



## 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>.

### 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).

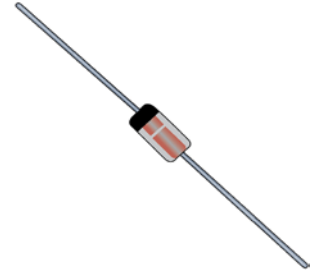
### APPLICATIONS / BENEFITS

- 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    | 70          | V    |
|   | 1N458A    | 150         |      |
|   | 1N459A    | 200         |      |
| Working Peak Reverse Voltage                                    | 1N457A    | 60          | V    |
|   | 1N458A    | 125         |      |
|   | 1N459A    | 175         |      |
| Maximum Average dc Output Current @ $T_A = +25\text{ °C}^{(1)}$ | $I_O$     | 150         | mA   |
| Forward Current   | 1N457A    | 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.



**DO-35 Package**

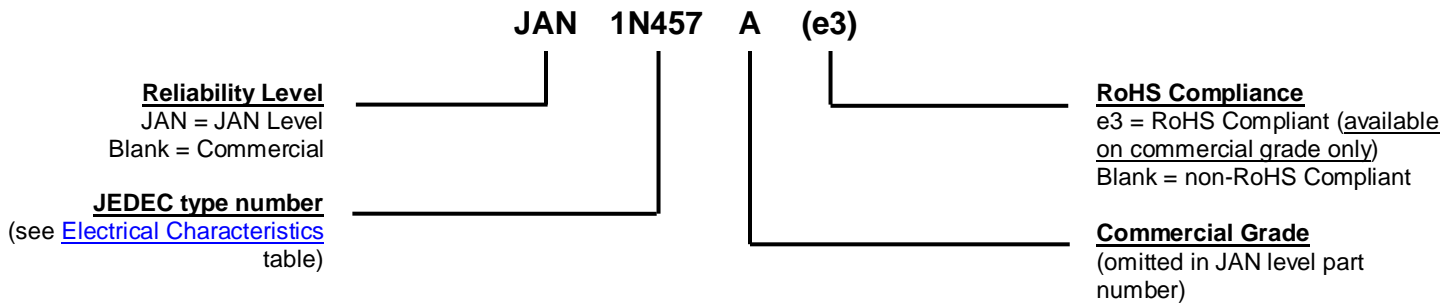
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**MECHANICAL and PACKAGING**

- 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**

**SYMBOLS & DEFINITIONS**

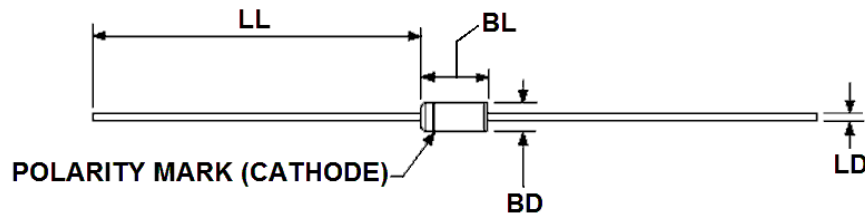
| Symbol    | Definition   |
|-----------|--|
| $I_F$     | Forward Current.   |
| $I_O$     | Average Rectified Output Current: The Output Current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.                                       |
| $I_R$     | 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.   |

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

| Part Number | Forward Voltage         | Reverse Current              |   |  | Low Temp Operating Forward Voltage     |
|-------------|-------------------------|------------------------------|---|--|--|
|             | $V_{F1} @ I_F$ (Note 1) | $I_{R1} @ V_{RWM}$           | $I_{R2} @ V_{RM}$                       | $I_{R3} @ V_{RWM}$                       | $V_{F2} @ I_F = 100 \text{ mA pulsed}$ |
|             | V                       | $T_A = +25 \text{ °C}$<br>nA | $T_A = +25 \text{ °C}$<br>$\mu\text{A}$ | $T_A = +150 \text{ °C}$<br>$\mu\text{A}$ | $T_A = -55 \text{ °C}$<br>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:**

- $I_F = 100 \text{ mA}$ ,  $t_p = 8.5 \text{ ms}$ , max duty cycle 2 percent (pulsed).

**PACKAGE DIMENSIONS**

**NOTES:**

- Dimensions are in inches.
- Millimeters are given for general information only.
- In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi x$  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 |
|     |            |       |             |       |