

### Features

- Non-Magnetic Ceramic Surface Mount Package
- Low Series Resistance
- Low Junction Capacitance
- Low Thermal Resistance
- RoHS\* Compliant

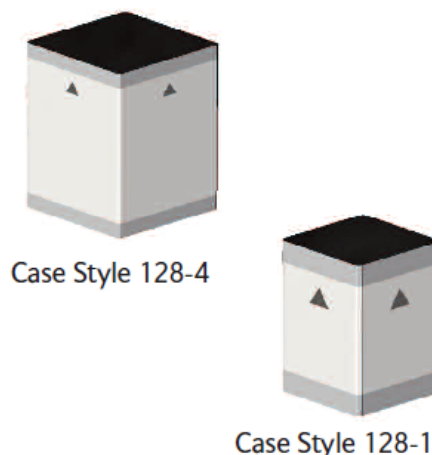
### Description

The MMP70xx-128-1 and MMP70xx-128-4 MELF PIN Diode Series are manufactured using a 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 ( $<1\ \Omega$ ), coupled with the longer minority carrier lifetime, ( $>8\ \mu\text{s}$ ), provides better IIP3 distortion values  $>70\ \text{dBm}$ , for SP2T  $T_x$  &  $R_x$  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.

The MMP70xx-128-1 and MMP70xx-128-4 MELF PIN Diode Series are designed to be used in High Average Power Switch and Attenuator applications, operating from 1 MHz to 1 GHz 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.



### Ordering Information

| Part Number     | Package         |
|-----------------|-----------------|
| MMP70xx-128-1-R | 2000 piece reel |
| MMP70xx-128-4-R | 500 piece reel  |

### Environmental Capabilities

The MMP70xx-128-x Series of PIN diodes are capable of meeting the environmental requirements of MIL-STD-750.

### Static & Moisture Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these (HBM) Class 1A devices. The moisture sensitivity level rating for this device is MSL1.

\* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

## Silicon PIN Diodes

Rev. V1

### Electrical Specifications:

$T_A = +25^{\circ}\text{C}$ ,  $V_F = 1\text{ V max. @ } 100\text{ mA}$ ,  $I_R = 1\text{ }\mu\text{A max. @ } 80\% V_B$

| Model         | Reverse Voltage Breakdown @ 10 $\mu\text{A}$ ( $V_{BR}$ ) | Total Capacitance @ 100 V, 1 MHz ( $C_T$ ) | Minority Carrier Lifetime $I_F = 10\text{ mA}$ , $I_R = 6\text{ mA}$ ( $T_L$ ) | Series Resistance @ 100 mA, 100 MHz ( $R_S$ ) | Parallel Resistance @ 0 V, 100 MHz ( $R_P$ ) | C.W. Thermal Resistance |
|---------------|-----------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------|-------------------------|
|               | V                                                         | pF                                         | $\mu\text{s}$                                                                  | $\Omega$                                      | k $\Omega$                                   | $^{\circ}\text{C/W}$    |
|               | Min.                                                      | Max.                                       | Typ.                                                                           | Max.                                          | Typ.                                         | Max.                    |
| MMP7070-128-4 | 100                                                       | 2.2                                        | 6.0                                                                            | 0.5                                           | 20                                           | 20                      |
| MMP7071-128-4 | 100                                                       | 2.0                                        | 8.0                                                                            | 1.0                                           | 50                                           | 20                      |
| MMP7072-128-1 | 100                                                       | 0.7                                        | 3.0                                                                            | 0.8                                           | 200                                          | 20                      |
| MMP7073-128-1 | 100                                                       | 1.0                                        | 2.5                                                                            | 0.5                                           | 100                                          | 20                      |
| MMP7074-128-4 | 200                                                       | 2.2                                        | 6.0                                                                            | 0.5                                           | 20                                           | 20                      |
| MMP7075-128-4 | 200                                                       | 2.0                                        | 8.0                                                                            | 1.0                                           | 50                                           | 20                      |
| MMP7076-128-1 | 200                                                       | 0.7                                        | 3.0                                                                            | 0.8                                           | 200                                          | 20                      |
| MMP7077-128-1 | 200                                                       | 1.0                                        | 2.5                                                                            | 0.5                                           | 100                                          | 20                      |
| MMP7078-128-1 | 400                                                       | 1.0                                        | 2.5                                                                            | 0.5                                           | 100                                          | 20                      |
| MMP7079-128-4 | 600                                                       | 2.2                                        | 6.0                                                                            | 0.5                                           | 20                                           | 20                      |
| MMP7080-128-1 | 600                                                       | 0.7                                        | 3.0                                                                            | 0.8                                           | 200                                          | 20                      |
| MMP7081-128-1 | 50                                                        | 1.2                                        | 4.0                                                                            | 0.8                                           | 20                                           | 20                      |
| MMP7089-128-1 | 500                                                       | 0.5                                        | 1.0                                                                            | 0.6                                           | 10                                           | 30                      |
| MMP7090-128-1 | 500                                                       | 0.7                                        | 2.0                                                                            | 0.5                                           | 20                                           | 25                      |
| MMP7091-128-1 | 500                                                       | 1.0                                        | 3.0                                                                            | 0.3                                           | 50                                           | 15                      |

### Absolute Maximum Ratings

| Parameter             | Absolute Maximum                                                                                                                                                                               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Forward Current       | 1000 mA                                                                                                                                                                                        |
| Forward Voltage       | 1.2 V @ $I_F = 100\text{ mA}$                                                                                                                                                                  |
| Power Dissipation     | 30 W,<br>Infinite heat sink; $T_C = +25^{\circ}\text{C}$ ,<br>De-Rate Linearly @ $-200\text{ mW}/^{\circ}\text{C}$ from<br>7.5 W @ $+25^{\circ}\text{C}$ to 0 W @ $T_J = +175^{\circ}\text{C}$ |
| Junction Temperature  | $+175^{\circ}\text{C}$                                                                                                                                                                         |
| Operating Temperature | $-65^{\circ}\text{C}$ to $+125^{\circ}\text{C}$                                                                                                                                                |
| Storage Temperature   | $-65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$                                                                                                                                                |
| Assembly Temperature  | $<260^{\circ}\text{C}$ for 10 seconds                                                                                                                                                          |



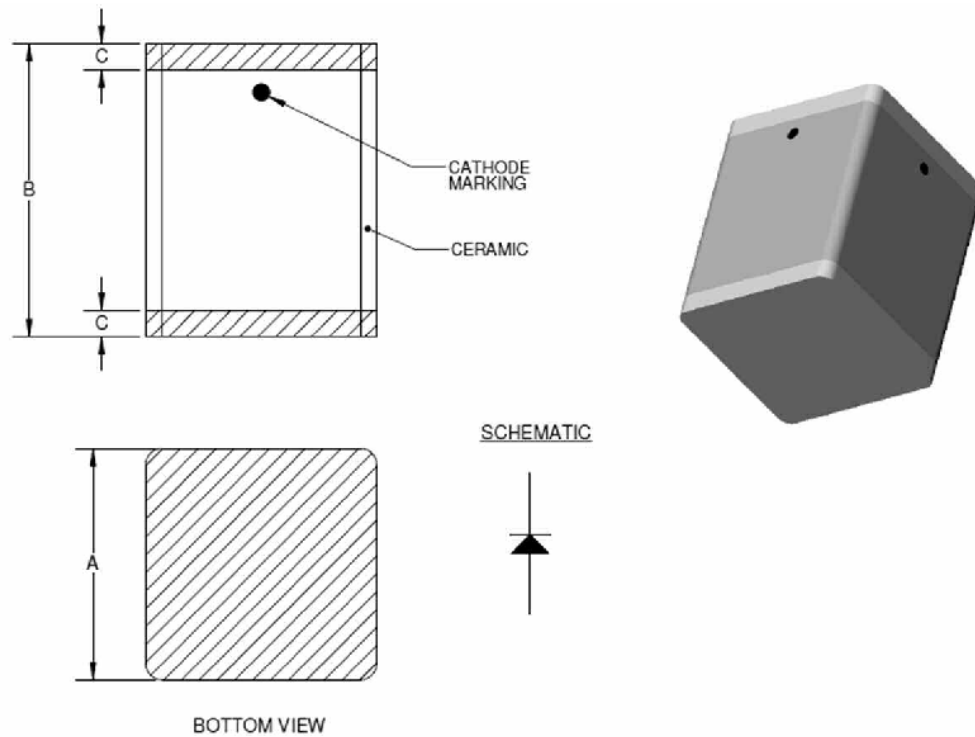
# MMP70xx-128-x Series



## Silicon PIN Diodes

Rev. V1

### Outline Drawing (CS128-1 & CS128-4)



### Outline Dimensions

| Case    | A                     | B                     | C            |
|---------|-----------------------|-----------------------|--------------|
| CS128-1 | 0.088 ±0.007          | 0.125 ±0.010          | 0.02         |
|         | (2.24 ±0.18)          | (3.18 ±0.25)          | -0.51        |
| CS128-4 | 0.143 +0.004 / -0.002 | 0.181 +0.003 / -0.002 | 0.016 ±0.008 |
|         | (3.63 +0.10 / -0.005) | (4.60 +0.08 / -0.05)  | (0.41 ±0.20) |

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