = 1 MHz, $V_{SIG} = 50$ mV (pk to pk).

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GRAPHS

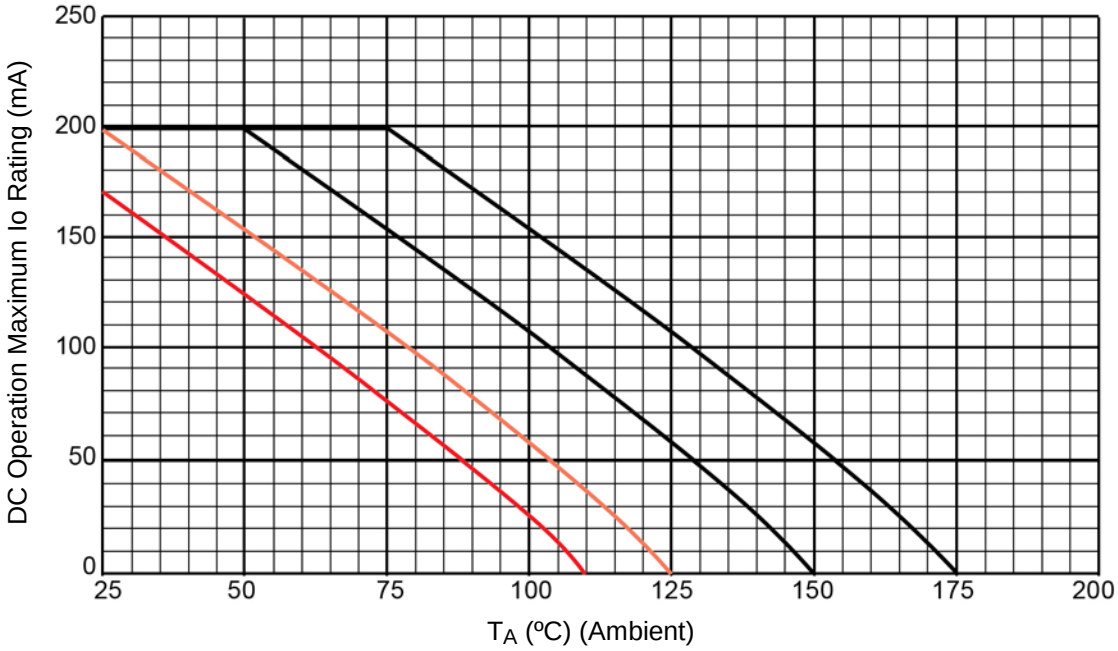

FIGURE 1 – Temperature – Current Derating

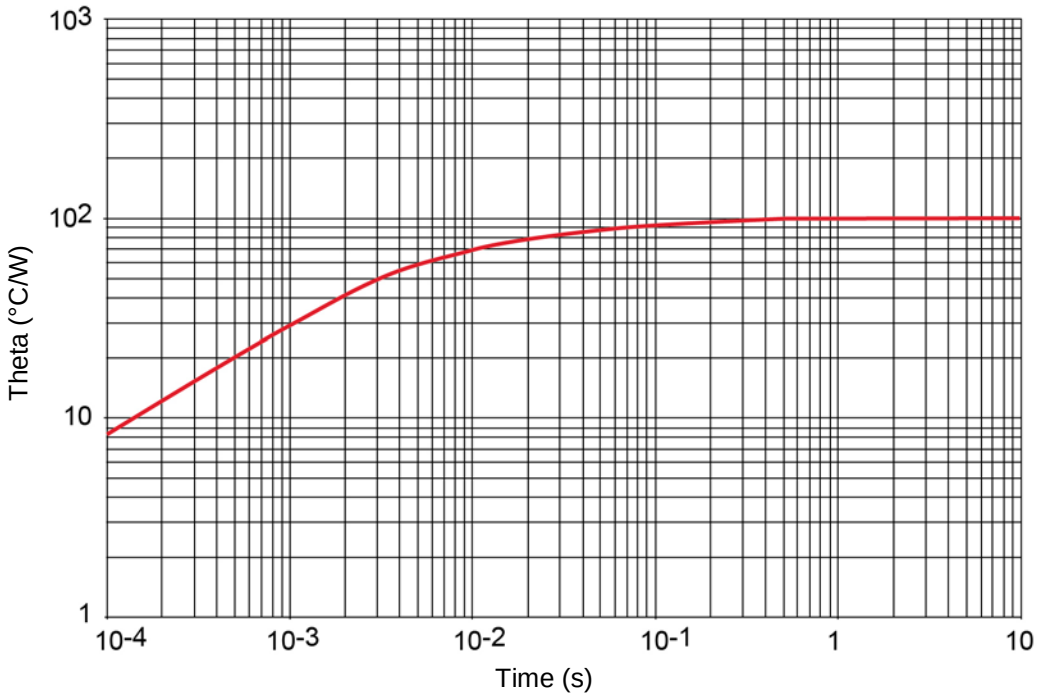

FIGURE 2 – Thermal Impedance

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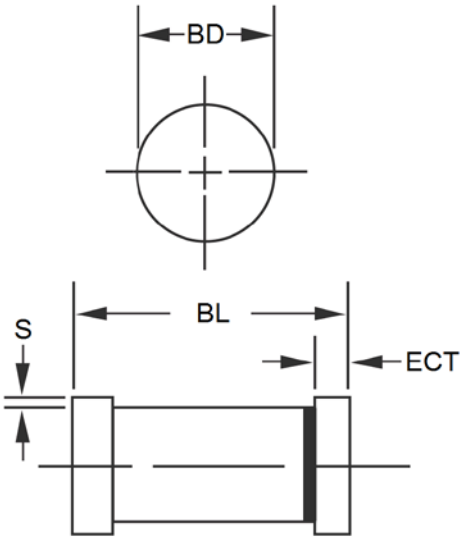
PACKAGE DIMENSIONS

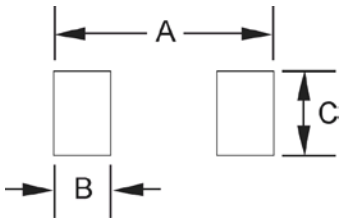


DIM	INCH		MILLIMETERS	
	MIN	MAX	MIN	MAX
BD	0.063	0.067	1.60	1.70
BL	0.130	0.146	3.30	3.71
ECT	0.016	0.022	0.41	0.56
S	.001 min		0.03 min	

NOTES:

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

PAD LAYOUT



	INCH	mm
A	.200	5.08
B	.055	1.40
C	.080	2.03

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