Available on commercial versions

VOIDLESS HERMETICALLY SEALED FAST RECOVERY GLASS RECTIFIERS

Qualified per MIL-PRF-19500/411

Qualified Levels:
JAN, JANTX, JANTXV
and JANS

DESCRIPTION

This “fast recovery” rectifier diode series is military qualified and is ideal for high-reliability applications where a failure cannot be tolerated. These industry-recognized 3.0 amp rated rectifiers for working peak reverse voltages from 50 to 600 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.

FEATURES

- Popular JEDEC registered 1N5415 thru 1N5420 series.
- Voidless hermetically sealed glass package.
- Quadruple-layer passivation.
- Internal “*Category 1”* metallurgical bonds.
- Working Peak Reverse Voltage 50 to 600 volts.
- JAN, JANTX, JANTXV and JANS qualifications available per MIL-PRF-19500/411.
- RoHS compliant versions available (commercial grade only).

APPLICATIONS / BENEFITS

- Fast recovery 3 amp 50 to 600 volt rectifiers.
- Military and other high-reliability applications.
- General rectifier applications including bridges, half-bridges, catch diodes, etc.
- High forward surge current capability.
- Extremely robust construction.
- Low thermal resistance.
- Controlled avalanche with peak reverse power capability.
- Inherently radiation hard as described in Microsemi “MicroNote 050”.

MAXIMUM RATINGS

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
Forward Surge Current @ 8.3 ms half-sine		I_{FSM}	80	A
Average Rectified Forward Current (4)	@ T_A = +55 °C @ T_A = +100 °C	I_O (2, 3) I_O (3)	3 2	A
Working Peak Reverse Voltage	1N5415 1N5416 1N5417 1N5418 1N5419 1N5420	V_{RWM}	50 100 200 400 500 600	V
Maximum Reverse Recovery Time (5)	1N5415 1N5416 1N5417 1N5418 1N5419 1N5420	t_{rr}	150 150 150 150 250 400	ns
Solder Temperature @ 10 s		T_{SP}	260	°C

See notes on next page.

“B” Package

Also available in:

“B” SQ-MELF
(D-5B) Package
(surface mount)
1N5415US – 1N5420US

MSC – Lawrence
6 Lake Street,
Lawrence, MA 01841
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(978) 620-2600
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Website:
www.microsemi.com

MAXIMUM RATINGS

Notes:
1. At 3/8 inch (10 mm) lead length from body.
2. Derate linearly at 22 mA/°C for 55 °C $\leq T_A \leq$ 100 °C.
3. Above T_A = 100 °C, derate linearly at 26.7 mA/°C to zero at T_A = 175 °C.
4. These ambient ratings are for PC boards where thermal resistance from mounting point to ambient is sufficiently controlled where $T_{J(max)}$ does not exceed 175 °C.
5. I_F = 0.5 A, I_{RM} = 1 A, $I_{R(REC)}$ = 0.250 A.

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 grade only.
- MARKING: Body paint and part number.
- POLARITY: Cathode band.
- TAPE & REEL option: Standard per EIA-296. Contact factory for quantities.
- WEIGHT: 750 milligrams.
- See Package Dimensions on last page.

PART NOMENCLATURE

JAN 1N5415 (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.

ELECTRICAL CHARACTERISTICS

TYPE	MINIMUM BREAKDOWN VOLTAGE V_{BR} @ 50 µA	FORWARD VOLTAGE V_F @ 9 A		MAXIMUM REVERSE CURRENT I_R @ V_{RWM}		CAPACITANCE C V_R @ 4 V
	Volts	MIN. Volts	MAX. Volts	25 °C µA	100 °C µA	pF
1N5415	55	0.6	1.5	1.0	20	550
1N5416	110	0.6	1.5	1.0	20	430
1N5417	220	0.6	1.5	1.0	20	250
1N5418	440	0.6	1.5	1.0	20	165
1N5419	550	0.6	1.5	1.0	20	140
1N5420	660	0.6	1.5	1.0	20	120

NOTE 1: I_F = 0.5 A, I_{RM} = 1 A, $I_{R(REC)}$ = 0.250 A.

GRAPHS

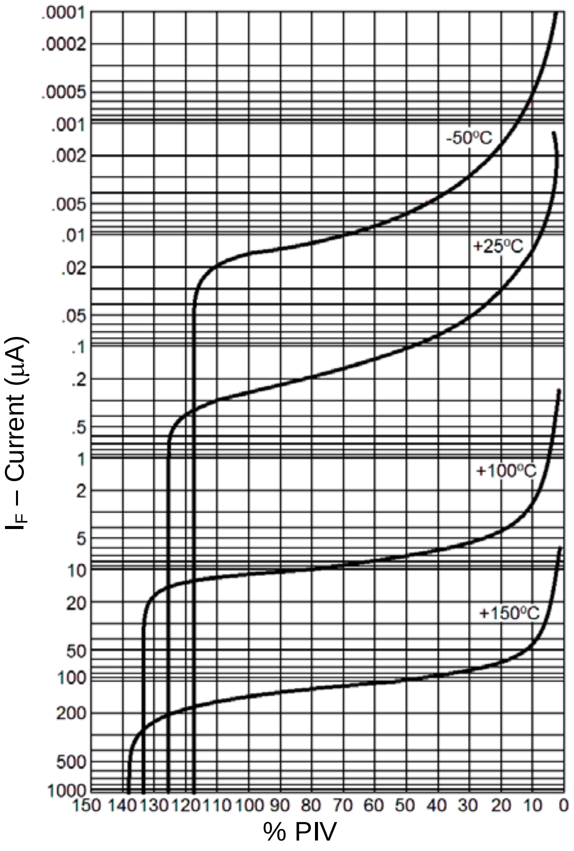


FIGURE 1
Typical Reverse Current vs. PIV

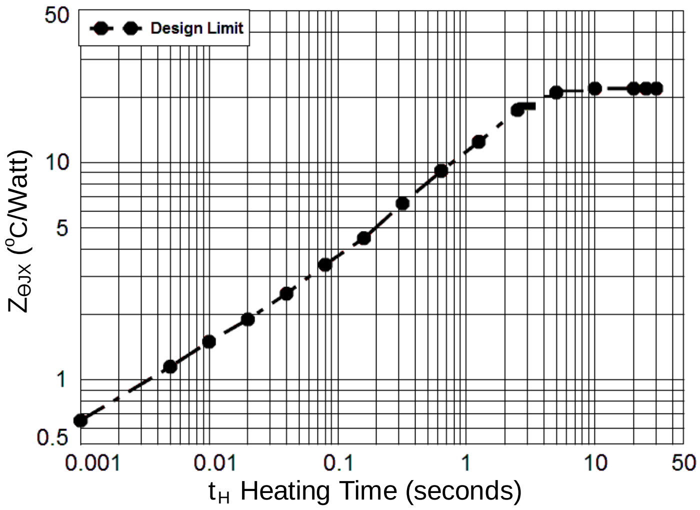


FIGURE 2
Maximum Thermal Impedance

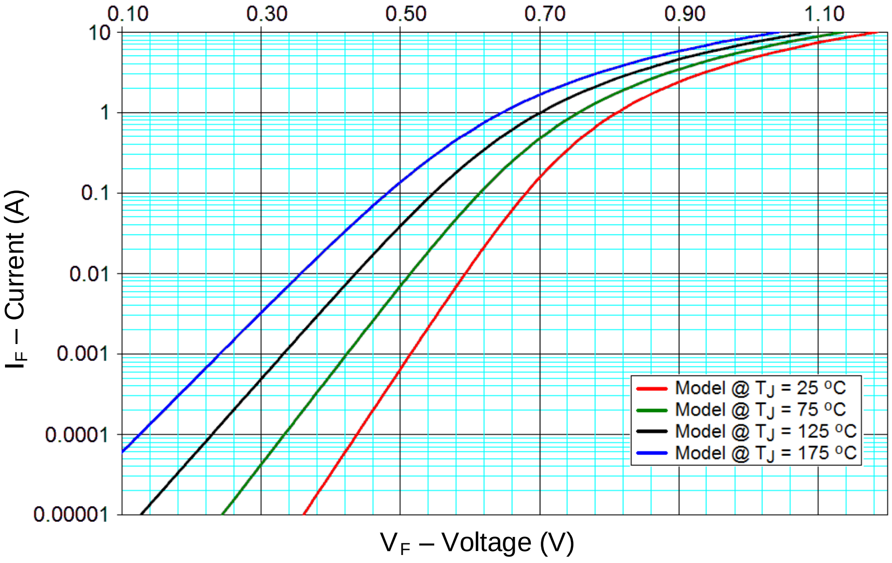
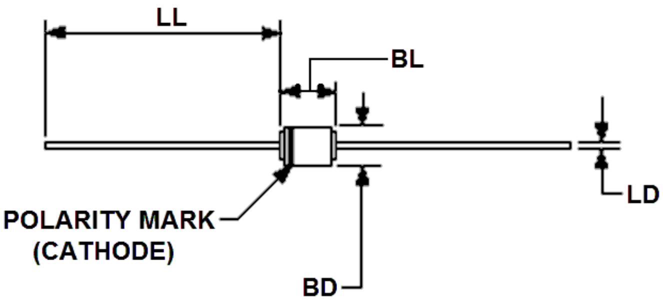


FIGURE 3
Typical Forward Current vs. Forward Voltage

PACKAGE DIMENSIONS



Symbol	Dimensions				Notes
	Inch		Millimeters		
	Min	Max	Min	Max	
BD	0.110	0.180	2.79	4.57	3
LD	0.036	0.042	0.91	1.07	4
BL	0.130	0.260	3.30	6.60	4
LL	0.90	1.30	22.9	33.0	

NOTES:

1. Dimensions are in inches.
2. Millimeter equivalents are given for general information only.
3. Dimension BD shall be measured at the largest diameter.
4. 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.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

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Данный компонент на территории Российской Федерации

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http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

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