Silicon PIN Diode Switch Element

Features
- Supports up to 40 W Power
- Broadband Performance up to 2 GHz
- Low Insertion Loss
- Medium Isolation
- RoHS* Compliant

Description
The MSWSE-044-010 is a PIN diode SPST switch element designed for medium incident power applications, up to 40W C.W. It has low insertion loss and medium isolation below 2.0 GHz.

Electrical Specifications: \( T_A = +25^\circ C \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage</td>
<td>( I_R = 10 \mu A )</td>
<td>300</td>
<td>—</td>
<td>—</td>
<td>V</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>( I_F = 50 \text{ mA} )</td>
<td>—</td>
<td>900</td>
<td>1000</td>
<td>mV</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>( V_R = 10 \text{ V}, 1 \text{ MHz} )</td>
<td>—</td>
<td>0.3</td>
<td>0.4</td>
<td>pF</td>
</tr>
<tr>
<td>Series Resistance</td>
<td>( I_F = 100 \text{ mA}, 500 \text{ MHz} )</td>
<td>—</td>
<td>0.5</td>
<td>0.7</td>
<td>Ω</td>
</tr>
<tr>
<td>Lifetime</td>
<td>( I_F = 10 \text{ mA}, I_R = 6 \text{ mA}, 50% )</td>
<td>—</td>
<td>1200</td>
<td>—</td>
<td>ns</td>
</tr>
<tr>
<td>I-Region</td>
<td>I-Layer</td>
<td>—</td>
<td>40</td>
<td>—</td>
<td>μs</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>( I_F = 10 \text{ mA}, &lt;1 \text{ GHz} )</td>
<td>—</td>
<td>0.20</td>
<td>0.30</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>( I_F = 10 \text{ mA}, &lt;2 \text{ GHz} )</td>
<td>—</td>
<td>0.25</td>
<td>0.35</td>
<td>dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>( V_R = 50 \text{ V}, &lt;1 \text{ GHz} )</td>
<td>—</td>
<td>11</td>
<td>14</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>( V_R = 50 \text{ V}, &lt;2 \text{ GHz} )</td>
<td>—</td>
<td>10</td>
<td>—</td>
<td>dB</td>
</tr>
</tbody>
</table>

Visit www.macom.com for additional data sheets and product information.
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Absolute Maximum Ratings\(^1,2\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage</td>
<td>300 V</td>
</tr>
<tr>
<td>Forward Current</td>
<td>200 mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>20°CW</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+175°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +150°C</td>
</tr>
<tr>
<td>Solder Temperature</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.

Typical RF Performance Curves @ +25°C

Insertion Loss

![Insertion Loss Graph](image)

Isolation

![Isolation Graph](image)

Input Return Loss

![Input Return Loss Graph](image)

Series Resistance vs. Current

![Series Resistance Graph](image)
Silicon PIN Diode Switch Element

Outline (0805P)

Pin Function for Silicon PIN diode:
1. Anode
2. Cathode

For further information and support please visit:
https://www.macom.com/support