



Glass Axial Switching Diode

Qualified per MIL-PRF-19500/116

DESCRIPTION

This 1N914 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.

FEATURES

- JEDEC registered 1N914 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. (See <u>part nomenclature</u> 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 diodes.
- LAN.
- Computers.

MAXIMUM RATINGS @ 25 °C 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 _{θJL}	250	°C/W
Thermal Resistance Junction-to-Ambient ⁽²⁾	R _{ƏJA}	325	°C/W
Maximum Breakdown Voltage	V _(BR)	100	V
Working Peak Reverse Voltage	V _{RWM}	75	V
Average Rectified Current @ $T_A = 75 {}^{\circ}C^{(3)}$	lo	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.

 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_{ΘJA} with a defined PCB thermal resistance condition included, is measured at I₀ = 200 mA.

3. See Figure 1 for derating.

<u>Qualified Levels</u>: JAN, JANTX, and JANTXV



Also available in:

DO-213AA package (surface mount)

MSC – Lawrence

6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or (978) 620-2600 Fax: (978) 689-0803

MSC – Ireland

Gort Road Business Park, Ennis, Co. Clare, Ireland Tel: +353 (0) 65 6840044 Fax: +353 (0) 65 6822298

Website:

www.microsemi.com

MECHANICAL and PACKAGING

• CASE: Hermetically sealed glass package.

🌽 Microsemi.

- TERMINALS: Tin/lead plated or RoHS compliant matte-tin (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



SYMBOLS & DEFINITIONS							
Symbol	Definition						
I _R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.						
lo	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.						
VF	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 =50 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	μΑ	μA	pF	pF
0.8	1.2	5	20	25	0.5	35	75	4.0	2.8

NOTE 1: $I_F = I_R = 10 \text{ mA}$, $R_L = 100 \text{ Ohms}$. **NOTE 2:** $I_F = 50 \text{ mA}$. **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











PACKAGE DIMENSIONS



	Inch		Millimeters		
Ltr	Min	Max	Min	Max	Notes
BD	.056	.075	1.42	1.91	3
BL	.140	.180	3.56	4.57	3
LD	.018	.022	0.46	0.56	
LL	1.000	1.500	25.40	38.10	
LL ₁		.050		1.27	4

NOTES:

- 1. Dimensions are in inch.
- 2. Millimeters are given for general information only.
- 3. Package contour optional within BD and length BL. Heat slugs, if any, shall be included within this cylinder but shall not be subject to minimum limit of BD. The BL dimension shall include the entire body including slugs.
- 4. Within this zone lead, diameter may vary to allow for lead finishes and irregularities other than heat slugs.
- 5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.