# M89 / M89C

## Triple-Balanced Mixer

Rev. V3

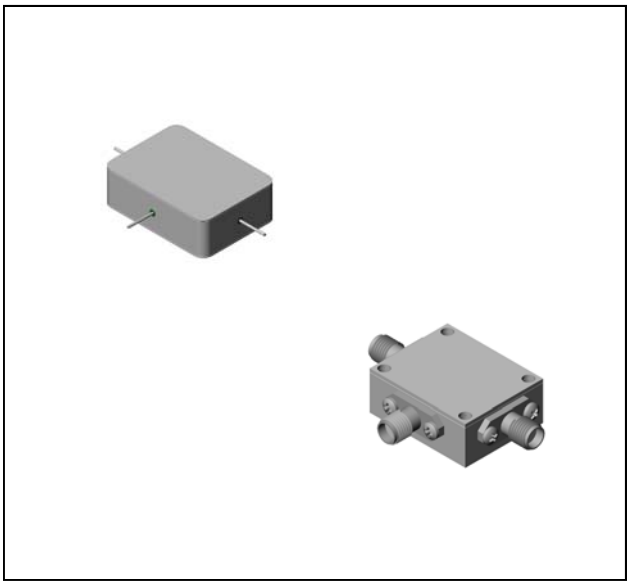
### Features

- 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.

### Product Image



### Ordering Information

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

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

| Parameter | Test Conditions | Units | Typical | Guaranteed | |
|---|---|---|---|---|---|
| | | | | +25ºC | -54º to +85ºC |
| SSB Conversion Loss (max) & SSB Noise 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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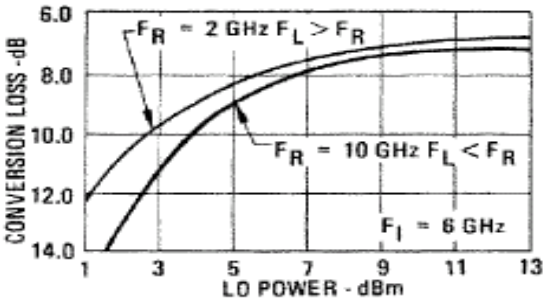
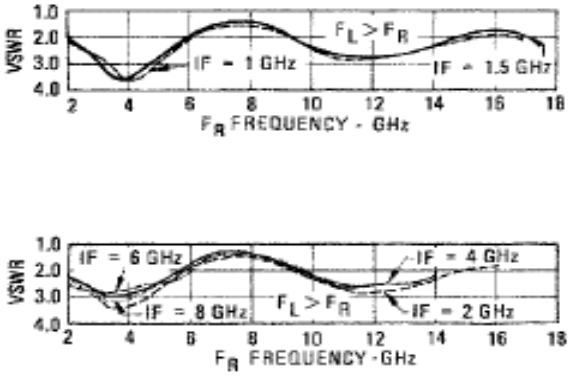
## Typical Performance Curves

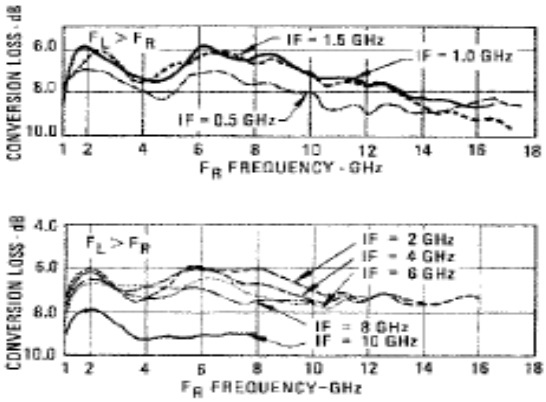
### Conversion Loss vs. LO Drive Power



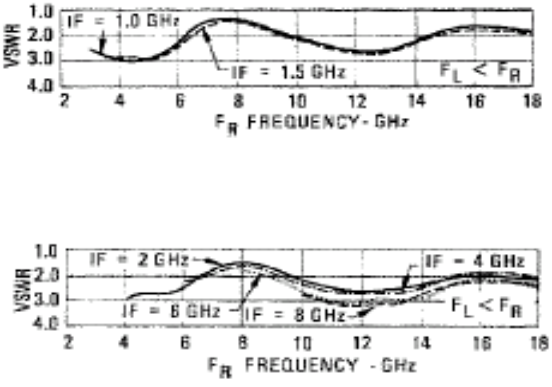

### R-Port VSWR vs. Frequency, LO Power @ +10 dBm



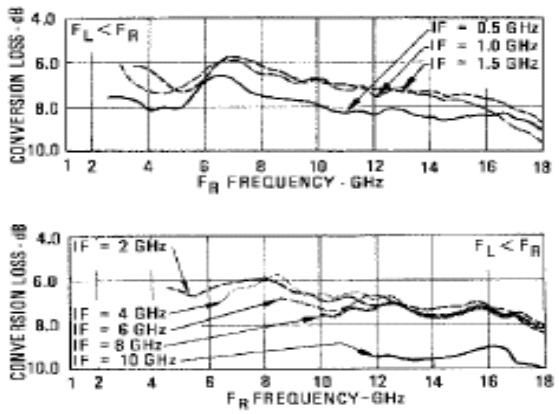

### Conversion Loss vs. Frequency, LO Power @ +10 dBm



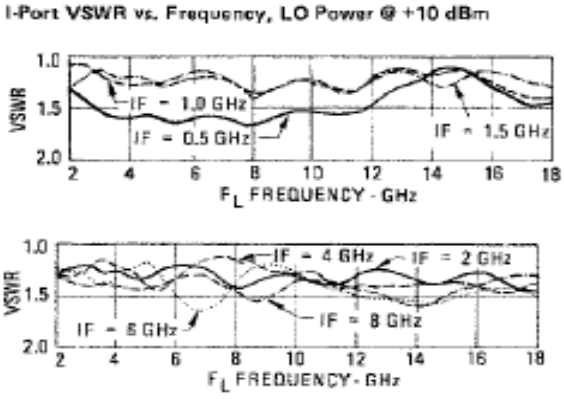

### VSWR vs. Frequency, LO Power @ +10 dBm




### Conversion Loss vs. Frequency and Temperature, LO Power @ +10 dBm




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







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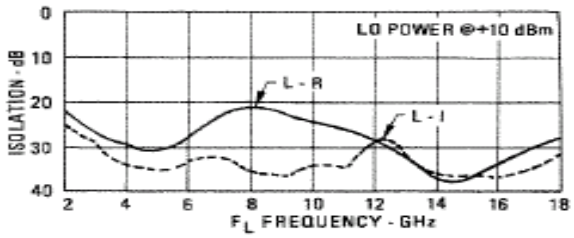
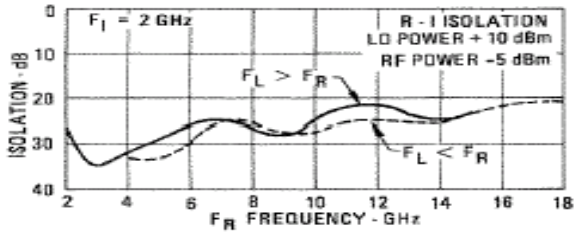
## Absolute Maximum Ratings

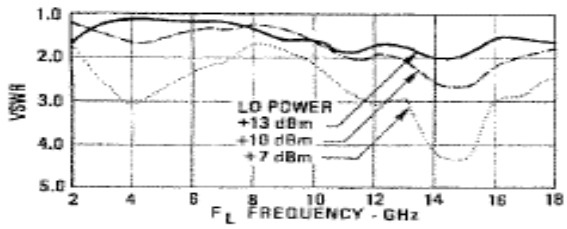
| Parameter | Absolute Maximum |
|---|---|
| Operating Temperature | -54ºC to +100ºC |
| Storage Temperature | -65ºC to +100ºC |
| Peak Input Power | +26 dBm max @ +25ºC<br>+23 dBm max @ +100ºC |
| Peak Input Current | mA DC |

Isolation vs. Frequency

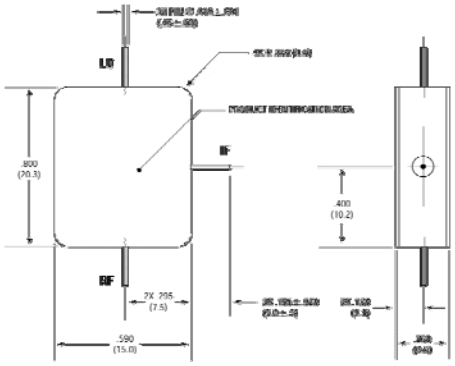



L-Port VSWR vs. Frequency

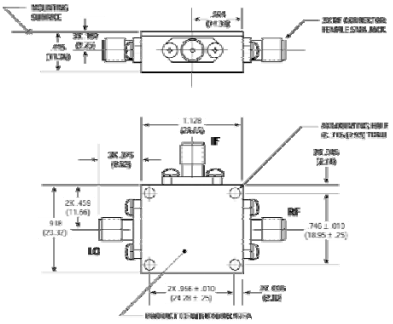



## Outline Drawing: Minpac *




Weight: 8 grams (0.28 oz.) max

## Outline Drawing: SMA Connectorized *




Weight: 29 grams (1.02 oz.) max

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



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