PIN Diode Shunt Switch Element

Rev. V3

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>
</tbody>
</table>
| Insertion Loss ($I_L$)   | $V_R = 10 \text{ V}, <2.7 \text{ GHz}$
                          | $V_R = 10 \text{ V}, <10.0 \text{ GHz}$ | dB    | —    | 0.08 | 0.40 | 0.2  | 0.5  |
| Isolation ($I_{ISO}$)    | $I_F = 20 \text{ mA}, <2.7 \text{ GHz}$
                          | $I_F = 20 \text{ mA}, <10.0 \text{ GHz}$ | dB    | 33   | 28   | 40   | 32   | —    |
| Input / Output Return Loss | $V_R = 10 \text{ V}, <2.7 \text{ GHz}$
                          | $V_R = 10 \text{ V}, <10.0 \text{ GHz}$ | dB    | 25   | 15   | 28   | 20   | —    |
| Minority Carrier Lifetime ($T_L$) | $I_F = 10 \text{ mA}$,
                                         | $I_R = 6 \text{ mA}$, @ 50% | ns    | —    | 4000 | —    |

* 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**

-50 V
-10 V
-0 V

**Isolation**

10 mA
20 mA
40 mA
100 mA

**Input Return Loss**

-50 V
-10 V
-0 V

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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 μm 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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