Available on commercial versions

# Switching Diode

*Qualified per MIL-PRF-19500/193*

*Qualified Level:*
*JAN*

## DESCRIPTION

These popular 1N457 – 1N459 series of JEDEC registered switching/signal diodes are metallurgically bonded. 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. Microsemi also offers a variety of other switching/signal diodes.

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



**DO-35 Package**

## FEATURES

- JEDEC registered 1N457A thru 1N459A series.
- Tightened $V_F$ of 1 V max at 100 mA.
- Metallurgically bonded.
- Hermetically sealed.
- Double plug construction.
- JAN qualification per MIL-PRF-19500/193 available.
- RoHS compliant versions available (commercial grade only).

## APPLICATIONS / BENEFITS

- Small size for high density mounting using flexible thru-hole leads (see package illustration).
- High frequency data lines:
  - RS-232 & RS–422 interface networks
  - Ethernet 10 Base T links
  - Switching core drivers
  - Local area networks
  - Computers

## MAXIMUM RATINGS @ 25 °C unless stated otherwise.

| Parameters/Test Conditions | | Symbol | Value | Unit |
|---|---|---|---|---|
| Junction Temperature | | $T_J$ | -65 to +150 | °C |
| Storage Temperature | | $T_{STG}$ | -65 to +175 | °C |
| Maximum Reverse Voltage | 1N457A | $V_{RM}$ | 70 | V |
| | 1N458A | | 150 | |
| | 1N459A | | 200 | |
| Working Peak Reverse Voltage | 1N457A | $V_{RWM}$ | 60 | V |
| | 1N458A | | 125 | |
| | 1N459A | | 175 | |
| Maximum Average dc Output Current @ $T_A$ = +25 °C (1) | | $I_O$ | 150 | mA |
| Forward Current | 1N457A | $I_F$ | 225 | mA |
| | 1N458A | | 165 | |
| | 1N459A | | 120 | |
| Steady-State Power Dissipation | | $P_D$ | 500 | mW |

**Notes:** 1. Derate $I_O$ linearly to 0.0 mA at +150 °C.

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## MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass package.
- TERMINALS: Tin/Lead or RoHS compliant matte/tin (commercial grade only) plated copper clad steel.
- MARKING: Blue body coat with black digits.
- POLARITY: Cathode end is banded.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: 0.2 grams.
- See Package Dimensions on last page.

## PART NOMENCLATURE

**JAN 1N457 A (e3)**

**Reliability Level**
JAN = JAN Level
Blank = Commercial

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

**RoHS Compliance**
e3 = RoHS Compliant (available on commercial grade only)
Blank = non-RoHS Compliant

**Commercial Grade**
(omitted in JAN level part number)

## SYMBOLS & DEFINITIONS

| Symbol | Definition |
|---|---|
| $I_F$ | Forward Current. |
| $I_O$ | Average Rectified Output 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. |
| $I_R$ | Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature. |
| $V_F$ | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| $V_{RWM}$ | 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. |
| $V_{WM}$ | Working Peak Voltage: The maximum peak voltage that can be applied over the operating temperature range. This is also referred to as Standoff Voltage. |


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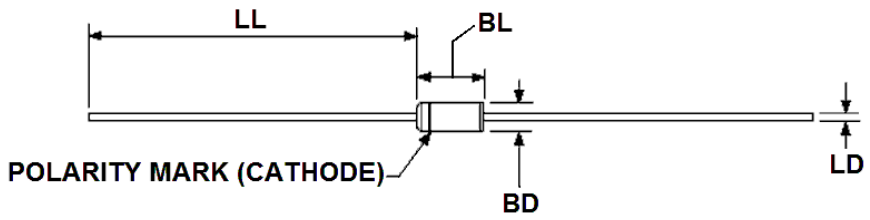
## ELECTRICAL CHARACTERISTICS @ 25 °C unless stated otherwise.

| Part Number | Forward Voltage $V_{F1}$ @ $I_F$ (Note 1) | Reverse Current $I_{R1}$ @ $V_{RWM}$ | Reverse Current $I_{R2}$ @ $V_{RM}$ | Reverse Current $I_{R3}$ @ $V_{RWM}$ | Low Temp Operating Forward Voltage $V_{F2}$ @ $I_F$ = 100 mA pulsed |
|---|---|---|---|---|---|
| | V | $T_A$ = +25 °C nA | $T_A$ = +25 °C µA | $T_A$ = +150 °C µA | $T_A$ = -55 °C V |
| 1N457 | 1.0 | 25 | 1 | 5 | 1.2 |
| 1N458 | 1.0 | 25 | 1 | 5 | 1.2 |
| 1N459 | 1.0 | 25 | 1 | 5 | 1.2 |

**NOTES:**

1. $I_F$ = 100 mA, $t_p$ = 8.5 ms, max duty cycle 2 percent (pulsed).

## PACKAGE DIMENSIONS




**NOTES:**

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

| Ltr | Dimensions | | | |
|---|---|---|---|---|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| BD | .056 | .075 | 1.42 | 1.90 |
| BL | .140 | .180 | 3.56 | 4.57 |
| LD | .018 | .022 | 0.46 | 0.56 |
| LL | 1.000 | 1.500 | 25.40 | 38.10 |
| | | | | |


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