1N5802(US), 1N5804(US), 1N5806(US)

Rectifier Diode Series
Ultrafast Recovery

Rev. V2

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



MELF



Axial

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 150 V
- 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 #	Working Peak Reverse Voltage (V_{RWM})	Breakdown Voltage (V_{BR}) @100 µA	Average Rectified Current (I_R)		Forward Voltage (V_F) @ 1 A (8.3 ms pulse)		Reverse Current (I_R) @ VRWM		Surge Current[3] (I_{FSM})	Reverse Recovery Time[4] (T_{RR})
	Min.	Min.	Max.		Max.		Max.		Max.	Max.
			I_{0L} @ T_L = 75°C	I_{01} @ T_A = 55°C	-65°C	+25°C	25°C	125°C		
	(V)	mA	A		V		µA		A	ns
1N5802 1N5802US	50	60	2.5	1.0	0.800	0.875	1	175	35	25
1N5804 1N5804US	100	110	2.5	1.0	0.800	0.875	1	175	35	25
1N5806 1N5806US	150	160	2.5	1.0	0.800	0.875	1	175	35	25

1. I_{0L} is rated @ T_L = 75°C @ 3/8 inch lead length. Derate @ 25 mA/°C for T_L above 75°C.
2. I_{01} is rated @ T_A = 55°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/°C for T_A above 55°C.
3. T_A = 25°C @ I_O = 1 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/µs minimum.

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Absolute Maximum Ratings[5,6]

Parameter	Absolute Maximum
Capacitance	25 pF @ V_R = 10 V, 1MHz
Forward Surge Current (I_{FSM})	35 A @ 8.3 ms half-sine
Average Rectified Forward Current ($I_{0(L)}$)	2.5 A @ T_L = +75°C @ 3/8 inch lead length
Storage Temperature	-65°C to +175°C
Junction 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.

Thermal Characteristics

Parameter	Test Conditions	Maximum
Thermal Resistance ($R\theta_{JL}$)	junction to lead (L = 0.375 in.)	36°C/W
Thermal Resistance ($R\theta_{JEC}$)	junction to end cap	13°C/W
Thermal Impedance ($Z\theta_{JX}$)	10 ms heating time	4°C/W

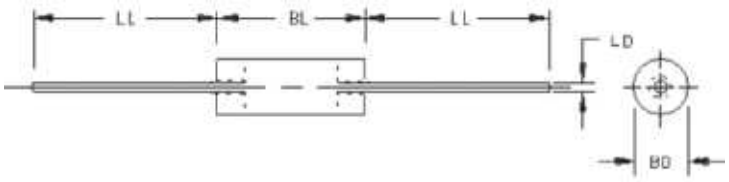
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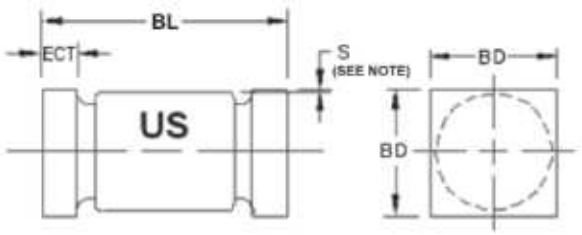
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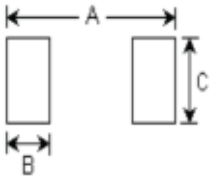
Outline Drawings[7,8,9]



Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
BD[10]	0.065	0.085	1.65	2.16
BL[11]	0.125	0.250	3.18	6.35
LD	0.027	0.032	0.69	0.81
LL	0.700	1.30	17.78	33.02



Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
BD	0.091	0.103	2.31	2.62
BL	0.168	0.200	4.27	5.08
ECT	0.019	0.028	0.48	0.71
S[12]	0.003	—	0.08	—



US Pad Layout

Dimensions	Inches	mm
A	0.246	6.25
B	0.067	1.70
C	0.105	2.67

Note: If mounting requires adhesive separate from the solder, an additional 0.060 inch diameter contact may be placed in the center between the pads as an optional spot for cement.

7. Dimensions are in inches. Millimeters are given for general information only.
8. Dimensions are pre-solder dip.
9. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.
10. Dimension BD shall be measured at the largest diameter.
11. 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.
12. Minimum clearance of glass body to mounting surface on all orientations.

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