PIN Diode Shunt Switch Element

Features
- Supports up to 25 W Power @ 5 GHz
- Low Insertion Loss:
  - 0.2 dB to 2.7 GHz
  - 0.4 dB to 10.0 GHz
- High Isolation:
  - 25 dB to 10.0 GHz
- RoHS* Compliant

Description
A broadband, high linearity, medium power shunt switch element in a 2 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 ~ 17 GHz broad band and 24 GHz narrow band with tuning.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSWSH-020-24</td>
<td>3000 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 ($I_L$)     | $V_R = 10 \, V$  
  2.7 GHz  
  10.0 GHz | dB   | —    | 0.20 | 0.60 | 0.30 | 0.75 |
| Isolation ($I_{SO}$)       | $I_F = 100 \, mA$  
  2.7 GHz  
  10.0 GHz | dB   | 27   | 30   | —    |
| Input Return Loss ($I_{RL}$)| $V_R = 10 \, V$  
  2.7 GHz  
  10.0 GHz | dB   | 20   | 25   | 12   |
| I-Region (W)               | I-Layer         | µm   | —    | 15   | —    |
| Minority Carrier Lifetime ($T_L$) | $I_F = 10 \, mA$, $I_R = 6 \, mA$, @ 50% | ns   | —    | 600  | —    |


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### 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>150 mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>30°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**

**Isolation**

**Input Return Loss**

**Diode Resistance vs. Current**

1. Input return loss can be reduced to less than -15 dB with the use of stub tuner printed on the circuit board. Insertion loss is also improve by 0.25 dB at 15 GHz with this tuner.

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Junction Temperature vs. Power,
1.3 GHz, $T_A = +25^\circ C$, 20 mil PCB Mounted on Heatsink

Printed Circuit Board Layout
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