

## Triple-Balanced Mixer

Rev. V3

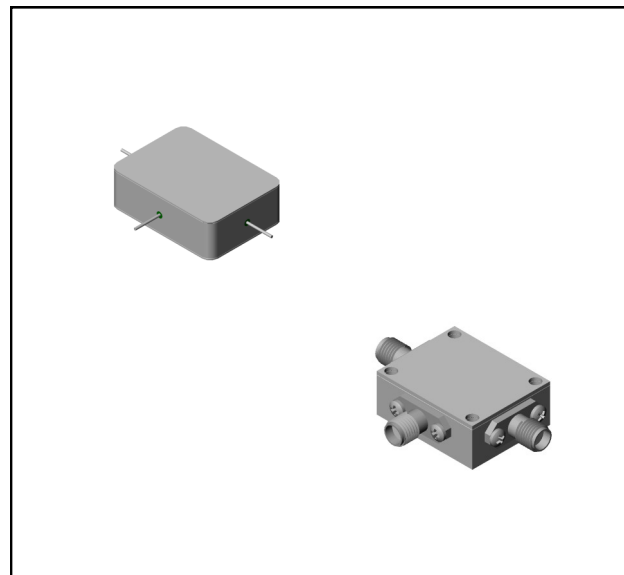
### Features

- LO 2 TO 18 GHz
- RF 2 TO 18 GHz
- IF 0.03 TO 4 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- WIDE BANDWIDTH

### Description

M93 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           |
|-------------|-------------------|
| M93         | Minpac            |
| M93C        | SMA Connectorized |

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

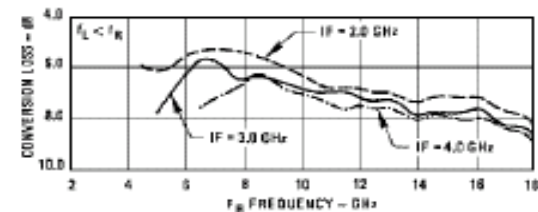
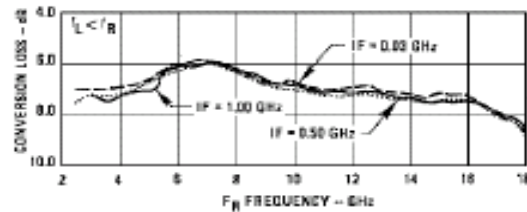
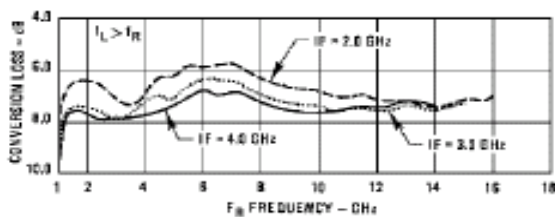
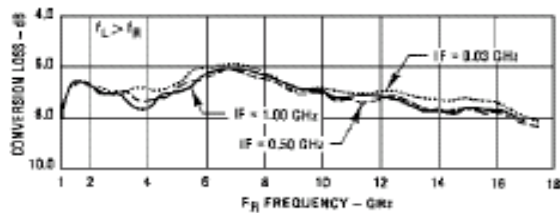
| Parameter                                          | Test Conditions                                                                                                                                     | Units      | Typical    | Guaranteed   |               |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|---------------|
|                                                    |                                                                                                                                                     |            |            | +25°C        | -54° to +85°C |
| SSB Conversion Loss (max) & SSB Noise Figure (max) | fR = 2 to 10 GHz, fL = 2 to 14 GHz, fI = 0.03 to 4 GHz<br>fR = 10 to 18 GHz, fL = 6 to 18 GHz, fI = 0.03 to 4 GHz                                   | dB<br>dB   | 7.5<br>8.0 | 10.0<br>11.0 | 10.5<br>11.5  |
| Isolation, L to R (min)                            | fL = 2 to 18 GHz                                                                                                                                    | dB         | 29         | 15           | 13            |
| Isolation, L to I (min)                            | fL = 2 to 18 GHz                                                                                                                                    | dB         | 34         | 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 = 8 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 |              |               |

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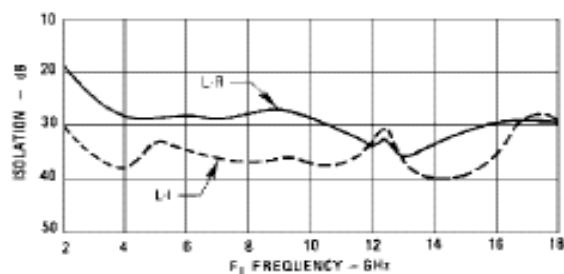
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### Typical Performance Curves

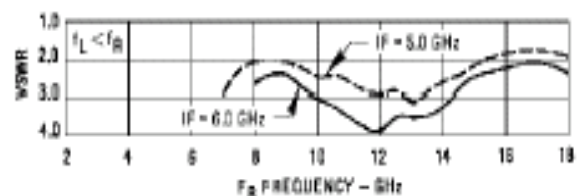
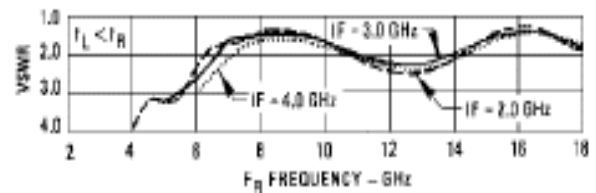
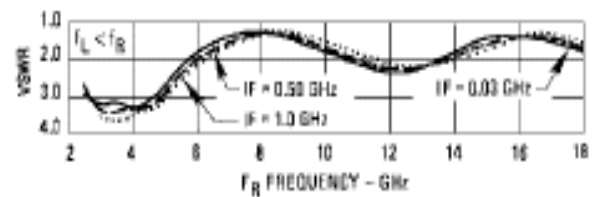
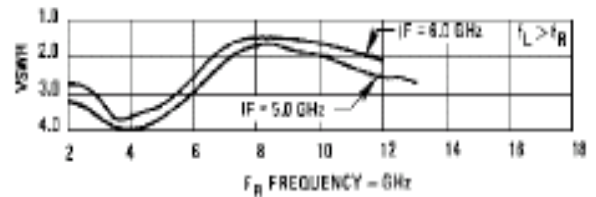
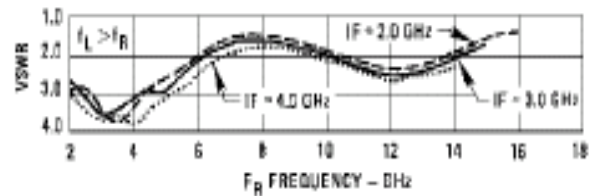
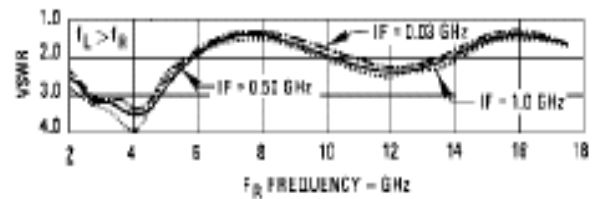
Conversion Loss vs. Frequency, LO Power @ +10 dBm



Isolation vs. Frequency, LO Power @ +10 dBm



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



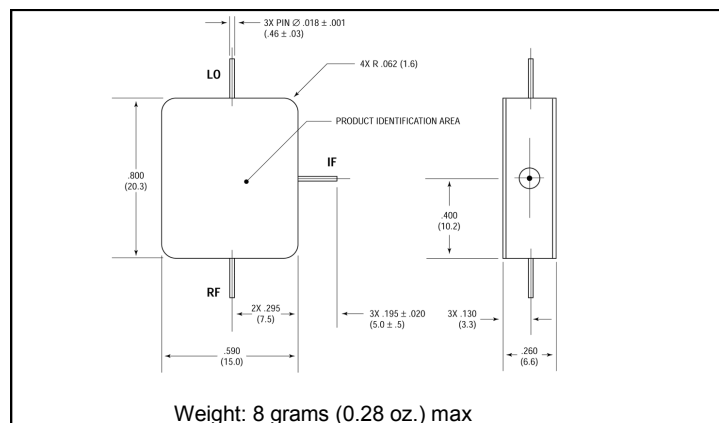
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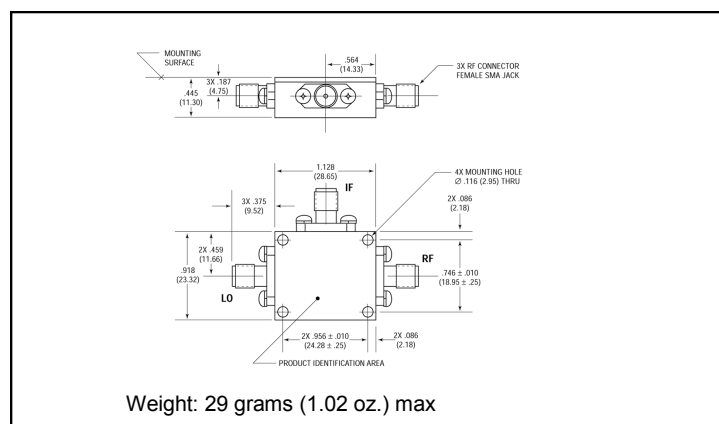
## Absolute Maximum Ratings

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

## Outline Drawing: Minpac \*

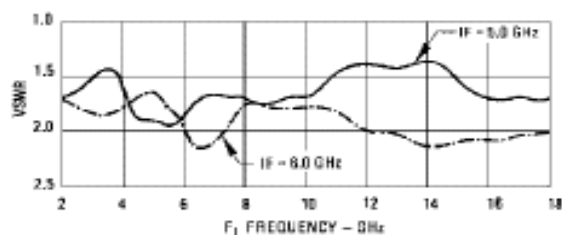
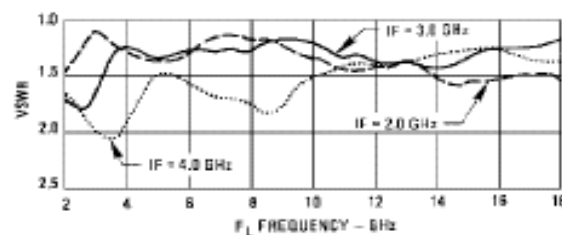
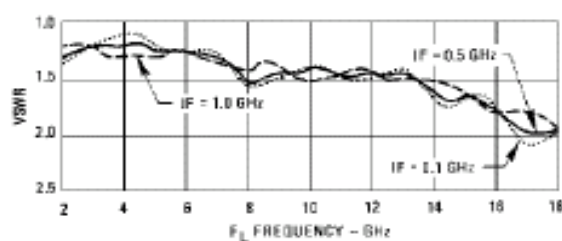


### Outline Drawing: SMA Connectorized \*

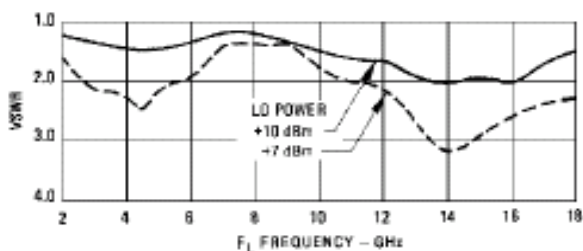


\* Dimensions are inches (millimeters)  $\pm 0.015$  (0.38) unless otherwise specified.

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



### L-Port VSWR vs. Frequency



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