

# MC1505

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

| Typical Values                  | MC1505      |
|---------------------------------|-------------|
| LO & RF .....                   | 10-1500 MHz |
| IF .....                        | DC to 1000  |
| Third Order I.P. ....           | +20.0 dBm   |
| Conversion Loss .....           | 7.5 dB      |
| LO Drive (nominal) .....        | +10.0 dBm   |
| High Isolation (LO to RF) ..... | 35.0 dB     |

### SPECIFICATIONS\*

| Parameter                                | Port       | Frequency (MHz) | Guaranteed<br>-55 to +85 °C |           |
|--|------------|-----------------|-----------------------------|-----------|
|  |            |                 | Typ. (dB)                   | Max. (dB) |
| SSB Conversion Loss and SSB Noise Figure | $f_R$      | 20 to 600       | 6.5                         | 8.0       |
|  | $f_L$      | 10 to 800       | 6.5                         | 8.0       |
|  | $f_I$      | DC to 200       | 6.5                         | 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      | 8.0                         | 9.0       |
| Conversion Comp. Desensitization Level   | $f_R$      | Level = +7 dBm  | —                           | 1.0       |
|  | $f_{R2}$   | Level = +5 dBm  | —                           | 1.0       |
| Isolation                                | $f_L$ at R | 10 to 800       | Typ. (dB)                   | Min. (dB) |
|  |            |                 | 40                          | 27        |
|  | $f_L$ at I | 800 to 1200     | 35                          | 25        |
|  |            |                 | 30                          | 24        |
|  | $f_L$ at R | 1200 to 1500    | 25                          | 20        |
| 25                                       |            |                 | 20                          |           |
| $f_L$ at I                               |            | 24              | 15                          |           |
| Third Order Intercept                    |            | LO = +10.0 dBm  | +17.0 dBm                   | —         |
|  |            | LO = +13.0 dBm  | +20.0 dBm                   | —         |

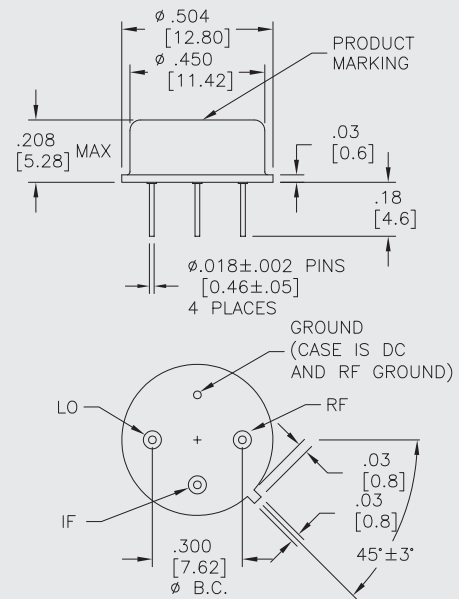
- \* 1) Measured in a 50-ohm system with nominal LO drive of +10.0 dBm as a downconverter.
- 2) The I-port frequency range extends to DC for phase detection, pulse modulation, or attenuation applications.
- 3) Noise figure is specified only down to 1 MHz for the IF frequency to avoid 1/f contributions.

### ABSOLUTE MAXIMUM RATINGS

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

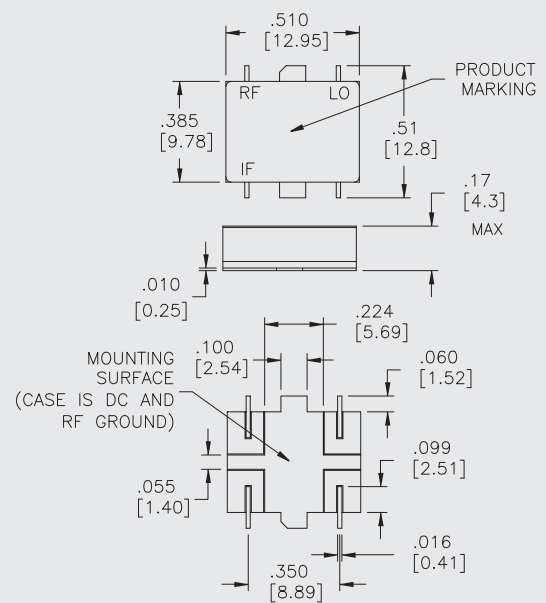
### MC1505

#### TO-8 Package for Mixer



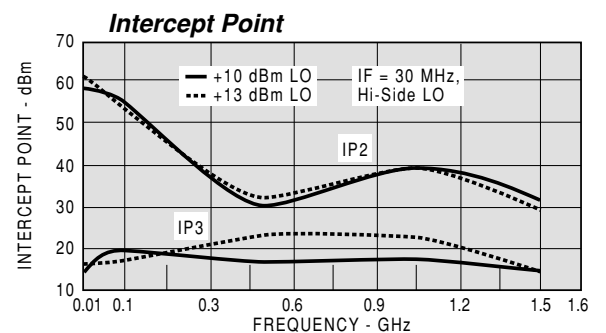
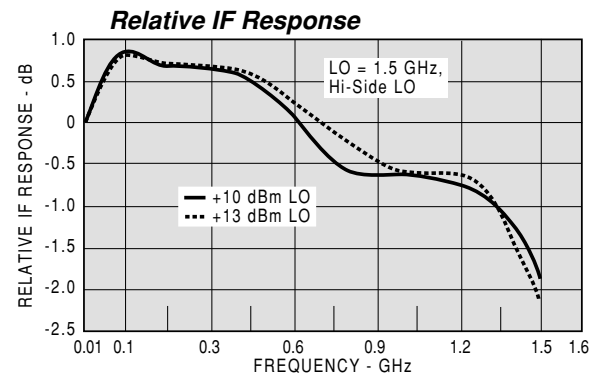
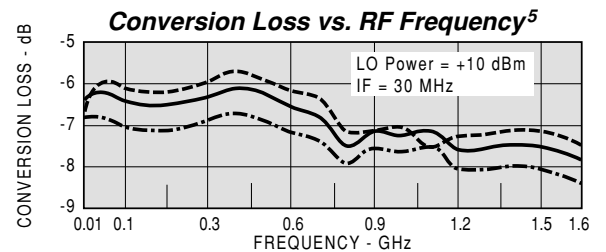
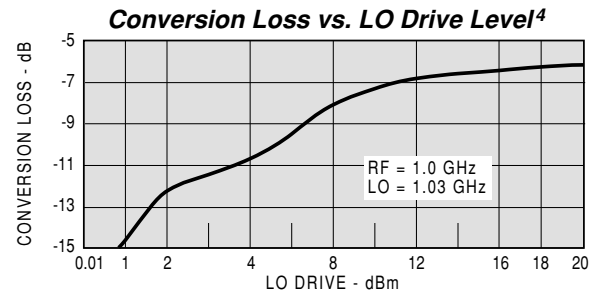
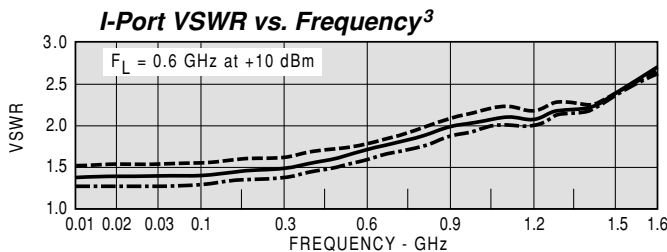
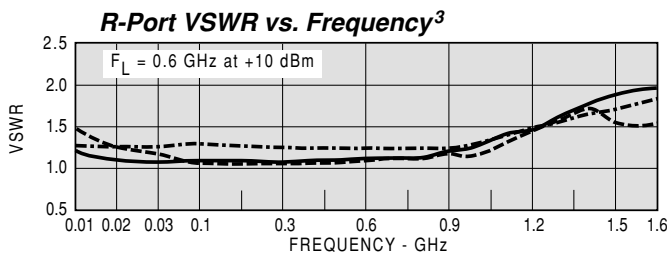
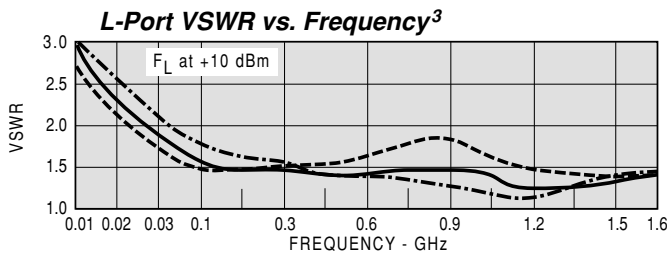
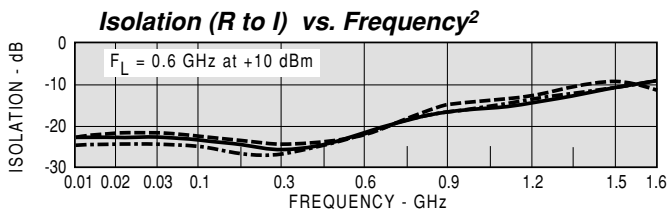
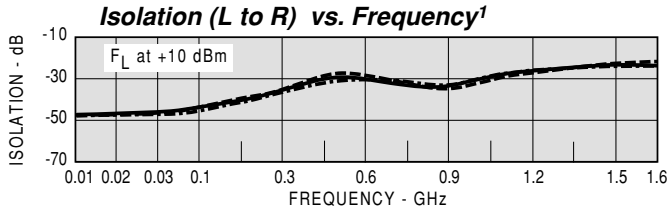
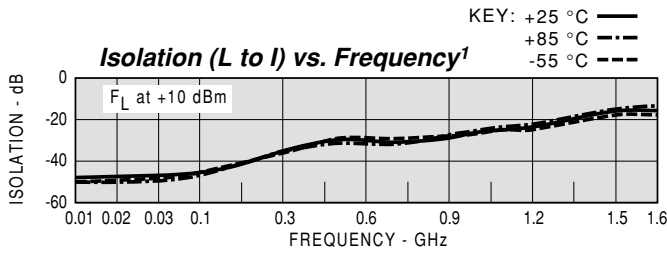
### MTS1505

#### Surface Mount Package for Mixer



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**



**Harmonic Intermodulation Products (single tone)**

| HARMONICS OF f <sub>R</sub> | 0    | 1    | 2    | 3    | 4    | 5    |
|-----------------------------|------|------|------|------|------|------|
| 5                           | 83.5 | 75.5 | 82.4 | 74.1 | 83.3 | 73.3 |
| 4                           | 84.8 | 80.0 | 84.3 | 75.6 | 84.1 | 76.2 |
| 3                           | 82.1 | 80.9 | 81.8 | 80.2 | 79.4 | 80.8 |
| 2                           | 82.3 | 73.1 | 81.9 | 73.0 | 83.5 | 73.9 |
| 1                           | 70.0 | 56.9 | 69.3 | 55.9 | 75.5 | 53.8 |
| 0                           | 67.5 | 65.2 | 69.8 | 57.9 | 80.9 | 55.1 |
| 5                           | 72.9 | 53.9 | 66.6 | 53.9 | 63.5 | 54.1 |
| 4                           | 70.7 | 55.7 | 69.7 | 55.8 | 67.2 | 55.6 |
| 3                           | 22.8 | 0.0  | 33.9 | 11.5 | 39.9 | 21.5 |
| 2                           | 23.7 | 0.0  | 36.5 | 15.1 | 44.0 | 38.2 |
| 1                           |      | 20.8 | 18.3 | 36.1 | 28.0 | 25.7 |
| 0                           |      | 28.8 | 23.9 | 41.5 | 34.7 | 33.9 |

F<sub>R</sub> = 100 MHz @ -10 dBm, F<sub>L</sub> @ +10 dBm (white box)  
F<sub>L</sub> = 130 MHz, F<sub>L</sub> @ +13 dBm (grey box)

<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> Level of the f<sub>R</sub> signal fed through the I-port with respect to the level of the f<sub>R</sub> 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.  
<sup>4</sup> The minimum recommended drive level is +10 dBm. The maximum recommended drive level is +20 dBm.  
<sup>5</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. Data plotted with an f<sub>L</sub> level of +10.0 dBm.