PIN Diode Shunt Switch Element

Features
• Supports up to 40 W Power
• Low Insertion Loss:
  0.2 dB to 2.7 GHz
  0.4 dB to 10.0 GHz
• High Isolation:
  30 dB to 10.0 GHz
• RoHS* Compliant

Description
A broadband, high linearity, medium power shunt switch element in a 1.9 x 1.1 mm DFN package.
This device is designed for wireless telecommunications infrastructure and test instrument applications. It is also suited for other applications in 0.05 ~ 10 GHz.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSWSHB-020-30</td>
<td>500 piece reel</td>
</tr>
</tbody>
</table>

Electrical Specifications: $T_A = +25^\circ C$

<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 ($V_B$)</td>
<td>$I_R = 10 \mu A$</td>
<td>V</td>
<td>200</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Insertion Loss ($I_L$)</td>
<td>$V_R = 10 \text{ V}, &lt;2.7 \text{ GHz}$ $V_R = 10 \text{ V}, &lt;10.0 \text{ GHz}$</td>
<td>dB</td>
<td>—</td>
<td>0.08</td>
<td>0.40</td>
</tr>
<tr>
<td>Isolation ($I_{ISO}$)</td>
<td>$I_F = 20 \text{ mA}, &lt;2.7 \text{ GHz}$ $I_F = 20 \text{ mA}, &lt;10.0 \text{ GHz}$</td>
<td>dB</td>
<td>33</td>
<td>28</td>
<td>32</td>
</tr>
<tr>
<td>Input / Output Return Loss</td>
<td>$V_R = 10 \text{ V}, &lt;2.7 \text{ GHz}$ $V_R = 10 \text{ V}, &lt;10.0 \text{ GHz}$</td>
<td>dB</td>
<td>25</td>
<td>15</td>
<td>28</td>
</tr>
<tr>
<td>Minority Carrier Lifetime ($T_L$)</td>
<td>$I_F = 10 \text{ mA}, I_R = 6 \text{ mA}, @ 50%$</td>
<td>ns</td>
<td>—</td>
<td>4000</td>
<td>—</td>
</tr>
</tbody>
</table>

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.
Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage</td>
<td>200 V</td>
</tr>
<tr>
<td>Forward Current</td>
<td>200 mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>15°C/W</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+175°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Assembly Temperature</td>
<td>+260°C Per JEDEC STD-J-20C</td>
</tr>
</tbody>
</table>

Typical Performance Curves

**Insertion Loss**

![Insertion Loss Graph](image)

**Isolation**

![Isolation Graph](image)

**Input Return Loss**

![Input Return Loss Graph](image)
NOTE: If possible, use copper filled vias underneath pin 3 for better thermals; otherwise, use vias that are plated through, filled and plated over.

Solder mask should provide a 60 um clearance between copper pad and soldermask. Rounded pkg pads should have matching rounded solder mask openings.

Use circles or squares for the thermal land stencil such that only get 50% to 80% solder paste coverage.
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