MASW-008543

SPDT High Isolation Terminated Switch
0.01- 4.0 GHz

Rev. V2

Features

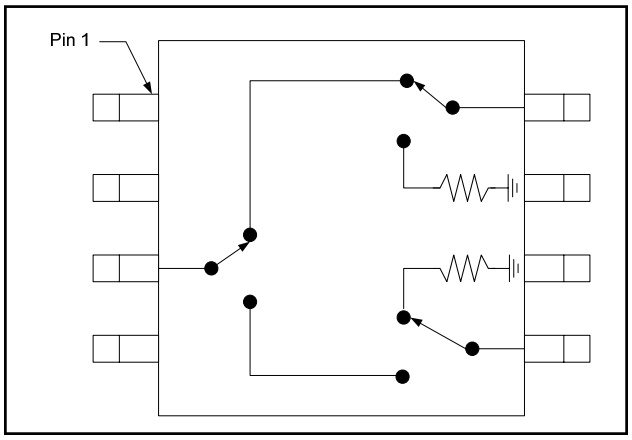
- Positive Voltage Control
- High Isolation: 62 dB @ 1 GHz
  65 dB @ 2 GHz
- 50 Ω Internal Terminations
- Low Insertion Loss: 0.65 dB @ 1 GHz
  0.70 dB @ 2 GHz
- Fast Settling for Low Gate Lag requirements
- Lead-Free MSOP-8-EP Package
- Halogen-Free "Green" Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description

The MASW-008543 GaAs monolithic switch provides high isolation in a lead-free, plastic surface mount package. The MASW-008543 is ideal for applications across a broad range of frequencies.

M/A-COM Technology Solutions' fabricates the MASW-008543 using a 0.5-micron gate length pHEMT process. The process features full chip passivation for performance and reliability.

Functional Block Diagram



Pin Configuration[3]

Pin	Function	Pin	Function
1	V1	5	RF Port 2
2	V2	6	Ground
3	RF Common	7	Ground
4	Ground	8	RF Port 1

3. The exposed pad centered on the package bottom must be connected to RF and DC ground.

Ordering Information[1,2]

Part Number	Package
MASW-008543-000000	Bulk Packaging
MASW-008543-TR3000	3000 piece reel
MASW-008543-001SMB	Sample Board

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

Absolute Maximum Ratings [4,5]

Parameter	Absolute Maximum
Input Power (0.5 - 3.0 GHz) V_{HIGH} = 3.0 V	33 dBm
Operating Voltage	8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

• **North America** Tel: 800.366.2266 • **Europe** Tel: +353.21.244.6400
• **India** Tel: +91.80.43537383 • **China** Tel: +86.21.2407.1588
Visit www.macomtech.com for additional data sheets and product information.

Electrical Specifications: T_A = 25°C, V_{HIGH} = 3.0 V, V_{LOW} = 0 V, Z_0 = 50 Ω [6]

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	1.0 GHz 2.0 GHz 3.0 GHz 4.0 GHz	dB dB dB dB	— — — —	0.65 0.70 0.85 1.10	— 0.95 — —
Isolation	1.0 GHz 2.0 GHz 3.0 GHz 4.0 GHz	dB dB dB dB	— 62 — —	62 65 50 45	— — — —
Return Loss	0.5 - 4.0 GHz	dB	—	20	—
Input IP_3	2-Tone, 2.1 GHz, 10 MHz spacing	dBm	—	53	—
P1dB	2.1 GHz	dBm	—	25	—
P0.1dB	2.1 GHz	dBm	—	20	—
Trise, Tfall	10% to 90% RF & 90% to 10% RF	ns	—	30	—
Ton, Toff	50% of V_C to 10% / 90% RF	ns	—	52	—
Transients	In-band	mV	—	12	—
Control Current		µA	—	<1	5

6. External DC blocking capacitors are required on all RF ports (39 pF capacitors are recommended).

Truth Table [7,8,9]

V1	V2	RFC-RF1	RFC-RF2
V_{HIGH}	V_{LOW}	On	Off
V_{LOW}	V_{HIGH}	Off	On

7. V_{LOW} = 0 V ± 0.2 V, V_{HIGH} = 1.8 V to +5 V, minimum V_{HIgh} - V_{LOw} = 1.8 V, maximum V_{HIgh} - V_{LOw} = 8.0 V.
8. For use at low voltage, M/A-COM Technology Solutions recommends connecting a 20K pull up resistor on pin 3 to a voltage equal to the most positive control voltage.
9. Negative control voltage may be used. The V_{HIGH} in the table would be the most positive (0 V) and the V_{LOw} would be the most negative (-3 V for example).

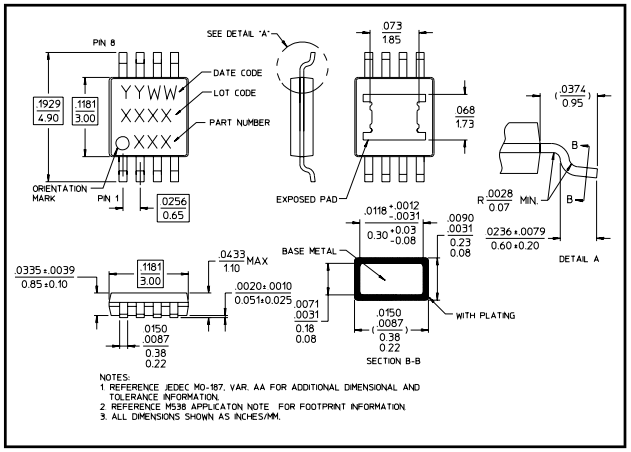
Handling Procedures

Please observe the following precautions to avoid damage:

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.

Lead-Free MSOP-8-EP†



† Reference Application Note M538 for lead-free solder reflow recommendations
Meets JEDEC moisture sensitivity level 1 requirements.
Plating is 100% matte tin over copper.

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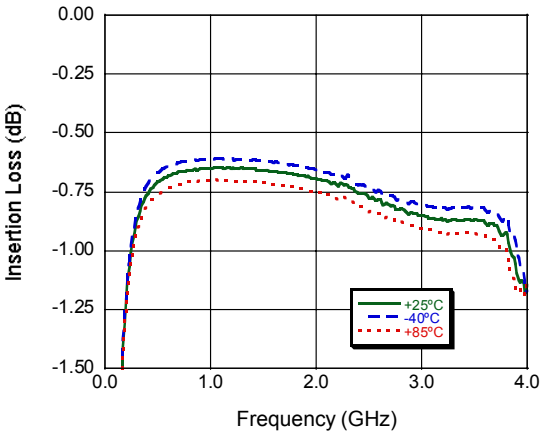
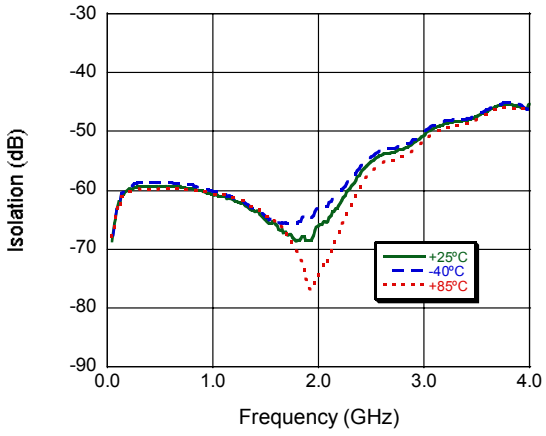
Typical Performance Curves

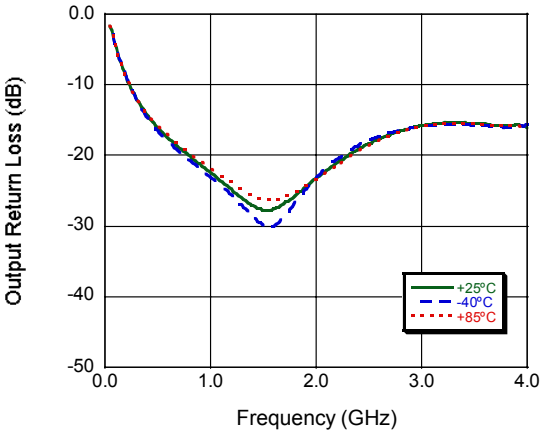
Insertion Loss



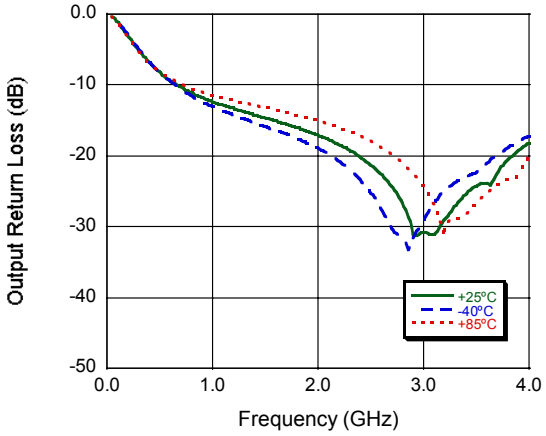
Isolation



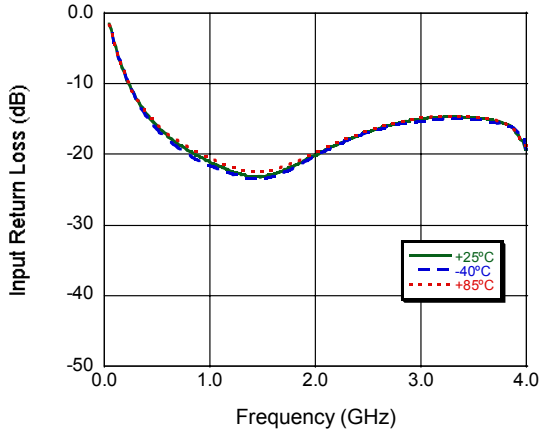
Output Return Loss (on state)



Output Return Loss (off state)

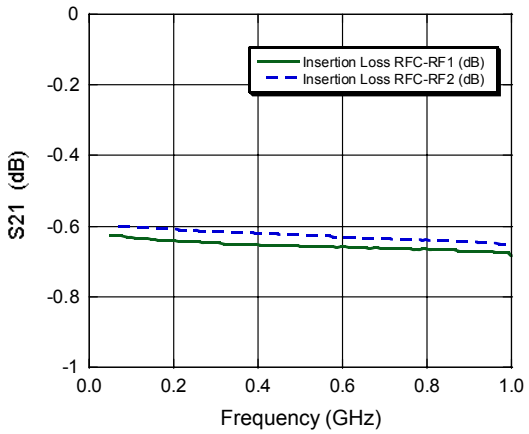


Input Return Loss (on state)

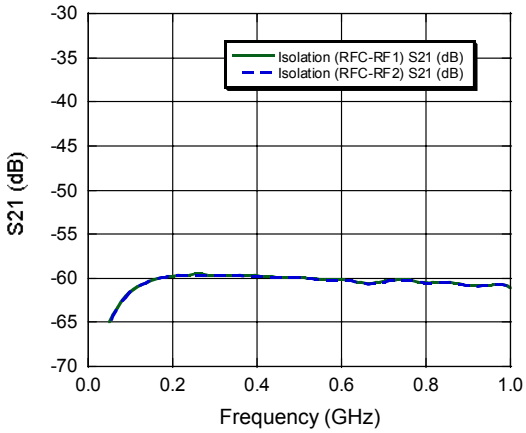


Applications Section—Low Frequency Measurement

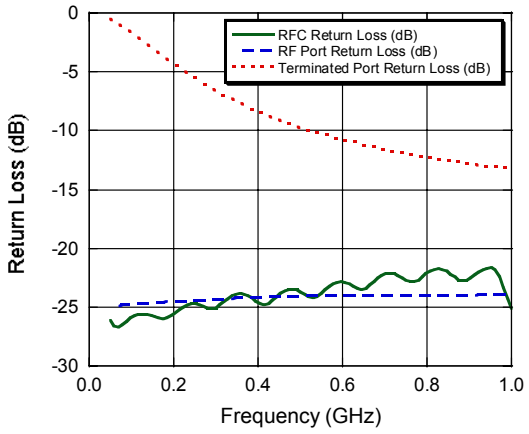
Insertion Loss



Isolation



Return Loss



This data shows the MASW-008543 measured on an evaluation board with 0 Ω resistors. The board and connector loss have been removed.

0 Ω resistors can be used if negative control is available. To avoid changing the device bias points, the device should not be exposed to DC potentials on the RF ports.

With positive control M/A-COM Technology Solutions recommends using DC-Blocking capacitors large enough that their X_c is insignificant at the frequency of use. At 50 MHz a capacitor value greater than 1000 pF is recommended.

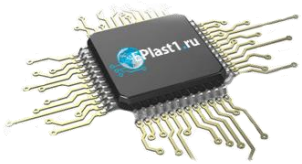
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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