

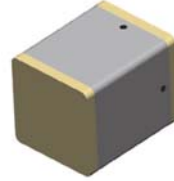
Non-Magnetic MELF PIN Diodes

MMP7000-128 Series Datasheet



Features

- Non-Magnetic Ceramic Surface Mount Package
- Lower $R_s < 1.0 \Omega$ (Lower Insertion Loss & Higher IIP3)
- Lower Thermal Resistance ($< 20^\circ \text{C/W}$) for Higher Power
- Hermetically Sealed
- RoHS Compliant



Description

The MMP7000-128 MELF PIN diode series is manufactured using Aeroflex / Metelics' proprietary diode process which optimizes the anode and cathode bonding area of the diode to the adjacent heat spreading metal posts within the ceramic package. This unique geometry provides lower electrical and thermal resistance within the surface mount package to provide higher average power performance to comparable surface mount diode packages.

With lower Thermal Resistance ($< 20^\circ \text{C/W}$), RF C.W. incident power levels of + 50 dBm and RF peak incident power levels of + 60 dBm are very achievable in higher power UHF cold switching applications. The low series resistance ($< 1.0 \Omega$), coupled with the longer minority carrier lifetime, ($> 8 \mu\text{s}$), provides better IIP3 distortion values $> + 70 \text{ dBm}$, for SP2T Tx-Rx Switches.

These devices are hermetically sealed and are constructed with non-magnetic materials to meet the stringent requirements for MRI systems. The devices are RoHS compliant.

Applications

These diodes are designed to be used in High Average Power Switch and Attenuator applications, operating from 1 MHz to 1GHz at Incident Power levels of 100 W Average Power and 1 KW Peak Power. These devices are durable, reliable, and are capable of meeting all military, commercial, and industrial applications.

Environmental Capabilities

This diode series is capable of meeting the environmental requirements of MIL-STD-750.

ESD and Moisture Sensitivity Level Rating

PIN diodes are susceptible to ESD conditions as with all semiconductors. The ESD rating for these devices is Class 1A, HBM. The moisture sensitivity level rating for this device is MSL 1.



Non-Magnetic MELF PIN Diodes

MMP7000-128 Series

Specifications @ TA = ± 25 °C (Unless Otherwise Defined)

Parameter	Voltage Rating	Total Capacitance	Minority Carrier Lifetime	Series Resistance	Parallel Resistance	C.W Thermal Resistance	Forward Voltage	Reverse Leakage Current
Symbol	Vb	Ct	Tl	Rs	Rp		Vf	Ir
Forcing Function	-10 μ A	Vr = -100 V, f = 1MHZ	@ 100 kHz	100 mA, 100MHz	Vr = -100V f = 100 MHz		100 mA	80 % of Vb
Part#	Volts	pF	μ S	Ω	k Ω	$^{\circ}$ C/W	Volts	μ A
	(min)	(max)	(Typ)	(max)	(Typ)	(max)	(max)	(max)
MMP7070-128-4	100	2.2	6	0.5	20	20	1	1
MMP7071-128-4	100	2	8	1	50	20	1	1
MMP7072-128-1	100	0.7	3	0.8	200	20	1	1
MMP7073-128-1	100	1	2.5	0.5	100	20	1	1
MMP7074-128-4	200	2.2	6	0.5	20	20	1	1
MMP7075-128-4	200	2	8	1	50	20	1	1
MMP7076-128-1	200	0.7	3	0.8	200	20	1	1
MMP7077-128-1	200	1	2.5	0.5	100	20	1	1
MMP7078-128-1	400	1	2.5	0.5	100	20	1	1
MMP7079-128-4	600	2.2	6	0.5	20	20	1	1
MMP7080-128-1	600	0.7	3	0.8	200	20	1	1
MMP7081-128-1	50	1.2	4	0.8	20	20	1	1
MMP7089-128-1	500	0.5	1	0.6	10	30	1	1
MMP7090-128-1	500	0.7	2	0.5	20	25	1	1
MMP7091-128-1	500	1	3	0.3	50	15	1	1

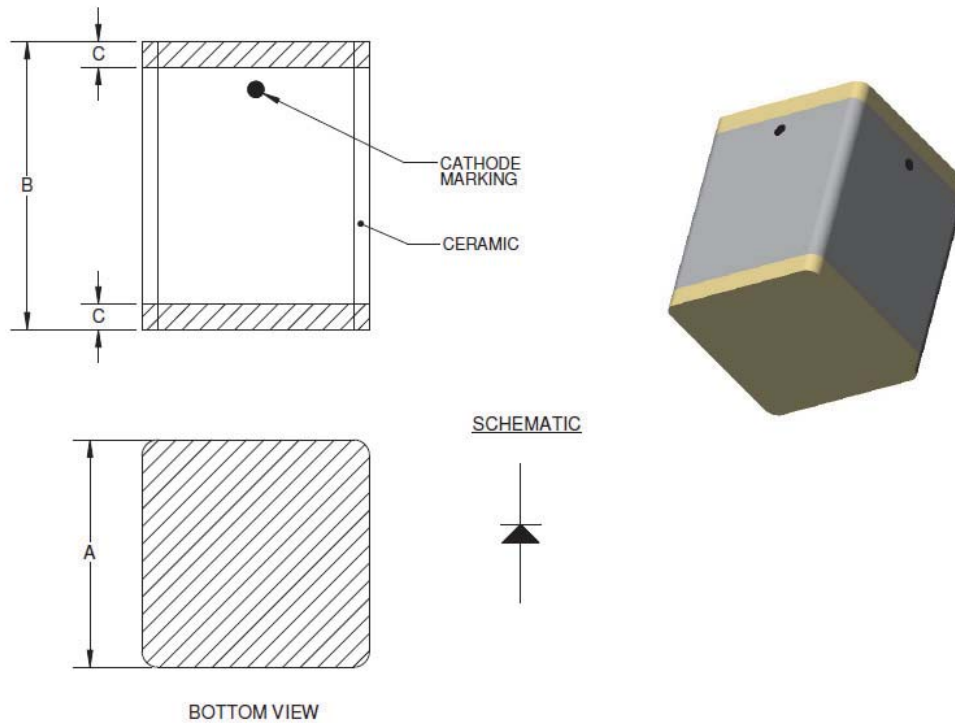
* Minority carrier lifetime is measured at 100 KHz using If = +10mA and Ir = -6 mA

Absolute Maximum Ratings @TA = +25°C (Unless Otherwise Defined)

Parameter	Absolute Maximum Value
Forward Current	1000 mA
Forward Voltage	1.2 V @ 100 mA
Operating Temperature	-65 °C to +125 °C
Storage Temperature	-65 °C to +150 °C
Junction Temperature	+175°C
Assembly Temperature	+260°C for 10 seconds
Power Dissipation (C.W.) (with infinite heat sink)	30W, De-Rate Linearly from +25°C to +175°C @ -200mW/°C

Non-Magnetic MELF PIN Diodes MMP7000-128 Series

Outline Drawing, CS128-1 and CS128-4



Case Style	DIM "A"	DIM "B"	DIM "C"
CS128-1	0.088 +/- 0.007	0.125 +/- 0.010	0.020 Typical
	(2.24 +/- 0.18)	(3.18 +/- 0.25)	-0.51
CS128-4	.143 +.004/-0.002	.181 +.003/-0.002	.016 +/-0.008
	(3.63 +0.10/-0.005)	(4.60 +0.08/-0.05)	(0.41 +/-0.20)

Note: Dimensions in parenthesis are in (mm)

Part Number Ordering Information:

Part Number	Description
MMP70xx-128-1-R	Tape & Reel Packaging 2000 per reel
MMP70xx-128-4-R	Tape & Reel Packaging 2000 per reel

Aeroflex / Metelics, Inc.

54 Grenier Field Road, Londonderry, NH 03053
 Tel: (603) 641-3800
 Sales: (888) 641-SEMI (7364)
 Fax: (603)-641-3500

975 Stewart Drive, Sunnyvale, CA 94085
 Tel: (408) 737-8181
 Fax: (408) 733-7645

www.aeroflex.com/metelics metelics-sales@aeroflex.com

Aeroflex / Metelics, Inc. reserves the right to make changes to any products and services herein at any time without notice. Consult Aeroflex or an authorized sales representative to verify that the information in this data sheet is current before using this product. Aeroflex does not assume any responsibility or liability arising out of the application or use of any product or service described herein, except as expressly agreed to in writing by Aeroflex; nor does the purchase, lease, or use of a product or service from Aeroflex convey a license under any patent rights, copyrights, trademark rights, or any other of the intellectual rights of Aeroflex or of third parties.

Copyright 2011 Aeroflex / Metelics. All rights reserved.

ISO 9001:2008 certified companies



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.