RoHS
Available on commercial versions

VOIDLESS HERMETICALLY SEALED SURFACE MOUNT STANDARD RECOVERY GLASS RECTIFIERS

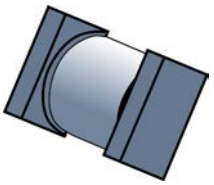
Qualified to MIL-PRF-19500/420

Qualified Levels:
JAN, JANTX, JANTXV and JANS

DESCRIPTION

This "standard recovery" surface mount rectifier diode series is military qualified 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 1*" metallurgical bond. These devices are also available in axial-leaded packages for thru-hole mounting. Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speeds.

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



"B" SQ-MELF (D-5B) Package

Also available in:

"B" Package
(axial-leaded)
1N5550 – 1N5554

FEATURES

- Surface mount equivalent of JEDEC registered 1N5550 thru 1N5554 series.
- Voidless hermetically sealed glass package.
- Extremely robust construction.
- Quadruple-layer passivation.
- Internal "*Category 1*" metallurgical bonds.
- JAN, JANTX, JANTXV and JANS qualified versions available per MIL-PRF-19500/420.
- RoHS compliant versions available (commercial grade only).

APPLICATIONS / BENEFITS

- Standard recovery 5 amp 200 to 1000 volts rectifiers series.
- 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.
- Extremely robust construction.
- Inherently radiation hard as described in Microsemi "MicroNote 050".

MAXIMUM RATINGS @ T_A = 25 °C unless otherwise noted.

Parameters/Test Conditions		Symbol	Value	Unit
Junction and Storage Temperature		T_J and T_{STG}	-65 to +175	°C
Thermal Resistance Junction-to-End Cap		$R_{\Theta JEC}$	6.5	°C/W
Thermal Impedance @ 10 ms heating time (1)		$Z_{\Theta JX}$	1.5	°C/W
Maximum Forward Surge Current (8.3 ms half sine)		I_{FSM}	100	A
Average Rectified Forward Current (2)	@ T_{EC} = 130 °C	$I_{O(L)}$	5	A
Average Rectified Forward Current (3)	@ T_A = 55 °C	I_{O2} (2)	3	A
	@ T_A = 100 °C	I_{O3} (4)	2	A
Working Peak Reverse Voltage	1N5550US	V_{RWM}	200	V
	1N5551US		400	
	1N5552US		600	
	1N5553US		800	
	1N5554US		1000	
Solder Temperature @ 10 s		T_{SP}	260	°C

See notes on next page.

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MAXIMUM RATINGS

Notes: 1. Derate linearly at 66.6 mA/ºC above T_{EC} = 100 ºC. 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 +200 °C.
2. Derate linearly at 22.2 mA/ºC from +55 ºC to +100 °C.
3. These I_O ratings are for a thermally (PC boards or other) mounting methods where the lead or end-cap temperatures cannot be maintained and where thermal resistance from mounting point to ambient is still sufficiently controlled where $T_{J(MAX)}$ does not exceed 175 °C. This equates to $R_{\theta JX} \leq 47$ ºC/W.
4. Derate linearly at 26.7 mA/°C above T_A= +100 °C to +175 °C ambient.

MECHANICAL and PACKAGING

- CASE: Hermetically sealed voidless hard glass with tungsten slugs.
- TERMINALS: End caps are copper with tin/lead (Sn/Pb) finish. RoHS compliant matte-tin is available for commercial only.
- MARKING: Cathode band only.
- POLARITY: Cathode indicated by band.
- TAPE & REEL option: Standard per EIA-481-B. Consult factory for quantities.
- WEIGHT: 539 milligrams.
- See Package Dimensions and recommended Pad Layout on last page.

PART NOMENCLATURE

JAN 1N5550 US (e3)

Reliability Level
JAN = JAN Level
JANTX = JANTX Level
JANTXV = JANTXV Level
JANS = JANS Level
Blank = Commercial

JEDEC type number
See Electrical Characteristics table

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

MELF Package

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: The 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 Reverse Current: The maximum reverse (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 a specified decay point after a peak reverse current occurs.

ELECTRICAL CHARACTERISTICS @ T_A = 25 °C unless otherwise noted.

TYPE	MINIMUM BREAKDOWN VOLTAGE V_{BR} I_R @ 50 µA Volts	FORWARD VOLTAGE V_F @ 9 A (pk)		MAXIMUM REVERSE CURRENT I_R @ V_{RWM} µA	REVERSE RECOVERY t_{rr} (Note 1) µs
		MIN. Volts	MAX. Volts		
1N5550US	220	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5551US	440	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5552US	660	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5553US	880	0.6 V (pk)	1.3 V (pk)	1.0	2.0
1N5554US	1100	0.6 V (pk)	1.3 V (pk)	1.0	2.0

NOTE 1: I_F = 0.5 A, I_{RM} = 1.0 A, $I_{R(REC)}$ = .250 A.

GRAPHS

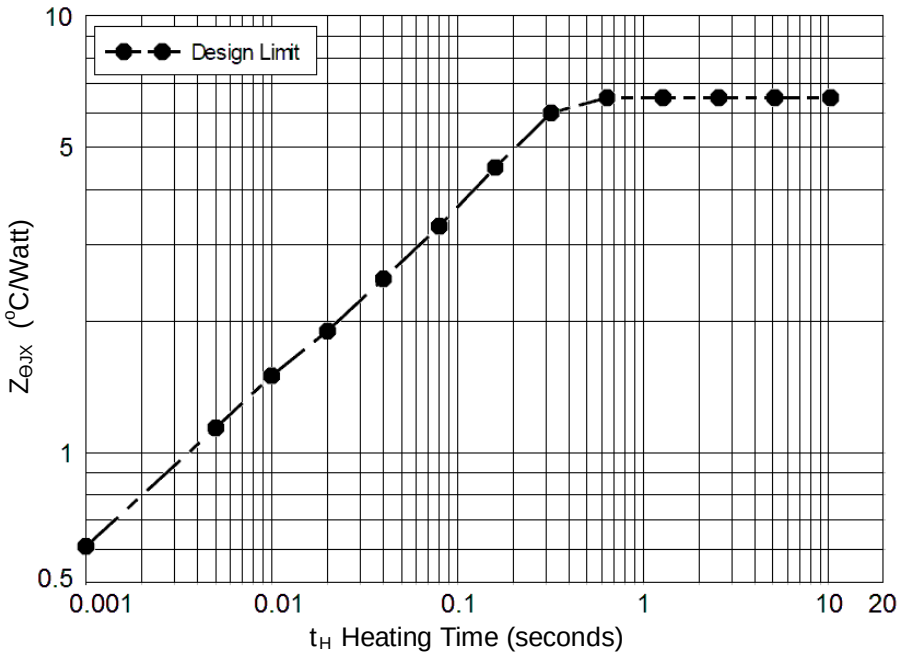


FIGURE 1
Maximum Thermal Impedance

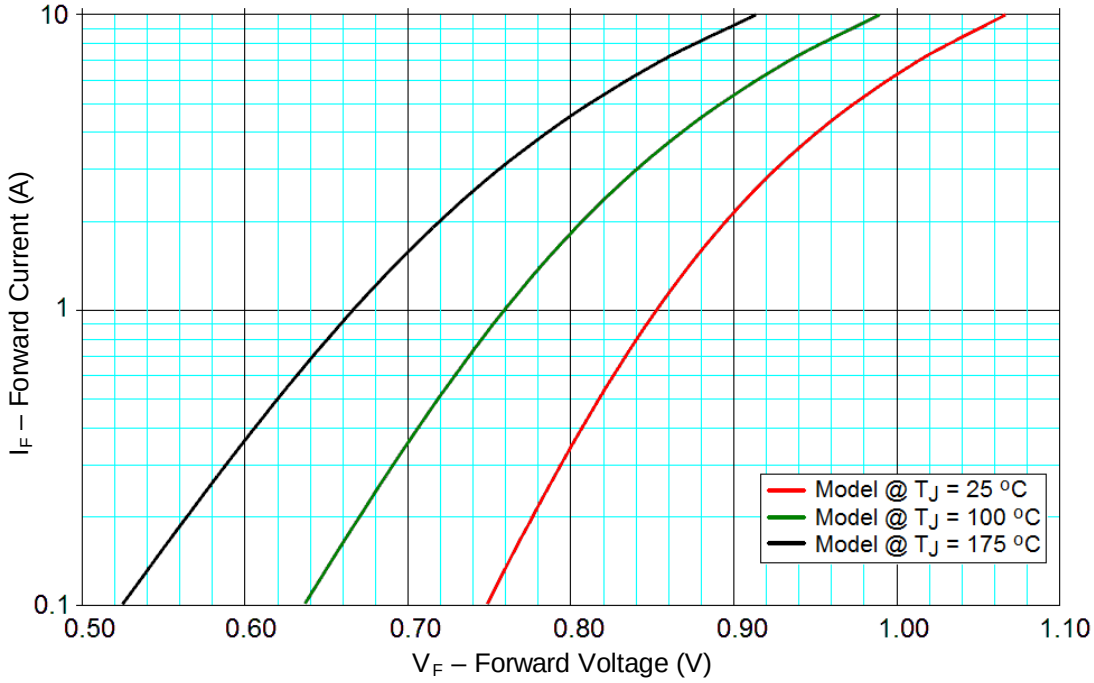
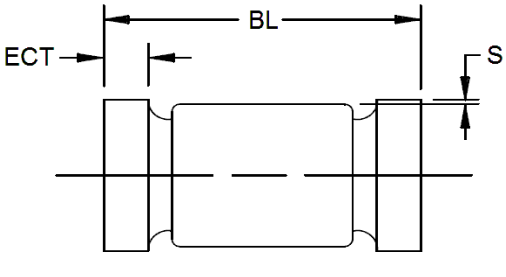
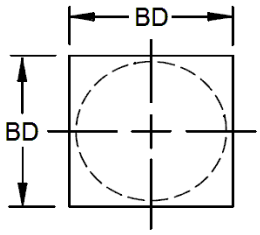


FIGURE 4
Typical Forward Voltage vs. Forward Current

PACKAGE DIMENSIONS



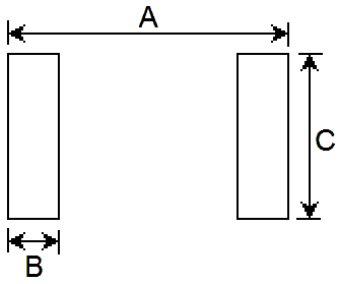


Ltr	Inch		Millimeters	
	MIN	MAX	MIN	MAX
BL	.200	.275	5.08	6.99
BD	.137	.186	3.48	4.72
ECT	.019	.034	0.48	0.86
S	.003	---	0.08	---

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Dimensions are pre-solder dip.
4. Minimum clearance of glass body to mounting surface on all orientations.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.
6. This package outline has also previously been identified as “D5B”.

PAD LAYOUT



Ltr	Inch	Millimeters
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.

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