

# MMP12244 2.0 TO 12.0 GHz COUGAR MIXERPAK DOUBLE-BALANCED MIXER

**Typical Values**

<b>LO &amp; RF</b> .....	<b>MMP12244</b>
<b>IF</b> .....	<b>2.0 - 13.0 GHz</b>
<b>Third Order I.P.</b> .....	<b>DC - 2.0 GHz</b>
<b>Conversion Loss</b> .....	<b>+19.0 dBm</b>
<b>LO Drive (nominal)</b> .....	<b>5.5 dB</b>
<b>High Isolation (LO to RF)</b> .....	<b>+16.0 dBm</b>
<b>Cougar MixerPak - Seam Sealed Hermetic Package</b>	<b>35.0 dB</b>

## SPECIFICATIONS\*

**Guaranteed  
-55 to +85 °C**

Parameter	Port	Frequency (GHz)	Typ. (dB)	Max. (dB)	
<b>SSB Conversion Loss and SSB Noise Figure</b>	$f_R$	3.0 to 12.0	6.0	7.0	
	$f_L$	3.0 to 12.0	6.0	7.0	
	$f_I$	DC to 1.0	6.0	7.0	
	$f_R$	2.0 to 12.0	7.0	9.0	
	$f_L$	2.0 to 12.0	7.0	9.0	
	$f_I$	DC to 1.0	7.0	9.0	
	$f_I$	1.0 to 2.0	8.5	10.0	
<b>Conversion Comp. Desensitization</b>	$f_R$	Level = +7 dBm	-	1.0	
	$f_{R2}$	Level = +5 dBm	-	1.0	
<b>Isolation</b>			<b>Typ. (dB)</b>	<b>Min. (dB)</b>	
	$f_L$ at R	$f_L$	2.0 to 6.0	40	30
	$f_L$ at I	$f_L$	2.0 to 6.0	22	15
	$f_R$ at I	$f_R$	2.0 to 6.0	28	22
	$f_L$ at R	$f_L$	6.0 to 12.0	35	25
	$f_L$ at I	$f_L$	6.0 to 12.0	18	13
$f_R$ at I	$f_R$	2.0 to 12.0	25	17	
<b>Third Order Intercept</b>		LO = +16 dBm	+19 dBm	-	

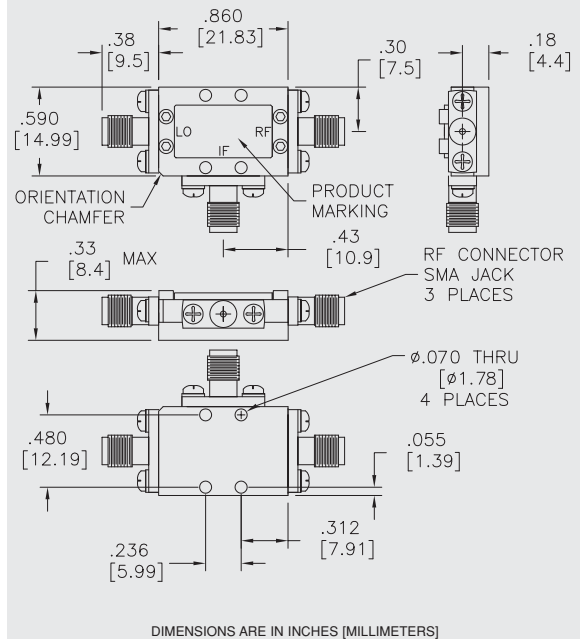
\* Measured in a 50-ohm system with nominal LO drive of +16 dBm as a downconverter.

## ABSOLUTE MAXIMUM RATINGS

<b>Storage Temperature</b> .....	<b>-65 to +150 °C</b>
<b>Peak RF Input Power All Ports</b> .....	<b>+24 dBm @ 25 °C</b>
	<b>derate to +19 dBm @ 100 °C</b>

## MMP12244

### Cougar MixerPak



### Harmonic Intermodulation Products (single tone)

HARMONICS OF $f_R$	5	99	>100	>100	>100	100	96
	4	>100	100	>100	>100	>100	>100
	3	>100	>100	>100	78	84	81
	2	>100	>100	99	73	77	75
	1	85	85	71	58	71	86
	0	84	82	66	56	67	83
HARMONICS OF $f_L$	5	69	53	58	50	77	57
	4	66	48	52	45	71	59
	3	22	0	27	39	49	41
	2	21	0	26	45	44	37
	1		-16	24	3	32	4
	0		-15	27	4	35	7

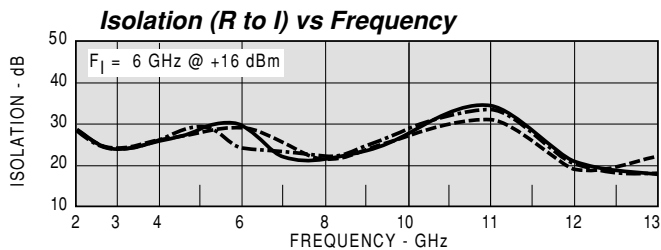
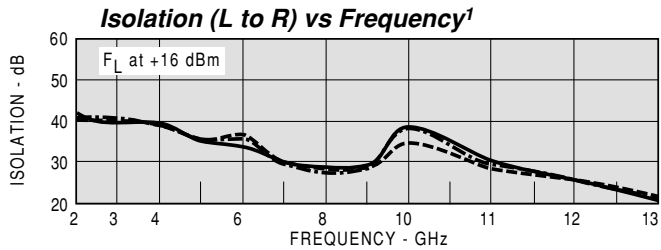
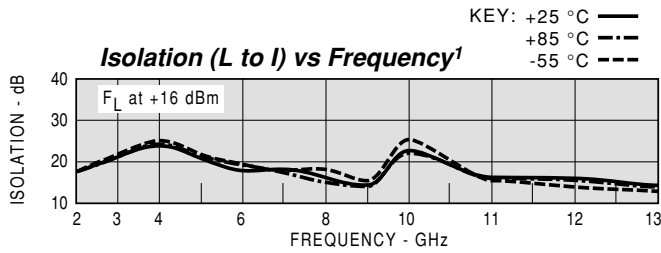
$F_R = 2000 \text{ MHz @ -10 dBm}$        $F_L = 2030 \text{ MHz}$   
 $F_L @ +13 \text{ dBm}$         $F_L @ +16 \text{ dBm}$

### Harmonic Intermodulation Products (single tone)

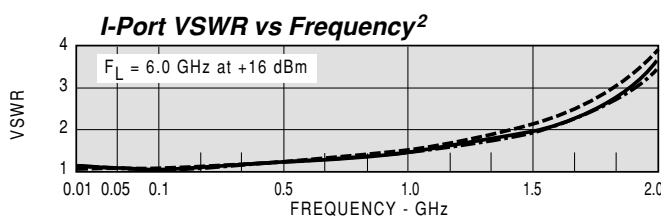
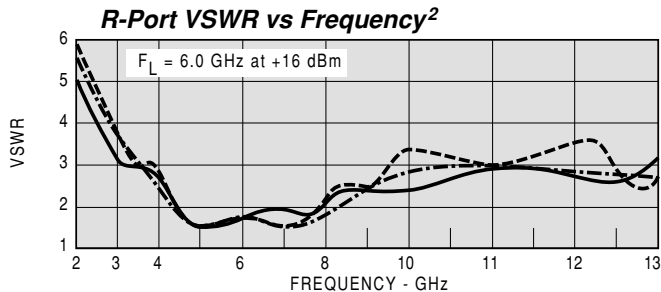
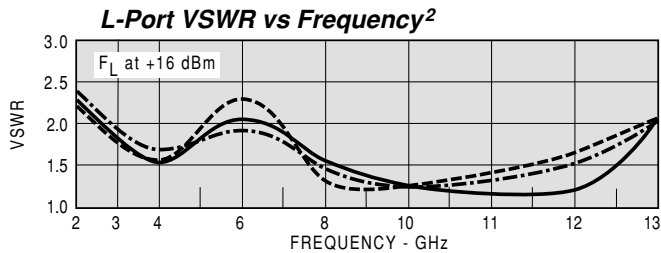
HARMONICS OF $f_R$	5	>100	97	>100	99	>100	95
	4	>100	>100	97	>100	>100	94
	3	90	85	97	>100	>100	98
	2	84	84	88	98	96	94
	1	81	86	85	65	89	87
	0	84	77	75	57	83	78
HARMONICS OF $f_L$	5	62	58	69	58	66	46
	4	57	54	62	54	61	44
	3	19	0	42	43	45	34
	2	17	0	36	45	47	46
	1		-7	32	-5	30	7
	0		-5	30	-4	35	10

$F_R = 4000 \text{ MHz @ -10 dBm}$        $F_L = 4030 \text{ MHz}$   
 $F_L @ +13 \text{ dBm}$         $F_L @ +16 \text{ dBm}$

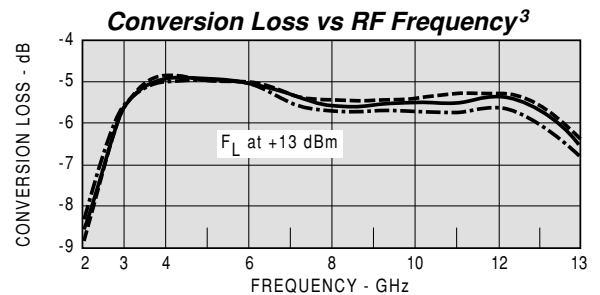
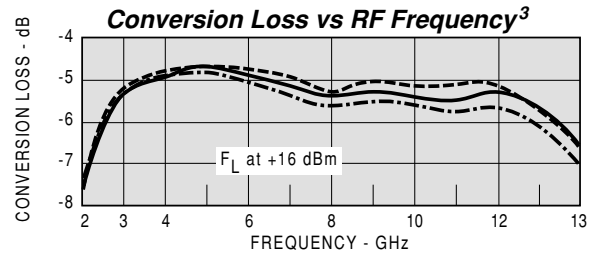
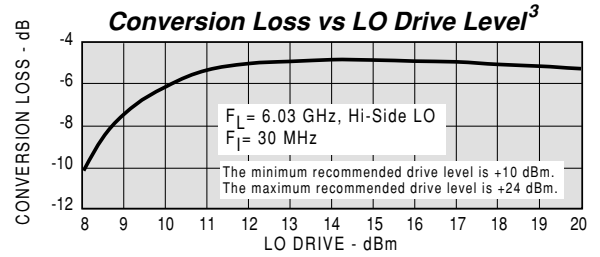
## TYPICAL PERFORMANCE



<sup>1</sup>Level of the  $f_L$  signal fed through to the R- and I-ports with respect to the level of the  $f_L$  signal at the L-port.



<sup>2</sup>VSWR of the I- and R-ports in a 50-ohm system. Some variation in the R-port VSWR will occur as a function of the L-port frequency as shown above.



<sup>3</sup>Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port ( $f_R$ ) with  $f_I$  at 30 MHz.

