

## Double-Balanced Mixer

Rev. V3

### Features

- LO 7 TO 17 GHz
- RF 9 TO 15 GHz
- IF DC TO 2.5 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- LOW NOISE FIGURE: 6.5 dB (TYP.)

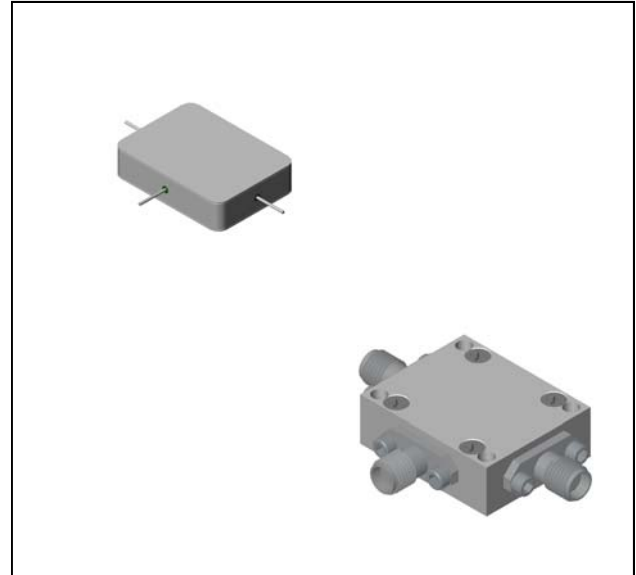
### Description

The M67 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 MIL-DTL-28837, consult factory.

### Ordering Information

| Part Number | Package           |
|-------------|-------------------|
| M67         | Minpac            |
| M67C        | SMA Connectorized |

### Product Image



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

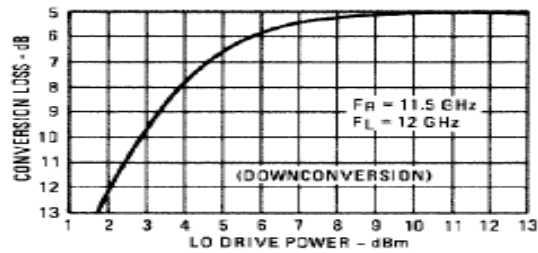
| Parameter                                          | Test Conditions                                                       | Units | Typical | Guaranteed |               |
|----------------------------------------------------|-----------------------------------------------------------------------|-------|---------|------------|---------------|
|                                                    |                                                                       |       |         | +25°C      | -54° to +85°C |
| SSB Conversion Loss (max) & SSB Noise Figure (max) | fR = 9.5 to 13 GHz, fL = 9 to 13.5 GHz, fI = 30 to 500 GHz            | dB    | 5.5     | 7.0        | 7.5           |
|                                                    | fR = 9 to 15 GHz, fL = 8 to 16 GHz, fI = 30 to 1000 GHz               | dB    | 6.5     | 8.5        | 9.0           |
|                                                    | fR = 9 to 15 GHz, fL = 7 to 17 GHz, fI = 30 to 2000 GHz               | dB    | 6.5     | 9.0        | 9.5           |
|                                                    | fR = 9.5 to 13.5 GHz, fL = 7 to 16 GHz, fI = 30 to 2500 GHz           | dB    | 6.5     | 9.0        | 9.5           |
| Isolation, L to R (min)                            | fL = 7 to 15 GHz                                                      | dB    | 40      | 22         | 20            |
|                                                    | fL = 15 to 17 GHz                                                     | dB    | 30      | 10         | 8             |
| Isolation, L to I (min)                            | fL = 7 to 17 GHz                                                      | dB    | 25      | 15         | 13            |
| 1 dB Conversion Comp.                              | fL = +10 dBm                                                          | dBm   | +4      |            |               |
| Input IP3                                          | fR1=11.5 GHz at -6 dBm, fR2=11.5GHz at -6 dBm, fL = 12 GHz at +10 dBm | dBm   | +11     |            |               |

## Double-Balanced Mixer

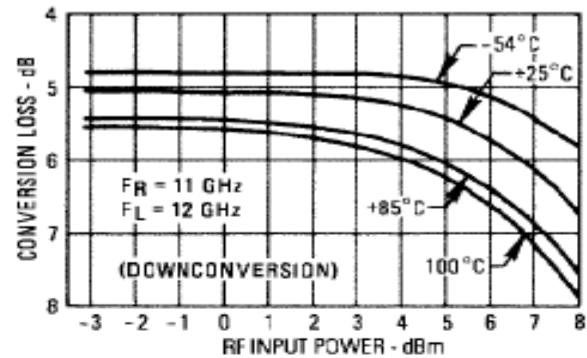
Rev. V3

### Typical Performance Curves

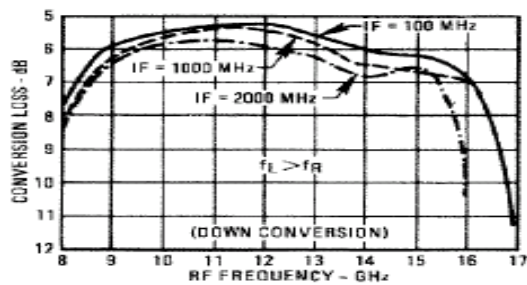
Conversion Loss vs. LO Drive



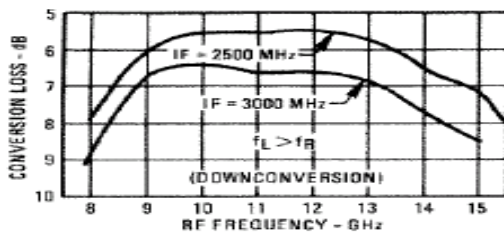
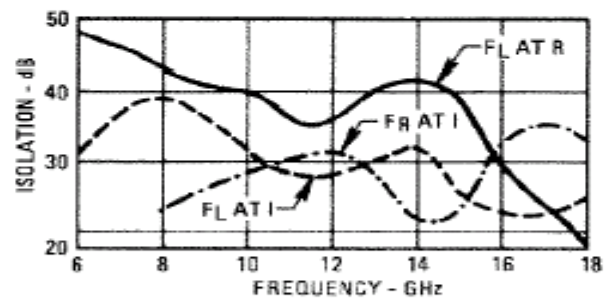
Conversion Loss vs. RF Input Power



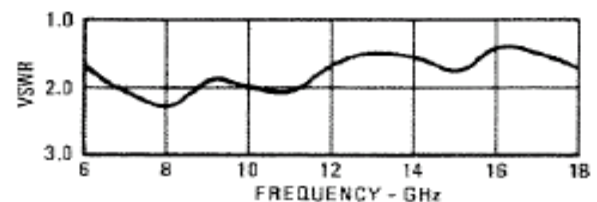
Conversion Loss vs. Frequency



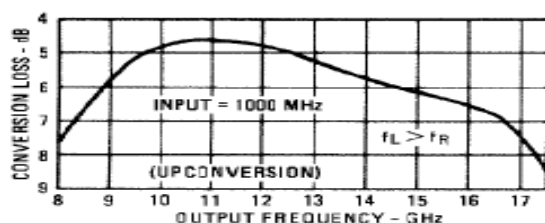
Isolation vs. Frequency



L-Port VSWR vs. Frequency



Conversion Loss vs. Output Frequency



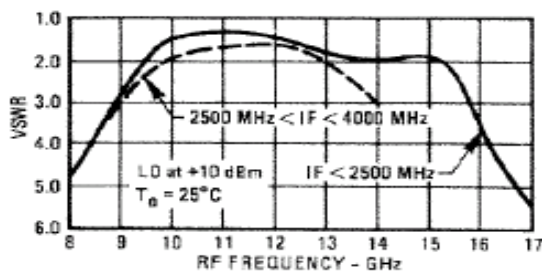
## Double-Balanced Mixer

Rev. V3

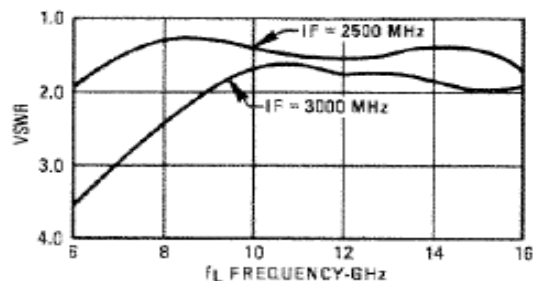
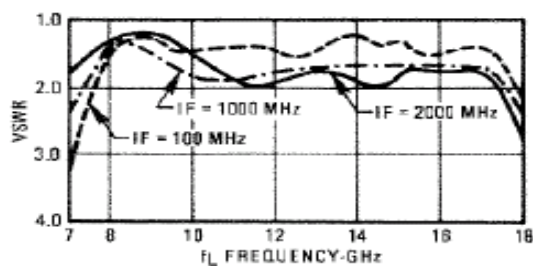
### Absolute Maximum Ratings

| Parameter             | Absolute Maximum                            |
|-----------------------|---------------------------------------------|
| Operating Temperature | -54°C to +100°C                             |
| Storage Temperature   | -65°C to +100°C                             |
| Peak Input Power      | +23 dBm max @ +25°C<br>+20 dBm max @ +100°C |
| Peak Input Current    | 50 mA DC                                    |

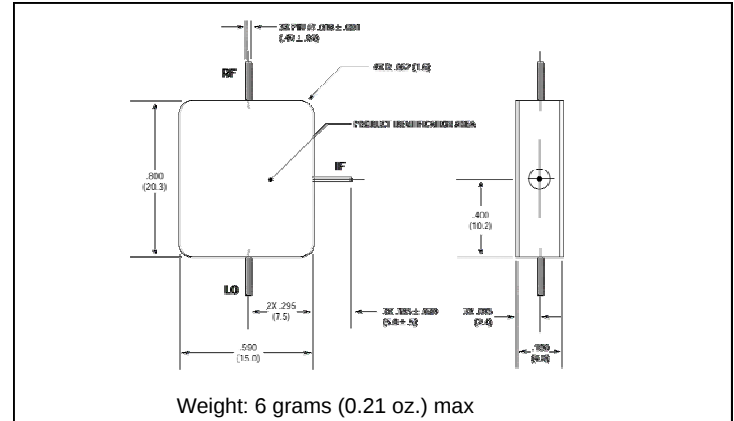
### R-Port VSWR vs. Frequency



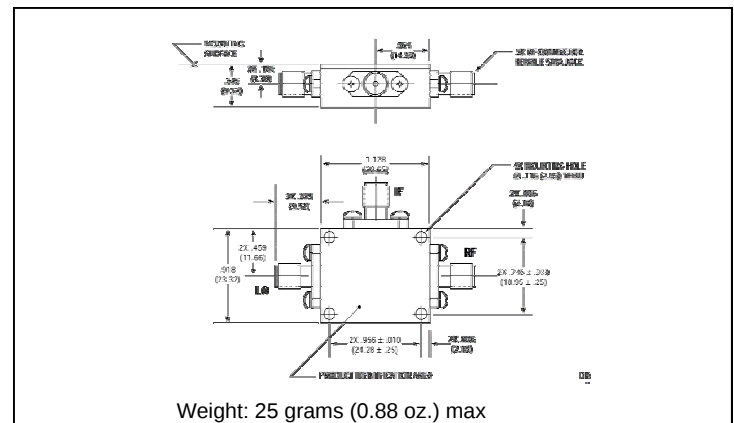
### I-Port VSWR vs. $f_L$



### Outline Drawing: Minpac \*



### Outline Drawing: SMA Connectorized \*



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