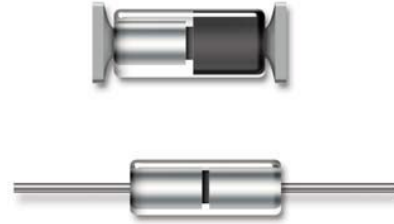


Rectifier Diode Series Ultrafast Recovery

Rev. V1

Features

- Popular JEDEC registered series
- Void-less hermetically sealed glass package
- Extremely robust construction
- Internal “Category I” Metallurgical bonds
- JAN, JANTX, JANTXV, and JANS available per MIL-PRF-19500/477



Description

These “Ultrafast Recovery” rectifier diodes are military qualified to MIL-PRF-19500/477 and are ideal for high reliability applications. These industry recognized 2.5 amp rated rectifiers for working peak reverse voltages from 50 to 150 volts are hermetically sealed with void-less glass construction using an internal “Category I” metallurgical bond. These devices are available in both axial leaded and MELF package configurations.

Applications / Benefits

- Ultrafast recovery 2.5 Amp rectifier series 50 to 150V
- Military, space and other high-reliability applications
- Switching power supplies
- Applications requiring extremely fast switching & low forward loss
- High forward surge current capability
- Low thermal resistance
- Controlled avalanche with peak reverse power capability

Electrical Specifications @ +25°C

Part Types ¹	Working Peak Reverse Voltage	Breakdown Voltage	Average Rectified Current		Forward Voltage		Reverse Current		Surge Current ³	Reverse Recovery Time ⁴
		@ 100 μA	I _{O1} @ T _L = 75°C ¹	I _{O2} @ T _L = 55°C ²	@ 8.3 ms pulse	@ V _{RWM} Coefficient				
	Volts	mA	A		V		μA		Amps	ns
	Typ.	Min.	Typ.		25°C	125°C	Max.		Max.	Max.
1N5802, US	50	60	2.5	1.0	0.875	0.800	1	175	35	25
1N5804, US	100	110	2.5	1.0	0.875	0.800	1	175	35	25
1N5806, US	150	160	2.5	1.0	0.875	0.800	1	175	35	25

1. I_{O1} is rated @ $T_L = 75^\circ\text{C}$ @ 3/8 inch lead length. Derate @ 25 mA/ $^\circ\text{C}$ for T_L above 75°C.

2. I_{O2} is rated @ $T_A = 55^\circ\text{C}$ for PC boards where thermal resistance from mounting point to ambient is sufficiently controlled where $T_{J(max)}$ does not exceed 175°C. Derate @ 8.33 mA/ $^\circ\text{C}$ for T_A above 55°C.

3. $T_A = 25^\circ\text{C}$ @ $I_O = 1.0$ A and V_{RWM} = rated, 8.3 ms surges at 1 minute intervals.

4. $I_F = 0.5$ A, $I_{RM} = 0.5$ A, $I_{R(REC)} = 0.05$ A, $di/dt = 65$ A/ μ s minimum.

Absolute Maximum Ratings^{5,6}

Parameter	Absolute Maximum
Capacitance	25 pF @ $V_R = 10\text{ V}$, 1MHz
Forward Surge Current	35 A @ 8.3 ms half-sine
Average Rectified Forward Current	2.5 A @ $T_L = +75^\circ\text{C}$
Thermal Impedance	4°C/W @ 10 ms heating time
Thermal Resistance (θ_{jc})	36°C/W junction to lead (L = 0.375 in.) 13°C/W junction to end cap
Storage Temperature	-65°C to +175°C
Operating Temperature	-65°C to +175°C
Solder Temperature	260°C for 10 seconds max.

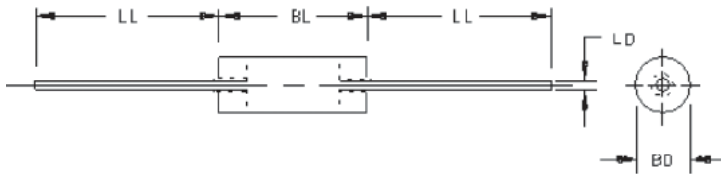
5. Exceeding any one or combination of these limits may cause permanent damage to this device.

6. MACOM does not recommend sustained operation near these survivability limits.

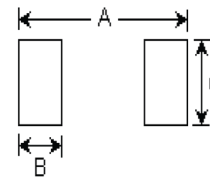
Rectifier Diode Series Ultrafast Recovery

Rev. V1

Outline Drawings^{7,8,9,10}



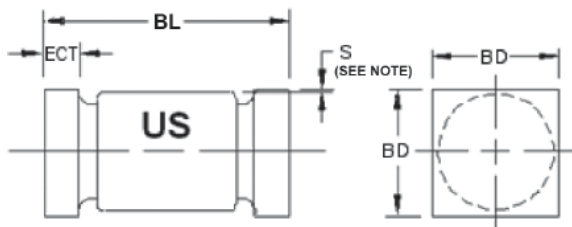
Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
BD ¹¹	0.115	0.142	2.92	3.61
BL ¹²	0.130	2.92	3.30	7.62
LD ¹²	0.36	3.61	0.91	1.07
LL	0.900	0.300	22.86	33.02



Pad Layout

Dimensions	Inches	mm
A	0.288	7.320
B	0.070	1.780
C	0.155	3.940

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.



Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
D	0.137	0.148	3.84	3.76
B	0.200	0.225	5.08	5.72
ECT	0.19	0.028	0.48	0.71
S	0.900	—	0.008	—

7. Dimensions are in inches. Millimeters are given for general information only.

8. Dimensions are pre-solder dip.

9. Minimum clearance of glass body to mounting surface on all orientations.

10. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

11. Dimension BD shall be measured at the largest diameter.

12. Dimension BL 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 0.050 inch (1.27 mm) onto the leads.

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.