

MMP20224 2.0 TO 20.0 GHz COUGAR MIXERPAK DOUBLE-BALANCED MIXER

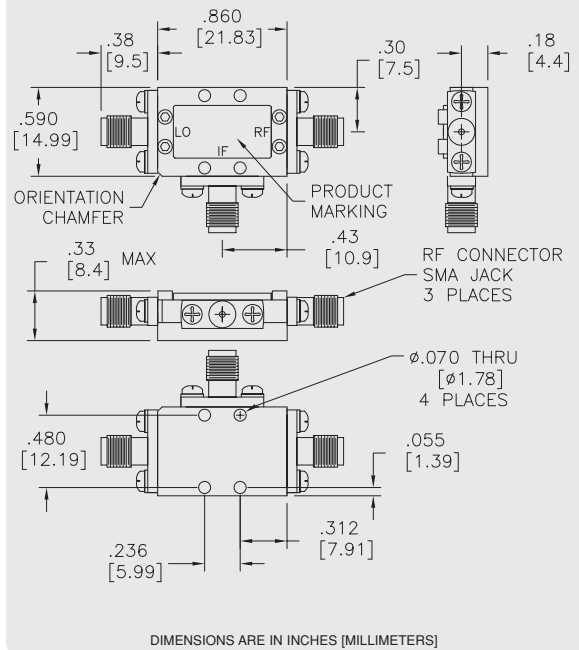
Typical Values

LO & RF	2.0 - 20.0 GHz
IF	DC - 1.0 GHz
Third Order I.P.	+20.0 dBm
Conversion Loss	6.0 dB
LO Drive (nominal)	+16.0 dBm
High Isolation (LO to RF)	35.0 dB
Cougar MixerPak - Seam Sealed Hermetic Package	

MMP20224

MMP20224

Cougar MixerPak



SPECIFICATIONS*

Guaranteed
-55 to +85 °C

Parameter	Port	Frequency (GHz)	Typ. (dB)	Max. (dB)	
SSB Conversion Loss and SSB Noise Figure	f_R	2.0 to 12.0	6.0	7.0	
	f_L	2.0 to 12.0	6.0	7.0	
	f_I	DC to 0.5	6.0	7.0	
	f_R	2.0 to 20.0	7.0	8.5	
	f_L	2.0 to 20.0	7.0	8.5	
	f_I	DC to 0.5	7.0	8.5	
	f_I	0.5 to 1.0	8.0	9.5	
Conversion Comp. Desensitization	f_R	Level = 10 dBm	-	1.0	
	f_{R2}	Level = 8 dBm	-	1.0	
Isolation			Typ. (dB)	Min. (dB)	
	f_L at R	f_L	2.0 to 10.0	40	30
	f_L at I	f_L	2.0 to 20.0	25	18
	f_R at I	f_R	2.0 to 4.0	25	18
	f_L at R	f_L	10.0 to 20.0	30	22
	f_L at I	f_L	2.0 to 20.0	25	18
f_R at I	f_R	4.0 to 20.0	30	25	
Third Order Intercept		LO = +16 dBm	+20 dBm	-	

* Measured in a 50-ohm system with nominal LO drive of +16 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

Harmonic Intermodulation Products (single tone)

HARMONICS OF f_R	HARMONICS OF f_L					
	0	1	2	3	4	5
5	>100	>100	99	>100	97	88
4	>100	95	93	86	81	91
3	77	64	78	53	70	66
2	69	61	70	49	61	65
1	72	49	52	54	69	60
0	60	43	46	59	61	54
	16	0	36	21	46	40
	16	0	34	22	41	51
		-8	19	13	35	27
		-4	20	15	38	29

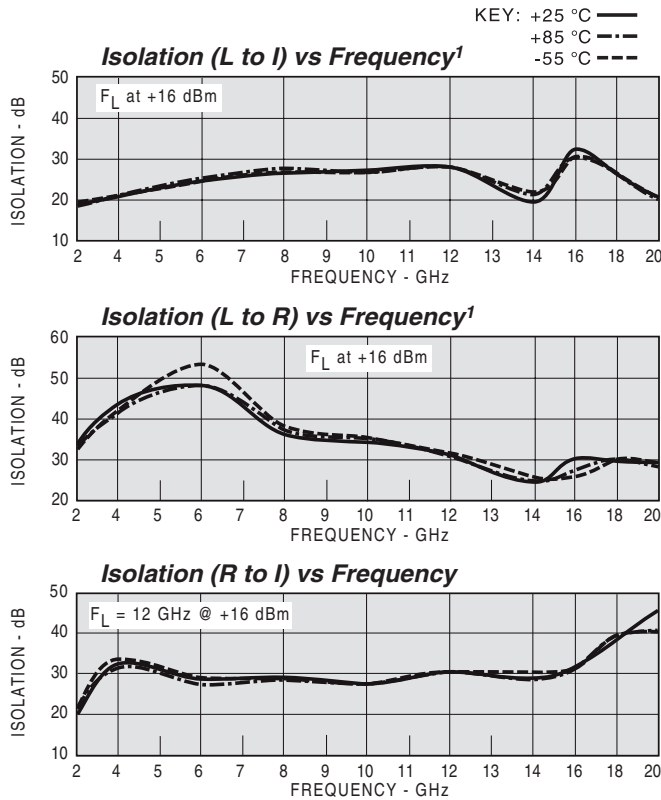
$F_R = 2000 \text{ MHz @ -10 dBm}$ $F_L = 1970 \text{ MHz}$
 $F_L @ +16 \text{ dBm}$ $F_L @ +19 \text{ dBm}$

Harmonic Intermodulation Products (single tone)

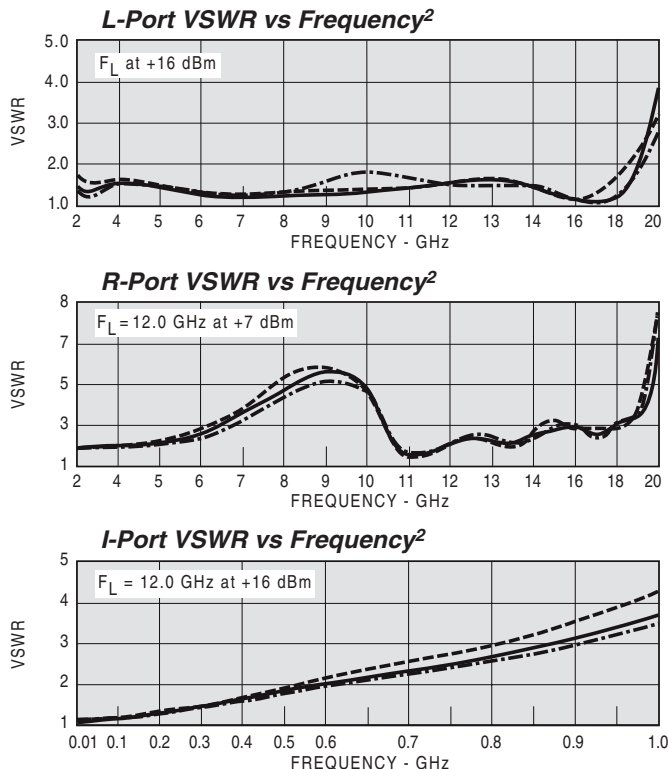
HARMONICS OF f_R	HARMONICS OF f_L					
	0	1	2	3	4	5
5	>100	96	>100	>100	97	89
4	>100	88	>100	91	93	90
3	76	71	77	51	72	73
2	77	68	76	48	70	72
1	79	51	55	53	73	52
0	80	50	52	51	72	53
	25	0	45	31	43	47
	29	0	40	34	42	52
		-5	31	10	59	20
		-3	33	12	58	25

$F_R = 4000 \text{ MHz @ -10 dBm}$ $F_L = 3970 \text{ MHz}$
 $F_L @ +16 \text{ dBm}$ $F_L @ +19 \text{ dBm}$

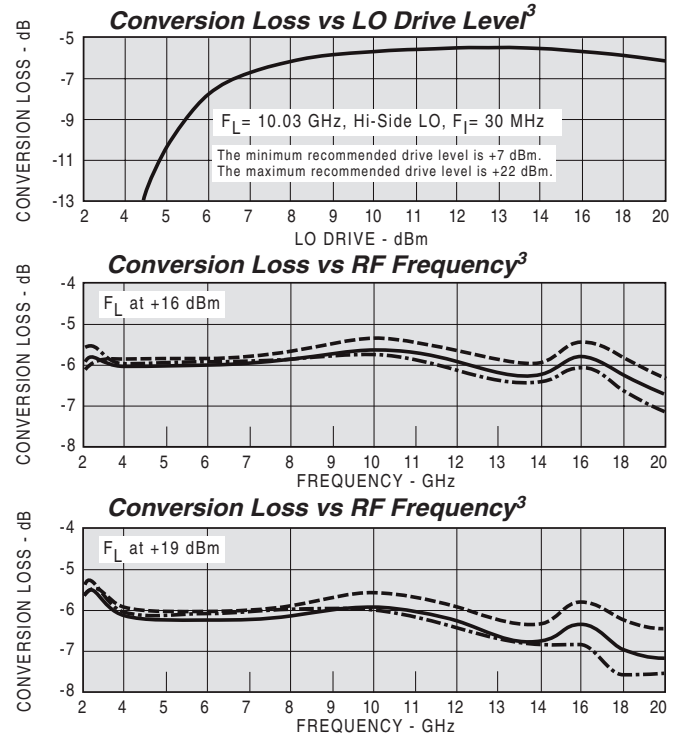
TYPICAL PERFORMANCE



¹Level 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.



² 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.



³Conversion 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.

