

Features

- UNII, Hiperlan, and 802.11a Applications
- Low Insertion Loss: 1.0 dB Typical
- High Isolation: 21 dB Typical
- Low Leakage Current: < 1 μ A
- Fast Switching Speed
- 4 mm FQFP-N Plastic Surface Mount Package

Description

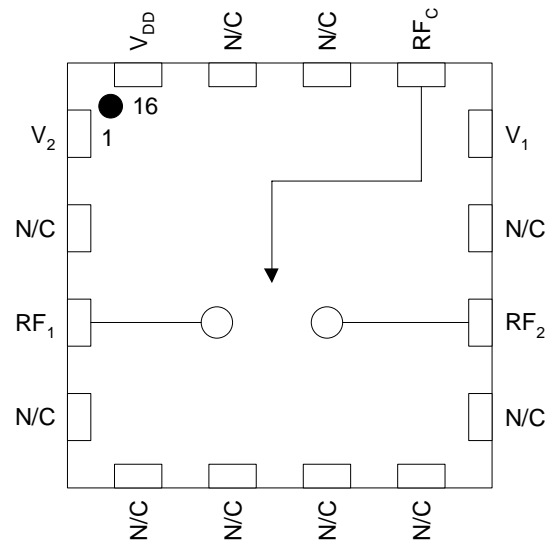
The MASWSM0002 is a low loss RF switch mounted in a standard outline 4 mm, 16 pin FQFP-N leadless plastic package. It is designed for U-NII, Hiperlan, and 802.11a applications. The MASWSM0002 features isolation greater than 20 dB, a P1dB point above 30 dBm, and switching speeds of 15 ns typical. Its small size and height make it ideal for PC card and access point applications.

The MASWSM0002 is fabricated using M/A-COM's 0.5 micron P-HEMT process to realize low loss and high linearity. The process features passivation for increased performance and reliability.

Ordering Information

| Part Number | Description |
|-------------------|--------------------------|
| MASWSM0002TR | 7 inch, 1000 piece reel |
| MASWSM0002TR-3000 | 13 inch, 3000 piece reel |
| MASWSM0002SMB | Sample Test Board |

Functional Schematic



Pin Configuration

| Pin | Function | Description |
|-----|-----------------|------------------------|
| 1 | V ₂ | Voltage Control Line 2 |
| 2 | N/C | Not Connected |
| 3 | RF ₁ | RF Port 1 |
| 4 | N/C | Not Connected |
| 5 | N/C | Not Connected |
| 6 | N/C | Not Connected |
| 7 | N/C | Not Connected |
| 8 | N/C | Not Connected |
| 9 | N/C | Not Connected |
| 10 | RF ₂ | RF Port 2 |
| 11 | N/C | Not Connected |
| 12 | V ₁ | Voltage Control Line 1 |
| 13 | RF _C | Common RF Port |
| 14 | N/C | Not Connected |
| 15 | N/C | Not Connected |
| 16 | V _{DD} | DC Supply Voltage |
| Pad | GND | RF & DC Ground |

Specifications subject to change without notice.

- **North America:** Tel. (800) 366-2266
- **Asia/Pacific:** Tel.+81-44-844-8296, Fax +81-44-844-8298
- **Europe:** Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Visit www.macom.com for additional data sheets and product information.

Electrical Specifications: $T_A = 25\text{ }^\circ\text{C}$, $Z_0 = 50\text{ }\Omega$ ¹

| Characteristic | Test Conditions | Unit | Min | Typ | Max |
|-----------------------------|--|---------------|------|------|------|
| Frequency | | GHz | 5.15 | | 5.35 |
| Insertion Loss | $F = 5.25\text{ GHz}$, $P_{IN} = 0\text{ dBm}$ | dB | | 1.0 | 1.4 |
| Isolation | $F = 5.25\text{ GHz}$, $P_{IN} = 0\text{ dBm}$ | dB | 18 | 21 | |
| Return Loss, RF_C | $F = 5.25\text{ GHz}$, $P_{IN} = 0\text{ dBm}$ | dB | | 13 | |
| 1 dB Compression Point | $F = 5.25\text{ GHz}$ | dBm | | 30.5 | |
| Third Order Intercept Point | $F = 5.250\text{ GHz}$, $P_{IN} = +20\text{ dBm}$ $F = 5.251\text{ GHz}$, $P_{IN} = +20\text{ dBm}$ | dBm | | 51 | |
| Leakage Current | $F = 5.25\text{ GHz}$, $P_{IN} = +20\text{ dBm}$ | μA | | 1.0 | |
| T_{RISE} , T_{FALL} | 10% to 90% RF, 90% to 10% RF | ns | | 8 | |
| T_{ON} , T_{OFF} | 50% Control to 90% RF, 50% Control to 10% RF | ns | | 15 | |

- Control voltages are 0 V and +3 V, and V_{DD} is +3 V unless otherwise specified.

Switch Logic Table^{1,2}

| Insertion Loss Path | Isolated Path | V_1 | V_2 |
|---------------------|---------------|-------|-------|
| RF_1/RF_C | RF_2/RF_C | 1 | 0 |
| RF_2/RF_C | RF_1/RF_C | 0 | 1 |

- "0" = 0 +/- 0.2 volts
- "1" = +2.7 to +5 volts, equal to V_{DD}

Absolute Maximum Ratings¹

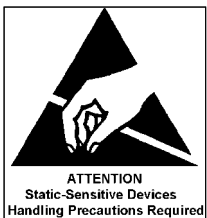
| Parameter | Absolute Maximum |
|-----------------------|-------------------|
| Max Input Power | + 33 dBm |
| Operating Voltage | +5.5 volts |
| Operating Temperature | -40 °C to +100 °C |
| Channel Temperature | +150 °C |
| Storage Temperature | -40 °C to +150 °C |

- Exceeding any one or combination of these limits may cause permanent damage.

Application Information

Static Sensitivity

Gallium arsenide integrated circuits are ESD sensitive and can be damaged by static electricity. Use proper ESD precautions when handling these devices.



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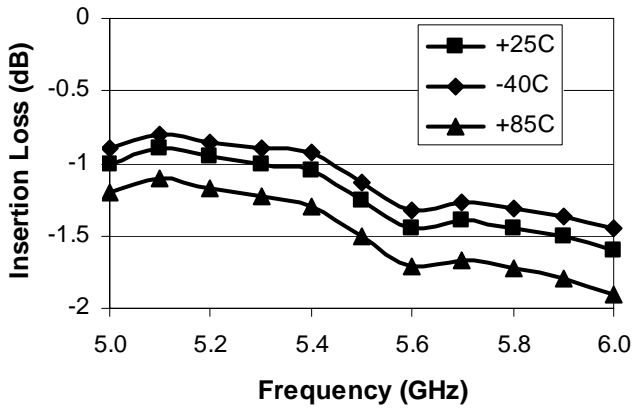
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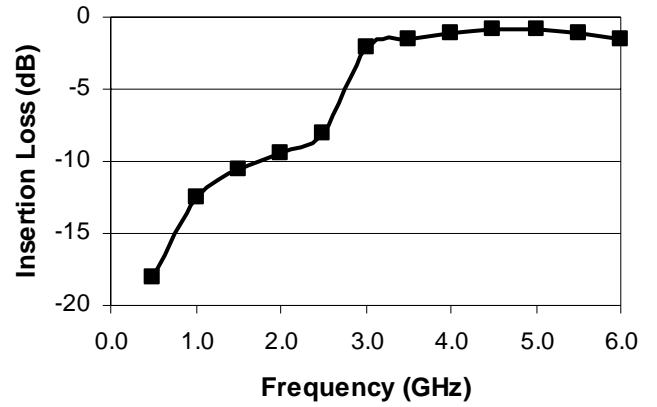
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Typical Performance

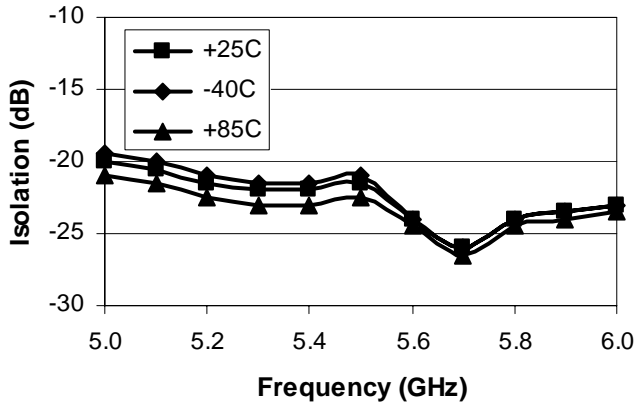
Insertion Loss vs. Frequency, over Temperature



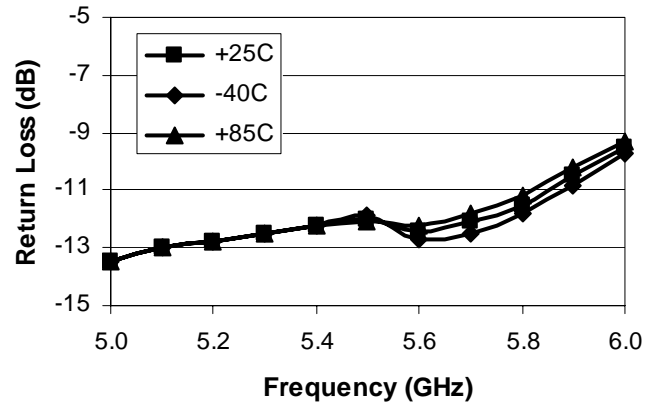
Insertion Loss vs. Frequency, T_A = +25°C



Isolation vs. Frequency, over Temperature



Return Loss vs. Frequency, over Temperature



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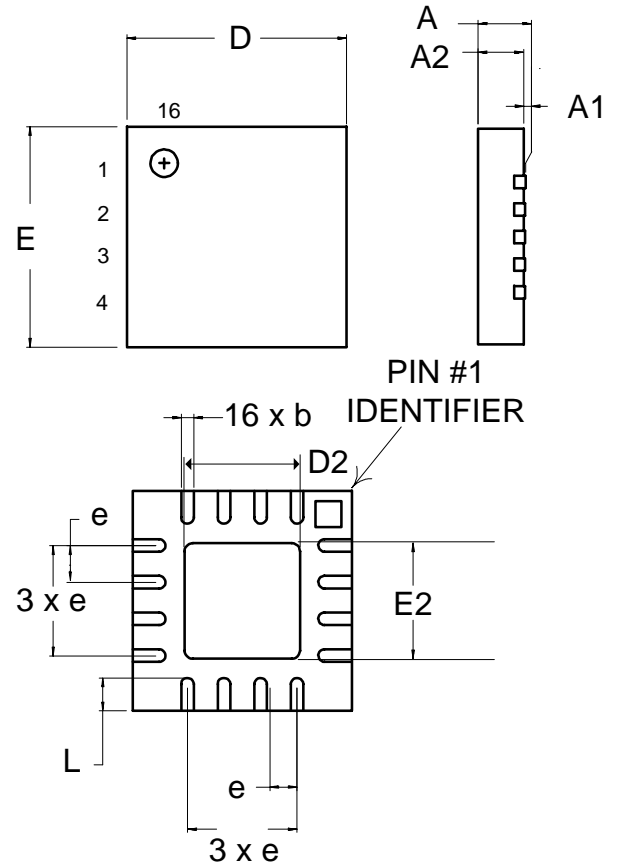
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4 mm, 16 Pin FQFP-N Package

| Dimension | Measurement (mm) | | |
|-----------|------------------|------|------|
| | Min. | Nom. | Max. |
| A | 0.80 | 0.90 | 1.00 |
| A1 | 0 | 0.02 | 0.05 |
| A2 | 0.80 | 0.88 | 1.00 |
| b | 0.23 | 0.30 | 0.38 |
| D | | 4.00 | |
| D2 | 2.05 | 2.15 | 2.25 |
| e | | 0.65 | |
| E | | 4.00 | |
| E2 | 2.00 | 2.15 | 2.25 |
| L | 0.40 | 0.55 | 0.65 |

Note: See JEDEC MO-220A VGGC Issue B for additional dimensional and tolerance information.



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