MASW-009588

GaAs SP2T Switch
DC - 4.0 GHz

Features
- Insertion Loss: 0.35 dB @ 1 GHz
- Lead-Free 1 mm 6-Lead PDFN Package
- Halogen-Free “Green” Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description
The MASW-009588 is a GaAs pHEMT MMIC single pole two throw (SP2T) switch in a miniature 1x1mm 6-lead PDFN package. The MASW-009588 is ideally suited for applications where low control voltage, low insertion loss, moderate isolation, and small size are required.

Typical applications are for filter and antenna switching in handset systems that connect separate receive functions to a common antenna, as well as other related handset and general purpose applications. This part can be used in all systems operating up to 4 GHz requiring high power at low control voltage.

The MASW-009588 is fabricated using a 0.5 micron gate length GaAs pHEMT process. The process features full passivation for performance and reliability.

Functional Diagram

Pin Configuration

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF1</td>
<td>RF Port 1</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>RF2</td>
<td>RF Port 2</td>
</tr>
<tr>
<td>4</td>
<td>V2</td>
<td>Control 2</td>
</tr>
<tr>
<td>5</td>
<td>RFC</td>
<td>RF Common</td>
</tr>
<tr>
<td>6</td>
<td>V1</td>
<td>Control 1</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASW-009588-000000</td>
<td>Bulk</td>
</tr>
<tr>
<td>MASW-009588-TR3000</td>
<td>3000 piece reel</td>
</tr>
<tr>
<td>MASW-009588-001SMB</td>
<td>Sample Board</td>
</tr>
</tbody>
</table>

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Input Power (0.5 - 4 GHz, 2.8V Control)</td>
<td>+33 dBm</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>+5 volts</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
</tbody>
</table>

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. M/A-COM Technology does not recommend sustained operation near these survivability limits.

The document contains a page with technical specifications for a GaAs SP2T Switch operating in the DC - 4.0 GHz frequency range. The specifications include electrical parameters such as Insertion Loss, Isolation, VSWR, IP3, P0.1dB, P1dB, 2nd Harmonic, 3rd Harmonic, Trise, Tfall, Ton, Toff, Transients, and Gate Leakage. The specifications are provided for different conditions and measurements, with typical values ranging from 0 dB to 93 dBc, and units ranging from dB to µA.

Recommended PCB diagrams illustrate the component values necessary for proper connections. The Truth Table outlines the logic states for V1 and V2, with corresponding RFC-RF1 and RFC-RF2 states.

The Off-Chip Component Values are listed, including component values and packages. The document also includes notes and reminders about the required external components and voltage levels.

For further information and support, please visit the MACOM website at www.macom.com/support.
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Typical Performance Curves, $V_{\text{CTL}} = 0/+2.6 \, V_{\text{DC}}$

**Insertion Loss**

- $S_{21} (\text{dB})$ vs. Frequency (GHz)

**Isolation**

- $S_{21} (\text{dB})$ vs. Frequency (GHz)

**Input Return Loss**

- $S_{11} (\text{dB})$ vs. Frequency (GHz)

**Output Return Loss**

- $S_{22} (\text{dB})$ vs. Frequency (GHz)

**Output Power vs. Input Power @ 2.5 GHz**

- Output Power (dBm) vs. Input Power (dBm)
**GaAs SP2T Switch**

DC - 4.0 GHz

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**PCB Land Pattern**

![PCB Land Pattern Diagram](image)

All dimensions are shown in in/mm

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**Qualification**


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**Handling Procedures**

Please observe the following precautions to avoid damage:

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**Static Sensitivity**

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

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**Lead-Free 1 mm 6-Lead PDFN†**

![6-Lead PDFN Diagram](image)

Note:

1. Reference Application Note S2083 for lead-free solder reflow recommendations.
2. Meets JEDEC moisture sensitivity level 1 requirements.
3. Plating is 100% matte tin over copper.

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