

## Double-Balanced Mixer

**M4A/SM4A**

V4

### Features

- LO 10 TO 1500 MHz
- RF 10 TO 1500 MHz
- IF DC TO 1000 MHz
- LO DRIVE: +7 dBm (NOMINAL)
- HIGH ISOLATION: 35 dB (TYP.)

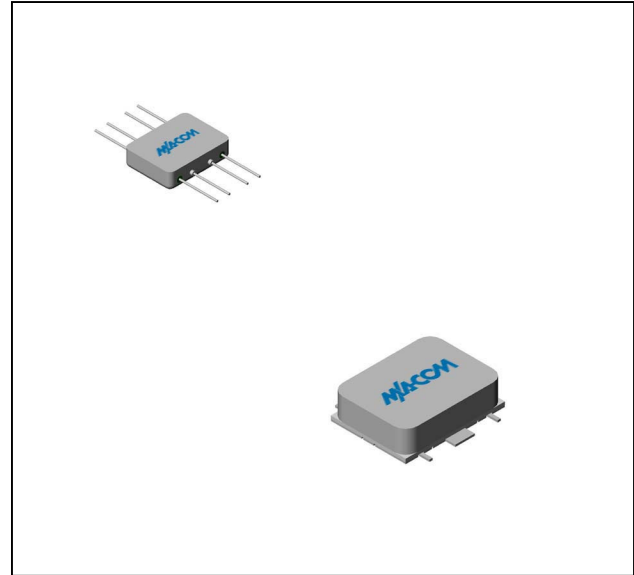
### Description

The M4A 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
M4A	Flatpack
SM4A	Surface Mount

### Product Image



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

Parameter	Test Conditions	Units	Typical	Guaranteed	
				+25°C	-54° to +85°C *
SSB Conversion Loss (max) & SSB Noise Figure (max)	fR = 0.02 to 0.6 GHz, fL = 0.01 to 0.8 GHz, fl = 0.001 to 0.2 GHz	dB	6.0	7.0	7.5
	fR = 0.01 to 1.2 GHz, fL = 0.01 to 1.4 GHz, fl = 0.001 to 0.2 GHz	dB	7.0	8.0	8.5
	fR = 0.01 to 1.5 GHz, fL = 0.01 to 1.5 GHz, fl = 0.001 to 0.2 GHz	dB	7.5	8.5	9.0
	fR = 0.01 to 1.5 GHz, fL = 0.01 to 1.5 GHz, fl = 0.001 to 1 GHz	dB	8.5	9.5	10.0
Isolation, L to R (min)	fL = 0.01 to 0.6 GHz	dB	40	30	28
	fL = 0.6 to 1.2 GHz	dB	35	25	23
	fL = 1.2 to 1.5 GHz	dB	30	25	23
Isolation, L to I (min)	fL = 0.1 to 0.6 GHz	dB	40	25	23
	fL = 0.6 to 1.2 GHz	dB	30	20	18
	fL = 1.2 to 1.4 GHz	dB	25	18	16
1 dB Conversion Comp.	fL @ +7 dBm	dBm	+0		
Input IP3					

\* The SM4A specification limits apply at 0°C to +50°C.

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Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

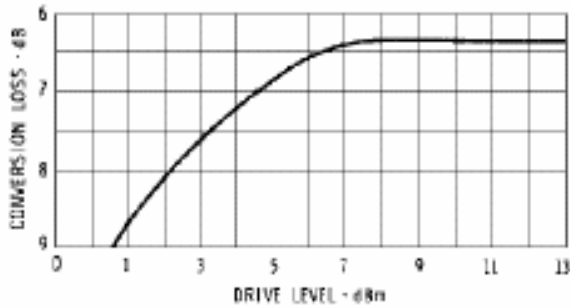
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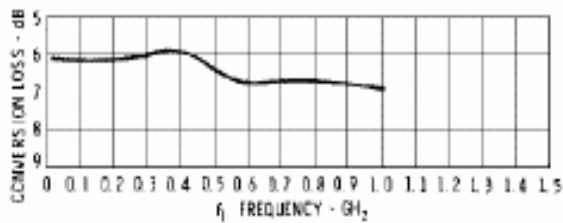
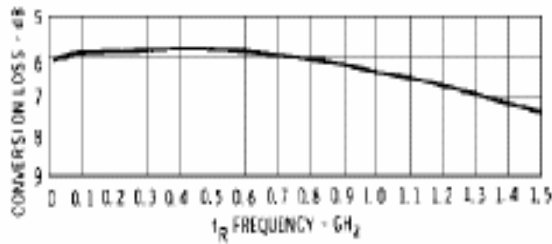
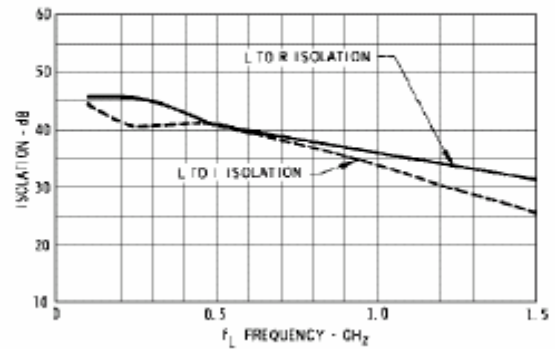
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**Typical Performance Curves**

**Conversion Loss**



**Isolation**



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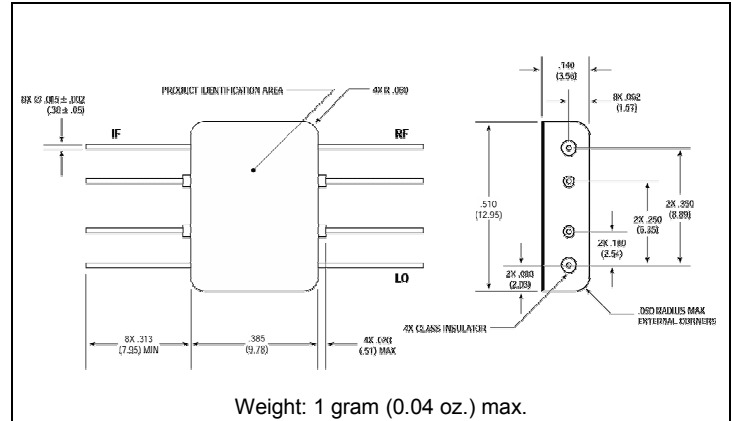
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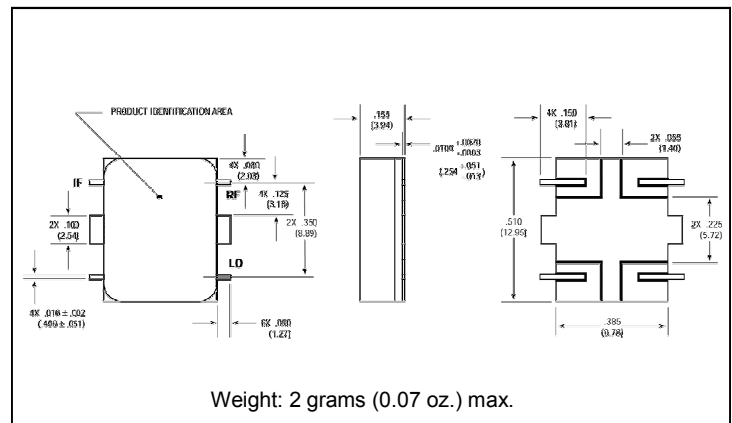
### Absolute Maximum Ratings

Parameter	Absolute Maximum
Operating Temperature	-54°C to +100°C
Storage Temperature	-65°C to +100°C
Peak Input Power	+23 dBm max @ +25°C +17 dBm max @ +100°C
Peak Input Current	50 mA DC

### Outline Drawing: Flatpack \*



### Outline Drawing: Surface Mount \*



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