Microsemi
SCOTTSDALE DIVISION

1N5802 thru 1N5806

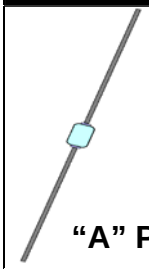
VOIDLESS-HERMETICALLY-SEALED ULTRAFAST RECOVERY GLASS RECTIFIERS

ALSO AVAILABLE IN SURFACE MOUNT

DESCRIPTION

These "Ultrafast Recovery" rectifier diodes are military qualified to MIL-PRF-19500/477 and are 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 thru-hole and surface-mount packages.

APPEARANCE



"A" Package

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 = 75ºC
- Thermal Resistance: 36 ºC/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: 260ºC for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs (package dimensions on last page)
- TERMINATIONS: Axial-leads are Tin/Lead (Sn/Pb) over Copper. Note: Previous JANS inventory had solid Silver axial-leads and no finish.
- MARKING: Body painted and part number, etc.
- POLARITY: Cathode indicated by band
- Tape & Reel option: Standard per EIA-296
- Weight: 340 mg

ELECTRICAL CHARACTERISTICS

TYPE	WORKING PEAK REVERSE VOLTAGE V_{RWM}	BREAKDOWN VOLTAGE (MIN.) @ 100µA V_{BR}	AVERAGE RECTIFIED CURRENT I_{O1} @ T_L=+75ºC (NOTE 1)	AVERAGE RECTIFIED CURRENT I_{O2} @ T_A=+55ºC (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	VOLTS	AMPS	AMPS	VOLTS		µA		AMPS	ns
					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 = 75ºC at 3/8 inch lead length. Derate at 25 mA/ºC for T_L above 75ºC.

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

NOTE 3: T_A = 25°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

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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

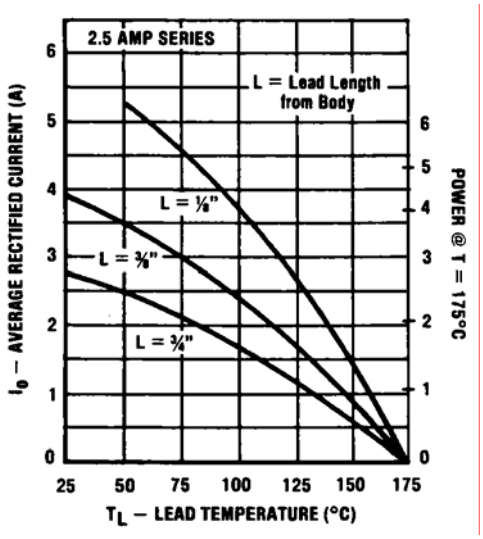
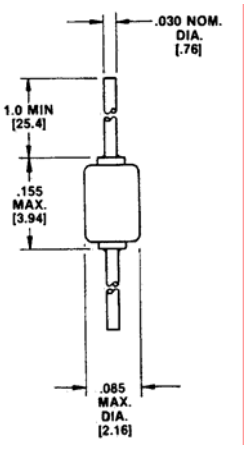


FIGURE 1
OUTPUT CURRENT vs. LEAD TEMP.

PACKAGE DIMENSIONS inches/[mm]



NOTE: Lead tolerance = +0.002/-0.003 inches

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