RoHS
Available on commercial versions

VOIDLESS HERMETICALLY SEALED STANDARD RECOVERY GLASS RECTIFIERS

Qualified to MIL-PRF-19500/420

Qualified Levels:
JAN, JANTX, JANTXV and JANS

DESCRIPTION

This "standard recovery" 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 surface mount MELF package configurations. Microsemi also offers numerous other rectifier products to meet higher and lower current ratings with various recovery time speed requirements including fast and ultrafast device types in both through-hole and surface mount packages.

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

"B" Package

FEATURES

- 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 rectifier 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".

Also available in:

"B" SQ-MELF (D-5B) Package
(surface mount)
1N5550US – 1N5554US

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-Lead (1)		$R_{\Theta JL}$	22	°C/W
Thermal Impedance @ 10 ms heating time		$Z_{\Theta JX}$	1.5	°C/W
Maximum Forward Surge Current (8.3 ms half sine)		I_{FSM}	100	A
Average Rectified Forward Current (1) @ T_L = 30 °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	1N5550	V_{RWM}	200	V
	1N5551		400	
	1N5552		600	
	1N5553		800	
	1N5554		1000	
Solder Temperature @ 10 s		T_{SP}	260	°C

See notes on next page.

MSC – Lawrence
6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

MSC – Ireland
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:
www.microsemi.com

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MAXIMUM RATINGS

Notes: 1. At .375 inch (9.52 mm) lead length from body.
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: Axial-leads are tin/lead (Sn/Pb) over copper. RoHS compliant matte-tin is available for commercial only.
- MARKING: Body paint and part number.
- POLARITY: Cathode band.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: 750 milligrams.
- See Package Dimensions on last page.

PART NOMENCLATURE

JAN 1N5550 (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

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.

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

TYPE	MINIMUM BREAKDOWN VOLTAGE V_{BR} I_R @ 50 µA Volts	FORWARD VOLTAGE V_F @ I_F = 9 A (pk)		MAXIMUM REVERSE CURRENT I_R @ V_{RWM} µA	REVERSE RECOVERY t_{rr} (Note 1) µs
		MIN. Volts	MAX. Volts		
1N5550	220	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5551	440	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5552	660	0.6 V (pk)	1.2 V (pk)	1.0	2.0
1N5553	880	0.6 V (pk)	1.3 V (pk)	1.0	2.0
1N5554	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.

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GRAPHS

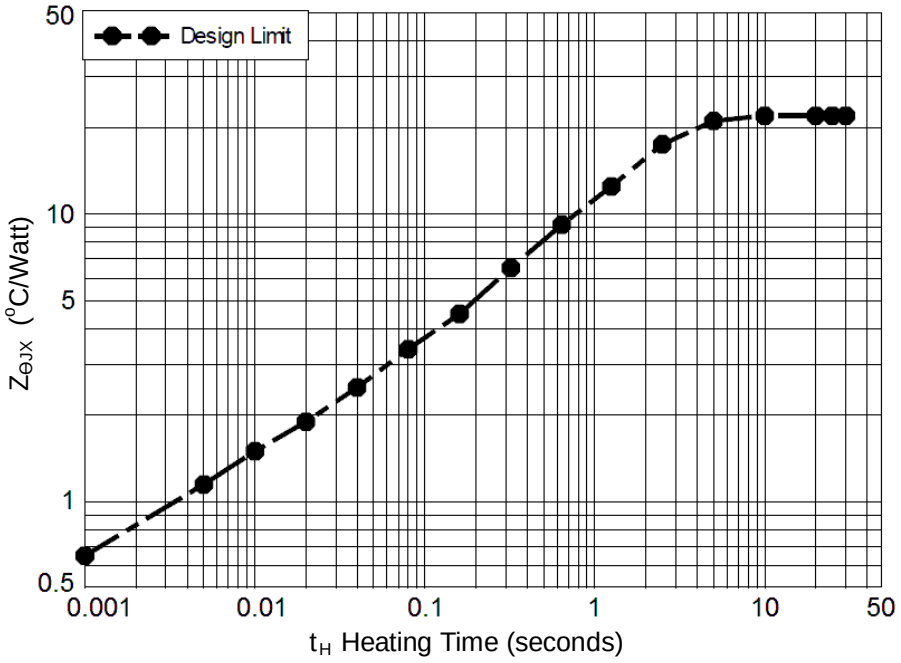

FIGURE 1
Maximum Thermal Impedance

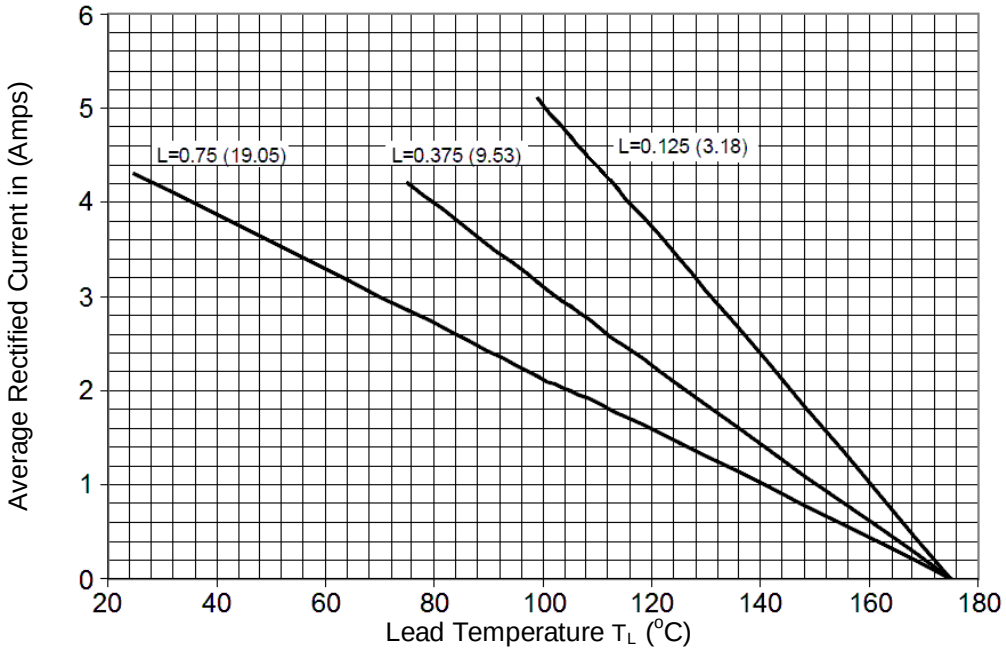

FIGURE 2
Maximum Current vs. Lead Temperature

NOTES: 1. Dimensions are in inches.
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

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GRAPHS (continued)

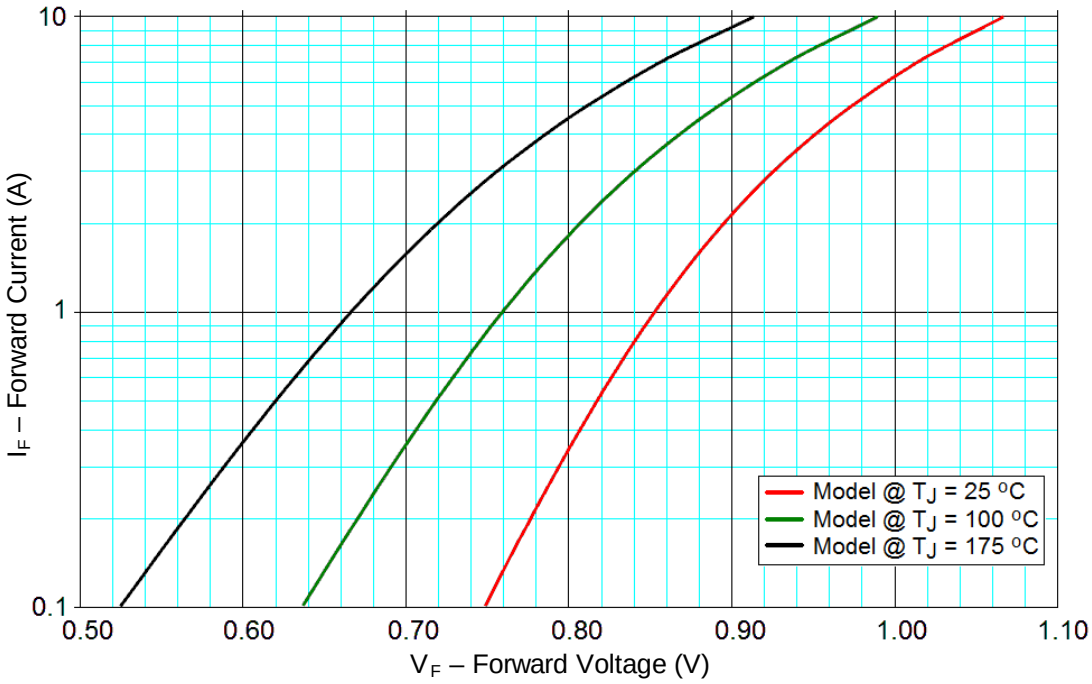

FIGURE 3
Typical Forward Voltage vs. Forward Current

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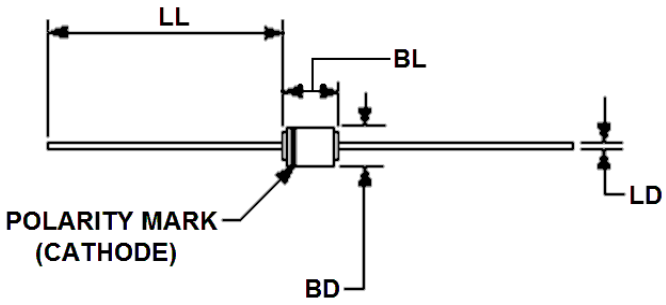
PACKAGE DIMENSIONS



Ltr	Dimensions				Notes
	Inch		Millimeters		
	Min	Max	Min	Max	
BD	0.115	0.180	2.92	4.57	3, 4
BL	0.130	0.300	3.30	7.62	4
LD	0.036	0.042	0.92	1.07	
LL	0.900	1.300	22.86	33.02	

NOTES:

1. Dimensions are in inches.
2. Millimeter equivalents are given for general information only.
3. The BL dimension shall include the entire body including slugs and sections of the lead over which the diameter is uncontrolled. This uncontrolled area is defined as the zone between the edge of the diode body and extending .050 inch (1.27 mm) onto the leads.
4. Dimension BD shall be measured at the largest diameter.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

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Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9