

Plug-In

# Frequency Mixer

Level 7 (LO Power +7 dBm) 0.04 to 400 MHz

TFM-3+



CASE STYLE: B13

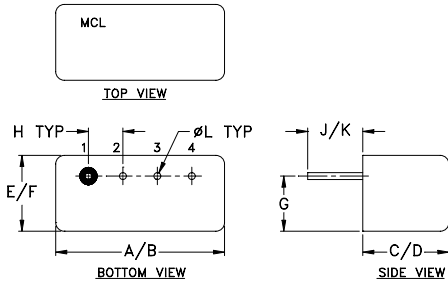
## Maximum Ratings

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

## Pin Connections

|             |   |
|-------------|---|
| LO          | 4 |
| RF          | 1 |
| IF          | 2 |
| GROUND      | 3 |
| CASE GROUND | 3 |

## Outline Drawing



## Outline Dimensions (inch/mm)

| A     | B     | C    | D    | E    | F     |
|-------|-------|------|------|------|-------|
| .480  | .500  | .240 | .255 | .210 | .230  |
| 12.19 | 12.70 | 6.10 | 6.48 | 5.33 | 5.84  |
| G     | H     | J    | K    | L    | wt    |
| .16   | .100  | .14  | .20  | .020 | grams |
| 4.06  | 2.54  | 3.56 | 5.08 | 0.51 | 1.9   |

## Features

- low conversion loss, 4.70 dB typ.
- excellent isolation, 50 dB typ. L-R, 45 dB typ. L-I
- rugged welded construction
- hermetically sealed
- phase detection, positive polarity

## Applications

- VHF/UHF
- aviation
- federal & defense communications

## Electrical Specifications

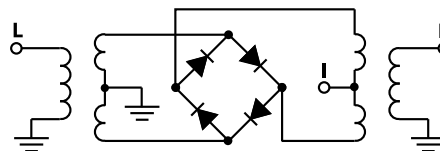
| FREQUENCY (MHz) |        | CONVERSION LOSS (dB) |          |      |                  | LO-RF ISOLATION (dB) |      |      |      |      |      | LO-IF ISOLATION (dB) |      |      |      |      |      |      |      |      |      |  |  |
|-----------------|--------|----------------------|----------|------|------------------|----------------------|------|------|------|------|------|----------------------|------|------|------|------|------|------|------|------|------|--|--|
| LO/RF           | IF     | Mid-Band             |          |      | Total Range Max. | L                    |      |      | M    |      |      | U                    |      |      | L    |      |      | M    |      |      | U    |  |  |
| $f_L$ - $f_U$   | DC-400 | $\bar{X}$            | $\sigma$ | Max. |                  | Typ.                 | Min. | Typ. | Min. | Typ. | Min. | Typ.                 | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. |  |  |
| 0.04-400*       | DC-400 | 4.70                 | 0.06     | 7.0  | 8.0              | 60                   | 50   | 50   | 35   | 35   | 25   | 55                   | 40   | 45   | 30   | 35   | 25   |      |      |      |      |  |  |

1 dB COMP.: +1 dBm typ.  
 \*Below 10°C,  $f_L$  is 0.2 MHz  
 For phase detection, DC output polarity is positive with in-phase LO and RF signals.  
 L = low range [ $f_L$  to 10  $f_L$ ]    M = mid range [10  $f_L$  to  $f_U/2$ ]    U = upper range [ $f_U/2$  to  $f_U$ ]  
 m = mid band [ $2f_L$  to  $f_U/2$ ]

## 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 +7dBm             | LO +7dBm           | LO +7dBm           | LO +7dBm          | LO +7dBm          |
| 0.04            | 30.04  | 6.15                 | >67.00             | >67.00             | 1.24              | 2.69              |
| 0.05            | 30.05  | 5.52                 | >67.00             | >67.00             | 1.25              | 2.55              |
| 0.07            | 30.07  | 5.12                 | >67.00             | >67.00             | 1.25              | 2.67              |
| 0.10            | 30.10  | 4.92                 | >67.00             | >67.00             | 1.24              | 2.63              |
| 0.50            | 30.50  | 4.77                 | >67.00             | >67.00             | 1.23              | 2.55              |
| 1.00            | 31.00  | 4.76                 | >67.00             | 63.53              | 1.23              | 2.45              |
| 5.00            | 35.00  | 4.75                 | >67.00             | 60.91              | 1.21              | 2.48              |
| 10.00           | 40.00  | 4.75                 | >67.00             | 60.97              | 1.21              | 2.42              |
| 20.00           | 50.00  | 4.74                 | >67.00             | 58.52              | 1.19              | 2.42              |
| 60.87           | 90.87  | 4.73                 | 50.40              | 49.37              | 1.18              | 2.36              |
| 100.00          | 70.00  | 4.63                 | 44.80              | 44.05              | 1.16              | 2.38              |
| 162.61          | 132.61 | 4.79                 | 39.22              | 39.87              | 1.15              | 2.46              |
| 200.00          | 170.00 | 4.95                 | 37.18              | 37.86              | 1.13              | 2.40              |
| 230.44          | 200.44 | 4.89                 | 35.78              | 37.67              | 1.13              | 2.42              |
| 281.31          | 251.31 | 5.05                 | 33.68              | 35.71              | 1.13              | 2.41              |
| 315.23          | 285.23 | 5.25                 | 34.22              | 33.98              | 1.14              | 2.56              |
| 349.14          | 319.14 | 5.32                 | 35.64              | 34.07              | 1.14              | 2.63              |
| 366.10          | 336.10 | 5.37                 | 35.56              | 34.58              | 1.14              | 2.68              |
| 383.05          | 353.05 | 5.44                 | 35.25              | 34.26              | 1.15              | 2.69              |
| 400.00          | 370.00 | 5.56                 | 34.72              | 32.46              | 1.15              | 2.76              |

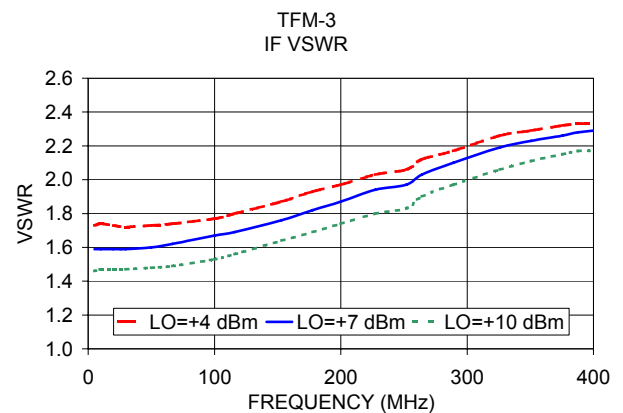
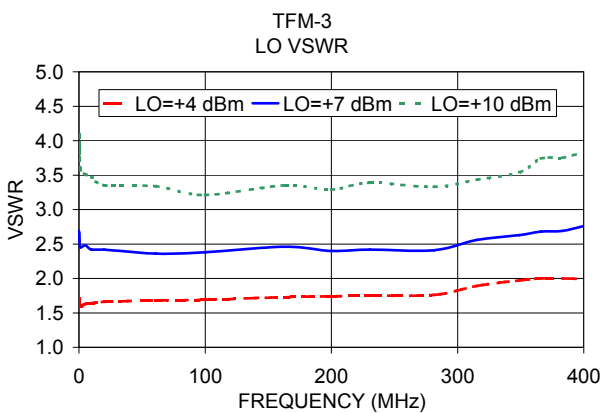
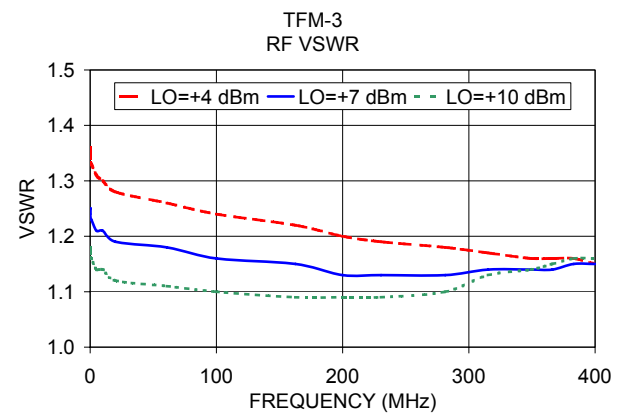
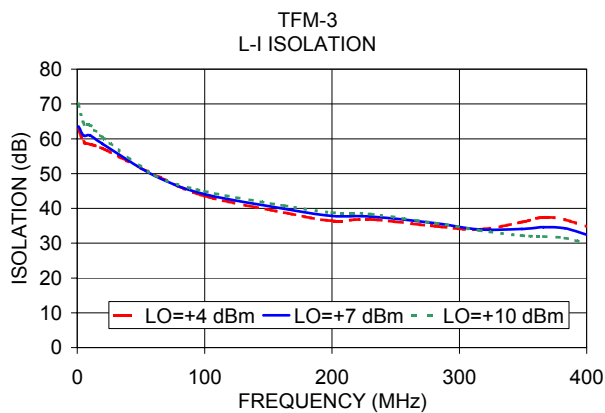
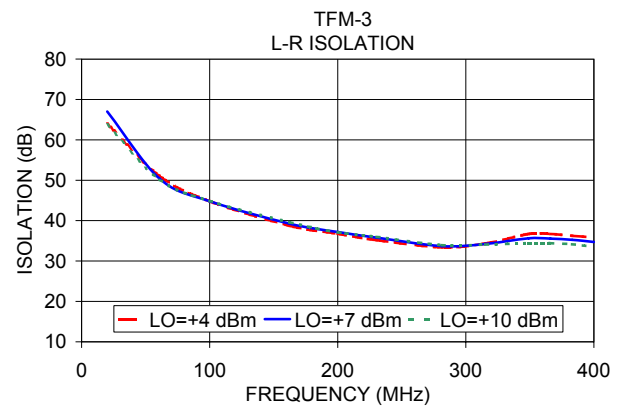
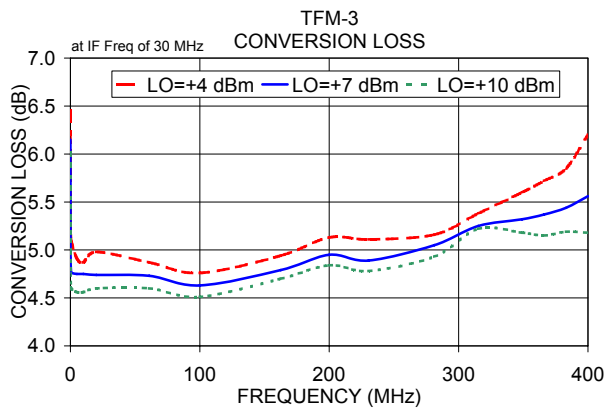
## Electrical Schematic



## Notes

- 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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