

MELF PIN Diode

V1

Features

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

Description

The chip used in the MA4PH611 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. This packaged, CERMACHIP, PIN diode is ideally suited for use in applications where high RF and DC voltages are present.

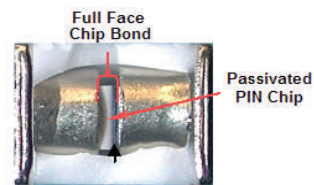
The chip is enclosed in a rugged, ceramic, Metal Electrode Leadless Faced (MELF), surface mount package that is full face bonded to refractory metal plugs on both the anode and cathode. The result is a low loss PIN diode with low thermal resistance due to its symmetrical thermal paths. MELF PIN diodes 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.

Applications

The MA4PH611 is well suited for use in low loss, low distortion, UHF and VHF high power switching circuits.

Package Style 1091

Dot Denotes Cathode



Diode Cross Section

Absolute Maximum Ratings

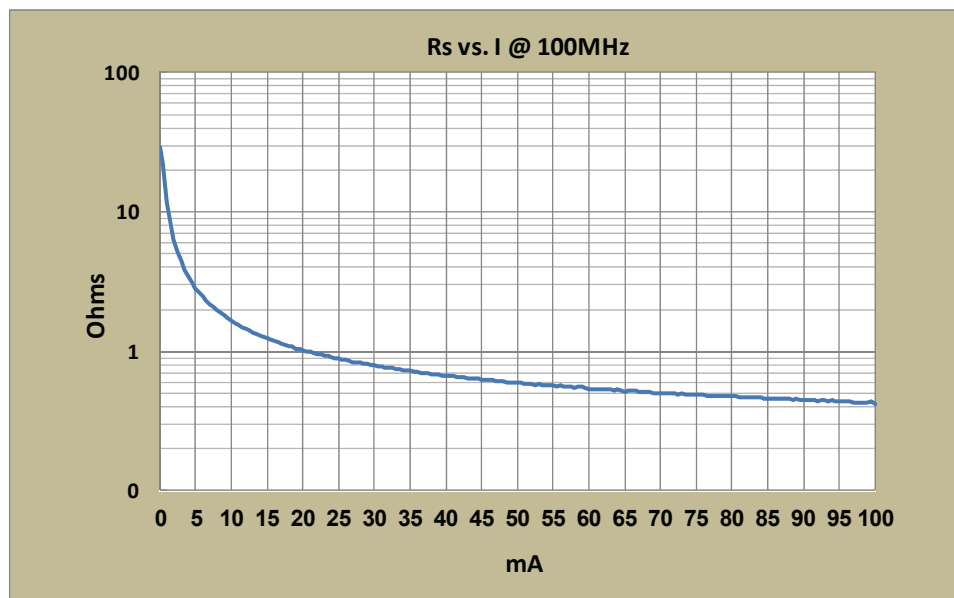
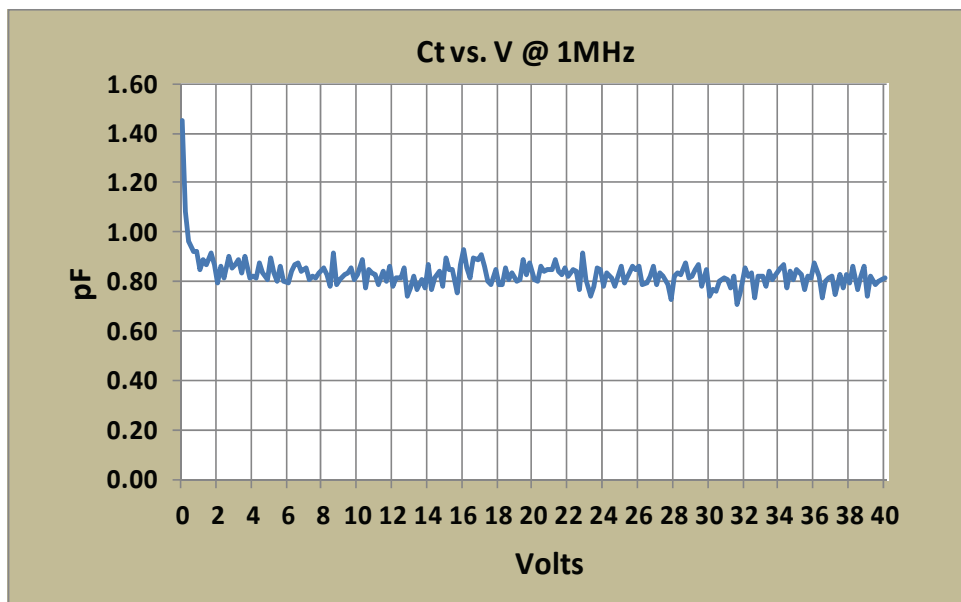
$T_{AMB} = +25^{\circ}\text{C}$ (Unless Otherwise Noted) ^{1,2}

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

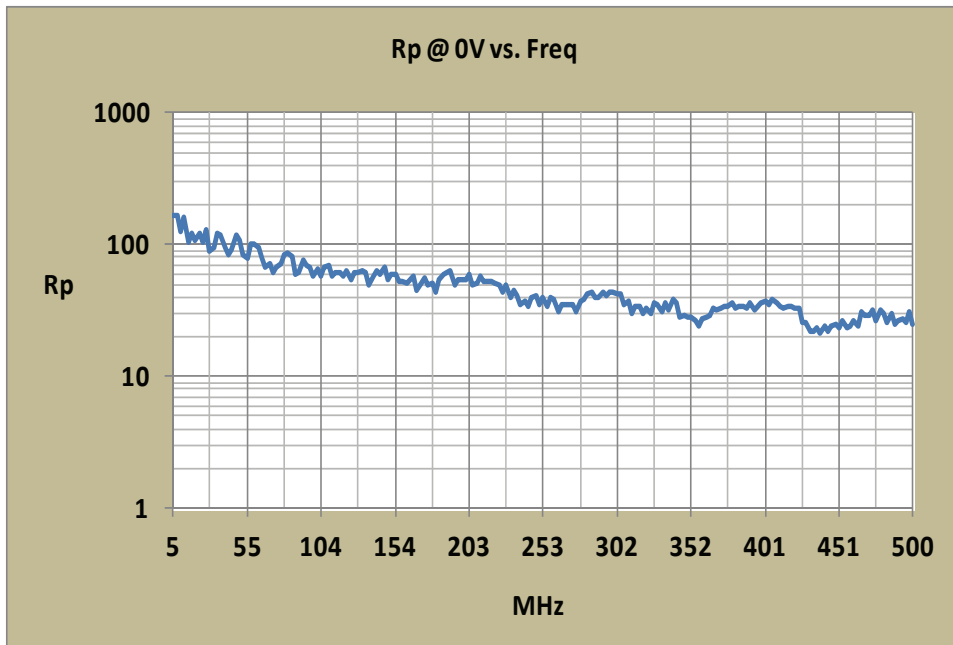
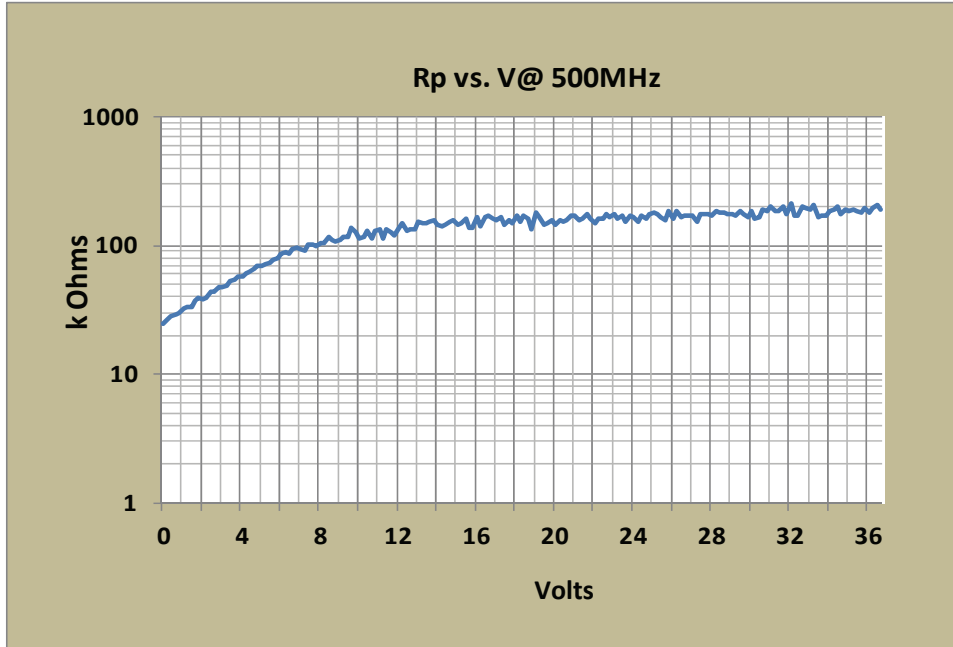
Notes

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Please refer to application note [M538](#) for surface mounting instructions.

Electrical Specifications @ +25 °C



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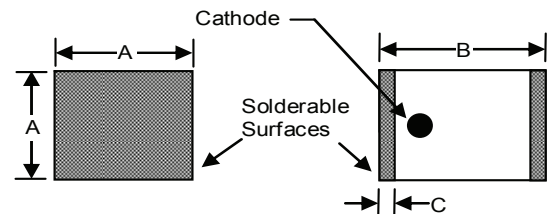
V_F Forward Voltage V_{DC}	T_L Lifetime μs	I_R Reverse Leakage nA	C_T Total Capacitance pF		R_S Series Resistance W		R_P Parallel Resistance kW
<u>Condition</u> $I_F = 250\text{mA}$	<u>Conditions</u> $I_F = 10\text{ mA}$ $I_R = 6\text{ mA}$	<u>Condition</u> $V_R = 1000\text{V}$	<u>Conditions</u> $f = 1\text{ MHz}$ $V_R = 50\text{ V}$		<u>Conditions</u> $f = 100\text{ MHz}$ $I_F = 100\text{ mA}$		<u>Conditions</u> $f = 100\text{ MHz}$ $V_R = 0\text{ V}$
MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	MIN.
1.1	5	1000	0.95	1.1	0.35	0.45	25

θ Thermal Resistance $^{\circ}\text{C/W}$	P_D^1 Power Dissipation W	θ Thermal Resistance $^{\circ}\text{C/W}$	P_D^2 Power Dissipation W
Infinite Heatsink	Infinite Heatsink	In Air	In Air
MAX.	MAX.	MAX.	MAX.
15	10	42	3.5

Notes:

- De-rate linearly by $-77\text{ mw}/^{\circ}\text{C}$ to 0W @ $+175\text{ }^{\circ}\text{C}$ junction temperature.
- De-rate linearly by $-25\text{ mw}/^{\circ}\text{C}$ to 0W @ $+175\text{ }^{\circ}\text{C}$ junction temperature

Package Dimensions



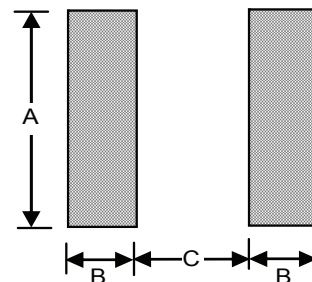
DIM.	INCHES		MM	
	MIN.	MAX.	MIN.	MAX.
A	0.138	0.155	3.51	3.94
B	0.180	0.200	4.57	5.08
C	0.008	0.030	0.203	0.762

Ordering Information

Package Style	Quantity 7" Reel	Bulk Devices
1091T	500	N/A

Circuit Pad Layout

Dimension	Package Style 1091	
	inches	mm
A	0.150	3.81
B	0.050	1.27
C	0.100	2.54



For further tape and reel information refer to [Application Note M513](#) on the [MACOM](#) website

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 50µm 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 MA4PH611 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](#).

Note: Click links below to view datasheets of other MELF and packaged PIN diodes.

[PACKAGED PIN DIODES](#)
and/or
[MA4P MELF & HIPAX SERIES](#)