

Features

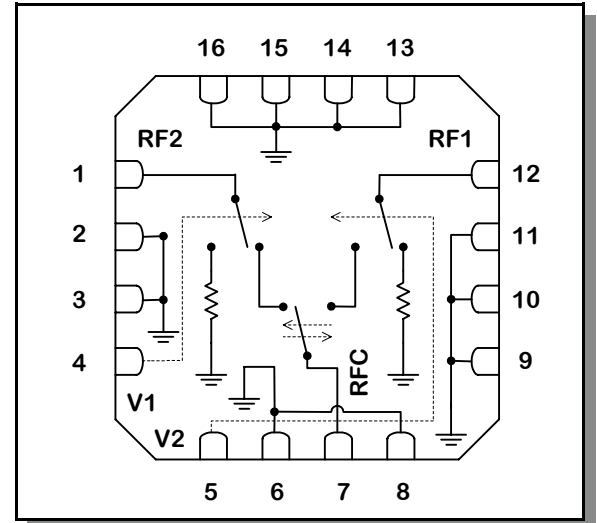
- Positive Voltage Control (0 / +3 V)
- High Isolation (43 dB typ @ 2.4 GHz)
- Low Insertion Loss (0.7 dB typ @ 2.4 GHz)
- 4 mm FQFP-N 16 Lead Package
- Ideal for Satellite Radio Applications

Description

The M/A-COM MASWSS0063 GaAs monolithic switch in a low cost 4 mm FQFP-N 16 Lead Surface Mount Plastic Package. The MASWSS0063 is ideal for Satellite Radio Applications and high isolation, broadband switching requirements. Typical applications include synthesizer switching, transmit / receive switching, switch matrices and filter banks in systems such as radio and cellular equipment, PCS, GPS, and fiber optic modules.

The MASWSS0063 is fabricated using a 0.5-micron gate length pHEMT process. The process features full chip passivation for performance and reliability.

Functional Schematic



Electrical Specifications: $T_A = 25\text{ }^\circ\text{C}$, $V_{CTL} = 0, 3.0\text{ V}$ (unless otherwise specified)

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	1.0 - 2.0 GHz	dB		0.6	
	2.0 - 3.0 GHz	dB		0.7	
	3.0 - 4.0 GHz	dB		0.9	
Isolation	1.0 - 2.0 GHz	dB		46	
	2.0 - 3.0 GHz	dB		43	
	3.0 - 4.0 GHz	dB		44	
Return Loss	1.0 - 2.0 GHz	dB		21	
	2.0 - 3.0 GHz	dB		21	
	3.0 - 4.0 GHz	dB		16	
Leakage	$V_C = 3.0\text{V}$	μA		1.0	
P1dB	$V_C = 3.0\text{V}$, $f = 1.0\text{ GHz}$	dB		24	
	$V_C = 3.0\text{V}$, $f = 2.4\text{ GHz}$	dB		24	
Input IP_2	$F=3.995\text{ GHz}$ @ $V_C = 3.0\text{ V}$, PIN = 10 dBm, 5 MHz Spacing	dBm		88	
Input IP_3	$F=3.995\text{ GHz}$ @ $V_C = 3.0\text{ V}$, PIN = 10 dBm, 5 MHz Spacing	dBm		50	
TRISE, TFALL	10% to 90% RF, & 90% to 10% RF	nS		15	
TON, TOFF	50% Control to 90% RF, 50% Control to 10% RF	nS		28	
Transients	In-band	mV		24	

Ordering Information ¹

Part Number	Package
MASWSS0063	4 mm FQFP-N 16 Lead Plastic Package
MASWSS0063TR	Forward tape and reel ¹
MASWSS0063TR-3000	3000 tape and reel ¹
MASWSS0063SMB	Sample Board (Includes 5 Samples)

1. If you need a specific reel size, please consult the factory for part number.

Truth Table

Mode (Control)	V1	V2	RFC - RF1	RFC - RF2
Positive	0	1	ON	OFF
Negative	1	0	OFF	ON

Absolute Maximum Ratings ²

Parameter	Absolute Maximum
Max Input Power (0.5 - 3.0 GHz)	
3 V Control	+30 dBm
5 V Control	+33 dBm
Operating Voltage	+8.5 volts
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C

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

Logic Level	Voltage Level
V _{LO} "0" =	0 ± 0.2 V
V _{HIGH} "1" =	V _C ± 0.2 V

PIN Configuration

Pin	Function	Description
1	RF2	RF Port
2	GND	RF Ground
3	GND	RF Ground
4	V1	Control 1
5	V2	Control 2
6	GND	RF Ground
7	RFC	RF Port
8	GND	RF Ground
9	GND	RF Ground
10	GND	RF Ground
11	GND	RF Ground
12	RF1	RF Port
13	GND	RF Ground
14	GND	RF Ground
15	GND	RF Ground
16	GND	RF Ground
PAD	GND	RF Ground

Handling Procedures

The following precautions should be observed to avoid damage:

Static Sensitivity

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

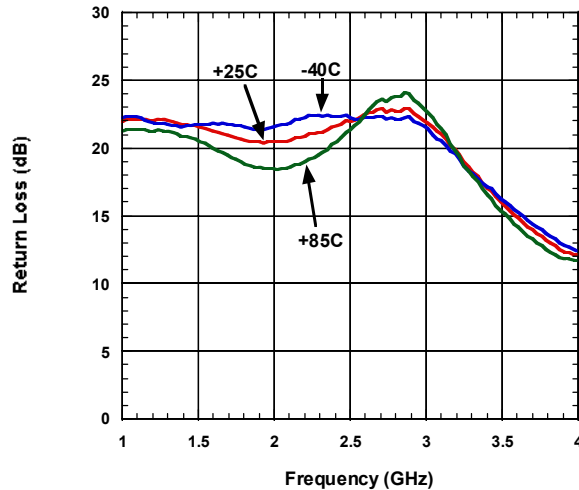
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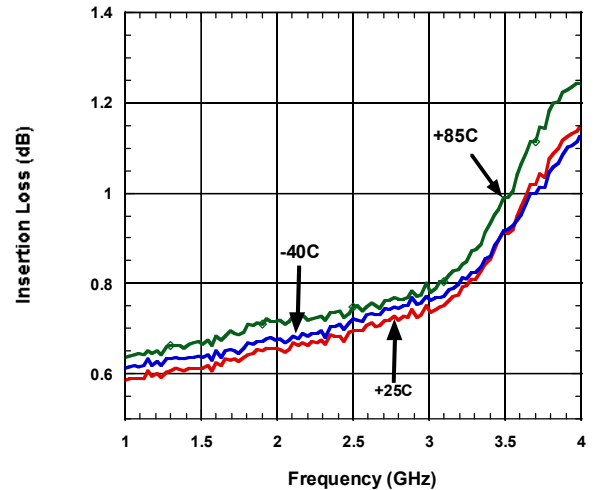
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 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Typical Performance Curves

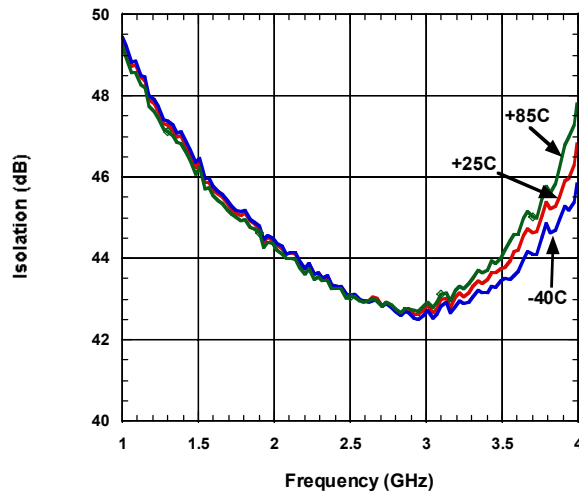
Return Loss Vs. Frequency



Insertion Loss Vs. Temperature



Isolation Vs. Frequency Over Temperature

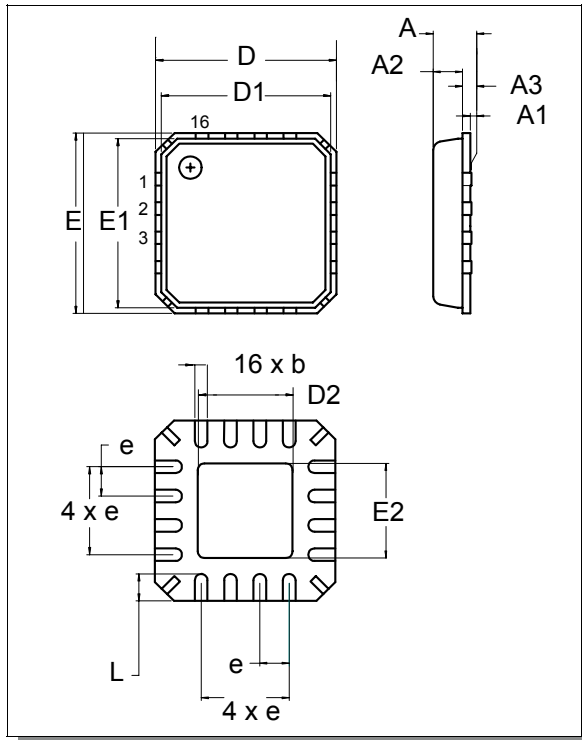


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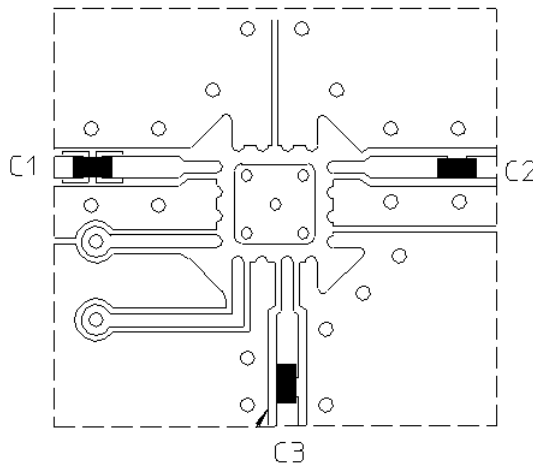
4-mm FQFP-N, 16-Lead (MLP) Package



Dim	Measurement (mm)		
	Min.	Nom.	Max.
A	0.80	0.90	1.00
A1	0	0.02	0.05
A2	0.70	0.65	1.00
A3		0.20 ref.	
b	0.23	0.28-	0.35
D	-	4.00 basic	-
D1	-	3.75 basic	-
D2	0.75	1.70	2.25
e		0.65 basic	
E	-	4.00 basic	-
E1	-	3.75 basic	-
E2	0.75	1.70	2.25
L	0.50 typ.	0.60 typ.	0.75 typ.

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

Sample Board



Recommended Tuning for Broadband

Qty	Description
3	100 pF (C1 - C3 / Blocking Caps)
2	100 pF (C4, C5 / Bias Line Decoupling Capacitors)

Recommended Tuning for Satellite Radio

Qty	Description
3	10 pF (C1 - C3 / Blocking Caps)
2	100 pF (C4, C5 / Bias Line Decoupling Capacitors)

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