

## Double-Balanced Mixer

Rev. V3

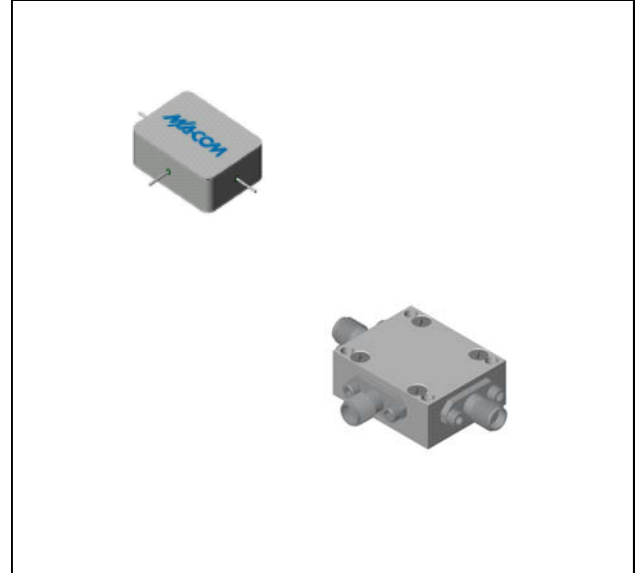
### Features

- LO 2 TO 18 GHz
- RF 2 TO 18 GHz
- IF 0 TO 1000 MHz
- LO DRIVE: +7 dBm (NOMINAL)
- DC COUPLED I-PORT
- WIDE BANDWIDTH

### Description

The M85 is a double balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric and 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. The use of high temperature solder and welded 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

### Product Image



### Ordering Information

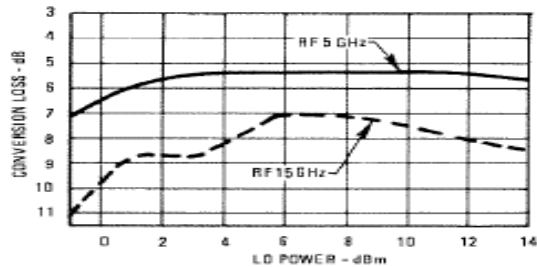
| Part Number | Package           |
|-------------|-------------------|
| M85         | Minpac            |
| M85C        | SMA Connectorized |

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

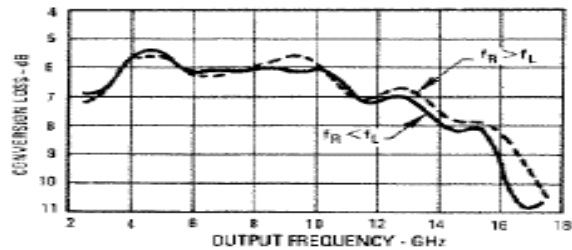
| Parameter                                          | Test Conditions                                                                                                                                                  | Units | Typical | Guaranteed |               |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|------------|---------------|
|                                                    |                                                                                                                                                                  |       |         | +25°C      | -54° to +85°C |
| SSB Conversion Loss (max) & SSB Noise Figure (max) | fR = 4 to 14 GHz, fL = 3 to 15 GHz, fI = 0 to 1 GHz<br>fR = 22 to 3 GHz, fL = 2 to 3 GHz, fI = 0 to 1 GHz<br>fR = 3 to 18 GHz, fL = 3 to 18 GHz, fI = 0 to 1 GHz | dB    | 7.0     | 9.0        | 9.5           |
|                                                    |                                                                                                                                                                  |       | 10.0    | 11.0       | 11.5          |
|                                                    |                                                                                                                                                                  |       | 8.5     | 10.5       | 11.0          |
| Isolation, L to R (min)                            | fL = 2 to 18 GHz                                                                                                                                                 | dB    | 35      | 22         | 20            |
| Isolation, L to I (min)                            | fL = 2 to 18 GHz                                                                                                                                                 | dB    | 20      | 15         | 13            |
| Isolation, R to I (min)                            | fL = 2 to 18 GHz                                                                                                                                                 | dB    | 20      |            |               |
| 1 dB Conversion Comp.                              | fL = +7 dBm                                                                                                                                                      | dBm   | +1      |            |               |
| Input IP3                                          | fR1=5 GHz at -10 dBm, fR2=5.01GHz at -10 dBm, fL = 5.5 GHz at +7 dBm<br>fR1=15 GHz at -10 dBm, fR2=15.01GHz at -10 dBm, fL = 14.5 GHz at +7 dBm                  | dBm   | +10     |            |               |
|                                                    |                                                                                                                                                                  | dBm   | +10     |            |               |

### Typical Performance Curves

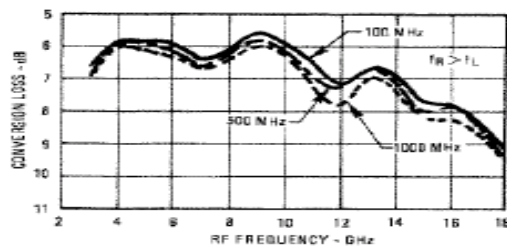
Conversion Loss vs LO Power Level



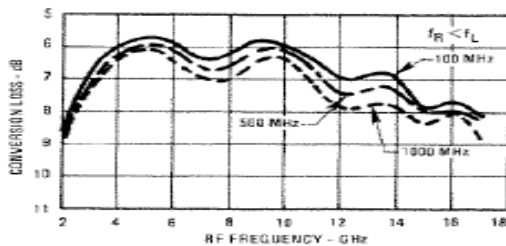
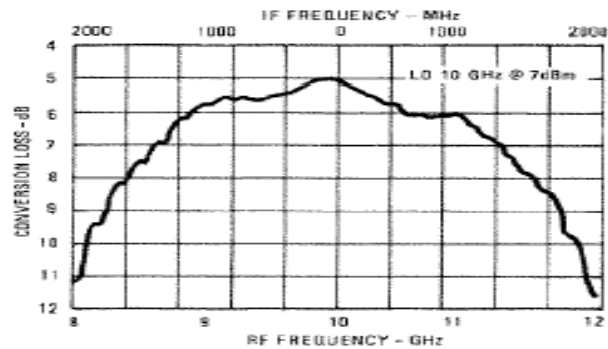
Up Conversion Loss



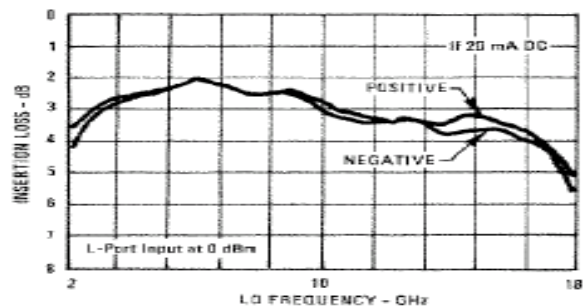
Conversion Loss



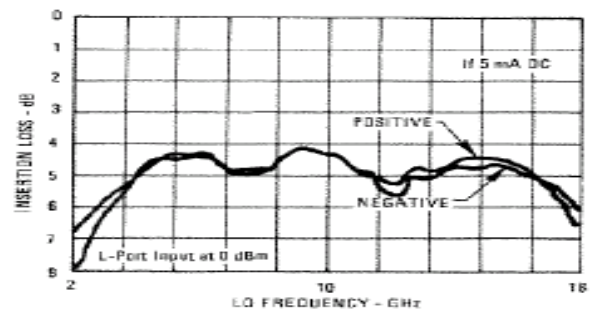
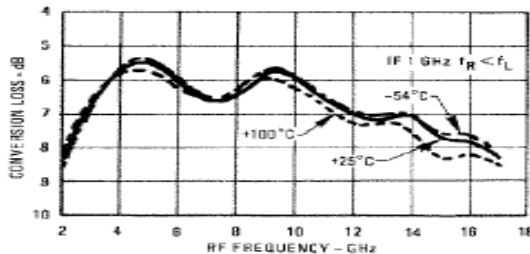
I Port Bandwidth



Insertion Loss with DC Driven I-Port



Conversion Loss over Temperature



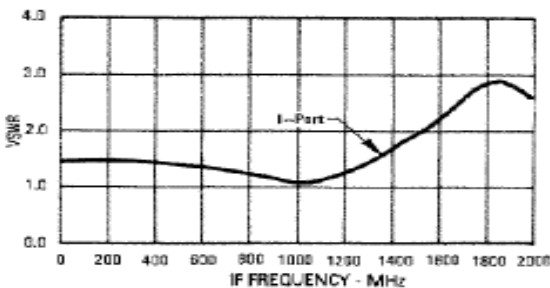
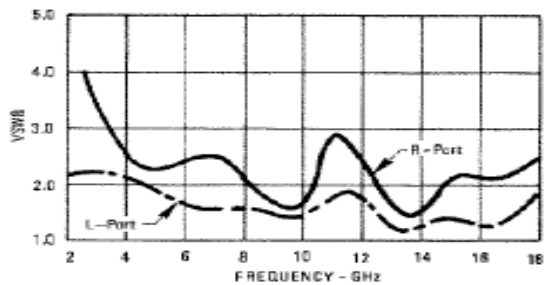
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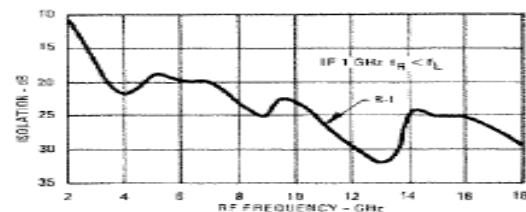
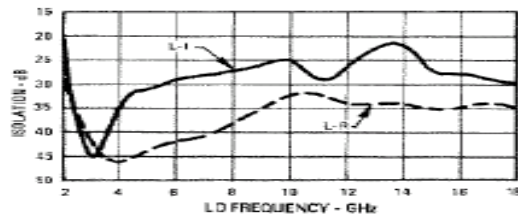
### Absolute Maximum Ratings

| 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<br>+20 dBm max @ +100°C |
| Peak Input Current    | 100 mA DC                                   |

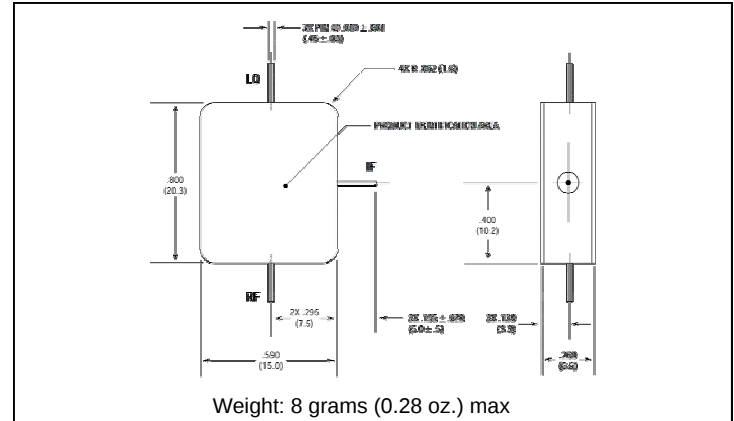
### VSWR



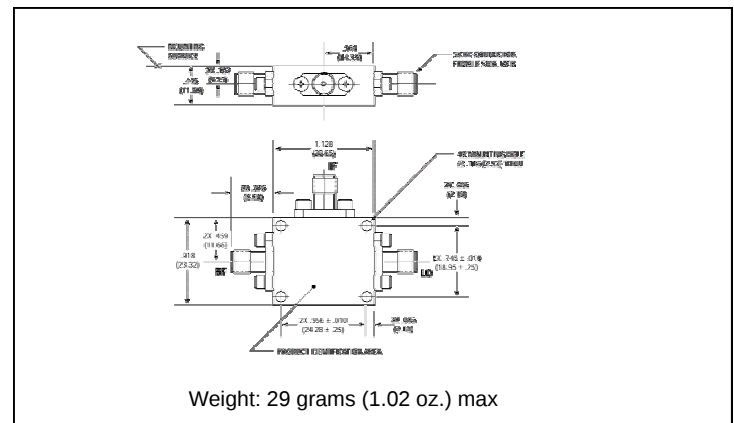
### Isolation



### Outline Drawing: Minpac \*



### Outline Drawing: SMA Connectorized \*



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