

## Triple-Balanced Mixer

Rev. V3

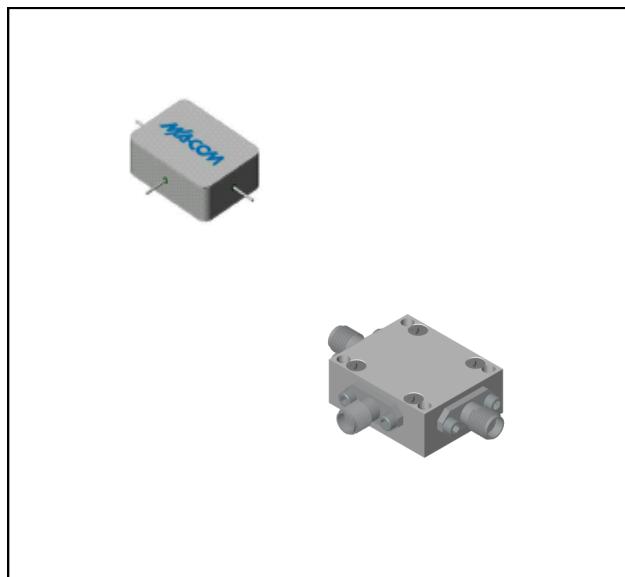
### Features

- LO 2 TO 24 GHz
- RF 2 TO 24 GHz
- IF 1 TO 15 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- HIGH COMPRESSION POINT

### Description

The M51 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 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
M51	Minpac
M51C	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)	$f_R = 2.5$ to 18 GHz, $f_L = 2$ to 18 GHz, $f_I = 2$ to 10 GHz $f_R = 2$ to 18 GHz, $f_L = 2$ to 24 GHz, $f_I = 1$ to 12 GHz $f_R = 2$ to 24 GHz, $f_L = 2$ to 24 GHz, $f_I = 1$ to 12 GHz $f_I = 1$ - 15 GHz $f_L < f_R$	dB dB dB	7.5 8.0 9.0	9.5 10.5 11.5	10.0 11.0 12.0
Isolation, L to R (min)	$f_L = 2$ to 3 GHz $f_L = 3$ to 24 GHz	dB dB	20 30	15 20	13 18
Isolation, L to I (min)	$f_L = 2$ to 7 GHz $f_L = 7$ to 24 GHz	dB dB	30 22	20 15	18 13
1 dB Conversion Comp.	$f_L @ +10$ dBm	dBm	+5		
Input IP3	$f_{R1} = 5$ GHz @ -6 dBm, $f_{R2} = 5.01$ GHz @ -6 dBm, $f_I = 8$ GHz @ 10 dBm $f_{R1} = 16$ GHz @ -6 dBm, $f_{R2} = 16.01$ GHz @ -6 dBm, $f_I = 18$ GHz @ 10 dBm	dBm dBm	+15 +15		

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\* The M51C specification limits apply at 0°C to +50°C.

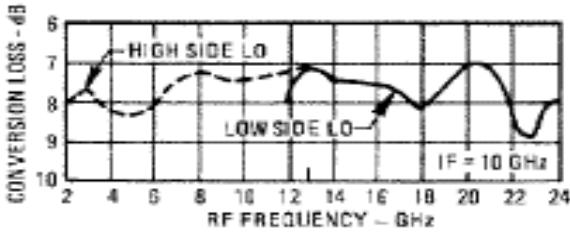
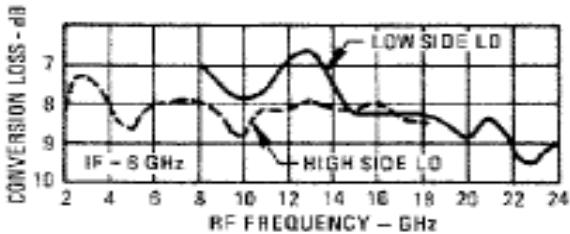
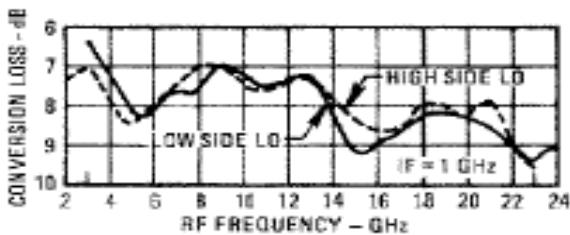
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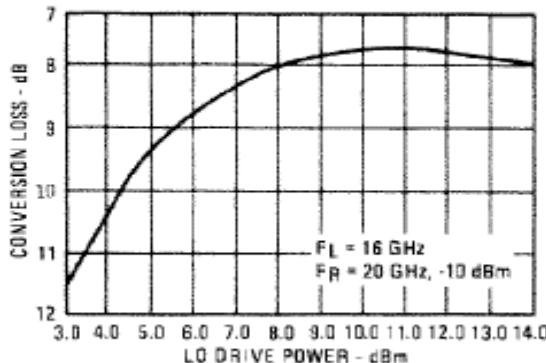
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### Typical Performance Curves

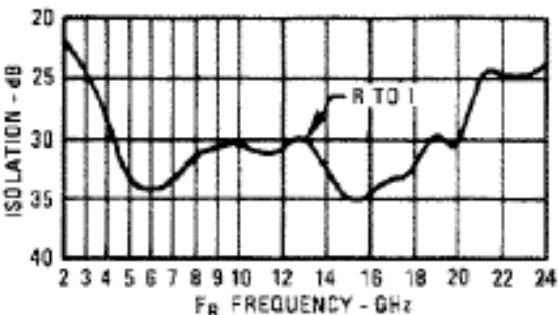
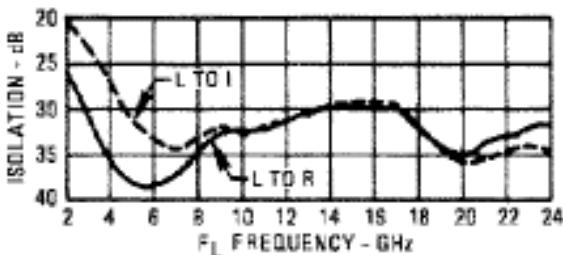
**Conversion Loss vs. Frequency**  
LO @ +10 dBm



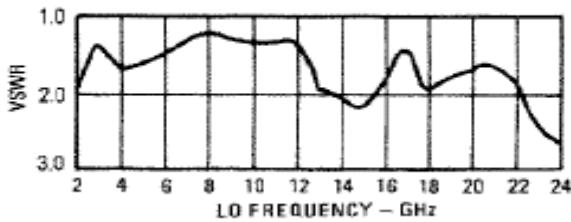
**Drive Level**



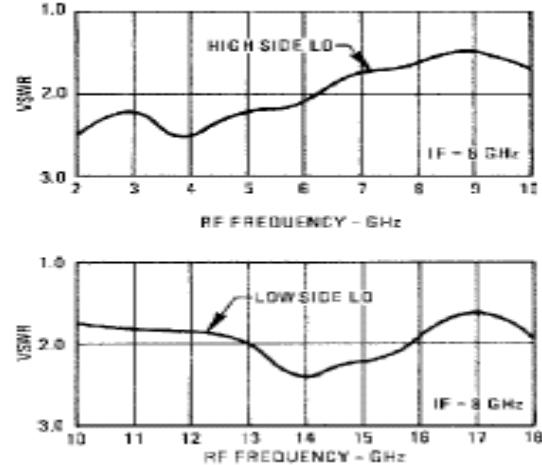
**Isolation vs. Frequency**



**L-Port VSWR**



**R-Port VSWR**



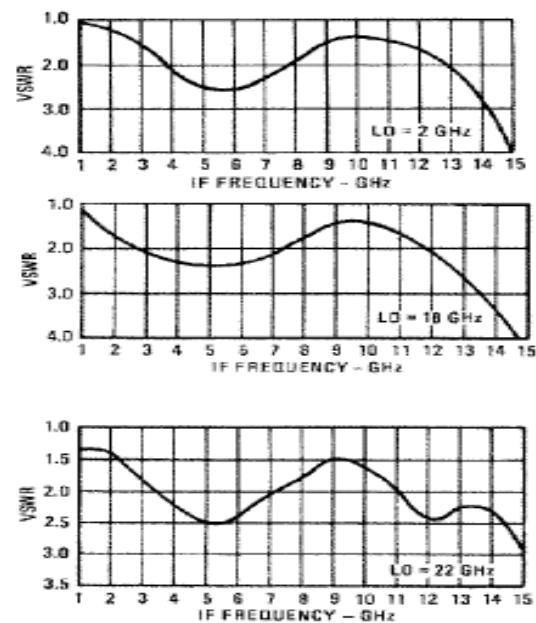
## Triple-Balanced Mixer

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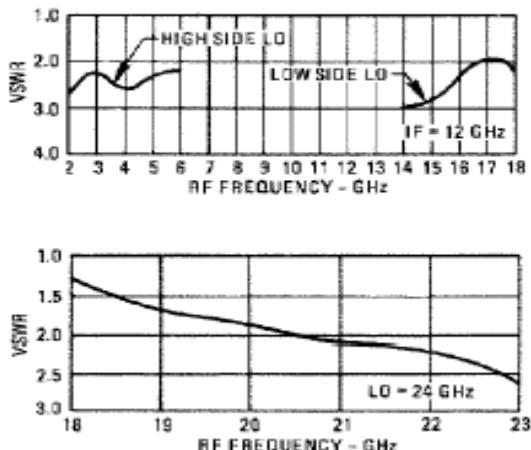
### Absolute Maximum Ratings

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 +22 dBm max @ +100°C
Peak Input Current	mA DC

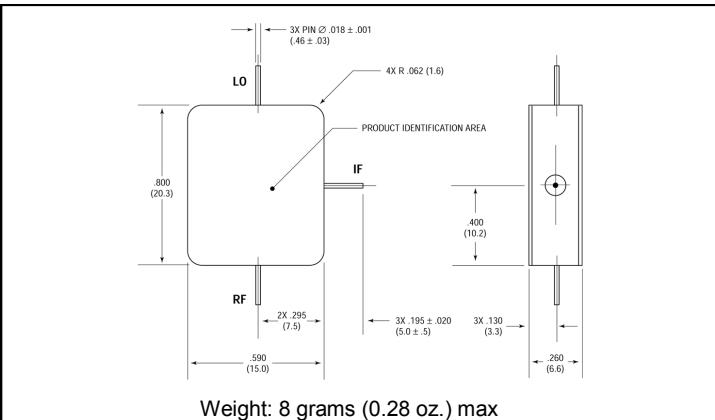
#### I-Port VSWR



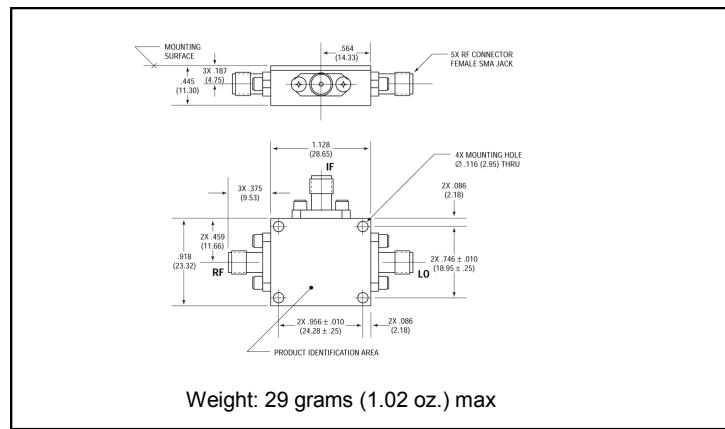
#### R-Port VSWR



### Outline Drawing: Minpac \*

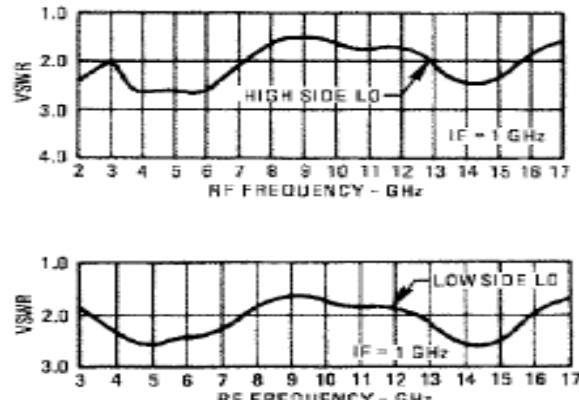


### Outline Drawing: SMA Connectorized \*



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

#### R-Port VSWR LO @ +10 dBm



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