

## Double-Balanced Mixer

Rev. V3

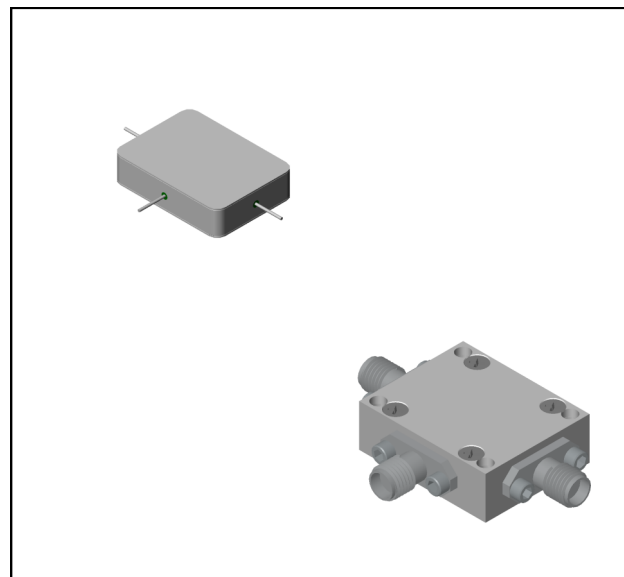
### Features

- LO 7 TO 15 GHz
- RF 8 TO 12.5 GHz
- IF DC TO 2.5 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- LOW NOISE FIGURE

### Description

The M77 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.

### Product Image



### Ordering Information

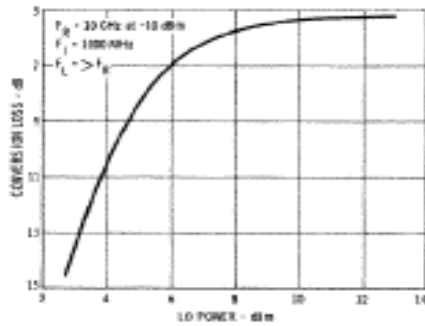
Part Number	Package
M77	Minpac
M77C	SMA Connectorized

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

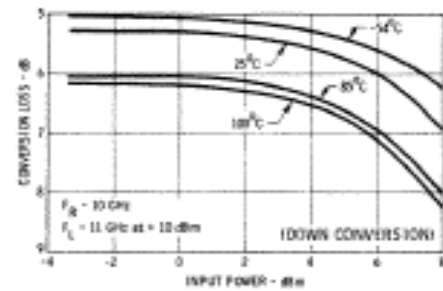
Parameter	Test Conditions	Units	Typical	Guaranteed	
				+25°C	-54° to +85°C
SSB Conversion Loss (max) & SSB Noise Figure (max)	f <sub>R</sub> = 8 to 12.5 GHz, f <sub>L</sub> = 7 to 13.5 GHz, f <sub>I</sub> = 0.03 to 1 GHz	dB	5.0	7.0	7.5
	f <sub>R</sub> = 8 to 12.5 GHz, f <sub>L</sub> = 7 to 14.5 GHz, f <sub>I</sub> = 1 to 2 GHz	dB	5.5	7.5	8.0
	f <sub>R</sub> = 8 to 12.5 GHz, f <sub>L</sub> = 7 to 15 GHz, f <sub>I</sub> = 2 to 2.5 GHz	dB	6.0	8.0	8.5
Isolation, L to R (min)	f <sub>L</sub> = 7 to 15 GHz	dB	35	20	18
	f <sub>L</sub> = 8 to 12 GHz	dB	35	20	18
Isolation, L to I (min)	f <sub>L</sub> = 7 to 14 GHz	dB	30	15	13
	f <sub>L</sub> = 14 to 15 GHz	dB	20	10	8
1 dB Conversion Comp.	f <sub>L</sub> = +10 dBm	dBm	+4		
Input IP3	f <sub>R1</sub> =10 GHz at -6 dBm, f <sub>R2</sub> =10.01GHz at -6 dBm, f <sub>L</sub> = 11 GHz at +10 dBm	dBm	+15		

### Typical Performance Curves

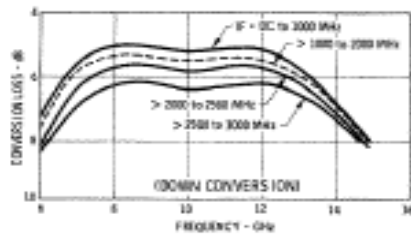
Conversion Loss Vs. LO Drive



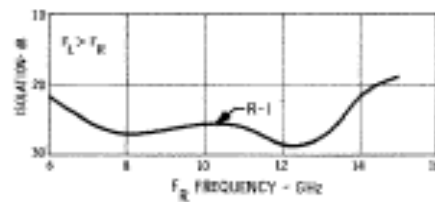
Conversion Loss vs. RF Input Power



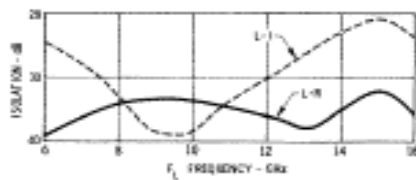
Conversion Loss vs. Frequency



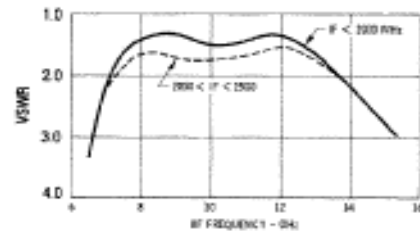
Isolation vs. Frequency



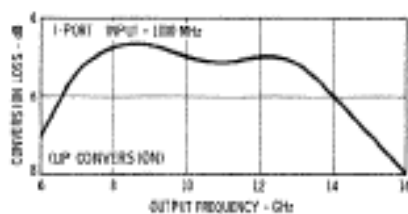
Isolation vs. Frequency



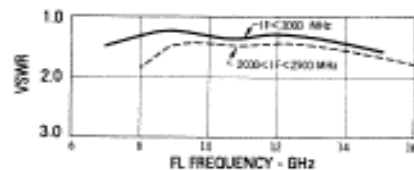
R-Port VSWR vs. Frequency



Conversion Loss vs. Output Frequency



I-Port VSWR vs.  $f_L$



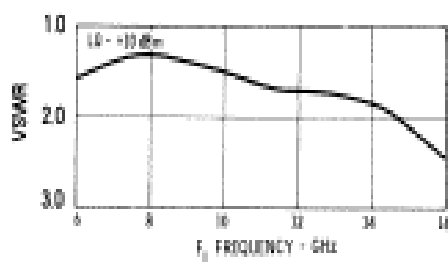
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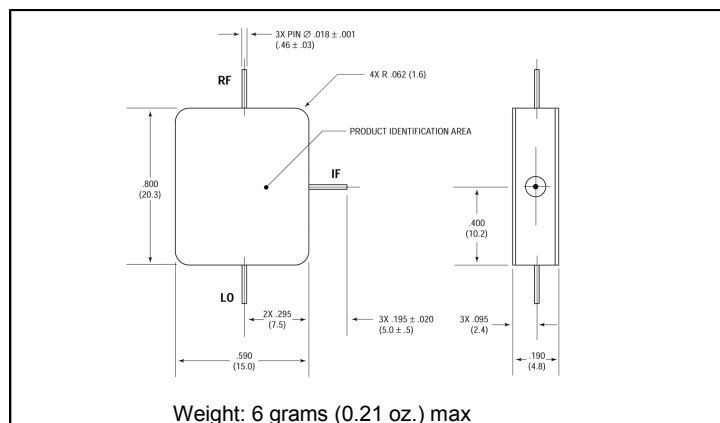
### Absolute Maximum Ratings

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 +20 dBm max @ +100°C
Peak Input Current	100 mA DC

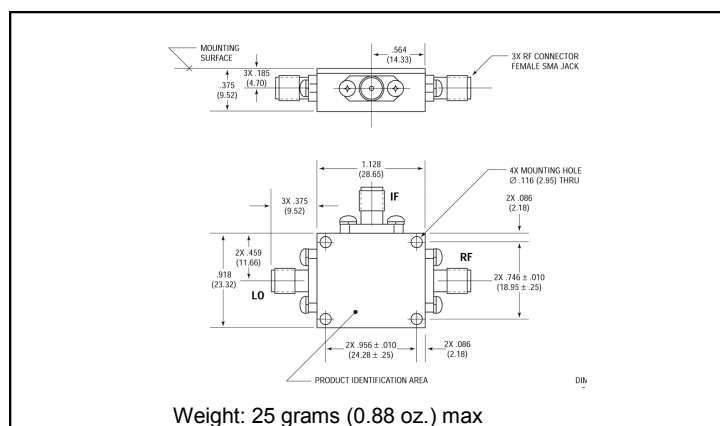
L-Port VSWR vs. Frequency



### Outline Drawing: Minpac \*



### Outline Drawing: SMA Connectorized \*



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

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