**Pin Diode Switch Element**

**Features**
- Supports up to 50 W Power
- Low Insertion Loss: 0.1 dB up to 2.5 GHz
- High Isolation: 16 dB @ 1 GHz
- RoHS* Compliant

**Description**
A broadband medium power switch element in a 2.6 x 1.5 mm DFN package. This device is electrical series with thermal to ground (EST2G). This device is designed for wireless infrastructure applications and test instruments. It is well suited for other applications from 45 MHz up to 1.5 GHz

**Electrical Specifications: \( T_C = +25^\circ C \) (unless otherwise specified)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage (( V_{BR} ))</td>
<td>( I_R = 10 \mu A )</td>
<td>V</td>
<td>500</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Lifetime (t)</td>
<td>( I_F = 10 \text{ mA}, \ I_R = 6 \text{ mA}, \ 10% / 90% )</td>
<td>ns</td>
<td>—</td>
<td>2200</td>
<td>—</td>
</tr>
<tr>
<td>I-Region (w)</td>
<td>I-Layer</td>
<td>( \mu \text{m} )</td>
<td>—</td>
<td>80</td>
<td>—</td>
</tr>
<tr>
<td>Series Resistance (( R_S ))</td>
<td>( I_F = 100 \text{ mA} )</td>
<td>( \Omega )</td>
<td>—</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Junction Capacitance (( C_J ))</td>
<td>( V_R = 50 \text{ V}, \ 1 \text{ MHz} )</td>
<td>pF</td>
<td>—</td>
<td>0.28</td>
<td>0.35</td>
</tr>
<tr>
<td>Insertion Loss (( I_L ))</td>
<td>( I_F = 100 \text{ mA}, \ 1.5 \text{ GHz} )</td>
<td>dB</td>
<td>—</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Input Return Loss (( I_R_L ))</td>
<td>( I_F = 100 \text{ mA}, \ 1.5 \text{ GHz} )</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>—</td>
</tr>
<tr>
<td>Isolation (( I_{SO} ))</td>
<td>( V_R = -10 \text{ V}, \ 0.5 \text{ GHz} ) ( V_R = -10 \text{ V}, \ &lt;1.5 \text{ GHz} )</td>
<td>dB</td>
<td>17</td>
<td>19</td>
<td>11</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings\(^{1,2}\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage (V(_R))</td>
<td>500 V</td>
</tr>
<tr>
<td>Forward Current (I(_{FDC}))</td>
<td>300 mA</td>
</tr>
<tr>
<td>Thermal Resistance ((\theta_{JC}))</td>
<td>6°C/W</td>
</tr>
<tr>
<td>Junction Temperature (T(_J))</td>
<td>175°C</td>
</tr>
<tr>
<td>Storage Temperature (T(_{STG}))</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Mounting Temperature (T(_{MTG}))</td>
<td>+260°C per JEDEC STD-J-20C</td>
</tr>
</tbody>
</table>

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

Handling Procedures
Please observe the following precautions to avoid damage:

Static 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 Class 0 (HBM) devices.

Typical Performance Curves: \(T_A = 25°C\), \(Z_O = 50\ \Omega\), -10 dBm Small Signal

**Insertion Loss**

![Insertion Loss Graph](image)

**Isolation**

![Isolation Graph](image)

**Input / Output Return Loss**

![Input / Output Return Loss Graph](image)

**Series Resistance vs. Current , 500 MHz**

![Series Resistance vs. Current Graph](image)
**MEST2G-050-80**

**Pin Diode Switch Element**

**Junction Temperature vs. $P_{\text{IN}}$**
*(20 mil Board Mounted on Heat Sink @ +25°C, 1.3 GHz)*

![Graph showing Junction Temperature vs. $P_{\text{IN}}$](image)

**Printed Circuit Board Layout$^{3,4,5,6}$**

- Tolerance ±0.10 mm
- Soldermask to extend 3 mils beyond metal trace
- Vias under package filled with copper or soldermask
- Use circles or squares for thermal land stencil such that there is only 50% to 80% solder paste coverage

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)
Pin Diode Switch Element

Outline

Dimensions in inches [mm]
M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.