

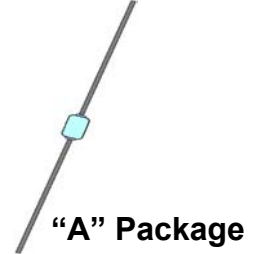
**VOIDLESS-HERMETICALLY-SEALED
ULTRAFAST RECOVERY GLASS
RECTIFIERS**

ALSO
AVAILABLE IN
SURFACE
MOUNT

DESCRIPTION

This "ultrafast recovery" rectifier diode series is military qualified to MIL-PRF-19500/477 and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 2.5 Amp rated rectifiers for working peak reverse voltages from 50 to 150 volts are hermetically sealed with voidless-glass construction using an internal "Category I" metallurgical bond. They are also available in surface-mount packages (see separate data sheet for 1N5802US thru 1N5806US). Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speed requirements including standard, fast and ultrafast in both through-hole and surface-mount packages.

APPEARANCE



IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

FEATURES

- Popular JEDEC registered 1N5802 to 1N5806 series
- Voidless hermetically sealed glass package
- Extremely robust construction
- Triple-layer passivation
- Internal "Category I" Metallurgical bonds
- JAN, JANTX, JANTXV, and JANS available per MIL-PRF-19500/477
- Surface mount equivalents also available in a square end-cap MELF configuration with "US" suffix (see separate data sheet for 1N5802US thru 1N5806US)

APPLICATIONS / BENEFITS

- Ultrafast recovery 2.5 Amp rectifier series 50 to 150V
- Military and other high-reliability applications
- Switching power supplies or other applications requiring extremely fast switching & low forward loss
- High forward surge current capability
- Low thermal resistance
- Controlled avalanche with peak reverse power capability
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Junction Temperature: -65°C to +175°C
- Storage Temperature: -65°C to +175°C
- Average Rectified Forward Current (I_O): 2.5 A @ $T_L = 75^\circ\text{C}$
- Thermal Resistance: 36 °C/W junction to lead (L=.375 in)
- Thermal Impedance: 4.5°C/W @ 10 ms heating time
- Forward Surge Current: 35 Amps @ 8.3 ms half-sine
- Capacitance: 25 pF @ $V_R = 10$ Volts, $f = 1$ MHz
- Solder temperature: 260°C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs
- TERMINATIONS: Axial-leads are Tin/Lead (Sn/Pb) over Copper
- MARKING: Body painted and part number, etc.
- POLARITY: Cathode indicated by band
- Tape & Reel option: Standard per EIA-296
- Weight: 340 mg
- See package dimensions on last page

ELECTRICAL CHARACTERISTICS

| TYPE | WORKING PEAK REVERSE VOLTAGE V_{RWM} | BREAKDOWN VOLTAGE (MIN.) @ 100 μ A V_{BR} | AVERAGE RECTIFIED CURRENT I_{O1} @ $T_L=+75^\circ\text{C}$ (NOTE 1) | AVERAGE RECTIFIED CURRENT I_{O2} @ $T_A=+55^\circ\text{C}$ (Note 2) | MAXIMUM FORWARD VOLTAGE @ 1 A (8.3 ms pulse) V_F | | REVERSE CURRENT (MAX) @ V_{RWM} I_R | | SURGE CURRENT (MAX) I_{FSM} (NOTE 3) | REVERSE RECOVERY TIME (MAX) (NOTE 4) t_{rr} |
|--------|---|---|--|--|---|-------|---|-------|--|---|
| | | | | | VOLTS | | μ A | | | |
| | | | | | 25°C | 100°C | 25°C | 100°C | | |
| 1N5802 | 50 | 55 | 2.5 | 1.0 | 0.875 | 0.800 | 1 | 50 | 35 | 25 |
| 1N5803 | 75 | 80 | 2.5 | 1.0 | | | 1 | 50 | 35 | 25 |
| 1N5804 | 100 | 110 | 2.5 | 1.0 | 0.875 | 0.800 | 1 | 50 | 35 | 25 |
| 1N5805 | 125 | 135 | 2.5 | 1.0 | | | 1 | 50 | 35 | 25 |
| 1N5806 | 150 | 160 | 2.5 | 1.0 | 0.875 | 0.800 | 1 | 50 | 35 | 25 |

NOTE 1: I_{O1} is rated at 2.5 A @ $T_L = 75^\circ\text{C}$ at 3/8 inch lead length. Derate at 25 mA/°C for T_L above 75°C.

NOTE 2: I_{O2} is rated at 1.0 A @ $T_A = 55^\circ\text{C}$ for PC boards where thermal resistance from mounting point to ambient is sufficiently controlled where $T_{J(max)}$ does not exceed 175°C. Derate at 8.33 mA/°C for T_A above 55°C.

NOTE 3: $T_A = 25^\circ\text{C}$ @ $I_O = 1.0$ A and V_{RWM} for ten 8.3 ms surges at 1 minute intervals

NOTE 4: $I_F = 0.5$ A, $I_{RM} = 0.5$ A, $I_R(REC) = .05$ A

SYMBOLS & DEFINITIONS

| Symbol | Definition |
|-----------|--|
| V_{BR} | Minimum Breakdown Voltage: The minimum 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 |
| I_O | Average Rectified Output Current: Output Current Averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle |
| V_F | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current |
| I_R | Maximum Leakage Current: The maximum leakage current that will flow at the specified voltage and temperature |
| C | Capacitance: The capacitance in pF at a frequency of 1 MHz and specified voltage |
| 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 recovery decay point after a peak reverse current occurs. |

GRAPHS

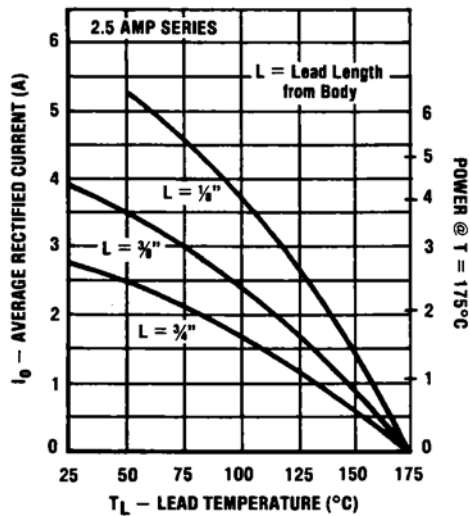
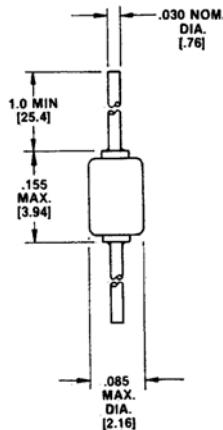


FIGURE 1
OUTPUT CURRENT vs. LEAD TEMP.

PACKAGE DIMENSIONS inches/[mm]



NOTE: Lead tolerance = +0.002/-0.003 inches