MASWCC0009

GaAs SP4T Switch, Absorptive
DC - 3.0 GHz

Rev. V7

Features

- Typical Isolation: 35 dB (2.0 GHz)
- Typical Insertion Loss: 1.2 dB (2.0 GHz)
- Integral ASIC/CMOS Driver
- 50 Ohm Nominal Impedance
- Low DC Power Consumption
- Test Boards Available
- Lead-Free QSOP-24 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free “Green” Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of SW65-0440

Description

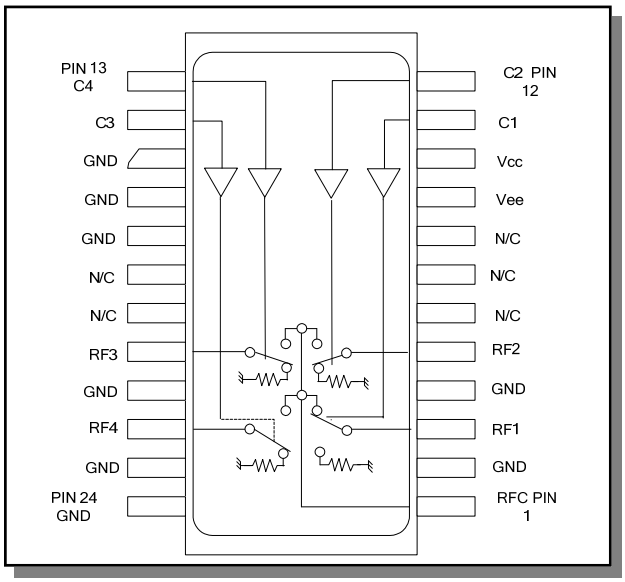
M/A-COM's MASWCC0009 is a GaAs MMIC absorptive SP4T switch with an integral silicon ASIC driver. This device is in a 24-lead plastic package. This switch offers excellent broadband performance and repeatability from DC to 3 GHz, while maintaining low DC power dissipation. The MASWCC0009 is ideally suited for wireless infrastructure applications.

Ordering Information

Part Number	Package
MASWCC0009	Bulk Packaging
MASWCC0009TR	1000 piece reel
MASWCC0009-TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RFC	13	C4
2	GND	14	C3
3	RF1	15	GND
4	GND	16	GND
5	RF2	17	GND
6	NC	18	NC
7	NC	19	NC
8	NC	20	RF3
9	V_{EE}	21	GND
10	V_{CC}	22	RF4
11	C1	23	GND
12	C2	24	GND

NC = No Connection

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

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Electrical Specifications: T_A = 25°C

Parameter	Test Conditions	Units	Min	Typ	Max
Insertion Loss	DC - 2.0 GHz DC - 3.0 GHz	dB dB	— —	1.2 1.3	1.8 2.5
Isolation	DC - 2.0 GHz DC - 3.0 GHz	dB dB	32 25	35 29	— —
VSWR RF1-RF4 On RF1- RF4 Off RFC RFC	DC - 3.0 GHz DC - 3.0 GHz DC - 2.0 GHz DC - 3.0 GHz	Ratio Ratio Ratio Ratio	— — — —	1.2:1 1.4:1 1.2:1 1.6:1	1.6:1 1.8:1 1.5:1 2.2:1
Switching Speed[1] T_{rise} T_{fall} T_{on} T_{off} Transients	 10%/90%, 90%/10% 50% TTL to 90%/10% RF In-band (peak to peak)	 ns ns mV	 — — —	 15 50 50	 50 150 150
1 dB Compression	.05 GHz .5 - 3.0 GHz	dBm dBm	— —	+20 +27	— —
Input IP_3	Two tone inputs 0.05 GHz up to +5 dBm 0.5 - 3.0 GHz	dBm dBm	— —	+35 +46	— —
V_{CC}	—	V	+4.5	+5.0	+5.5
V_{EE}	—	V	-8.0	-5.0	-4.75
V_{IL} V_{IH}	LOW-level input voltage HIGH-level input voltage	V V	0.0 2.0	— —	0.8 5.0
Iin (Input Leakage Current)	Vin = V_{CC} or GND	uA	-1.0	—	1.0
Icc (Quiescent Supply Current)	Vcntrl = V_{CC} or GND	uA	—	250	400
ΔIcc (Additional Supply Current Per TTL Input Pin)	V_{CC} = Max, Vcntrl = V_{CC} - 2.1 V	mA	—	—	1.0
I_{EE}	V_{EE} min to max, Vin = V_{IL} or V_{IH}	mA	-1.0	-0.2	—

Absolute Maximum Ratings [2,3,4]

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz 0.5 - 3.0 GHz	 +27 dBm +34 dBm
V_{CC}	-0.5V ≤ V_{CC} ≤ +7.0V
V_{EE}	-8.5V ≤ V_{EE} ≤ +0.5V
V_{CC} - V_{EE}	-0.5V ≤ V_{CC} - V_{EE} ≤ 14.5V
Vin[5]	-0.5V ≤ Vin ≤ V_{CC} + 0.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

2. Exceeding any one or combination of these limits may cause permanent damage to this device.
3. M/A-COM does not recommend sustained operation near these survivability limits.
4. When the RF input is applied to the terminated port, the absolute maximum power is +30 dBm.
5. Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

1. Decoupling capacitors (0.1 µF) are required on the power supply lines.

Truth Table (Switch)

TTL				RF Common To:			
C1	C2	C3	C4	RF1	RF2	RF3	RF4
1	0	0	0	On	Off	Off	Off
0	1	0	0	Off	On	Off	Off
0	0	1	0	Off	Off	On	Off
0	0	0	1	Off	Off	Off	On

0 = TTL Low; 1 = TTL High

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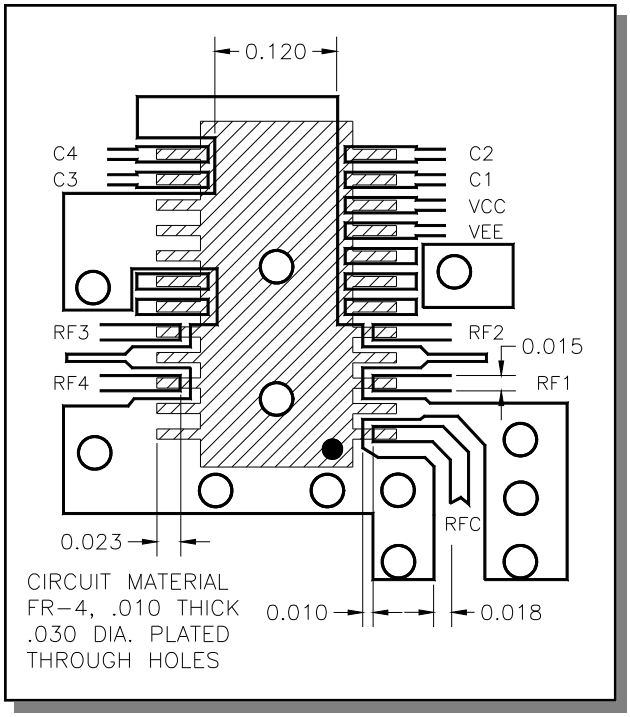
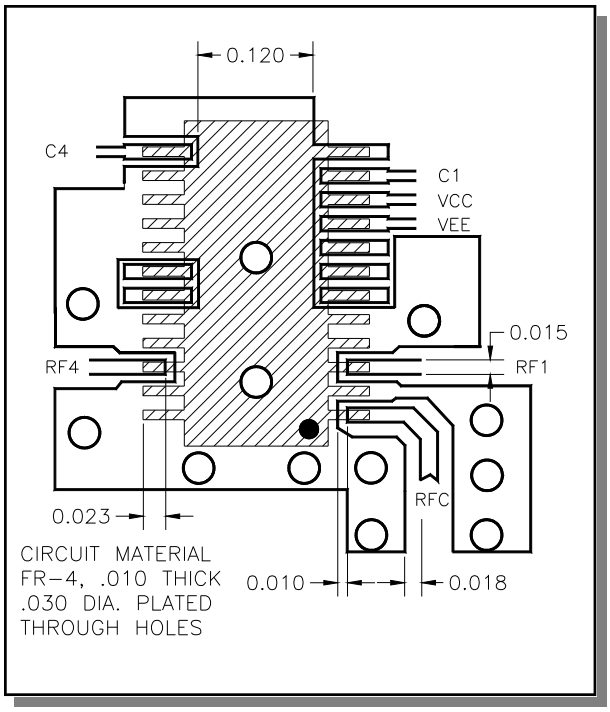
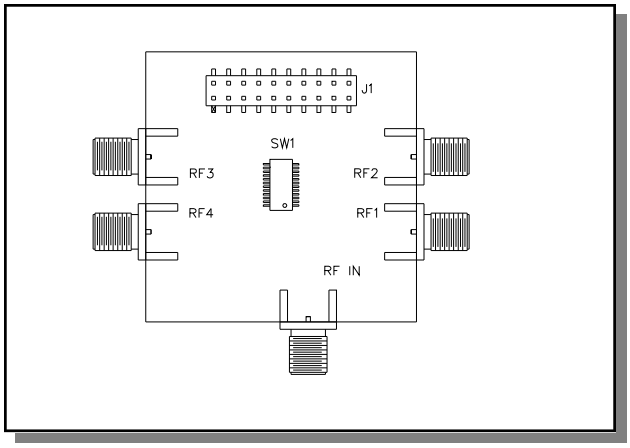
Recommended PCB Layout—SP4T



Recommended PCB Layout—SP2T



Evaluation Board - SW65-0440-TB



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.

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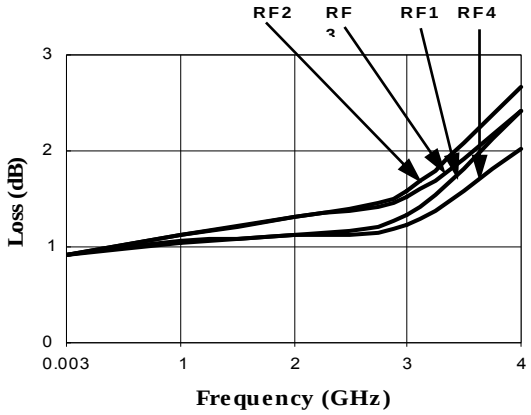
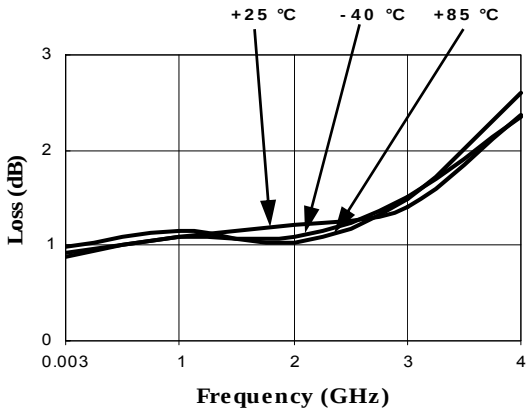
Typical Performance Curves

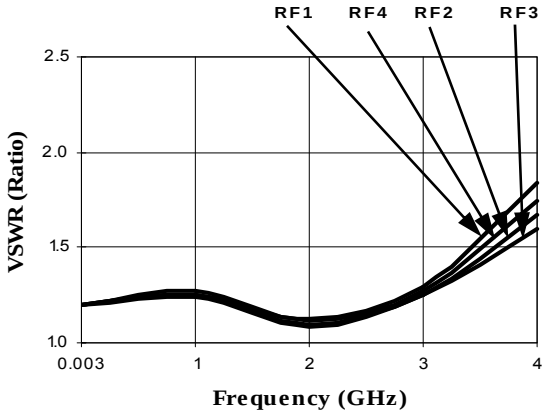
Insertion Loss (dB) @ +25ºC



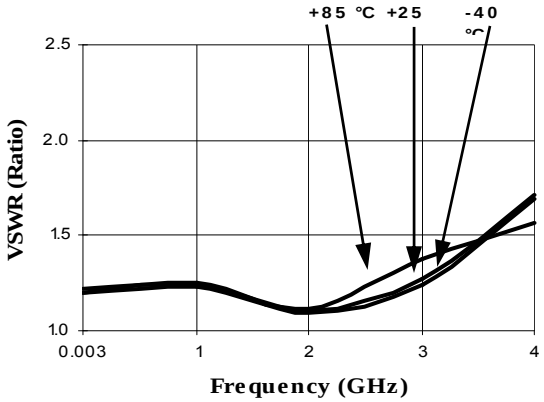
Loss Variation Over Temp. (dB)



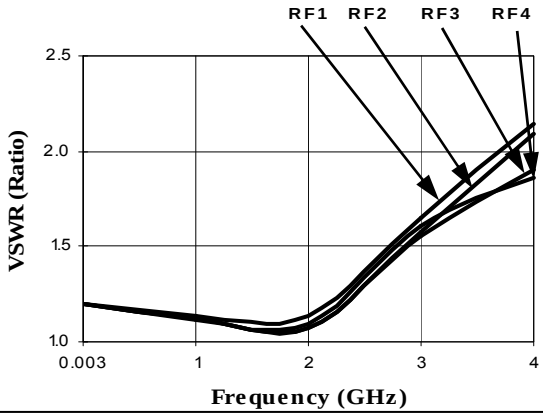
RF1 - RF4 On VSWR @ +25°C



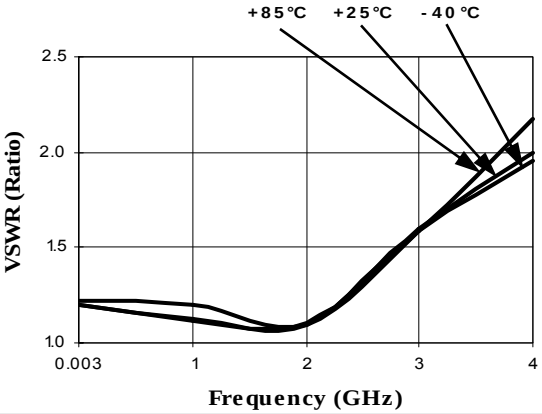
RF1 - RF4 On VSWR Temp. Variation



RFC On VSWR @ +25°C

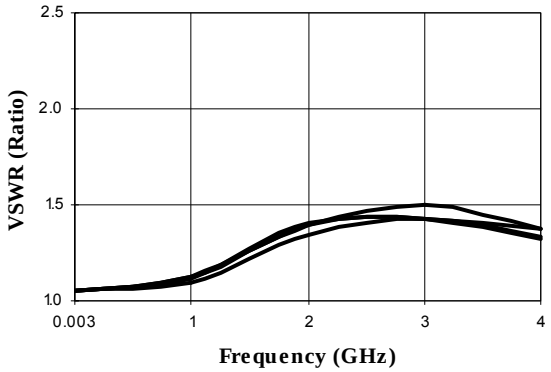


RFC On VSWR Temp. Variation

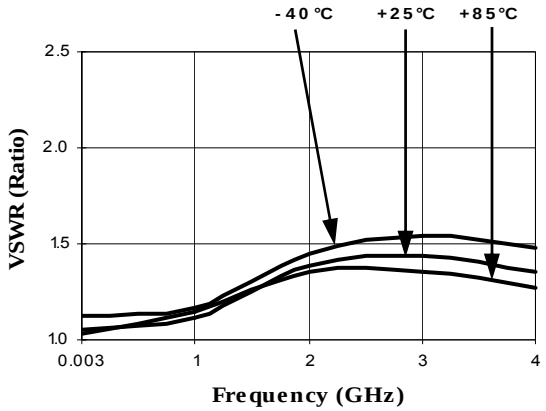


Typical Performance Curves

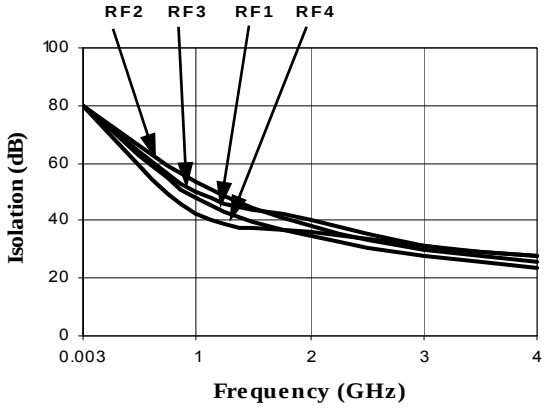
RF1 - RF4 Off VSWR @ +25°C



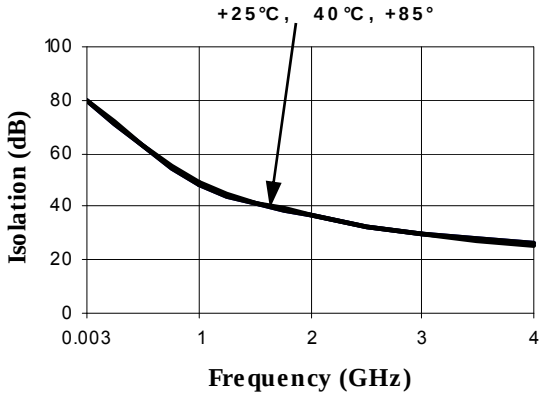
RF1 - RF4 Off VSWR Temp. Variation



Isolation (dB) @ +25°C



Isolation Temp. Variation (dB)



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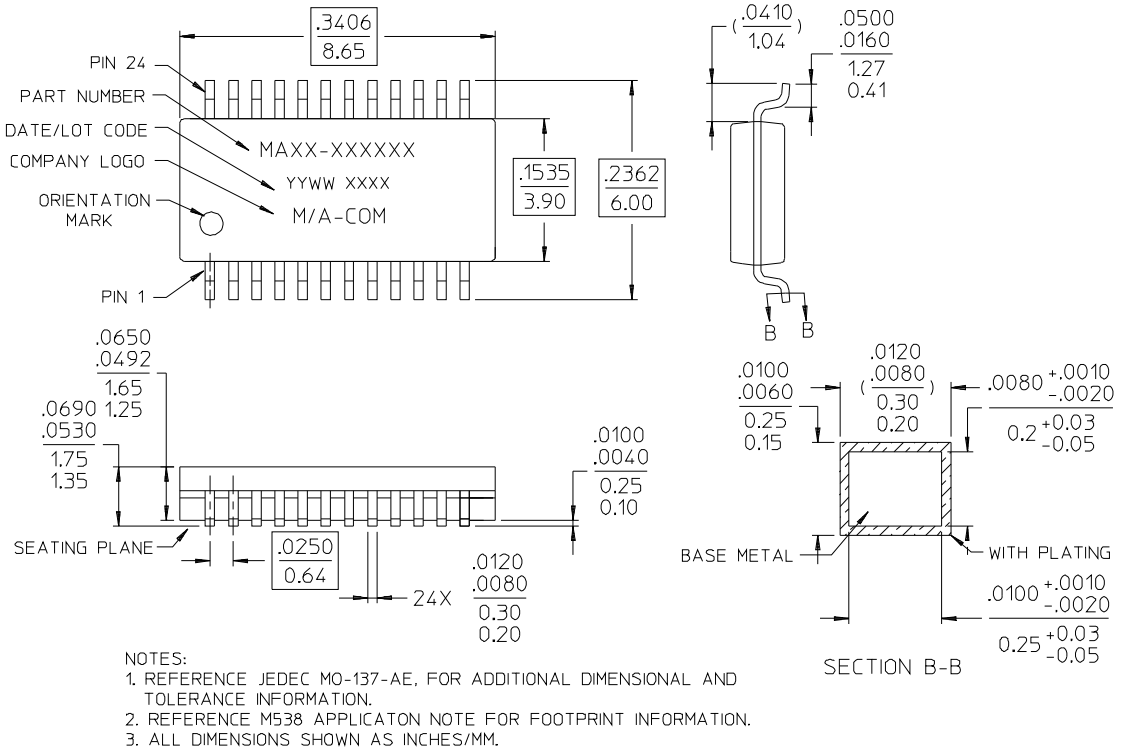
***Lead-Free,* QSOP-24†**



† Reference Application Note M538 for lead-free solder reflow recommendations.

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- 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;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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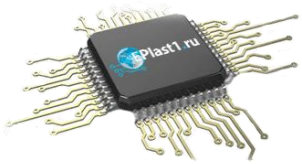
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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