



Single-Pole Double-Throw Switch

2.0-8.0 GHz

Preliminary Information

MASWGM0003-DIE

Features

- ◆ 2.0-8.0 GHz Operation
- ◆ 3 dB Insertion Loss
- ◆ Non-Reflective
- ◆ TTL Control
- ◆ Excellent Match on Off Port
- ◆ Self-Aligned Gate (MSAG®) MESFET Process.

Primary Applications

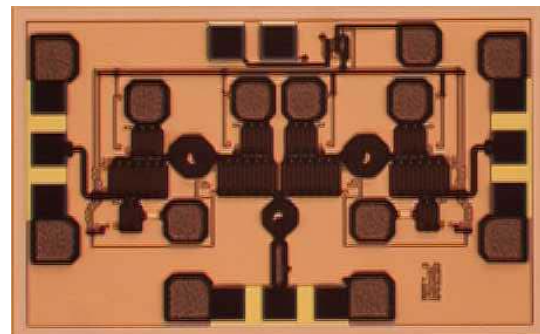
- ◆ Test Equipment and Instrumentation
- ◆ Electronic Warfare
- ◆ Weather and Military Radar
- ◆ Point to Point Communications
- ◆ VSAT

Description

The MASWGM0003-DIE is a single-pole, double-throw switch that is fully matched to 50 ohms on both the input and output.

Each device is 100% RF tested on wafer to ensure performance compliance. The part is fabricated using M/A-COM's repeatable, high performance and highly reliable GaAs Multifunction Self-Aligned Gate (MSAG®) MESFET Process.

2.0-8.0 GHz GaAs MMIC Switch



Electrical Characteristics: $T_B = 40^\circ\text{C}^1$, $Z_0 = 50\Omega$, $V_{EE} = -5V$

Parameter	Symbol	Typical	Units
Bandwidth	f	2.0-8.0	GHz
Insertion Loss @ 4 GHz	IL	1.6	dB
Insertion Loss @ 8 GHz	IL	3.0	dB
Isolation	ISO	> 45	dB
Input VSWR	VSWR	1.6:1	
Output VSWR (On)	VSWR	1.7:1	
Output VSWR (Off)	VSWR	1.7:1	
Input Third Order Intercept	ITOI	35	dBm
Input 1-dB Compression Point	P1dB	26	dBm

1. T_B = MMIC Base Temperature

Maximum Operating Conditions ¹

Parameter	Symbol	Absolute Maximum	Units
Input Power	P_{IN}	31	dBm
Digital Driver Voltage	V_{EE}	-6.0	V
Junction Temperature	T_J	180	°C
Storage Temperature	T_{STG}	-55 to +150	°C

1. Operation outside of these ranges may reduce product reliability. Operation at other than the typical values may result in performance outside the guaranteed limits.

Recommended Operating Conditions

Characteristic	Symbol	Min	Typ	Max	Unit
Digital Driver Voltage	V_{EE}	-5.2	-5	-4.8	V
Digital Driver Current	I_{EE}	3	5	10	mA

Operating Instructions

This device is static and light sensitive. Digital circuitry operation can be impaired under high intensity light, e.g. microscope light. Please handle with care. To operate the device, follow these steps.

1. Power Up: Apply $V_{EE} = -5$ V.
2. Apply Logic Voltages to control Circuits as listed in Recommended Operating Conditions
3. Power Down: Set $V_{EE} = 0$



Specifications subject to change without notice.

Customer Service: Tel. (888)-563-3949

Email: macom_adbu_ics@tycoelectronics.com

- **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

tyco / Electronics

MACOM

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

Single-Pole Double-Throw Switch

MASWGM0003-DIE

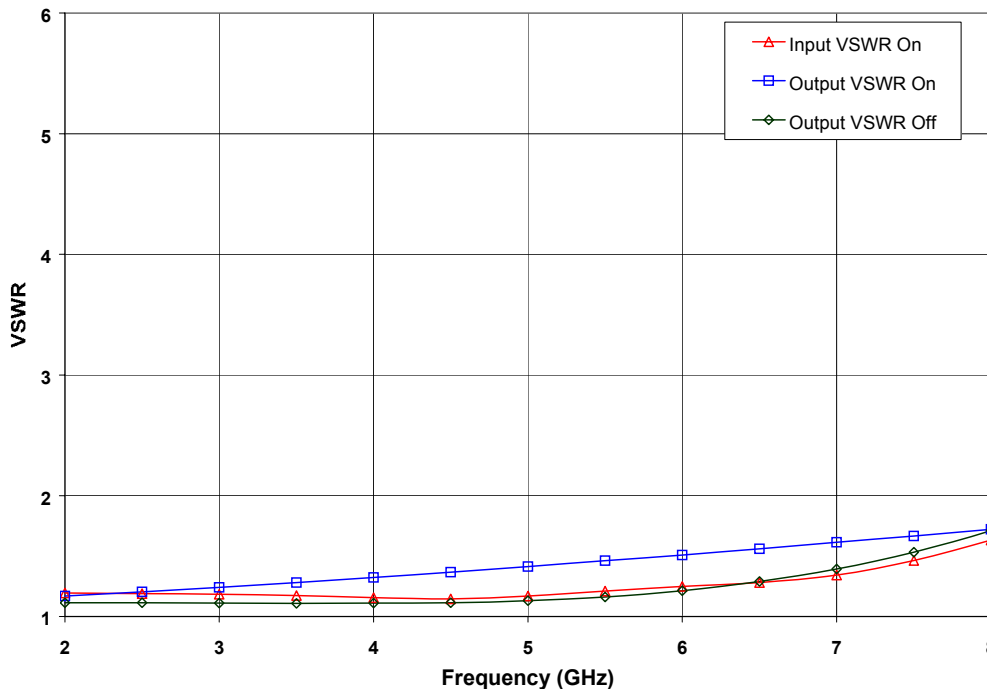


Figure 1. Input and Output VSWR vs. Frequency

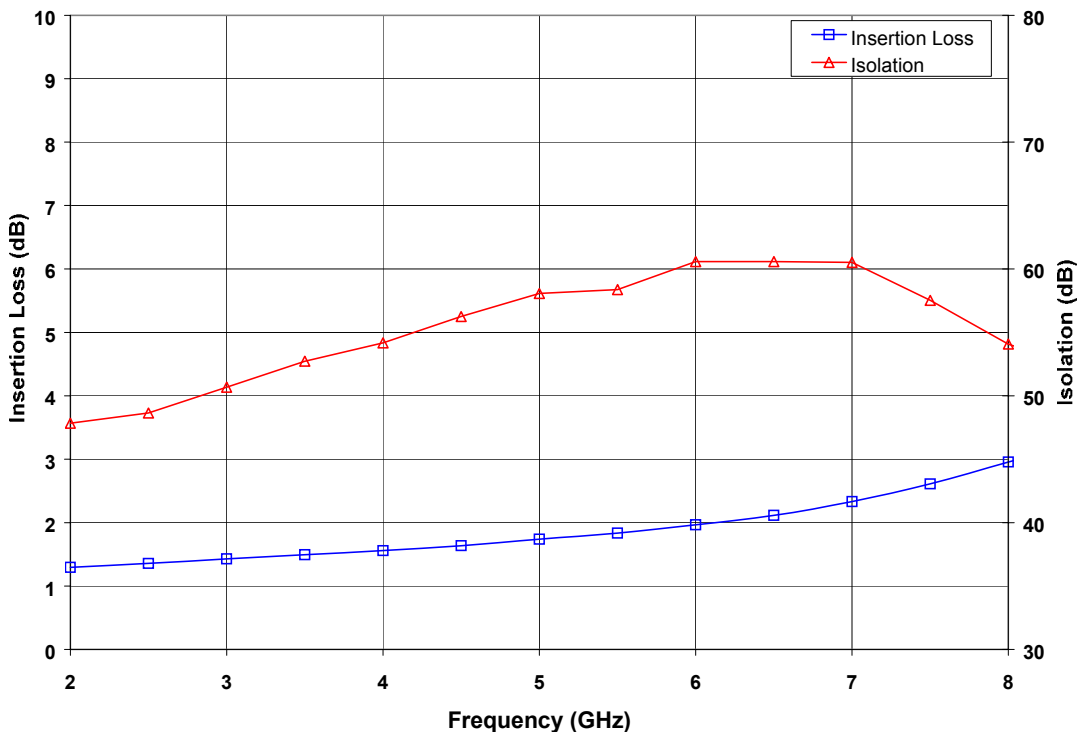


Figure 2. Insertion Loss and Isolation vs. Frequency

Specifications subject to change without notice.

Customer Service: Tel. (888)-563-3949

Email: macom_adbu_ics@tycoelectronics.com

- 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.

Mechanical Information

Chip Size: 2.054 x 1.294 x 0.075 mm (81 x 51 x 3)

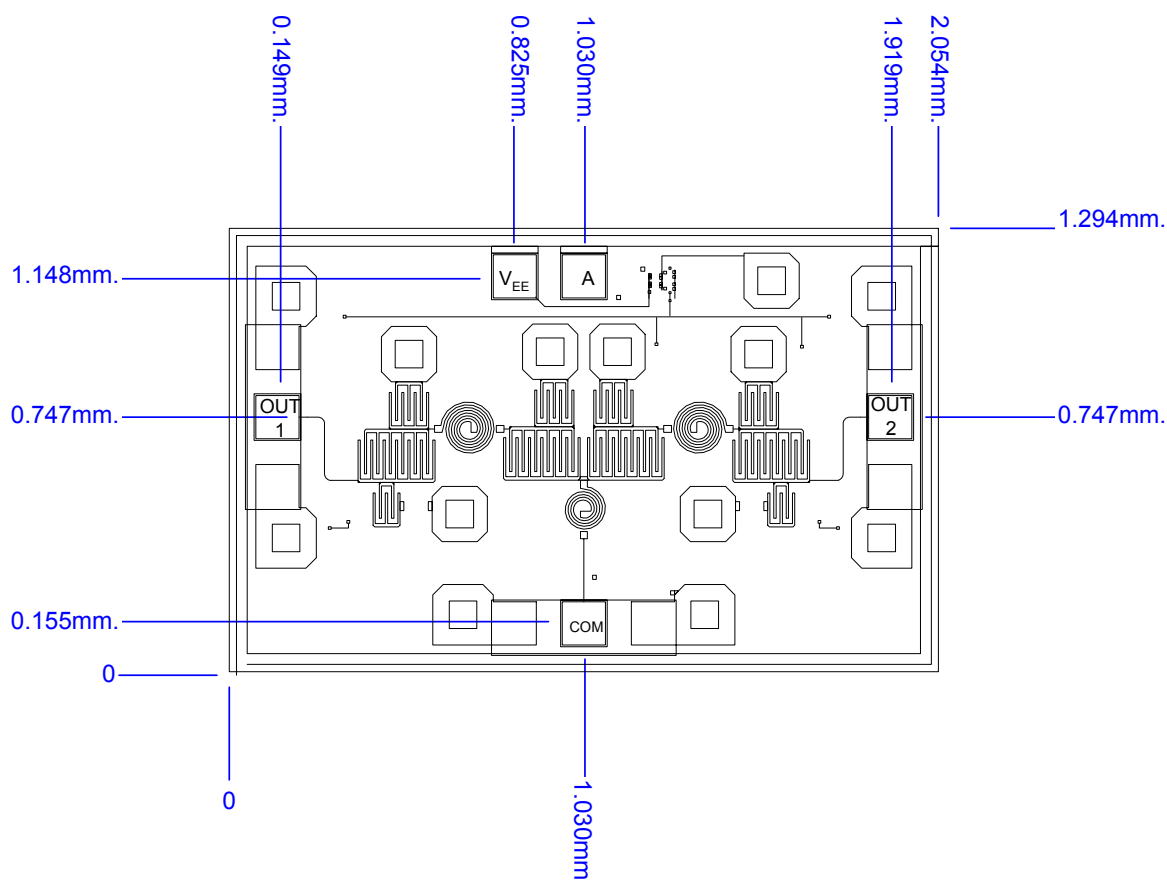


Figure 3. Die Layout

Bond Pad Dimensions

Pad	Size (μm)	Size (mils)
RF: COMMON, OUT1, OUT2	125 x 125	5 x 5
Digital Driver Voltage V_{EE}	125 x 125	5 x 5
A (TTL Control)	125 x 125	5 x 5

Specifications subject to change without notice.

Customer Service: Tel. (888)-563-3949

Email: macom_adbu_ics@tycoelectronics.com

- 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

tyco / Electronics

MACOM

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

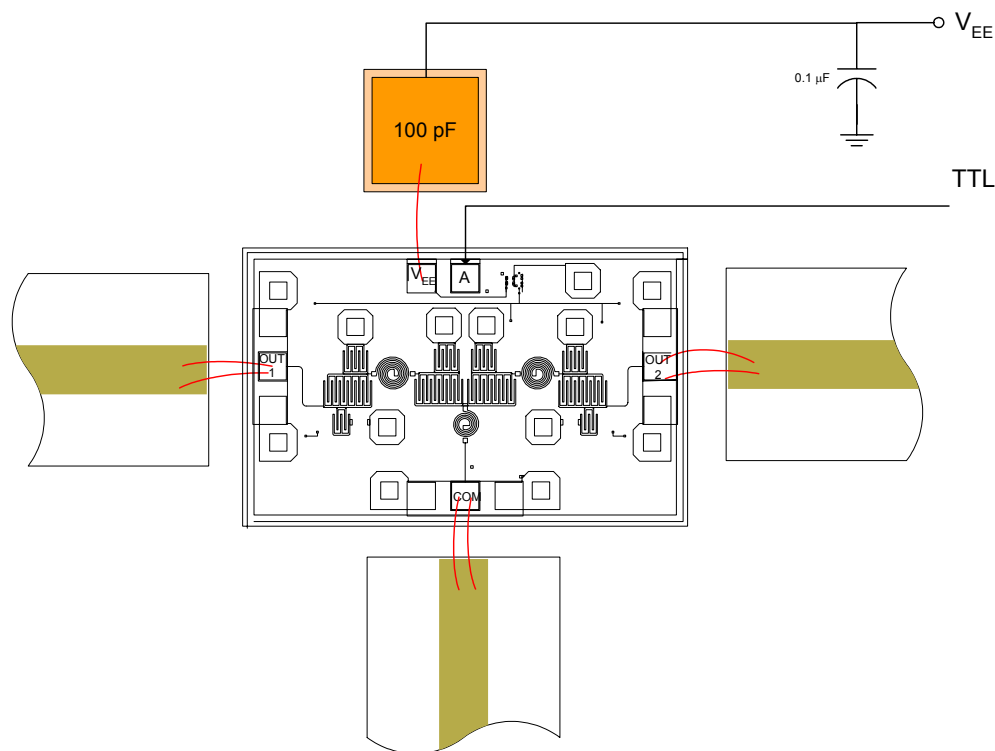


Figure 4. Recommended bonding diagram for pedestal mount. Support circuitry typical of MMIC characterization.

Assembly Instructions:

Die attach: Low thermal conductivity silver epoxies are acceptable for die attach of this MMIC. Follow the manufacturer's instructions. If solder is employed, use AuSn (80/20) 1-2 mil preform solder. Limit time @ 300 °C to less than 5 minutes.

Wirebonding: Bond @ 160 °C using standard ball or thermal compression wedge bond techniques. For DC and RF pad connections, use either ball or wedge bonds. For best performance, especially above 10 GHz, wedge bonds of shortest length employed on the RF interconnects is preferred over ball bonds.

Biasing Note: Must apply negative bias to V_{EE} before applying positive bias to Control Pads.

Specifications subject to change without notice.

Customer Service: Tel. (888)-563-3949

Email: macom_adbu_ics@tycoelectronics.com

- **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

tyco / Electronics

MACOM

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