Features

- High Power Handling
- Low Loss / Low Distortion
- Leadless Low Inductance MELF Package
- Surface Mountable
- RoHS* Compliant

Applications

- Multi Market

Description

The chip used in the MADP-011180-10910T is manufactured using a unique, CERMACHIP, passivation process which provides for a hard glass encapsulation that protects and hermetically seals the active area of the chip.

The chip is enclosed in a rugged, ceramic, Metal Electrode Leadless Faced (MELF), surface mount package that is full face bonded to refractory metal plugs on both the anode and cathode. The result is a low loss PIN diode with low thermal resistance due to its symmetrical thermal paths. MELF PIN diodes are designed specifically for high volume tape and reel assembly. Their user friendly design provides for extremely easy, automatic, pick and place, indexing and assembly. All solderable surfaces are tin plated and are compatible with all industry standard reflow and vapor phase solder processes.

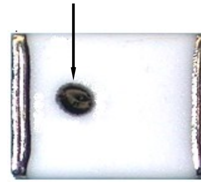
The MADP-011180-10910T is ideally suited for use in applications where high RF and DC voltages are present. This device is well suited for use in low loss, low distortion, UHF and VHF high power switching circuits.

Ordering Information[1]

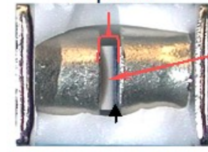
Part Number	Package
MADP-011180-10910T	Package style 1091T 500 piece reel

1. Reference Application Note M513 for reel size information.

Dot Denotes Cathode



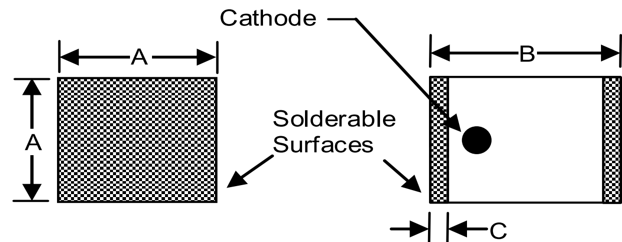
Full Face Chip Bond



Passivated PIN Chip

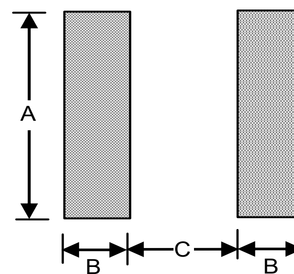
Diode Cross Section

Package Dimensions (ODS-1091)



Dim.	Inches		mm	
	Min.	Max.	Man.	Max.
A	0.138	0.155	3.51	3.94
B	0.180	0.200	4.57	5.08
C	0.008	0.030	0.203	0.762

Circuit Pad Layout



Dim.	Inches	mm
A	0.150	3.81
B	0.050	1.27
C	0.100	2.54

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

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Electrical Specifications: T_A = +25°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Forward Voltage	I_F = 200 mA	V	—	.85	1.0
Reverse Leakage	V_R = 1000 V	nA	—	—	1000
Total Capacitance	V_R = 50 V, 1 MHz	pF	—	1.45	1.6
Series Resistance	I_F = 100 mA, 100 MHz	Ohms	—	0.35	0.6
Parallel Resistance	0 V, 100 MHz	KOhms	500	—	—
Lifetime	I_F = 10 mA, I_R = 6 mA	µs	16	20	—

Maximum Thermal Characteristics

Parameter	Test Conditions	Units	Max.
Thermal Resistance	Infinite Heatsink In Air	°C/W	15 42
Power Dissipation[2]	Infinite Heatsink In Air	W	10.0 3.5

2. De-rate linearly by -77 mw/°C to 0 W @ +175°C junction temperature.

Absolute Maximum Ratings[3,4]

Parameter	Absolute Maximum
DC Reverse Voltage	1000 V
Operating Chip Junction Temperature	-55°C to +175°C
Storage Temperature	-55°C to +200°C
Installation Temperature	+280°C for 10 Seconds

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

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Assembly Recommendations

- Devices may be soldered using standard Sn63/ Pb37 or any RoHS compliant solder. Leads are bright tin plated to a minimum thickness of 50 µm to ensure an optimum connection.
- For recommended Sn/Pb and RoHS soldering time/temperature profiles. See Application Note M538 on the MACOM website.

Handling Procedures

The following precautions should be observed to avoid damaging these devices.

Cleanliness and Storage

MELF devices should be handled and stored in a clean environment. The metalized ends of the device are tin plated for greater solderability and any continuous exposure to high humidity (>80%) for extended periods of time may cause the surface to oxidize. Caution should be taken when storing devices for extended intervals.

ESD

These devices are susceptible to ESD and are rated Class 1C.

General Handling

Device can be handled with tweezers or vacuum pickups and are suitable for use with automatic pick-and-place equipment.

RoHS

The MADP-011180-10910T is fully RoHS compliant meaning it contains less than the maximum allowable concentration of 0.1%, by weight, in homogenous materials for lead, hex chrome, mercury, PBB, PBDE, and 0.01% for cadmium.

Mounting Techniques

Solder Attach

Typical wave soldering or reflow techniques may be used to mount MELF packages to circuit boards. Alloys such as Sn63/Pb37 or any RoHS compliant solder may be used. For more information visit the MACOM website and refer to application note M538.

To view the datasheets of other MELF and packaged PIN diodes on the MACOM website please see PACKAGED_PIN_DIODES and/or MA4P MELF & HIPAX SERIES

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