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: \( T_A = +25^\circ\text{C} \)

<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\text{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 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 MHz} )</td>
<td>—</td>
<td>0.5</td>
<td>0.7</td>
<td>( \Omega )</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>( \mu\text{s} )</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>11</td>
<td>14</td>
<td>—</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](http://www.macom.com) for additional data sheets and product information.
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**

- **Frequency (GHz)**
  - 0.0
  - 0.5
  - 1.0
  - 1.5
  - 2.0
  - 2.5
  - 3.0

- **dB**
  - -1.0
  - -0.8
  - -0.6
  - -0.4
  - -0.2
  - 0.0
  - 0.2
  - 0.4

- **Current (mA)**
  - 5 mA
  - 10 mA
  - 50 mA

**Isolation**

- **Frequency (GHz)**
  - 0.0
  - 0.5
  - 1.0
  - 1.5
  - 2.0
  - 2.5
  - 3.0

- **dB**
  - -50
  - -40
  - -30
  - -20
  - -10
  - 0

- **Voltage (V)**
  - -10 V
  - -20 V
  - -50 V

**Series Resistance vs. Current**

- **Resistance (Ω)**
  - 0.1
  - 1
  - 10
  - 100

- **Current (mA)**
  - 0.0
  - 0.1
  - 1.0
  - 10.0
  - 100.0

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