



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 | 1 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 | 1 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 | 1 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 | — |

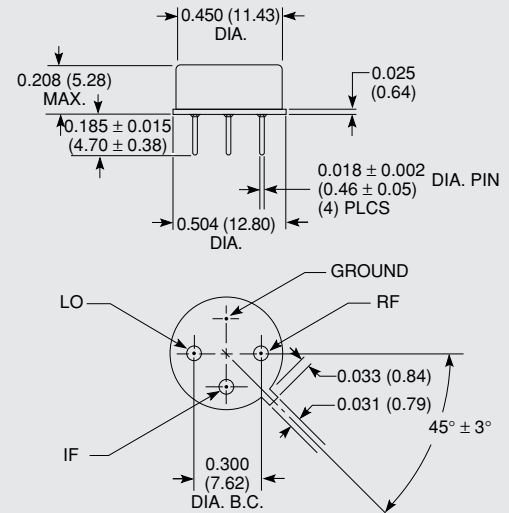
- * 1) Measured in a 50-ohm system with nominal LO drive of +7.0 dBm as a downconverter.
- 2) Guaranteed conversion loss increases 0.5 dB for -55°C to +85°C temperature range.
- 3) The I-port frequency range extends to DC for phase detection, pulse modulation, or attenuation applications.
- 4) Noise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

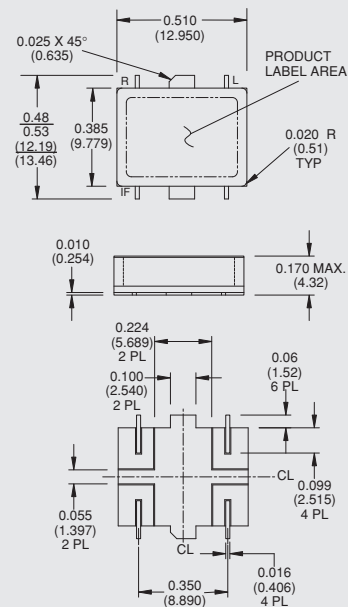
MC1502

TO-8 Package for Mixer



MTS1502

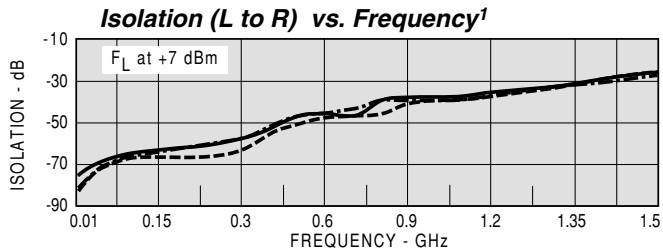
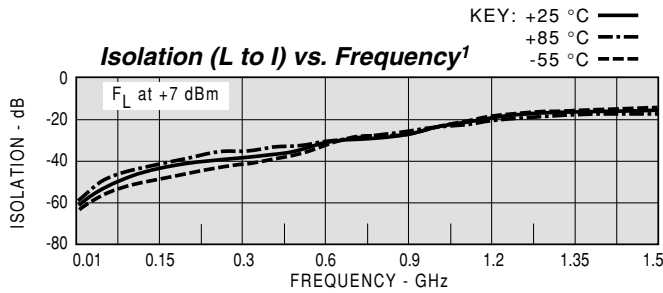
Surface Mount Package for Mixer



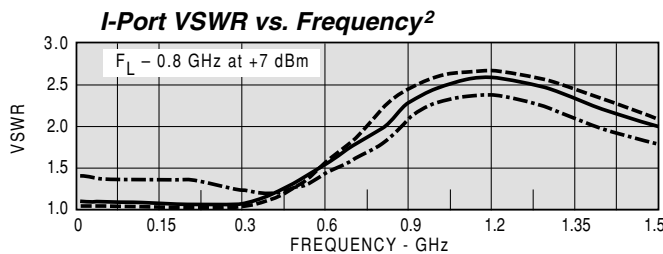
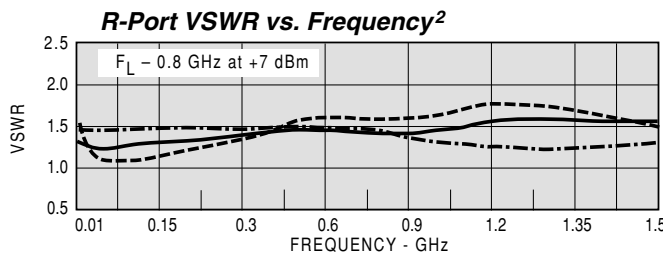
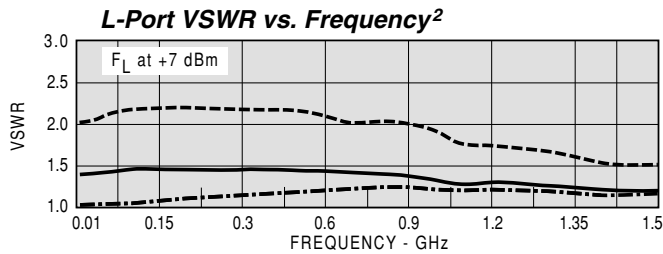
DIMENSIONS ARE IN INCHES (MILLIMETERS)



TYPICAL PERFORMANCE

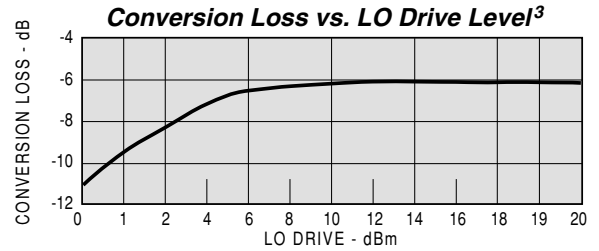


¹ Level of the f_L signal fed through to the R- and I-ports with respect to the level of the f_L signal at the L-port.

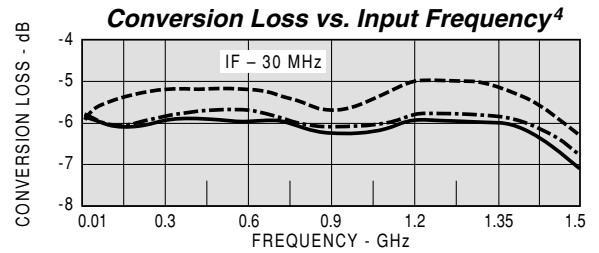


² VSWR of the I- and R-ports in a 50-ohm system. Some variation in the R-port VSWR will occur as a function of the L-port frequency as shown above.

TYPICAL PERFORMANCE



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



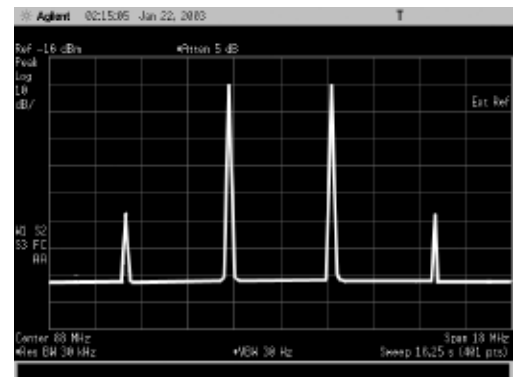
⁴ Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port (f_R) with f_I at 30 MHz. Data plotted with an f_L level of +7.0 dBm.

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