

# MC1507 10 TO 1500 MHz TO-8 DOUBLE-BALANCED MIXER

**Typical Values**

<b>LO &amp; RF</b> .....	<b>10-1500 MHz</b>
<b>IF</b> .....	<b>DC to 1000</b>
<b>Third Order I.P.</b> .....	<b>+23.0 dBm</b>
<b>Conversion Loss</b> .....	<b>6.5 dB</b>
<b>LO Drive (nominal)</b> .....	<b>+15.0 dBm</b>
<b>High Isolation (LO to RF)</b> .....	<b>35.0 dB</b>

**MC1507**

## 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	7.0	8.5
	$f_L$	10 to 800	7.0	8.5
	$f_I$	1 to 200	7.0	8.5
	$f_R$	10 to 1500	7.5	9.0
	$f_L$	10 to 1500	7.5	9.0
	$f_I$	1 to 200	7.5	9.0
Conversion Comp. Desensitization Level	$f_{R2}$	Level = +3 dBm	—	1.0
	$f_{R2}$	Level = +1 dBm	—	1.0
Isolation	$f_L$ at R	10 to 800	Typ. (dB)	Min. (dB)
			40	32
	$f_L$ at I	800 to 1200	35	25
			35	22
	$f_L$ at R	1200 to 1500	25	20
			35	22
$f_L$ at I	24	16		
Third Order Intercept		LO = +15.0 dBm	+23.0 dBm	—

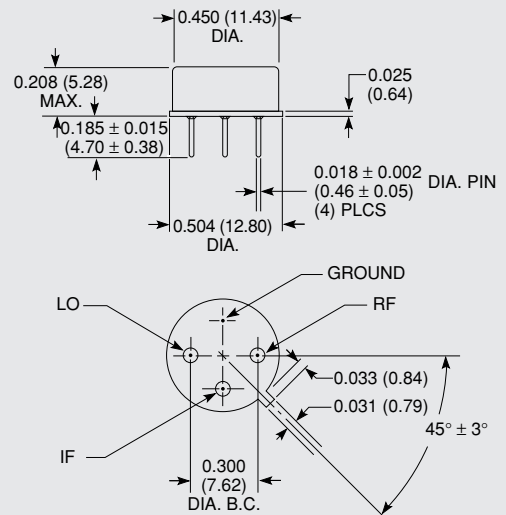
- \* 1) Measured in a 50-ohm system with nominal LO drive of +15.0 dBm as a downconverter.
- 2) The I-port frequency range extends to DC for phase detection, pulse modulation, or attenuation applications.
- 3) Noise figure is specified only down to 1 MHz for the IF frequency to avoid 1/F contributions.

## ABSOLUTE MAXIMUM RATINGS

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

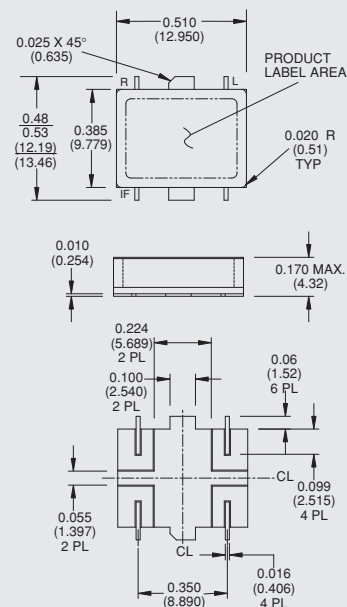
## MC1507

### TO-8 Package for Mixer



## MTS1507

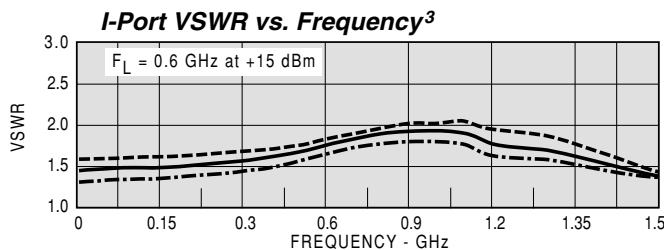
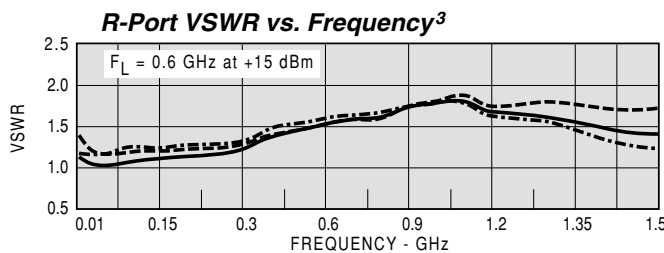
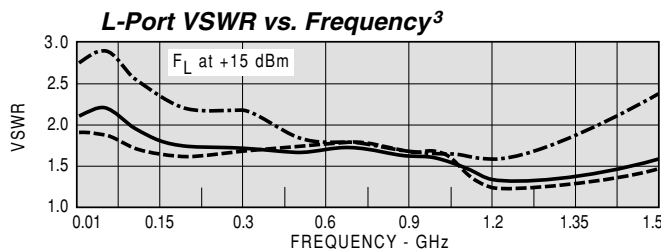
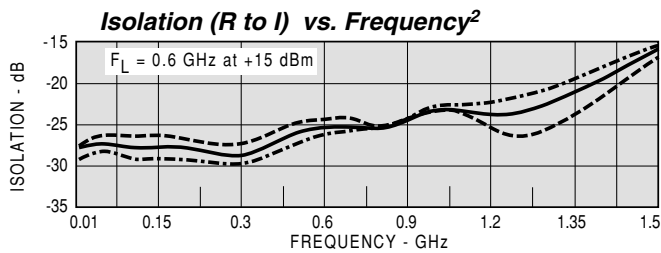
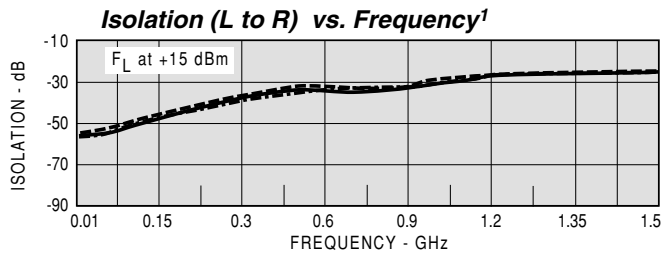
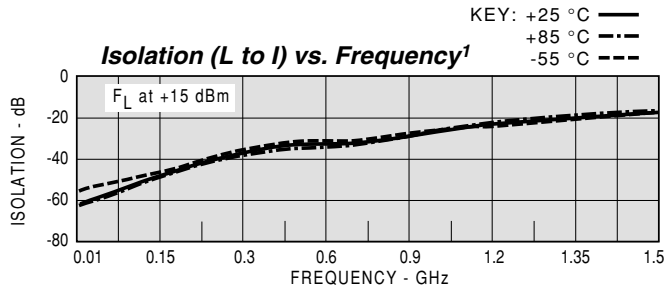
### Surface Mount Package for Mixer



DIMENSIONS ARE IN INCHES (MILLIMETERS)



## TYPICAL PERFORMANCE

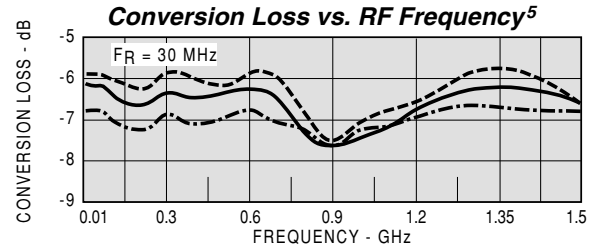
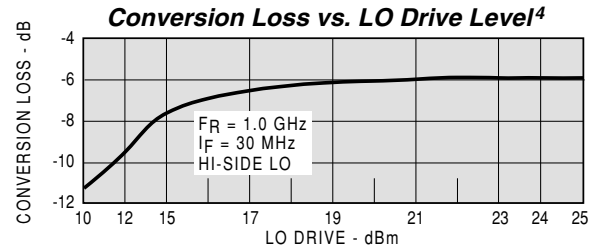


<sup>1</sup> Level of the  $f_I$  signal fed through to the R- and I-ports with respect to the level of the  $f_L$  signal at the L-port.

<sup>2</sup> Level of the  $f_R$  signal fed through the I-port with respect to the level of the  $f_R$  signal at the R-port.

<sup>3</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.

## TYPICAL PERFORMANCE



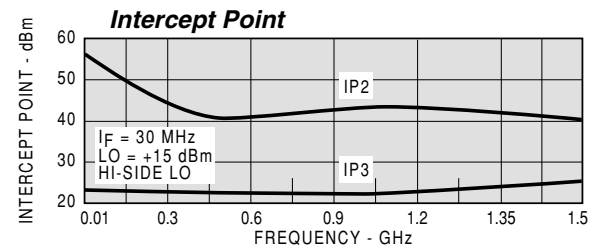
<sup>4</sup> The minimum recommended drive level is +15 dBm. The maximum recommended drive level is +25 dBm.

<sup>5</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. Data plotted with an  $f_L$  level of +15.0 dBm.

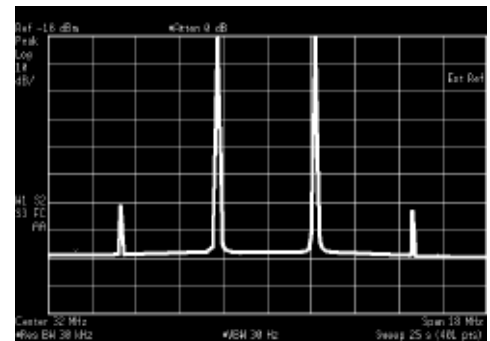
### Harmonic Intermodulation Products (single tone)

HARMONICS OF $f_R$	0	1	2	3	4	5
5	96.1	91.0	90.4	91.1	90.5	90.5
4	96.4	98.2	96.3	96.6	96.2	96.2
3	95.8	90.6	90.8	91.1	90.7	90.3
2	96.7	96.4	96.0	95.4	96.4	94.8
1	86.5	81.3	83.8	70.8	86.9	89.1
0	97.8	80.1	80.5	65.7	83.9	83.0
5	38.7	43.7	75.1	55.6	86.4	68.1
4	37.8	41.7	63.7	59.1	68.6	55.8
3	13.0	0.0	32.9	22.9	35.7	36.3
2	12.2	0.0	36.7	24.4	34.2	34.1
1		-6.1	8.4	3.9	14.3	9.1
0		-4.1	12.8	6.7	17.8	12.1

FR = 1000 MHz @ -10 dBm      FL = 1030 MHz  
FL @ +15 dBm      FL @ +18 dBm



### IP3



FR = 1500/1496 MHz @ -10 dBm      FL = 1530 MHz @ +15 dBm  
Vertical Scale: 10 dB/DIV