



UMX-4220
Double Balanced Mixer
3700 to 4200 MHz

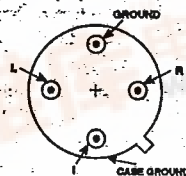
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FEATURES

- 1.5:1 VSWR
- 4.5 dB Conversion Loss/Noise Figure
- Low Cost

APPLICATIONS

- Low Cost, High Performance
- 3.7 to 4.2 GHz Downconverter in TVRO Applications
- Instrumentation and Test Equipment



TO-8M, p. 16-47

DESCRIPTION

The UMX Series double-balanced mixers feature exceptionally high isolation and good harmonically-related intermodulation product suppression. They are packaged in compact easy-to-use hermetically sealed TO-8 cans. The UMX-4220 is a microwave mixer designed to meet the need for a low cost,

high performance 3.7 to 4.2 GHz downconverter in TVRO applications. Typical conversion loss is 4.5 dB with a low-side LO and 5.0 with a high-side LO for either an 880 or 1125 MHz IF frequency. LO to RF isolation exceeds 30 dB.

ELECTRICAL SPECIFICATIONS (Measured in a 50-ohm system)

Symbol	Characteristic	Operating Frequencies GHz			Power Level			Specifications		Unit
		f_{LO}	f_{RF}	f_{IF}	LO Port dBm (typ)	Model Suffix	RF Port dBm	Typical $T_c = 25^\circ\text{C}$	Guaranteed $T_c = -55^\circ\text{ to } +100^\circ\text{C}$	
BW	Operating Frequency Range	2.4-5.5	3.7-4.2	DC-1.3						GHz
CL	SSB Conversion Loss	$>f_{RF}$ $<f_{RF}$	3.7-4.2 3.7-4.2	DC-1.3 DC-1.3	+7-+10 +7-+10			5.0 4.5	6.0 6.0	dB max
—	Conversion Loss Flatness over any 40 MHz segment of f_{RF} 3.7 to 4.2 GHz peak-to-peak	2.3-5.5	3.7-4.2	DC-1.3	+7-+10			0.1	—	dB typ
NF	SSB Noise Figure	$>f_{RF}$ $<f_{RF}$	3.7-4.2 3.7-4.2	0.03-1.3 0.03-1.3	+6-+8 +6-+8			5.0 4.5	6.0 6.0	dB max
ISOL	Isolation Port-to-Port	L-R	2.4-5.5	—				35	25	dB min
		R-L	—	3.7-4.2				35	—	
		R-I	—	3.7-4.2				20	—	
		L-I	2.4-5.5	—				25	20	
—	VSWR (50 ohm)	L	2.4-5.5	—				1.5:1	—	max
		R	—	3.7-4.2				1.5:1	—	
		I	—	0.01-1.3				1.5:1	—	
CC	Conversion Compression Point (1dB)	2.3-5.5	3.7-4.2	≤ 1.3	$\geq +7$			+1	—	dBm typ
IP ₃	Third-Order Two-Tone Intercept Point	2.4-5.5	3.7-4.2	≤ 1.3	$\geq +7$			+12	—	dBm typ

NOTE: Guaranteed specifications apply with LO input power of +7 dBm.

MAXIMUM RATINGS

Peak Input Current @ 25°C	100 mA DC
Pin Temperature	260°C for 10 seconds
Operating Case Temperature	-55°C to +100°C
Storage Temperature	-65°C to +100°C
Continuous RF Input Power	200 mW @ +25°C 100 mW @ +100°C

WEIGHT: (typical) 0.06 oz.



TYPICAL PERFORMANCE AT 25°C

Typical Single Tone Intermodulation Harmonic Suppression at 25°C (dB below desired output)

Harmonics of f_{IF}	1	2	3	4
4	>70	>70	>70	>70
3	65	>70	65	>70
2	50	55	50	58
1	0	25	18	40
	1	2	3	4

Typical Harmonic Intermodulation Suppression for mixer generated harmonics of the input signals. Suppression numbers are for a f_{RF} signal level at -10 dBm and f_{LO} signal level of +7 dBm.

