# M89 / M89C

## **Triple-Balanced Mixer**



Rev. V3

#### Features

- LO 2 TO 18 GHz
- RF 2 TO 18 GHz
- IF 1 TO 8 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- WIDE BANDWIDTH

#### Description

M89 is a triple balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric baluns to attain excellent performance. The use of high temperature solder assembly processes used internally makes it ideal for use in manual, semi-automated assembly. Environmental screening available to MIL-STD-883, MIL-STD-202 or MIL-DTL-28837, consult factory.

## **Ordering Information**

| Part Number | Package           |  |
|-------------|-------------------|--|
| M89         | Minpac            |  |
| M89C        | SMA Connectorized |  |

### Electrical Specifications: $Z_0 = 50\Omega$ Lo = +10 dBm (Downconverter Application only)

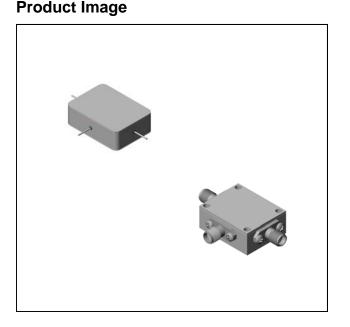
| Decemeter  | Test Conditions   | Unite      | Typical      | Guaranteed   |               |
|--|---|------------|--------------|--------------|---------------|
| Parameter Test Conditions                                |   | Units      |              | +25⁰C        | -54º to +85ºC |
| SSB Conversion Loss<br>(max) & SSB Noise<br>Figure (max) | fR = 2 to 10 GHz, fL = 2 to 18 GHz, fI = 1 to 8 GHz<br>fR = 10 to 18 GHz, fL = 2 to 18 GHz, fI = 2 to 8 GHz   | dB<br>dB   | 7.5<br>8.0   | 10.0<br>10.5 | 10.5<br>11.0  |
| Isolation, L to R (min)                                  | fL = 2 to 18 GHz  | dB         | 28           | 15           | 13            |
| Isolation, L to I (min)                                  | fL = 2 to 18 GHz  | dB         | 32           | 16           | 14            |
| 1 dB Conversion Comp.                                    | fL = +10 dBm  | dBm        | +4           |              |               |
| Input IP3  | fR1 = 6 GHz at -6 dBm, fR2 = 6.01 GHz at -6 dBm, fL = 10 GHz at +10 dBm<br>fR1 = 15 GHz at -6 dBm, fR2 = 15.01 GHz at -6 dBm, fL =18 GHz at +10 dBm | dBm<br>dBm | +14<br>+18.5 |              |               |

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# M89 / M89C

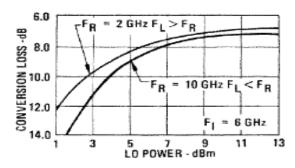
### **Triple-Balanced Mixer**

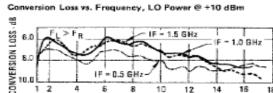


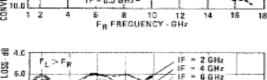
Rev. V3

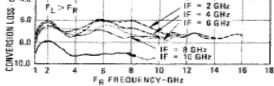
#### **Typical Performance Curves**

#### Conversion Loss vs. LO Drive Power



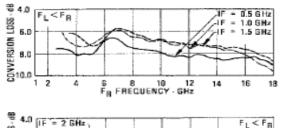


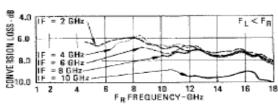




Conversion Loss vs. Frequency and Temperature,

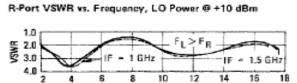
LO Power @ +10 dBm



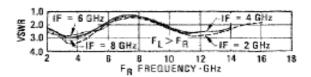


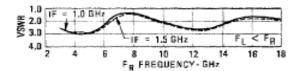
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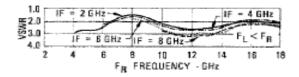
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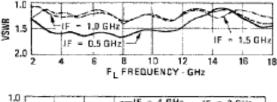
FREQUENCY - GHz

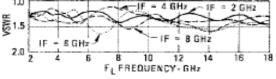






I-Port VSWR vs. Frequency, LO Power @ +10 dBm





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Rev. V3

#### **Absolute Maximum Ratings**

| Parameter             | Absolute Maximum                            |  |  |
|-----------------------|---|--|--|
| Operating Temperature | -54°C to +100°C                             |  |  |
| Storage Temperature   | -65°C to +100°C                             |  |  |
| Peak Input Power      | +26 dBm max @ +25ºC<br>+23 dBm max @ +100ºC |  |  |
| Peak Input Current    | mA DC                                       |  |  |

Isolation vs. Frequency

8 10

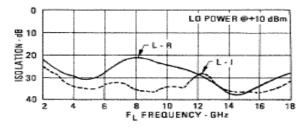
SOLATION SOLATION

40

2

4

6



R - LISOLATION LD POWER + 10 dBm

RF POWER -5 dBm

R

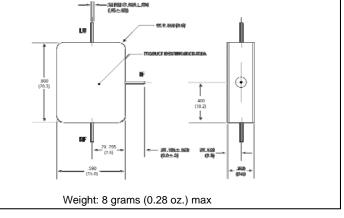
16

18

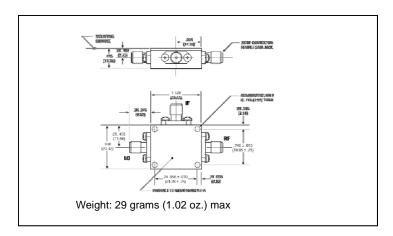
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# Outline Drawing: Minpac \*



#### **Outline Drawing: SMA Connectorized \***



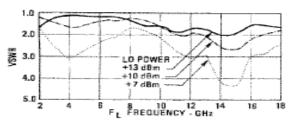
\* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

L-Port VSWR vs. Frequency

= 2 GHz

FL >

8 10 12 FREQUENCY - GHz



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