

MC1502

10 TO 1500 MHz TO-8 DOUBLE-BALANCED MIXER

Typical Values

	MC1502
LO & RF	10-1500 MHz
IF	DC to 800
Third Order I.P.	+12.0 dBm
Conversion Loss	6.0 dB
LO Drive (nominal)	+7.0 dBm
High Isolation (LO to RF)	40.0 dB

SPECIFICATIONS*

**Guaranteed
-55 to +85 °C**

Parameter	Port	Frequency (MHz)	Typ. (dB)	Max. (dB)
SSB Conversion Loss and SSB Noise Figure	f_R	20 to 600	6.0	7.5
	f_L	10 to 800	6.0	7.5
	f_I	DC to 200	6.0	7.5
	f_R	10 to 1200	7.0	8.0
	f_L	10 to 1400	7.0	8.0
	f_I	DC to 200	7.0	8.0
	f_R	10 to 1500	7.5	8.5
	f_L	10 to 1500	7.5	8.5
	f_I	DC to 200	7.5	8.5
	f_I	DC to 1000	8.5	9.5
Conversion Comp. Desensitization Level	f_R	Level = 0 dBm	—	1.0
	f_{R2}	Level = -2 dBm	—	1.0
Isolation	f_L at R	10 to 800	Typ. (dB)	Min. (dB)
			40	35
	f_L at I	800 to 1200	32	25
			35	25
	f_L at R	1200 to 1500	25	18
			30	25
f_L at I		25	14	
Third Order Intercept		LO = +7.0 dBm	+12.0 dBm	—

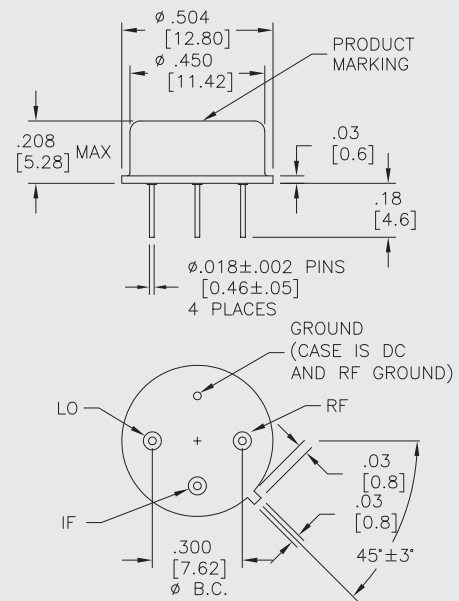
- * 1) Measured in a 50-ohm system with nominal LO drive of +7.0 dBm as a downconverter.
- 2) Guaranteed conversion loss increases 0.5 dB for -55°C to +85°C temperature range.
- 3) The I-port frequency range extends to DC for phase detection, pulse modulation, or attenuation applications.
- 4) Noise figure is specified only down to 1 MHz for the IF frequency to avoid 1/F contributions.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65 to +125 °C
Peak Input Power	+23 dBm @ 25° C derate to +17 dBm @ 100° C
Peak Input Current @ 25° C	50 mA DC

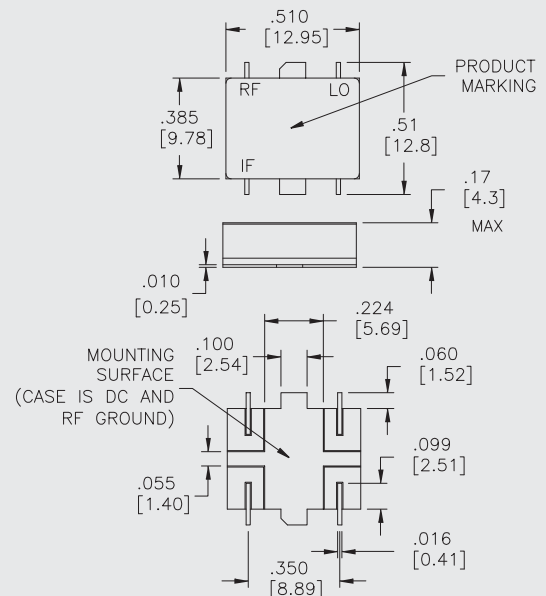
MC1502

TO-8 Package for Mixer



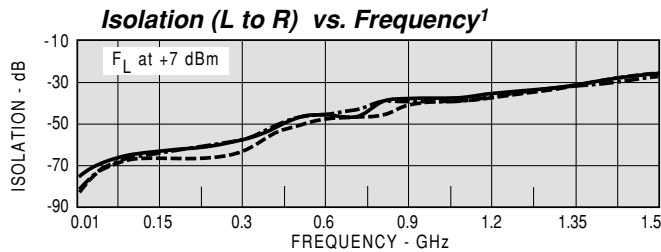
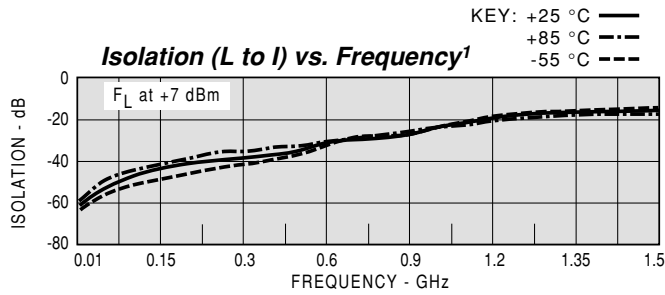
MTS1502

Surface Mount Package for Mixer

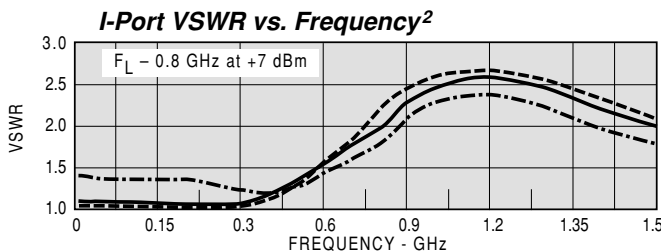
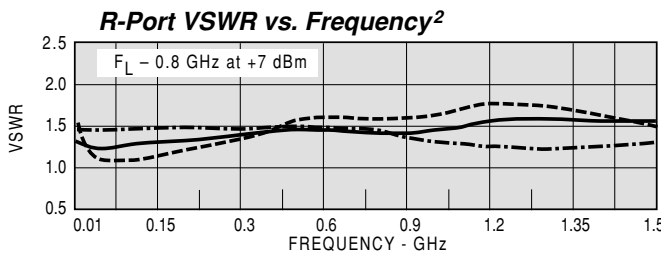
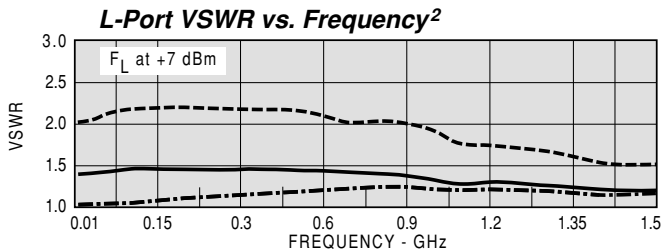


DIMENSIONS ARE IN INCHES [MILLIMETERS]

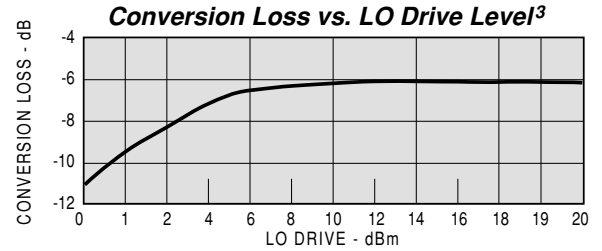
TYPICAL PERFORMANCE



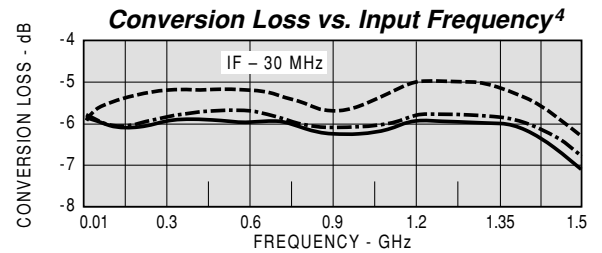
¹ Level of the f_L signal fed through to the R- and I-ports with respect to the level of the f_L signal at the L-port.



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.



³ The minimum recommended drive level is +4 dBm. The maximum recommended drive level is +18 dBm.



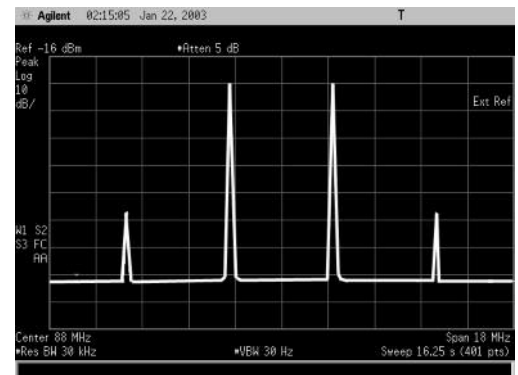
⁴ Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port (f_R) with f_I at 30 MHz. Data plotted with an f_L level of +7.0 dBm.

Harmonic Intermodulation Products (single tone)

HARMONICS OF f_R	0	1	2	3	4	5
5	79.9	81.3	76.4	76.9	75.0	75.4
4	72.7	74.9	70.6	69.4	70.6	67.7
3	65.4	72.7	64.8	69.5	65.4	68.1
2	75.1	71.5	72.3	65.8	72.9	67.1
1	53.3	54.4	54.2	55.4	57.4	55.1
0	47.5	48.6	51.0	45.6	58.5	44.1
	46.3	39.8	46.0	39.9	54.4	41.4
	53.1	42.8	50.3	43.0	57.9	47.3
	18.1	0.0	25.8	14.6	32.4	22.8
	16.8	0.0	28.4	20.0	34.1	35.9
		7.0	21.3	8.2	24.2	22.4
		12.0	25.6	11.5	29.0	29.7

$F_R = 410$ MHz @ -10 dBm $F_L = 500$ MHz
 $F_L @ +7$ dBm $F_L @ +10$ dBm

IP3



$F_R = 410, 414$ MHz @ -10 dBm $F_L = 500$ MHz @ +10 dBm
Vertical Scale: 10 dB/DIV