Microsemi
SCOTTSDALE DIVISION

1N5550US thru 1N5554US

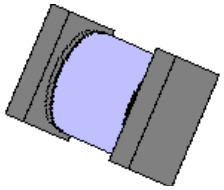
VOIDLESS HERMITICALLY SEALED SURFACE MOUNT STANDARD RECOVERY GLASS RECTIFIERS

DESCRIPTION

This "standard recovery" surface mount rectifier diode series is military qualified to MIL-PRF-19500/420 and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 5.0 Amp rated rectifiers for working peak reverse voltages from 200 to 1000 volts are hermetically sealed with voidless-glass construction using an internal "Category I" metallurgical bond. These devices are also available in axial-leaded packages for thru-hole mounting (see separate data sheet for 1N5550 thru 1N5554). Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speeds.

APPEARANCE

Package "E"
or D-5B



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

FEATURES

- Surface mount package series equivalent to the JEDEC registered 1N5550 to 1N5554 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-19500/420
- Axial-leaded equivalents also available (see separate data sheet for 1N5550 thru 1N5554)

APPLICATIONS / BENEFITS

- Standard recovery 5 Amp rectifiers 200 to 1000 V
- Military and other high-reliability applications
- General rectifier applications including bridges, half-bridges, catch diodes, etc.
- 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 +200°C
- Storage Temperature: -65°C to +175°C
- Thermal Resistance: 11°C/W junction to endcap
- Thermal Impedance: 1.5°C/W @ 10 ms heating time
- Average Rectified Forward Current (I_O): 5 Amps @ T_{EC} = 55ºC (see Note 1)
- Forward Surge Current (8.3 ms half sine): 100 Amps
- Solder temperatures: 260°C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs
- TERMINALS: End caps are Copper with Tin/Lead (Sn/Pb) finish. Note: Previous inventory had solid Silver end caps with Tin/Lead (Sn/Pb) finish.
- MARKING: Cathode band only
- POLARITY: Cathode indicated by band
- TAPE & REEL option: Standard per EIA-481-B
- WEIGHT: 539 mg
- See package dimensions and recommended pad layout on last page

ELECTRICAL CHARACTERISTICS

TYPE	MINIMUM BREAKDOWN VOLTAGE V_{BR} @50µA VOLTS	WORKING PEAK REVERSE VOLTAGE V_{RWM} VOLTS	AVERAGE RECTIFIED CURRENT I_{O1} @ T_{EC}=+55° C Note 1 AMPS	AVERAGE RECTIFIED CURRENT I_{O2} @ T_A=+55°C Note 2 AMPS	FORWARD VOLTAGE V_F @ 9A (pk)		REVERSE CURRENT I_R @ V_{RWM} µA	REVERSE RECOVERY t_{rr} Note 3 µs
					MIN. VOLTS	MAX. VOLTS		
1N5550US	220	200	5	3	0.6V (pk)	1.2V (pk)	1.0	2.0
1N5551US	440	400	5	3	0.6V (pk)	1.2V (pk)	1.0	2.0
1N5552US	660	600	5	3	0.6V (pk)	1.2V (pk)	1.0	2.0
1N5553US	880	800	5	3	0.6V (pk)	1.3V (pk)	1.0	2.0
1N5554US	1100	1000	5	3	0.6V (pk)	1.3V (pk)	1.0	2.0

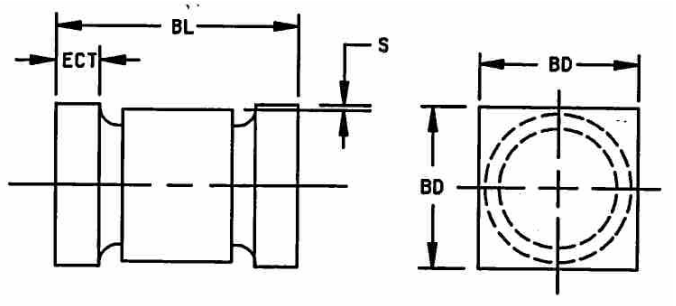
NOTE 1: Derate linearly at 66.6 mA/ºC above T_{EC} = 100ºC. An I_O of up to 6 Amps is allowable provided that appropriate heat sinking or forced air cooling maintains the junction temperature at or below +200C.
NOTE 2: Derate linearly at 25 mA/ºC above T_A = 55ºC. This rating is typical for PC boards where thermal resistance from mounting point to ambient is sufficient controlled where $T_{J(MAX)}$ rating is not exceeded.
NOTE 3: I_F = 0.5 A, I_{RM} = 1.0 A, $I_{R(REC)}$ = .250 A

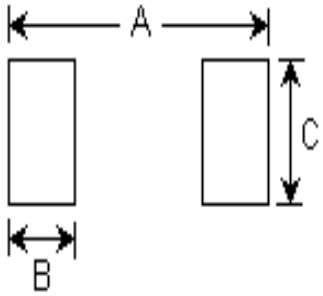
VOIDLESS HERMITICALLY SEALED SURFACE MOUNT STANDARD RECOVERY GLASS RECTIFIERS

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 excluding all transient voltages (ref JESD282-B).
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.
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 then a specified recovery decay point after a peak reverse current occurs.

PACKAGE DIMENSIONS AND PAD LAYOUT





NOTE: This Package Outline has also previously been identified as “D-5B”

	INCHES		mm	
	MIN	MAX	MIN	MAX
BL	.205	.225	5.21	5.72
BD	.137	.142	3.48	3.61
ECT	.019	.028	0.48	0.711
S	.003	---	0.08	---

PAD LAYOUT

	INCHES	mm
A	0.288	7.32
B	0.070	1.78
C	0.155	3.94

Note: If mounting requires adhesive separate from the solder, an additional 0.080 inch diameter contact may be placed in the center between the pads as an optional spot for cement.