# M4G / SM4G

## **Double-Balanced Mixer**



Rev. V3

#### Features

- LO 800 TO 3500 MHz
- RF 800 TO 2400 MHz
- IF DC TO 1500 MHz
- LO DRIVE: +7 dBm (NOMINAL)
- HIGH ISOLATION: 30 dB (TYP.)

#### Description

The M4G is a double balanced mixer, designed for use in military, commercial, and test equipment applications. The design utilizes Schottky ring quad diodes and broadband ferrite baluns to attain excellent performance. This mixer can also be used as a phase detector and/or bi-phase modulator since the IF port is DC coupled to the diodes. Environmental screening is available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.

### **Ordering Information**

Part Number	Package	
M4G	Flatpack	
SM4G	Surface Mount	

### Electrical Specifications: $Z_0 = 50\Omega$ Lo = +7 dBm (Downconverter application only)

Parameter	Test Canditions	Unito	Typical	Guaranteed	
Parameter Test Conditions		Units		+25⁰C	-54º to +85ºC *
SSB Conversion Loss (max) & SSB Noise Figure (max)	fR = 1.3 to 2.4 GHz, fL =0.8 to 3.5 GHz, fl =0.01 to 1.5 GHz fR = 0.8 to 2.4 GHz, fL =0.8 to 3.5 GHz, fl =0.01 to 1.5 GHz	dB dB	7.0 8.0	8.5 9.0	9.0 9.5
Isolation, L to R (min)	fL = 0.8 to 2 GHz fL = 1 to 3.5 GHz	dB dB	35 28	25 20	23 18
Isolation, L to I (min)	fL = 0.8 to 3.5 GHz	dB	25	18	16
1 dB Conversion Comp.	fL @ +7 dBm	dBm	+0		
Input IP3					

\* The SM4G specification limits apply at 0°C to +50°C.

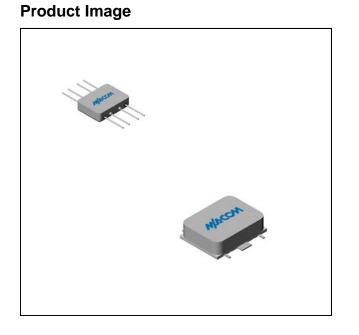
Commitment to produce in volume is not guaranteed.

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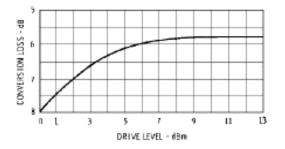


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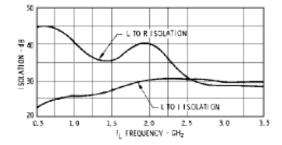
#### **Typical Performance Curves**

#### Conversion Loss

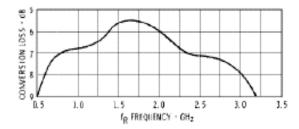


Conversion Loss vs. Drive Level: The minimum recommended drive level is +5 dBm. The maximum recommended drive level is +13 dBm.

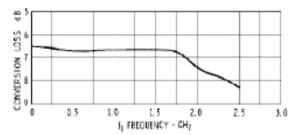
#### Isolation



Isolation vs. Frequency: Level of the  $f_L$  signal fed through to the R and I-ports with respect to the level of the  $f_L$  signal at the L-port.



Conversion Loss vs. Input Frequency: Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port ( $f_R$ ) with  $f_I$  at 120 MHz and  $f_L$  less than  $f_R$ . Data plotted with an  $f_L$  level of +7 dBm.



Conversion Loss vs.  $f_I$  Frequency: Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the I-port ( $f_I$ ) with  $f_R$  at 1.2 GHz and  $f_L$  swept from 1.2 to 3.7 GHz.

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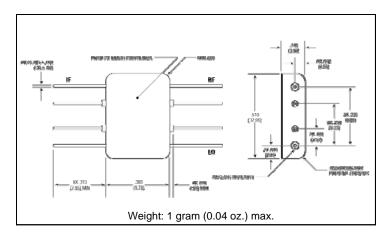


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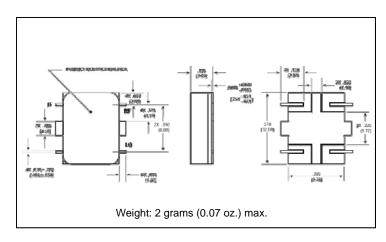
#### **Absolute Maximum Ratings**

Parameter	neter Absolute Maximum		
Operating Temperature	-54ºC to +100ºC		
Storage Temperature	-65°C to +100°C		
Peak Input Power	+23 dBm max @ +25⁰C +17 dBm max @ +100⁰C		
Peak Input Current	50 mA DC		

## **Outline Drawing: Flatpack \***



#### **Outline Drawing: Surface Mount \***



\* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

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