

# Surface Mount Frequency Mixer

Level 7 (LO Power +7 dBm) 5 to 1000 MHz

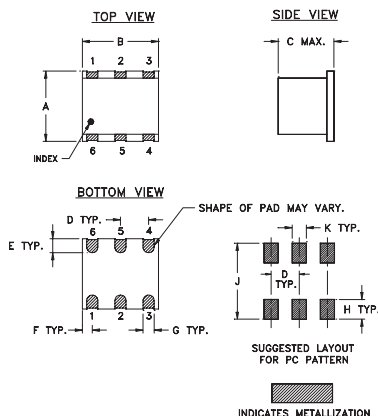
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| RF Power                                                        | 200mW          |
| IF Current                                                      | 40mA           |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Pin Connections

|        |       |
|--------|-------|
| LO     | 1     |
| RF     | 4     |
| IF     | 5     |
| GROUND | 2,3,6 |

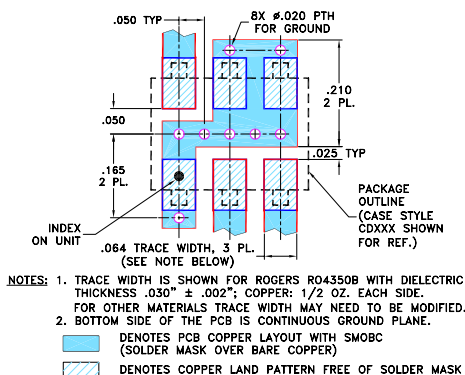
## Outline Drawing



## Outline Dimensions (inch mm)

|      |      |      |      |      |       |
|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F     |
| .250 | .31  | .20  | .100 | .050 | .055  |
| 6.35 | 7.87 | 5.08 | 2.54 | 1.27 | 1.40  |
| G    | H    | J    | K    |      | wt    |
| .040 | .070 | .270 | .050 |      | grams |
| 1.02 | 1.78 | 6.86 | 1.27 |      | 0.50  |

Demo Board MCL P/N: TB-03  
Suggested PCB Layout (PL-052)



## Features

- excellent L-R isolation, 40 dB typ.
- conversion loss, 6.67 dB typ.
- small size, 0.25"x0.31"x0.2"

## Applications

- cellular
- GSM
- ISM



CASE STYLE: TT240  
PRICE: \$6.95 ea. QTY (1-9)

+ RoHS compliant in accordance  
with EU Directive (2002/95/EC)

The +Suffix identifies RoHS Compliance. See our web site  
for RoHS Compliance methodologies and qualifications.

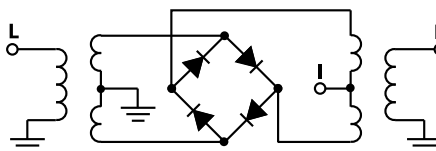
## Electrical Specifications

| FREQUENCY<br>(MHz)                                                                        |         | CONVERSION LOSS<br>(dB) |          |      |                        | LO-RF ISOLATION<br>(dB)                                                    |      |      |      |      |      | LO-IF ISOLATION<br>(dB)                                                       |      |      |      |      |      | IP3<br>at center<br>band<br>(dBm) |      |      |
|-------------------------------------------------------------------------------------------|---------|-------------------------|----------|------|------------------------|----------------------------------------------------------------------------|------|------|------|------|------|-------------------------------------------------------------------------------|------|------|------|------|------|-----------------------------------|------|------|
| LO/RF                                                                                     | IF      | $\bar{X}$               | $\sigma$ | Max. | Total<br>Range<br>Max. | L                                                                          |      | M    |      | U    |      | L                                                                             |      | M    |      | U    |      |                                   |      |      |
| $f_L$ - $f_U$                                                                             |         |                         |          |      |                        | Typ.                                                                       | Min. | Typ. | Min. | Typ. | Min. | Typ.                                                                          | Min. | Typ. | Min. | Typ. | Min. |                                   | Typ. | Min. |
|                                                                                           |         |                         |          |      |                        |                                                                            |      |      |      |      |      |                                                                               |      |      |      |      |      |                                   |      |      |
| 5-1000                                                                                    | DC-1000 | 6.67                    | .26      | 8.0  | 9.5                    | 60                                                                         | 40   | 40   | 20   | 25   | 18   | 55                                                                            | 30   | 30   | 20   | 20   | 12   | 17                                |      |      |
| 1 dB COMP.: +1 dBm typ.<br>For phase detection, DC output positive with in-phase RF & LO. |         |                         |          |      |                        | L = low range [ $f_L$ to $10 f_L$ ]<br>M = mid band [ $2 f_L$ to $f_U/2$ ] |      |      |      |      |      | M = mid range [ $10 f_L$ to $f_U/2$ ]<br>U = upper range [ $f_U/2$ to $f_U$ ] |      |      |      |      |      |                                   |      |      |

## Typical Performance Data

| Frequency<br>(MHz) |        | Conversion<br>Loss<br>(dB) | Isolation<br>L-R<br>(dB) | Isolation<br>L-I<br>(dB) | VSWR<br>RF Port<br>(:1) | VSWR<br>LO Port<br>(:1) |
|--------------------|--------|----------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| RF                 | LO     | LO<br>+7dBm                | LO<br>+7dBm              | LO<br>+7dBm              | LO<br>+7dBm             | LO<br>+7dBm             |
| 5.00               | 35.00  | 6.93                       | 67.42                    | 57.23                    | 1.35                    | 2.44                    |
| 10.00              | 40.00  | 7.00                       | 66.49                    | 56.87                    | 1.25                    | 2.37                    |
| 20.00              | 50.00  | 6.97                       | 65.94                    | 56.78                    | 1.22                    | 2.52                    |
| 35.15              | 65.15  | 6.92                       | 62.92                    | 55.59                    | 1.22                    | 2.57                    |
| 50.00              | 80.00  | 6.86                       | 60.51                    | 53.87                    | 1.23                    | 2.54                    |
| 65.30              | 95.30  | 6.89                       | 58.52                    | 52.15                    | 1.23                    | 2.49                    |
| 100.00             | 70.00  | 6.84                       | 55.07                    | 48.85                    | 1.22                    | 2.44                    |
| 155.76             | 125.76 | 6.72                       | 52.10                    | 46.19                    | 1.22                    | 2.43                    |
| 200.00             | 170.00 | 6.70                       | 49.75                    | 44.71                    | 1.23                    | 2.36                    |
| 246.21             | 216.21 | 6.75                       | 48.10                    | 43.71                    | 1.23                    | 2.37                    |
| 306.52             | 276.52 | 6.96                       | 45.81                    | 41.99                    | 1.25                    | 2.40                    |
| 366.82             | 336.82 | 6.97                       | 44.49                    | 39.66                    | 1.27                    | 2.39                    |
| 427.12             | 397.12 | 6.99                       | 42.09                    | 37.81                    | 1.30                    | 2.44                    |
| 500.00             | 470.00 | 7.03                       | 39.89                    | 35.06                    | 1.36                    | 2.58                    |
| 577.88             | 547.88 | 7.29                       | 38.51                    | 32.59                    | 1.44                    | 2.74                    |
| 668.33             | 638.33 | 7.63                       | 36.87                    | 29.46                    | 1.56                    | 2.95                    |
| 758.79             | 728.79 | 7.68                       | 34.71                    | 26.72                    | 1.72                    | 3.17                    |
| 849.24             | 819.24 | 7.98                       | 33.07                    | 23.71                    | 1.95                    | 3.58                    |
| 909.55             | 879.55 | 8.51                       | 32.47                    | 22.35                    | 2.13                    | 3.70                    |
| 1000.00            | 970.00 | 8.90                       | 32.02                    | 20.21                    | 2.45                    | 3.80                    |

## Electrical Schematic



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For detailed performance specs  
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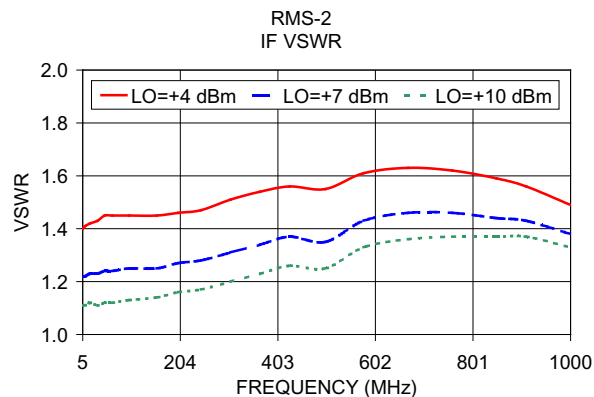
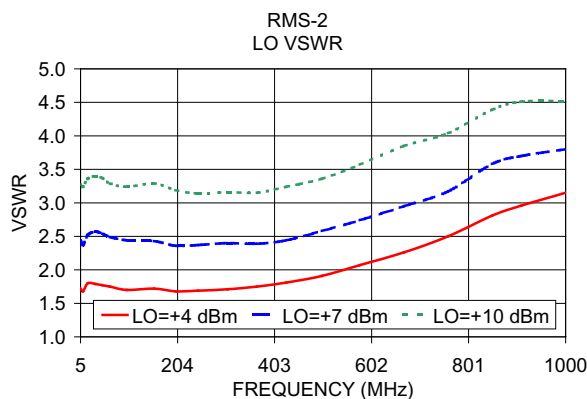
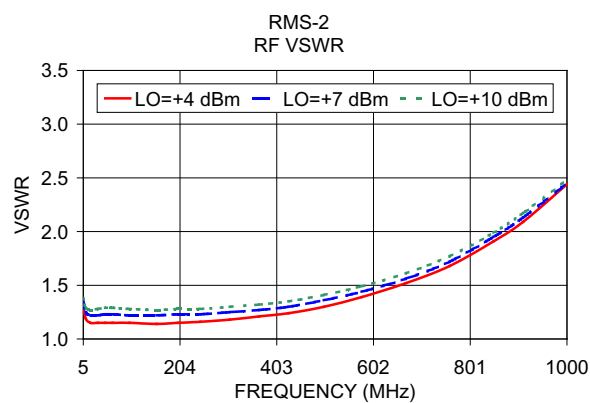
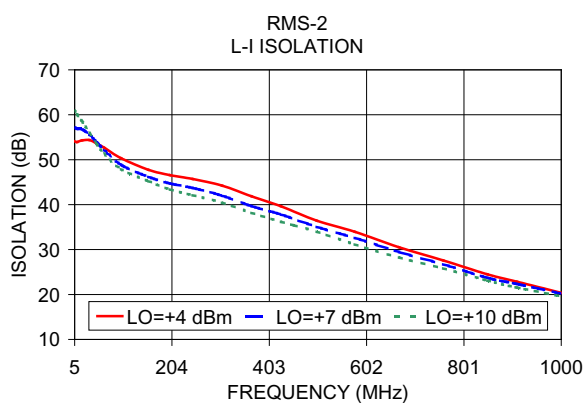
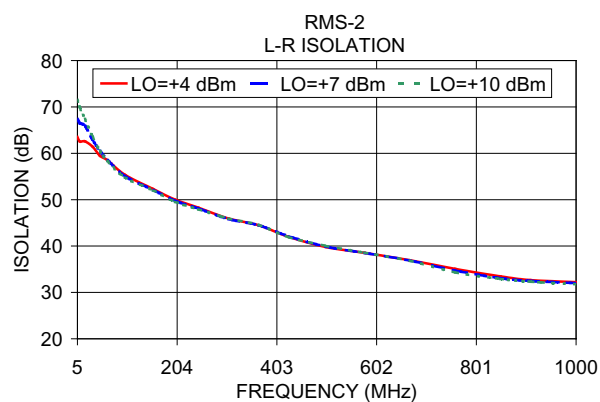
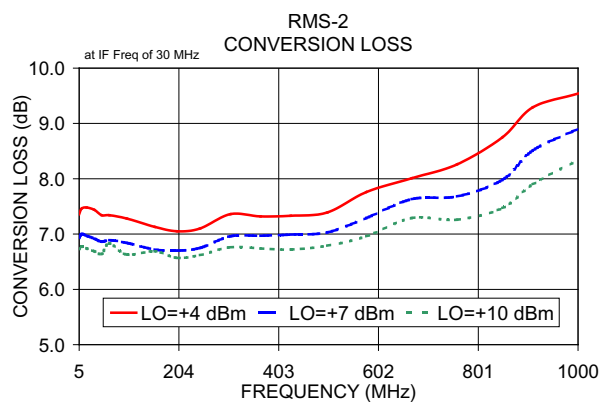
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# Performance Charts

**RMS-2+  
RMS-2**



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