

High IP3

# Frequency Mixer WIDE BAND

MCA-35LH+

Level 10 (LO Power+10 dBm) 500 to 3500 MHz



CASE STYLE: DZ883

## Maximum Ratings

|   |                |
|---|----------------|
| Operating Temperature   | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| RF Power  | 50 mW          |
| IF Current  | 40 mA          |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Pin Connections

|        |               |
|--------|---------------|
| LO     | 10            |
| RF     | 5             |
| IF     | 3             |
| GROUND | 1,2,4,6,7,8,9 |

## Features

- wide bandwidth, 500 to 3500 MHz
- excellent isolation, 30 dB typ. (1800-2500 MHz)
- good matching 2:1 VSWR typ. (over 1800-2800 MHz)
- small size 0.25"x0.3"x0.2"
- aqueous washable
- triple balanced mixer
- protected by US Patent 6,917,796

## Applications

- cellular
- PCN
- PDC
- DECT
- PHS
- WiMAX

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

## Electrical Specifications (T<sub>AMB</sub>=-55°C to 100°C)

| FREQUENCY (MHz)                      |         | CONVERSION LOSS (dB) |          |      | LO-RF ISOLATION (dB) |      | LO-IF ISOLATION (dB) |      | IP3 at center band (dBm) |
|--------------------------------------|---------|----------------------|----------|------|----------------------|------|----------------------|------|--------------------------|
| LO/RF f <sub>i</sub> -f <sub>o</sub> | IF      | $\bar{X}$            | $\sigma$ | Max. | Typ.                 | Min. | Typ.                 | Min. | Typ.                     |
| 500-3500                             | 10-1500 | 6.9                  | 0.1      | 8.9  |                      |      |                      |      |                          |
| 500-800                              | 10-300  | 6.3                  | 0.1      | 7.7  | 18                   | 11   | 32                   | 25   | 16                       |
| 800-1000                             | 10-200  | 7.1                  | 0.1      | 8.6  | 24                   | 17   | 30                   | 23   | 16                       |
| 1000-1800                            | 10-800  | 7.3                  | 0.1      | 8.9  | 29                   | 20   | 28                   | 20   | 16                       |
| 1800-2000                            | 10-200  | 6.3                  | 0.1      | 8.2  | 32                   | 25   | 30                   | 23   | 16                       |
| 1800-2500                            | 10-700  | 5.8                  | 0.1      | 8.2  | 32                   | 22   | 30                   | 21   | 16                       |
| 2000-3500                            | 10-1500 | 6.5                  | 0.1      | 8.7  | 29                   | 17   | 26                   | 15   | 16                       |

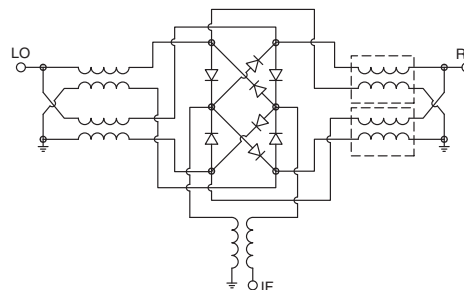
1 dB COMPR. +6 dBm typ.

• see individual band specs

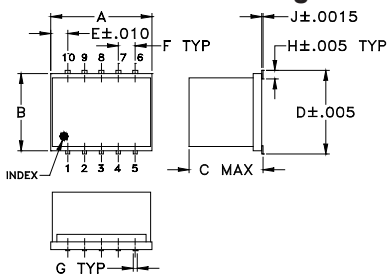
## Typical Performance Data

| Frequency (MHz) |         | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|---------|----------------------|--------------------|--------------------|-------------------|-------------------|
| RF              | LO      | LO +10dBm            | LO +10dBm          | LO +10dBm          | LO +10dBm         | LO +10dBm         |
| 500.00          | 530.00  | 6.10                 | 16.44              | 16.44              | 1.53              | 1.46              |
| 600.00          | 630.00  | 6.10                 | 17.92              | 17.92              | 1.83              | 1.23              |
| 700.00          | 730.00  | 6.04                 | 20.26              | 20.26              | 2.24              | 1.16              |
| 800.00          | 830.00  | 6.58                 | 23.10              | 23.10              | 2.77              | 1.17              |
| 1000.00         | 1030.00 | 7.04                 | 28.73              | 28.73              | 3.23              | 1.30              |
| 1300.00         | 1330.00 | 7.00                 | 31.09              | 31.09              | 2.56              | 1.49              |
| 1500.00         | 1530.00 | 7.71                 | 28.68              | 28.68              | 1.99              | 1.65              |
| 1600.00         | 1630.00 | 7.50                 | 28.46              | 28.46              | 2.11              | 1.66              |
| 1700.00         | 1730.00 | 6.81                 | 30.31              | 30.31              | 2.04              | 1.57              |
| 1800.00         | 1830.00 | 6.41                 | 31.73              | 31.73              | 1.95              | 1.58              |
| 2000.00         | 2030.00 | 6.20                 | 32.70              | 32.70              | 1.69              | 1.64              |
| 2300.00         | 2330.00 | 6.19                 | 31.39              | 31.39              | 1.61              | 1.61              |
| 2500.00         | 2530.00 | 6.34                 | 30.15              | 30.15              | 2.25              | 1.78              |
| 2700.00         | 2730.00 | 6.73                 | 30.75              | 30.75              | 3.06              | 1.72              |
| 2900.00         | 2930.00 | 7.09                 | 31.56              | 31.56              | 3.22              | 1.79              |
| 3000.00         | 3030.00 | 7.12                 | 30.82              | 30.82              | 3.34              | 1.75              |
| 3100.00         | 3130.00 | 7.32                 | 31.63              | 31.63              | 3.34              | 1.63              |
| 3300.00         | 3330.00 | 7.18                 | 31.03              | 31.03              | 3.19              | 1.43              |
| 3400.00         | 3430.00 | 6.86                 | 29.04              | 29.04              | 3.05              | 1.45              |
| 3500.00         | 3530.00 | 6.75                 | 26.75              | 26.75              | 2.75              | 1.42              |

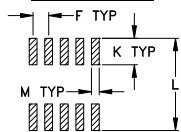
## Electrical Schematic



## Outline Drawing



### PCB Land Pattern

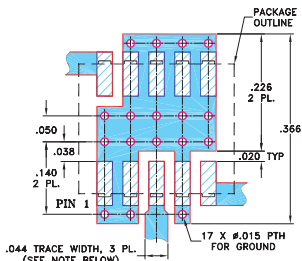


Suggested Layout, Tolerance to be within ±.002

## Outline Dimensions (inch/mm)

|      |      |      |      |      |      |      |      |      |      |      |      |       |
|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F    | G    | H    | J    | K    | L    | M    | wt    |
| .30  | .250 | .190 | .266 | .050 | .050 | .012 | .029 | .004 | .085 | .296 | .030 | grams |
| 7.62 | 6.35 | 4.83 | 6.76 | 1.27 | 1.27 | 0.30 | 0.74 | 0.10 | 2.16 | 7.52 | 0.76 | 0.5   |

## Demo Board MCL P/N: TB-144 Suggested PCB Layout (PL-045)



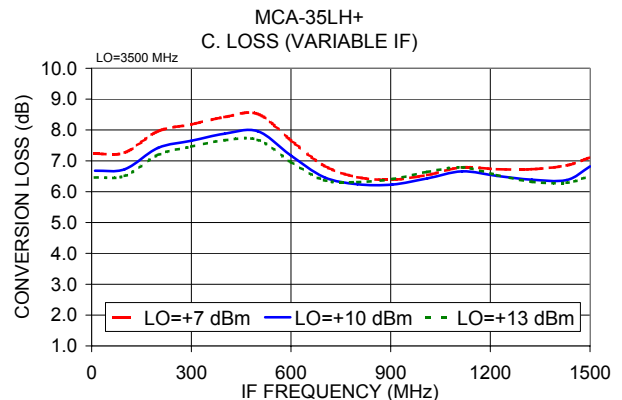
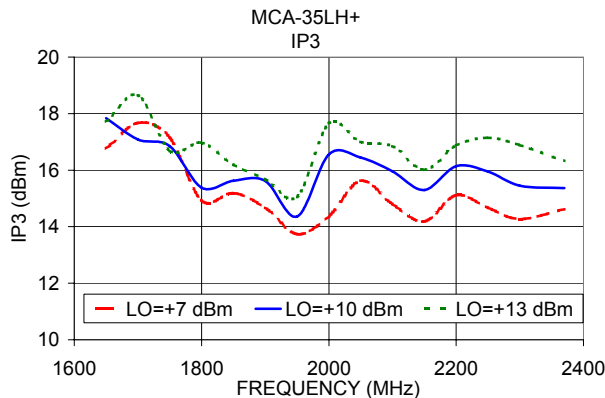
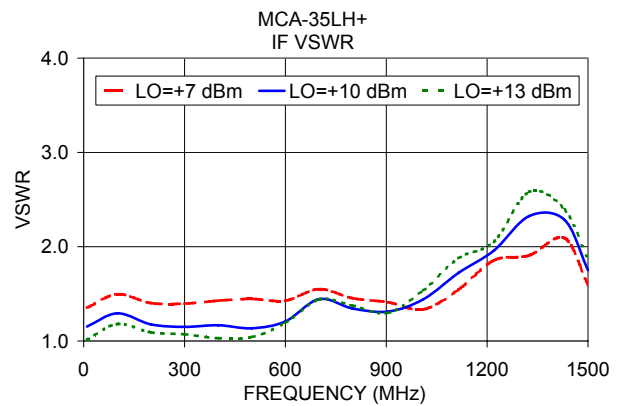
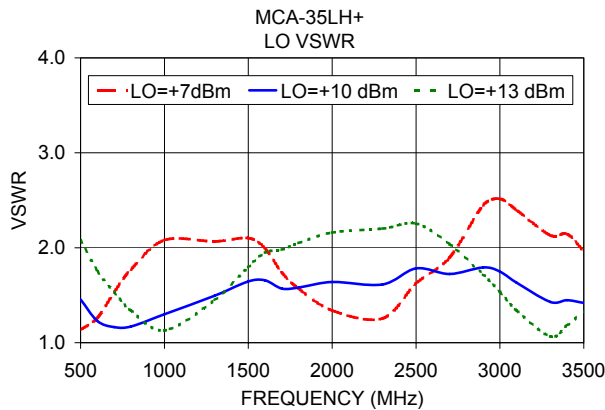
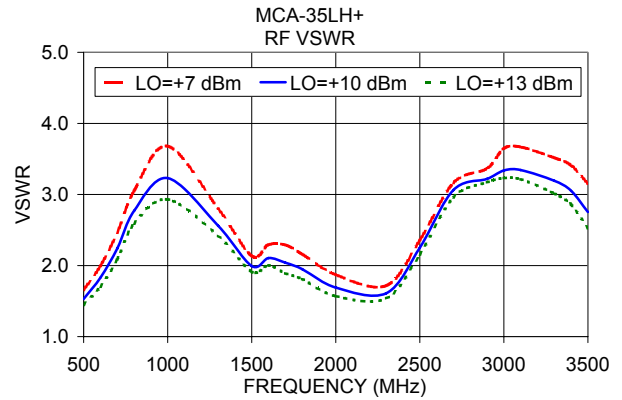
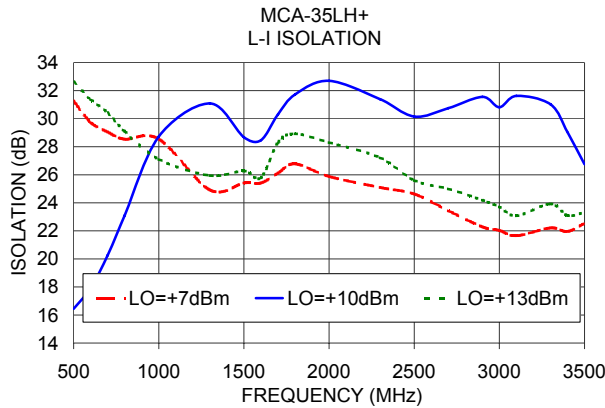
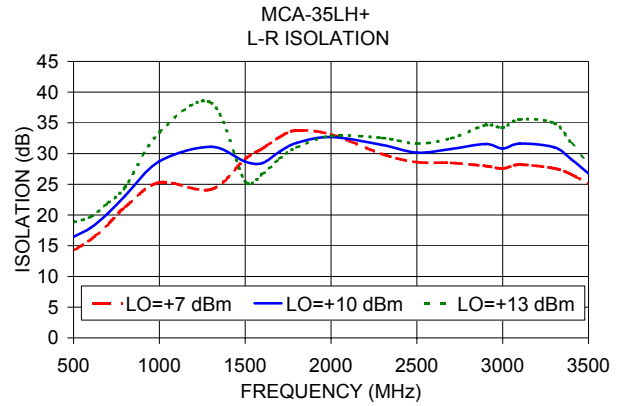
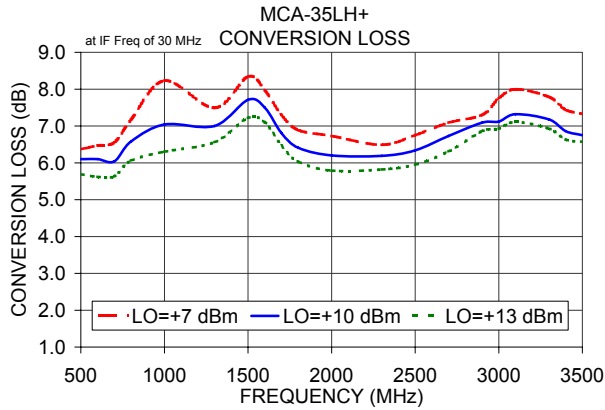
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.20" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
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