RoHS Available

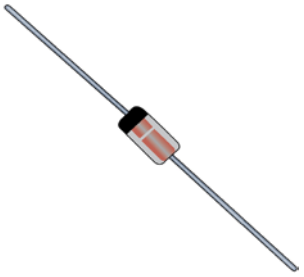
# Computer Switching Diode

*Screening in reference to MIL-PRF-19500 available*

## DESCRIPTION

These popular 1N4149, 1N4151, 1N4154 and 1N4446 – 1N4449 series of JEDEC registered switching/signal diodes are available with internal metallurgical bonded construction. These small low capacitance diodes, with very fast switching speeds, are hermetically sealed and bonded into a double-plug DO-35 package. They may be used in a variety of fast switching applications including computers and peripheral equipment such as magnetic cores, thin-film memories, plated-wire memories, as well as decoding or encoding applications, 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 1N4149, 51, 54 and 1N4446 – 49 series.
- Hermetically sealed glass construction.
- Metallurgically bonded.
- Double plug construction.
- Very low capacitance.
- Very fast switching speeds with minimal reverse recovery times.
- Screening available in reference to MIL-PRF-19500.
  (See part nomenclature for all available options.)
- RoHS compliant versions available.

## 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.
- Switching core drivers.
- LAN.
- Computers.

## MAXIMUM RATINGS @ 25 ºC

| Parameters/Test Conditions | Symbol | Value | Unit |
|---|---|---|---|
| Junction | $T_J$ | -65 to +150 | $^oC$ |
| Storage Temperature | $T_{STG}$ | -65 to +200 | $^oC$ |
| Reverse Voltage, Maximum (Peak) Total Value<br>1N4154:<br>1N4149, 1N4151, 1N4446, 1N4447, 1N4448, 1N4449: | $V_{RM}$ | <br>35<br>75 | V |
| Average Rectified Current | $I_O$ | 200 | mA |
| Non-Repetitive Sinusoidal Surge Current (8.3 mS) | $I_{FSM}$ | 500 | mA |

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## MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass package.
- TERMINALS: Tin/lead plated or RoHS compliant matte-tin 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

**MQ 1N4149 -1 (e3)**

**Reliability Level**
MQ (reference JAN)
MX (reference JANTX)
MV (reference JANTXV)
MSP (reference JANS)
Blank = Commercial grade

**JEDEC type number**
(see Electrical Characteristics table)

**RoHS Compliance**
e3 = RoHS compliant
Blank = non-RoHS compliant

**Metallurgically Bonded**

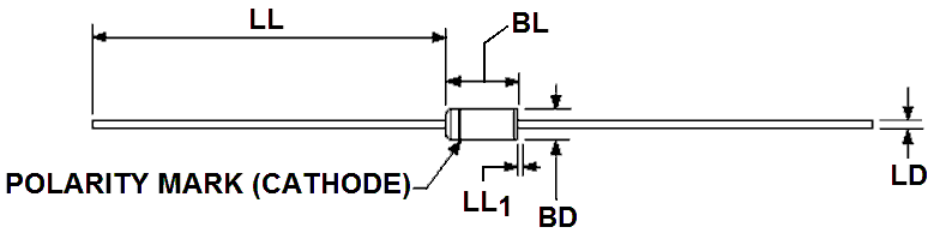
## SYMBOLS & DEFINITIONS

| 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

| Type | Working Peak Reverse Voltage $V_{RWM}$ | Forward Voltage $V_F$ | | | | | Reverse Current $I_R$ @ $V_R$ | | Reverse Current @ 150 °C $I_R$ @ $V_R$ | | Junction Capacitance $C_J$ @ 0 V | Reverse Recovery Time $t_{rr}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | @ 10 mA | @ 20 mA | @ 30 mA | @ 50 mA | @ 100 mA | V | nA | V | µA | | |
| 1N4149-1 | 75 | 1.0 | - | - | - | - | 20 | 25 | 20 | 50 | 4 pF | 4 ns |
| 1N4151-1 | 75 | - | - | - | 1.0 | - | 50 | 50 | 50 | 50 | 4 pF | 2 ns |
| 1N4154-1 | 35 | - | - | 1.0 | - | - | 25 | 100 | 25 | 100 | 4 pF | 2 ns |
| 1N4446-1 | 75 | - | 1.0 | - | - | - | 20 | 25 | 20 | 50 | 4 pF | 4 ns |
| 1N4447-1 | 75 | - | 1.0 | - | - | - | 20 | 25 | 20 | 50 | 4 pF | 4 ns |
| 1N4448-1 | 75 | - | - | - | - | 1.0 | 20 | 25 | 20 | 50 | 4 pF | 4 ns |
| 1N4449-1 | 75 | - | - | 1.0 | - | - | 20 | 25 | 20 | 50 | 2 pF | 4 ns |

## PACKAGE DIMENSIONS




| Ltr | Dimensions | | | | Notes |
|---|---|---|---|---|---|
| | Inch | | Millimeters | | |
| | Min | Max | Min | Max | |
| **BD** | .055 | .090 | 1.40 | 2.29 | 3 |
| **BL** | .120 | .200 | 3.05 | 5.08 | 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.