

Double-Balanced Mixer

Rev. V3

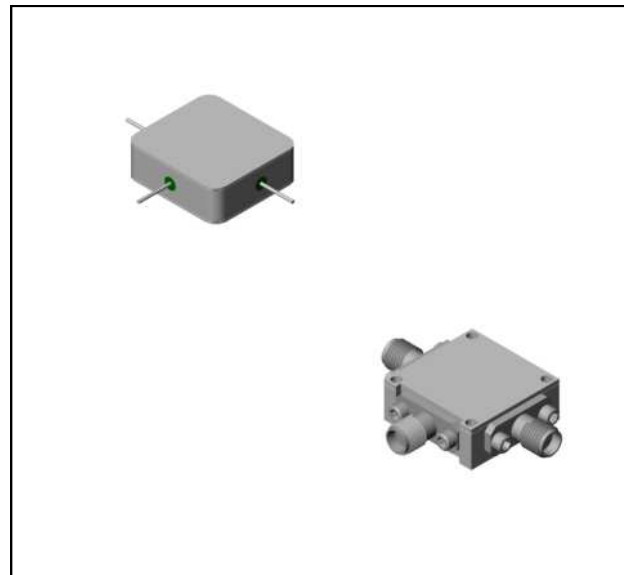
Features

- LO 5 TO 18 GHz
- RF 7 TO 18 GHz
- IF DC TO 3 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- VERY SMALL PACKAGE

Description

The M74 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

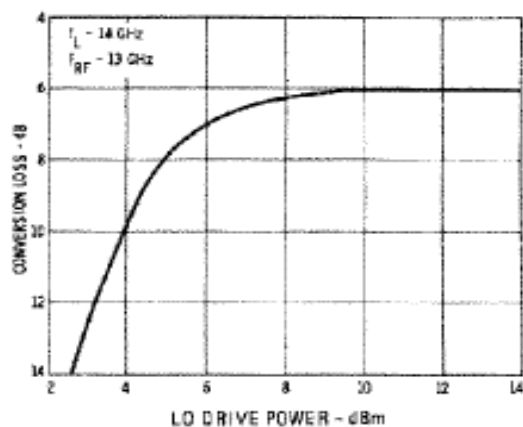
Part Number	Package
M74	Minpac
M74C	SMA Connectorized

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

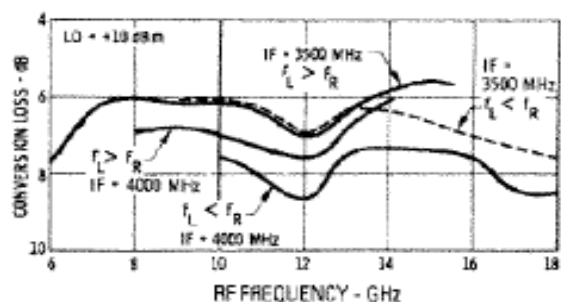
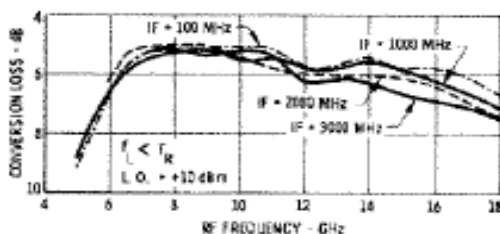
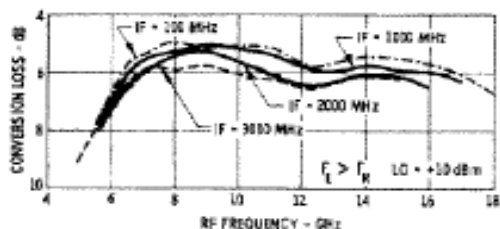
Parameter	Test Conditions	Units	Typical	Guaranteed	
				+25°C	-54° to +85°C
SSB Conversion Loss (max) & SSB Noise Figure (max)	fR = 7 to 16 GHz, fL = 6 to 17 GHz, fl = 0.03 to 1 GHz	dB	5.5	7.0	7.5
	fR = 7 to 16 GHz, fL = 5 to 18 GHz, fl = 0.03 to 2 GHz	dB	6.0	8.0	8.5
	fR = 8 to 16 GHz, fL = 5 to 16 GHz, fl = 0.03 to 3 GHz	dB	6.5	8.5	9.0
	fR = 16 to 18 GHz, fL = 13 to 18 GHz, fl = 0.03 to 3 GHz	dB	7.0	9.0	9.5
Isolation, L to R (min)	fL = 5 to 14 GHz	dB	40	22	20
	fL = 14 to 18 GHz	dB	30	10	8
Isolation, L to I (min)	fL = 5 to 8 GHz	dB	25	15	13
	fL = 8 to 18 GHz	dB	25	15	13
1 dB Conversion Comp.	fL = +10 dBm	dBm	+4		
Input IP3	fR1=13 GHz at -6 dBm, fR2=13.01GHz at -6 dBm, fL = 14 GHz at +10 dBm	dBm	+11		

Typical Performance Curves

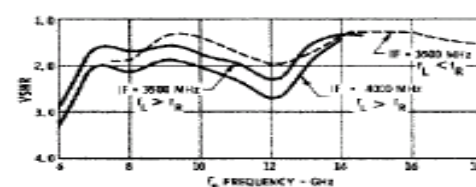
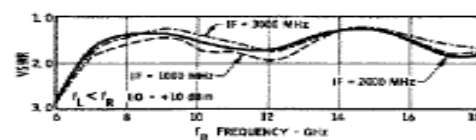
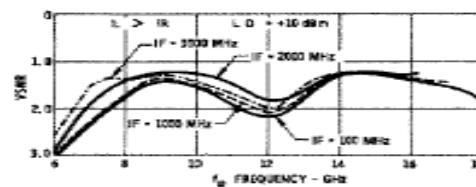
Conversion Loss vs. LO Drive Power



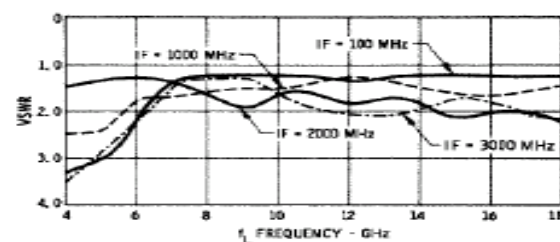
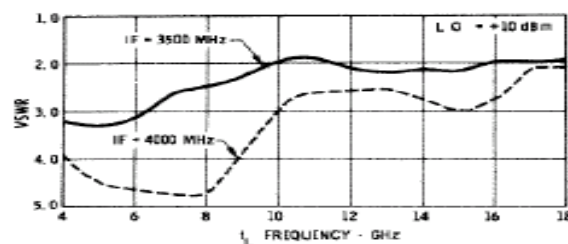
Conversion Loss vs. Frequency



R-Port VSWR



I-Port VSWR



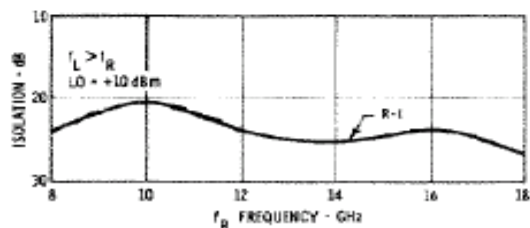
Rev. V3

Outline Drawing: Minpac *

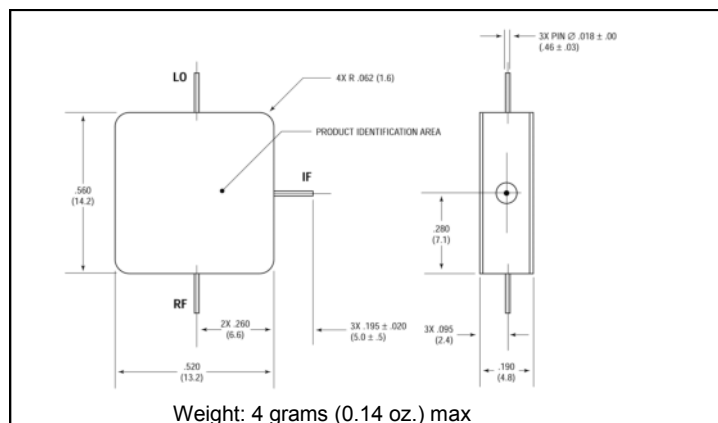
Parameter	Absolute Maximum
Operating Temperature	-54°C to +100°C
Storage Temperature	-65°C to +100°C
Peak Input Power	+23 dBm max @ +25°C +20 dBm max @ +100°C
Peak Input Current	100 mA DC

The graph shows the isolation characteristics of the L-R and L-I components. The y-axis is labeled 'ISOLATION - dB' and ranges from 10 to 50 in increments of 10. The x-axis is labeled 'F₁ FREQUENCY - GHz' and ranges from 4 to 18 in increments of 2. A legend at the top left indicates '(L) = +30 dBm'. The L-I curve (dashed line) starts at approximately 22 dB at 4 GHz, decreases to about 30 dB at 8 GHz, 40 dB at 12 GHz, and ends at approximately 35 dB at 18 GHz. The L-R curve (solid line) starts at approximately 35 dB at 4 GHz, dips to about 38 dB at 6 GHz, remains relatively flat around 40 dB until 12 GHz, and then rises to approximately 48 dB at 18 GHz.

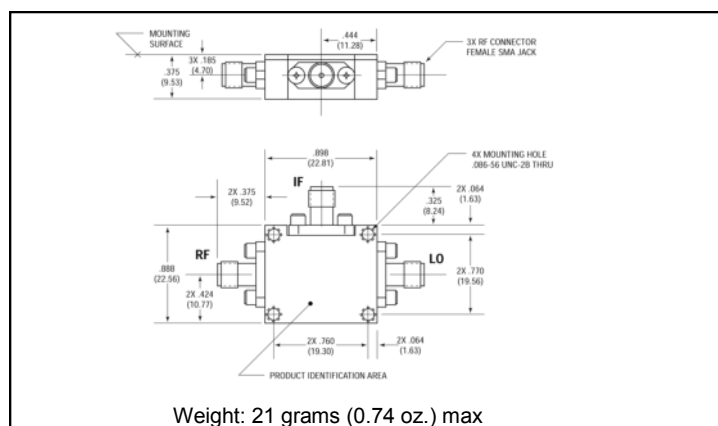
F ₁ FREQUENCY - GHz	L-I Isolation (dB)	L-R Isolation (dB)
4	22	35
6	28	38
8	30	40
10	35	40
12	40	40
14	42	45
16	45	48
18	35	48



Graph of VSWR vs Frequency (GHz) for the 10 dBm LO. The y-axis is VSWR from 1.0 to 3.0. The x-axis is Frequency from 4 to 18 GHz. The curve shows a peak near 6 GHz and a dip near 10 GHz.



Outline Drawing: SMA Connectorized *



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

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