1N5807(US), 1N5809(US), 1N5811(US)

Rectifier Diode Series
Ultrafast Recovery

Rev. V1

Features

- Popular JEDEC Registered Series
- Voidless Hermetically Sealed Glass Package
- Available in Axial Leaded and MELF packages
- Extremely Robust Construction
- Internal “Category I” Metallurgical Bonds
- JAN, JANTX, JANTXV, and JANS available per MIL-PRF-19500/477

MELF

Axial

Description

The “Ultrafast Recovery” rectifier diode series is military qualified to MIL-PRF-19500/477 and is ideal for high reliability applications. These industry recognized 6 Amp rated rectifiers for working peak reverse voltages from 50 to 150 volts are hermetically sealed with voidless glass construction.

The rectifier diode series are ideally suited for switching power supplies or other applications requiring extremely fast switching, low forward loss, high forward surge current capability and low thermal resistance. These diodes have a controlled avalanche with peak reverse power capability.

Electrical Specifications: T_A = +25°C

Part #	Working Peak Reverse Voltage (V_{RWM})	Breakdown Voltage (V_{BR}) @100 µA	Rectified Current (I_R)		Forward Voltage (V_F) @ 4 A (8.3 ms pulse)		Reverse Current (I_R) @ VRM Coeffecient		Surge Current[3] (I_{FSM})	Reverse Recovery Time[4] (T_{RR})
	Typ.	Min.	Avg.		Max.		Max.		Max.	Max.
			I_{01} @ T_L = 75°C	I_{02} @ T_L = 55°C	25°C	125°C	25°C	125°C		
	(V)	mA	A		V		µA		A	ns
1N5807 1N5807US	50	60	6.0	3.0	0.875	0.800	5	175	125	30
1N5809 1N5809US	100	110	6.0	3.0	0.875	0.800	5	175	125	30
1N5811 1N5811US	150	160	6.0	3.0	0.875	0.800	5	175	125	30

1. I_{01} is rated at T_L = 75°C @ 3/8 Inch lead length. Derate @ 60 mA/°C for T_L above 75°C.
2. I_{02} is rated at 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.
3. T_A = 25°C @ I_0 = 3 A, V_{RWM} = rated 8.3 ms surges @ 1 minute intervals.
4. I_F = 1.0 A, I_{RM} = 1 A, $I_{R(REC)}$ = 0.01 A, di/dt = 100 A/µs minimum.

Absolute Maximum Ratings[5,6]

Parameter	Absolute Maximum
Average Rectified Forward Current	6 A @ TL = 75°C @ 3/8 inch lead length
Forward Surge Current	125 A @ 8.3 ms 1/2 half-sine
Capacitance	60 pF @ 10 V, 1 MHz
Junction Temperature	-65°C to +175°C
Storage Temperature	-65°C to +175°C

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	Units
Thermal Resistance	Junction to lead (L = 0.375 in.) Junction to end cap	22.0°C/W 6.5°C/W
Thermal Impedance	10 ms heating time	1.5°C/W

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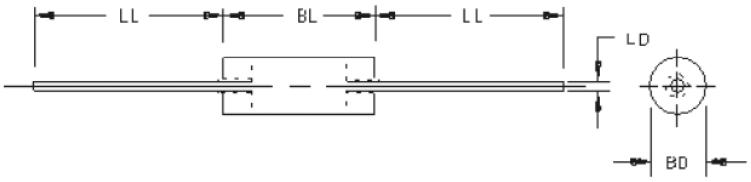
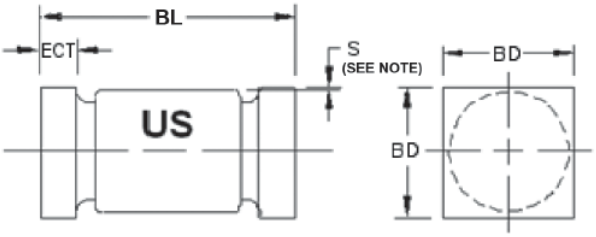
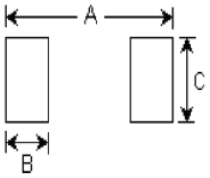
Outline Drawings



Dimensions	Inches		Millimeters		Notes
	Min.	Max.	Min.	Max.	
BD	0.115	0.142	2.92	3.61	3
BL	0.130	2.92	3.30	7.62	2
LD	0.3.6	3.61	0.91	1.07	2
LL	0.900	0.300	22.86	33.02	—

Notes:
1. Dimensions are in inches. Millimeters are given for general information only.
2. Dimension BL shall include the entire body including slugs and sections of the lead over which the
3. diameter is uncontrolled. This uncontrolled area is defined as the zone between the edge of the diode
4. body and extending 0.050 inch (1.27 mm) onto the leads.
5. Dimension BD shall be measured at the largest diameter.
6. Dimensions are pre-solder dip.
7. Minimum clearance of glass body to mounting surface on all orientations.
8. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.





Pad Layout

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	—

Dimensions	Inches	Millimeters
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.		