

Double-Balanced Mixer

Rev. V3

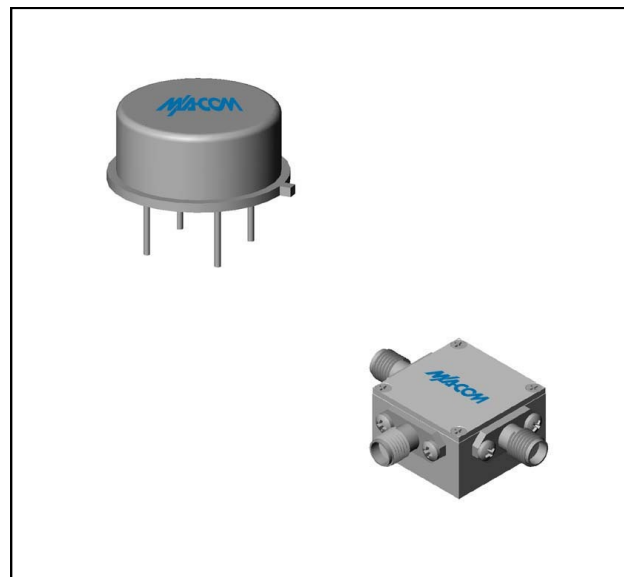
Features

- LO 10 to 1500 MHz
- RF 10 to 1500 MHz
- IF DC to 800 MHz
- LO Drive +7 dBm (nominal)
- High Isolation 35 dB (typ)

Description

The M2A 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.

Product Image



Ordering Information

| Part Number | Package |
|-------------|-------------------|
| M2A | TO-8 |
| M2AC | SMA Connectorized |

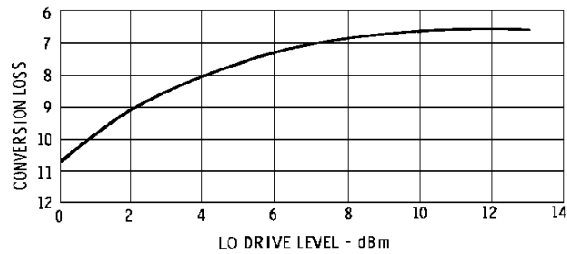
Electrical Specifications: $Z_0 = 50\Omega$ $L_o = +7$ dBm (Downconverter application only)

| Parameter | Test Conditions | Units | Typical | Guaranteed | |
|---------------------------|---|-------|-------------------|-------------------|-------------------|
| | | | | +25°C | -54° to +85°C * |
| SSB Conversion Loss (max) | fR = 0.02 to 0.6 GHz, fL = 0.01 to 0.8 GHz, fl = 0.001 to 0.2 GHz fR = 0.01 to 1.5 GHz, fL = 0.01 to 1.5 GHz, fl = 0.001 to 0.2 GHz fl = 0.001 to 0.8 GHz | dB | 7.0 7.5 8.0 | 7.5 8.5 9.0 | 8.0 9.0 9.5 |
| SSB Noise Figure (max) | Within 1 db of conversion loss | dB | — | — | — |
| Isolation, L to R (min) | fL = 0.01 to 0.5 GHz fL = 0.5 to 1.2 GHz fL = 1.2 to 1.5 GHz | dB | 45 40 35 | 35 28 25 | — |
| Isolation, L to I (min) | fL = 0.01 to 0.5 GHz fL = 0.5 to 1.2 GHz fL = 1.2 to 1.5 GHz | dB | 40 30 25 | 30 20 18 | — |
| 1 dB Conversion Comp. | fL = +7 dBm | dBm | 0 | — | — |
| Input IP3 | — | dBm | +12 | — | — |

* The M2AC specification limits apply at 0°C to +50°C.

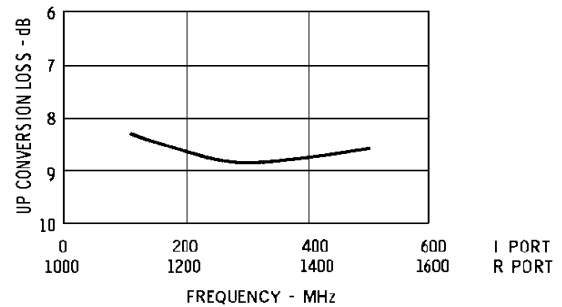
Typical Performance Curves

Conversion Loss



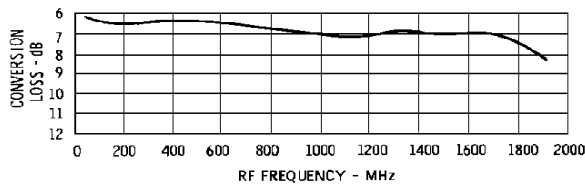
$F_R = 1000 \text{ MHz}$
 $F_L = 1020 \text{ MHz}$
 $F_I = 20 \text{ MHz}$

Conversion Loss



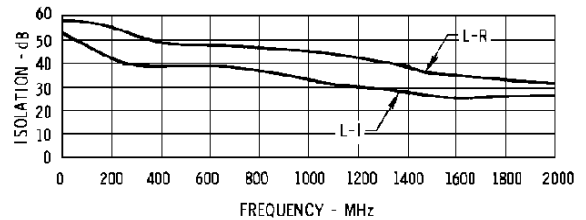
$F_{LO} = 1000 \text{ MHz AT } +7 \text{ dBm}$
 $P_{IF} = -10 \text{ dBm}$

Conversion Loss



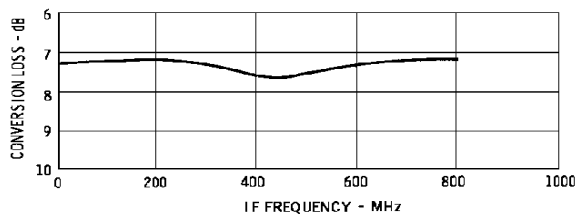
$F_{IF} = F_{LO} - F_{RF} = 20 \text{ MHz}$
 $P_{LO} = +7 \text{ dBm}$
 $P_{RF} = -10 \text{ dBm}$

Isolation



$P_{LO} = +7 \text{ dBm}$

Conversion Loss



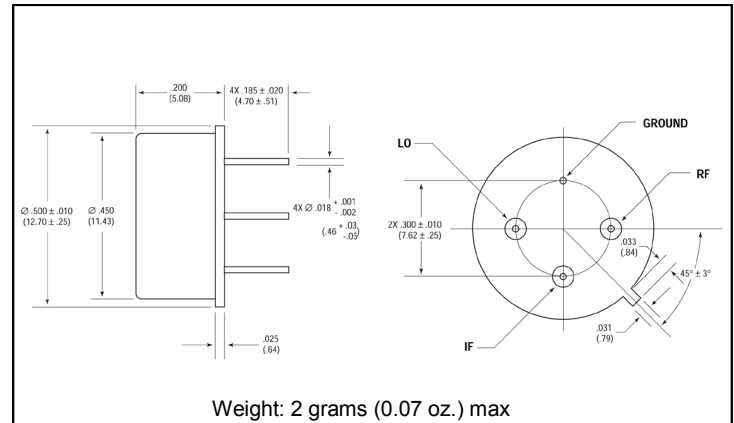
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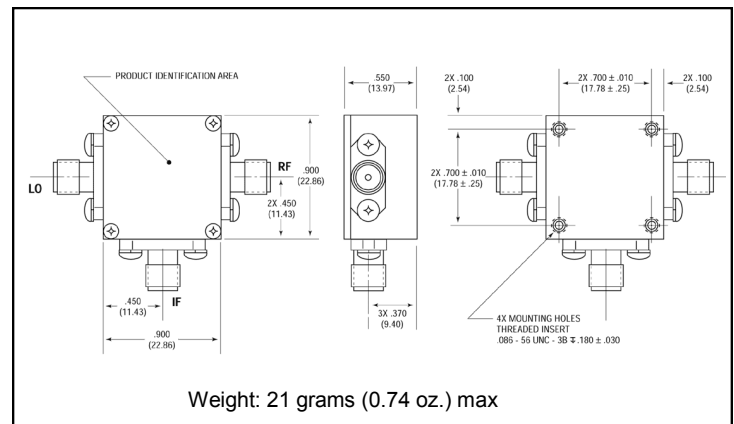
Absolute Maximum Ratings

| 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: TO-8 *



Outline Drawing: SMA Connectorized *



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

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