RoHS
Available on commercial versions

Glass Axial Switching Diode

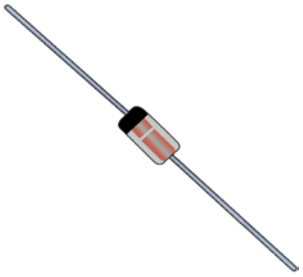
Qualified per MIL-PRF-19500/116

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This popular 1N4148-1 JEDEC registered switching/signal diode features internal metallurgical bonded construction for military grade products per MIL-PRF-19500/116. This small low capacitance diode, with very fast switching speeds, is hermetically sealed and bonded into a double-plug DO-35 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-35 (DO-204AH) Package

FEATURES

- 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 qualifications are available per MIL-PRF-19500/116.
- MSP screening is also available in reference to MIL-PRF-19500 (JANS).
  (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 flexible thru-hole leads (see package illustration).
- RS-232 & RS–422 interface networks.
- Ethernet 10 base T.
- Low capacitance steering or blocking.
- LAN.
- Computers.

MAXIMUM RATINGS @ 25 ºC unless otherwise stated

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J & T_{STG}	-65 to +175	°C
Thermal Resistance Junction-to-Lead (1)	$R_{\Theta JL}$	250	°C/W
Thermal Resistance Junction-to-Ambient (2)	$R_{\Theta JA}$	325	°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. Lead length = .375 inch (9.35 mm). See Figure 2 for thermal impedance curves.
2. 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 for axial = .092 inch (2.34 mm) diameter, strip = .030 inch (0.76 mm) x 1 inch (25.4 mm) long, lead length L ≤ 0.187 inch (≤ 4.75 mm); $R_{\Theta JA}$ with a defined PCB thermal resistance condition included, is measured at I_O = 200 mA.
3. See Figure 1 for derating.

Also available in:

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

UB package
(surface mount)
1N4148UB

UB2 package
(2-Pin surface mount)
1N4148UB2

UBC package
(Ceramic Lid surface mount)
1N4148UBC

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Website:
www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass 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 indicated by band.
- 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

JAN 1N4148 -1 (e3)

Reliability Level
JAN = JAN level
JANTX = JANTX level
JANTXV = JANTXV level
MSP (reference JANS)
See 1N6642 for JANS level
Blank = Commercial grade

JEDEC type number
(see Electrical Characteristics table)

RoHS Compliance
e3 = RoHS compliant (on commercial grade only)
Blank = non-RoHS compliant

Metallurgically Bonded

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).

GRAPHS

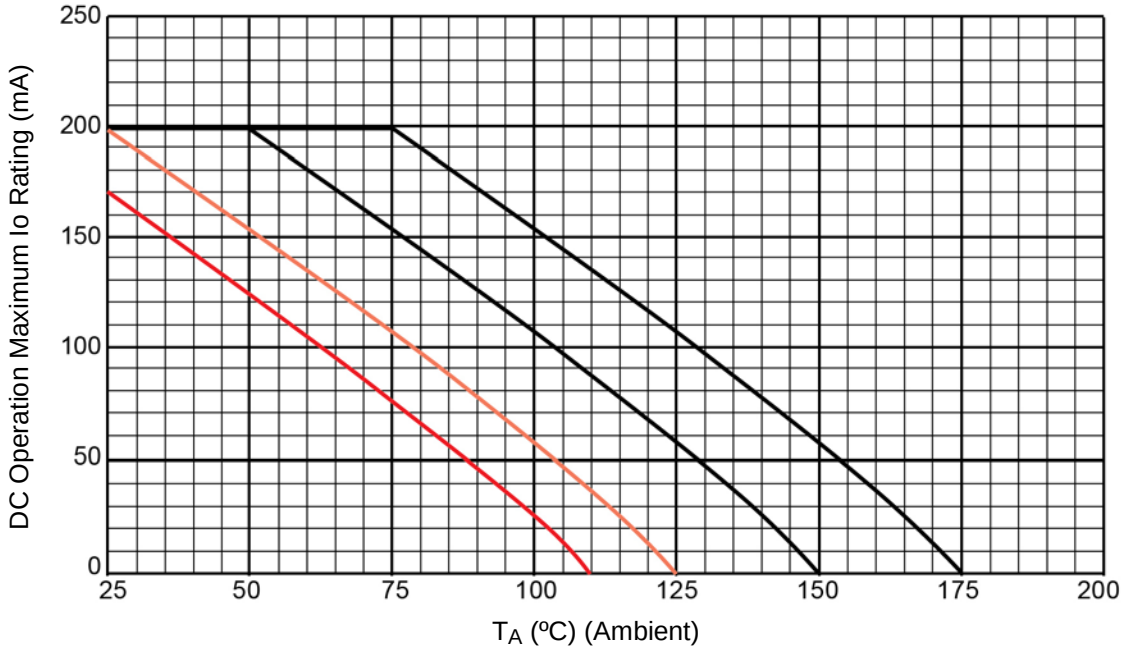

FIGURE 1 – Temperature – Current Derating

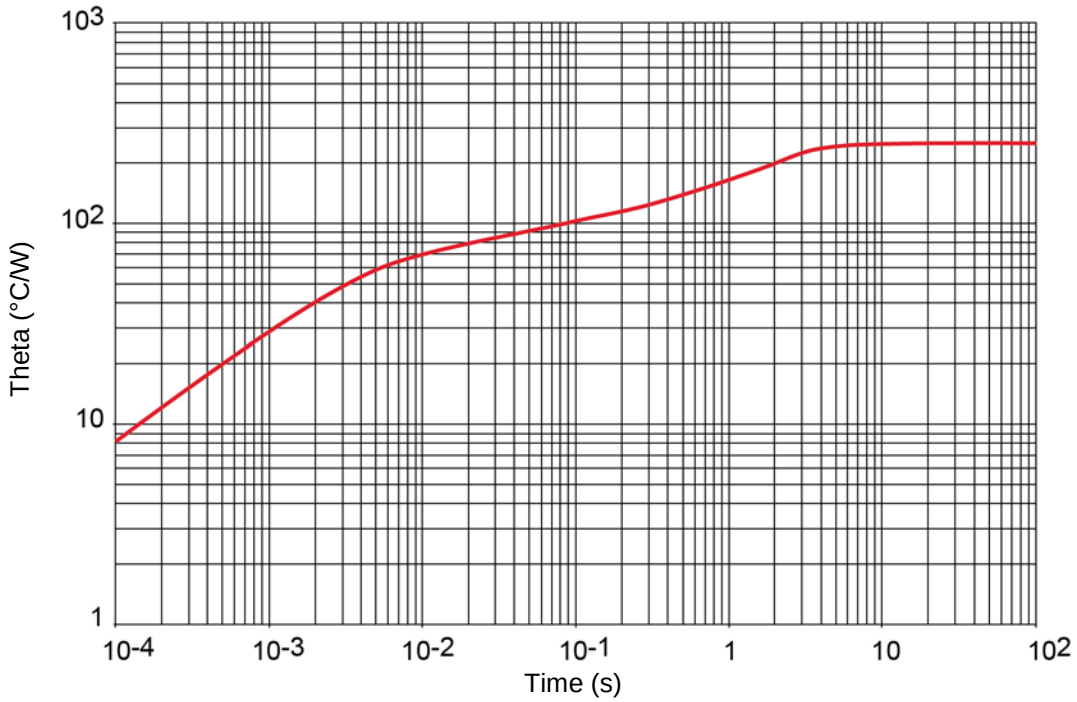

FIGURE 2 – Thermal Impedance