

# MMP12241 2.0 TO 12.0 GHz COUGAR MIXERPAK DOUBLE-BALANCED MIXER

**Typical Values**

LO & RF .....	<b>MMP12241</b>
IF .....	<b>2.0 - 13.0 GHz</b>
Third Order I.P. ....	<b>DC - 2.0 GHz</b>
Conversion Loss .....	<b>+10.0 dBm</b>
LO Drive (nominal) .....	<b>5.0 dB</b>
High Isolation (LO to RF) .....	<b>+7.0 dBm</b>
Cougar MixerPak - Seam Sealed Hermetic Package	<b>35.0 dB</b>

## SPECIFICATIONS\*

**Guaranteed  
-55 to +85 °C**

Parameter	Port	Frequency (GHz)	Typ. (dB)	Max. (dB)	
SSB Conversion Loss and SSB Noise Figure	$f_R$	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	8.5	
	$f_L$	2.0 to 12.0	7.0	8.5	
	$f_I$	DC to 1.0	7.0	8.5	
	$f_I$	1.0 to 2.0	8.5	9.5	
Conversion Comp. Desensitization	$f_R$	Level = +7 dBm	-	1.0	
	$f_{R2}$	Level = +5 dBm	-	1.0	
Isolation			<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	$f_R$	6.0 to 10.0	35	25
	$f_L$ at R	$f_L$	6.0 to 12.0	45	30
	$f_L$ at I	$f_L$	6.0 to 12.0	25	15
$f_R$ at I	$f_R$	2.0 to 12.0	30	18	
Third Order Intercept		LO = +7 dBm	+10 dBm	-	
		LO = +10 dBm	+13 dBm	-	

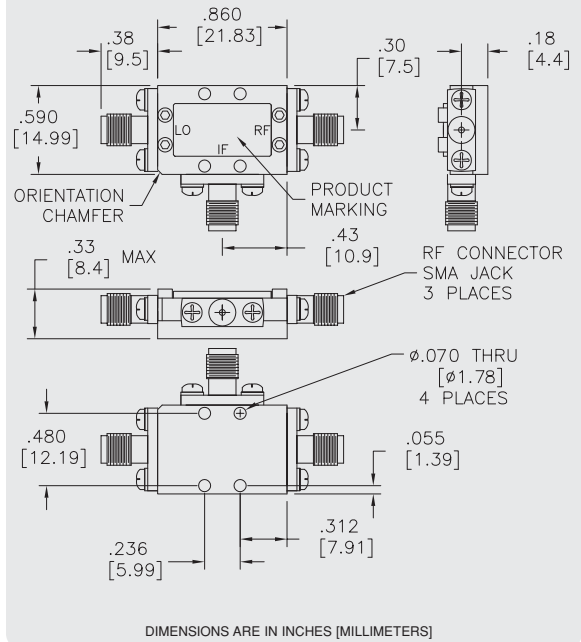
\* Measured in a 50-ohm system with nominal LO drive of +7 dBm as a downconverter.

## ABSOLUTE MAXIMUM RATINGS

Storage Temperature .....	-65 to +150 °C
Peak RF Input Power All Ports .....	+22 dBm @ 25 °C
	derate to +17 dBm @ 100 °C

## MMP12241

### Cougar MixerPak



### Harmonic Intermodulation Products (single tone)

HARMONICS OF $f_R$	5	100	>100	>100	>100	77	71
	4	>100	>100	96	94	74	69
	3	94	90	92	73	73	72
	2	94	92	89	65	66	64
	1	78	73	62	46	59	73
	0	76	70	56	44	56	71
HARMONICS OF $f_L$	5	65	52	49	51	87	55
	4	62	44	50	44	71	56
	3	19	0	26	38	58	54
	2	19	0	25	41	56	62
	1		3	29	15	50	16
	0		5	31	16	53	20

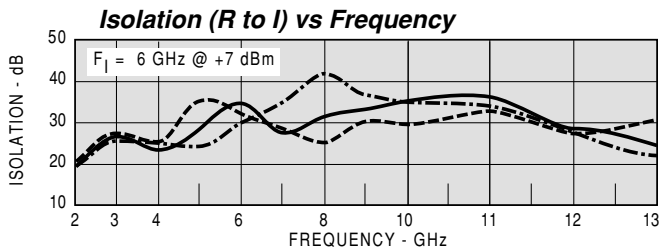
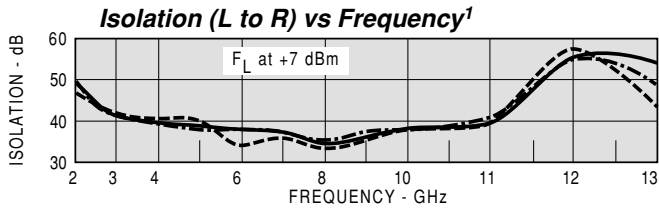
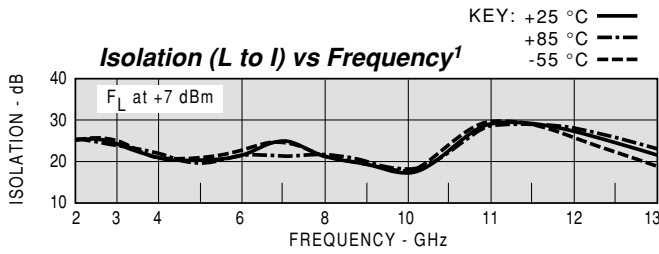
$F_R = 2000 \text{ MHz @ } -10 \text{ dBm}$        $F_L = 2030 \text{ MHz}$   
 $F_L @ +7 \text{ dBm}$         $F_L @ +10 \text{ dBm}$

### Harmonic Intermodulation Products (single tone)

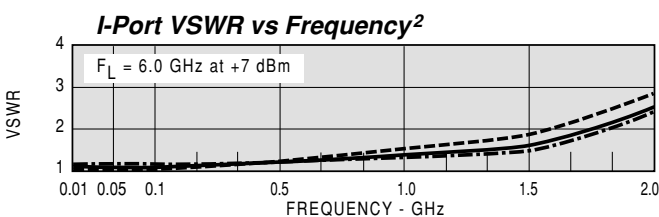
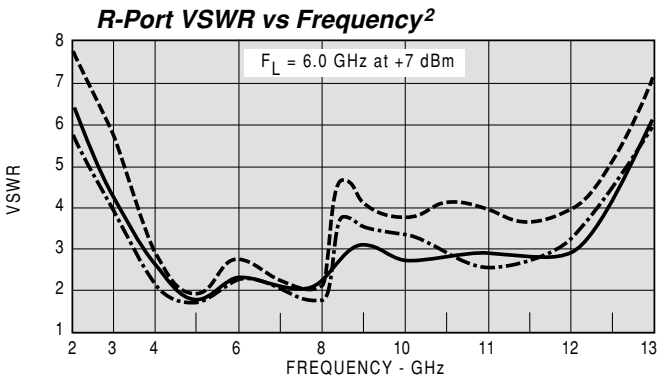
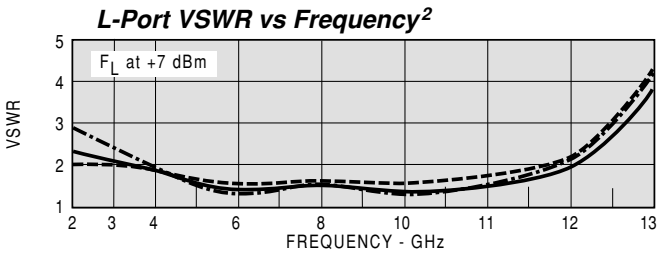
HARMONICS OF $f_R$	5	>100	>100	>100	>100	>100	99
	4	>100	>100	97	>100	96	77
	3	100	85	93	88	>100	84
	2	95	81	87	82	93	78
	1	71	88	72	51	76	96
	0	67	84	68	49	73	90
HARMONICS OF $f_L$	5	63	51	60	51	67	53
	4	61	49	69	49	67	52
	3	20	0	41	53	43	37
	2	20	0	40	55	45	39
	1		-4	49	13	38	21
	0		-2	51	14	42	24

$F_R = 4000 \text{ MHz @ } -10 \text{ dBm}$        $F_L = 4030 \text{ MHz}$   
 $F_L @ +7 \text{ dBm}$         $F_L @ +10 \text{ dBm}$

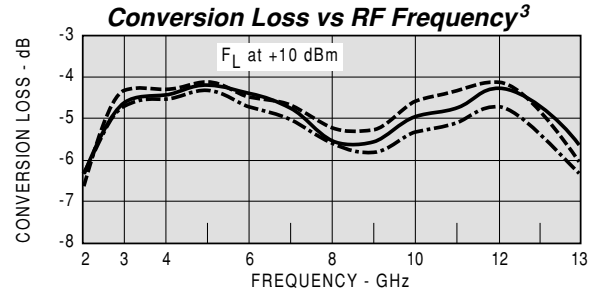
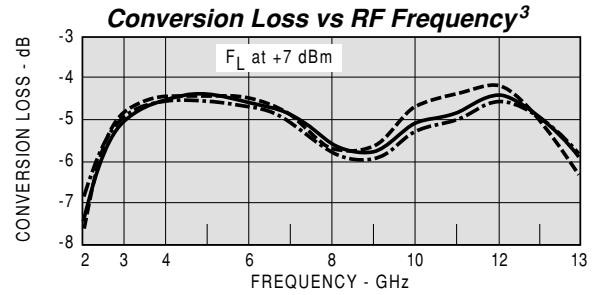
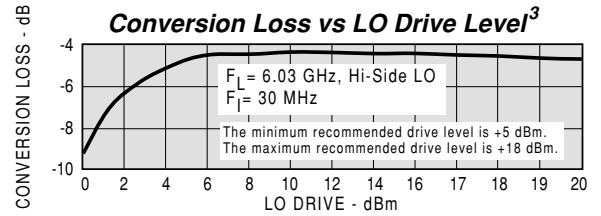
**TYPICAL PERFORMANCE**



<sup>1</sup>Level of the f<sub>L</sub> signal fed through to the R- and I-ports with respect to the level of the f<sub>L</sub> 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<sub>R</sub>) with f<sub>I</sub> at 30 MHz.

