

## High IP3

Level 23 (LO Power +23 dBm) 2 to 1100 MHz

## Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -45°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| LO Power              | +25 dBm        |
| RF Power              | +24 dBm        |

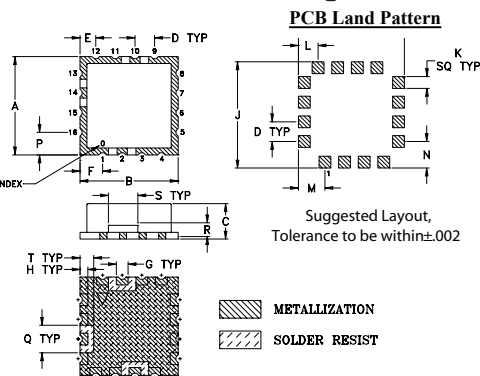
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## Pin Connections

|        |                                |
|--------|--------------------------------|
| LO     | 10                             |
| RF     | 2                              |
| IF     | 14                             |
| GROUND | 1,3,4,5,6,7,8,9,11,12,13,15,16 |

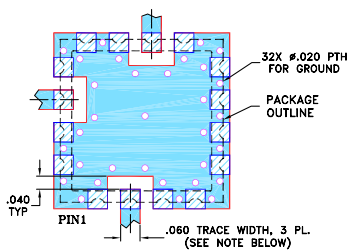
## Outline Drawing



### Outline Dimensions ( $\frac{\text{inch}}$ $\frac{\text{mm}}$ )

| A    | B     | C     | D     | E     | F     | G     | H     | J     | K     |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| .500 | .500  | .180  | .100  | .080  | .115  | .060  | .040  | .540  | .060  |
| 12.7 | 12.7  | 4.572 | 2.54  | 2.032 | 2.921 | 1.524 | 1.016 | 13.72 | 1.524 |
| L    | M     | N     | P     | Q     | R     | S     | T     |       | wt.   |
| .100 | .135  | .135  | .115  | .140  | .070  | .150  | .070  |       | grams |
| 2.54 | 3.429 | 3.429 | 2.921 | 3.556 | 1.778 | 3.81  | 1.778 |       | 1.0   |

**Demo Board MCL P/N: TB-433+**  
**Suggested PCB Layout (PL-012)**



- NOTES: 1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030"  $\pm$  .002"; 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

## Features

- very high IP3, 34 dBm typ.
- wideband, 2 to 1100 MHz
- excellent L-R isolation, 48 dB typ. and L-I isolation, 47 dB typ.
- high 1 dB compression, 23 dBm typ.
- shielded metal cover
- aqueous washable
- protected by US Patent 6,807,407

## Applications

- cellular base stations
- mobile radio
- defense communications
- CATV
- VHF/UHF radios

### Electrical Specifications (T<sub>AMB</sub>=25°C)

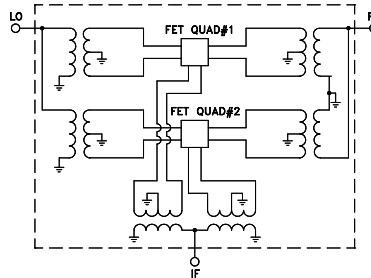
| FREQUENCY<br>(MHz) |        |        | CONVERSION LOSS<br>(dB) |      |      | RF in<br>at 1dB<br>Compr<br>(dBm) | IP3*<br>(dBm) | LO-RF<br>ISOLATION<br>(dB) |      | LO-IF<br>ISOLATION<br>(dB) |      |
|--------------------|--------|--------|-------------------------|------|------|-----------------------------------|---------------|----------------------------|------|----------------------------|------|
| RF                 | LO     | IF     | Typ.                    | σ    | Max. | Typ.                              | Typ.          | Typ.                       | Min. | Typ.                       | Min. |
| 2-1100             | 2-1100 | 2-1000 | 7.5                     | 0.12 | 9.5  | +23                               | 34            | 48                         | 37   | 47                         | 36   |

\* Specified at RF= 1000 MHz

### Typical Performance Data

| Frequency (MHz) |         | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) | IP3 (dBm) | IF Freq. (MHz) | VSWR IF (:1) |
|-----------------|---------|----------------------|--------------------|--------------------|-------------------|-------------------|-----------|----------------|--------------|
| RF              | LO      | LO +23dBm            | LO +23dBm          | LO +23dBm          | LO +23dBm         | LO +23dBm         | LO +23dBm |                | LO +23dBm    |
| 2.10            | 32.10   | 6.21                 | 54.85              | 54.80              | 1.23              | 4.05              | 33.04     | 2.00           | 1.23         |
| 5.10            | 35.10   | 6.21                 | 54.39              | 54.54              | 1.22              | 4.11              | 32.18     | 5.00           | 1.22         |
| 12.10           | 42.10   | 6.23                 | 53.71              | 53.75              | 1.23              | 4.13              | 30.70     | 12.00          | 1.23         |
| 52.10           | 82.10   | 6.18                 | 55.03              | 54.87              | 1.27              | 2.52              | 29.56     | 52.00          | 1.25         |
| 100.10          | 130.10  | 6.38                 | 57.25              | 55.04              | 1.36              | 4.01              | 29.36     | 100.00         | 1.31         |
| 220.10          | 250.10  | 6.62                 | 56.89              | 52.84              | 1.50              | 2.99              | 31.29     | 220.00         | 1.46         |
| 300.10          | 330.10  | 6.60                 | 50.40              | 49.21              | 1.53              | 3.43              | 30.65     | 300.00         | 1.58         |
| 420.10          | 450.10  | 6.94                 | 47.19              | 48.38              | 1.53              | 3.32              | 31.86     | 420.00         | 1.80         |
| 500.10          | 530.10  | 6.75                 | 43.95              | 45.44              | 1.49              | 3.93              | 31.63     | 500.00         | 1.90         |
| 620.10          | 650.10  | 6.97                 | 42.14              | 42.90              | 1.46              | 3.45              | 31.02     | 620.00         | 2.06         |
| 740.10          | 770.10  | 7.36                 | 39.64              | 41.69              | 1.41              | 5.01              | 30.87     | 740.00         | 2.07         |
| 820.10          | 850.10  | 7.48                 | 43.30              | 49.90              | 1.24              | 3.85              | 32.54     | 820.00         | 1.74         |
| 900.10          | 930.10  | 7.40                 | 47.94              | 58.49              | 1.13              | 2.87              | 33.19     | 900.00         | 1.60         |
| 1010.10         | 1040.10 | 7.52                 | 50.72              | 63.09              | 1.10              | 3.66              | 33.24     | 975.00         | 1.59         |
| 1070.10         | 1100.10 | 7.70                 | 54.52              | 52.16              | 1.09              | 2.19              | 32.54     | 1000.00        | 1.55         |

## Electrical Schematic



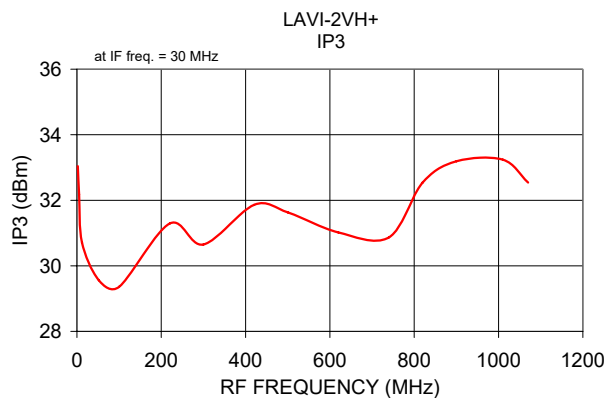
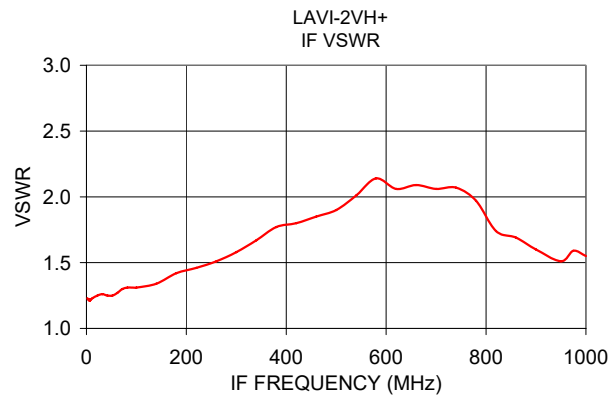
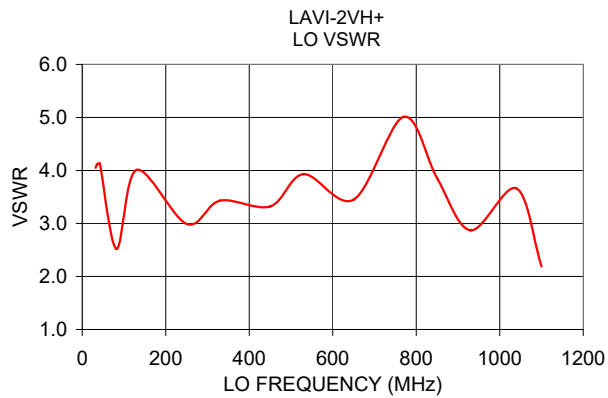
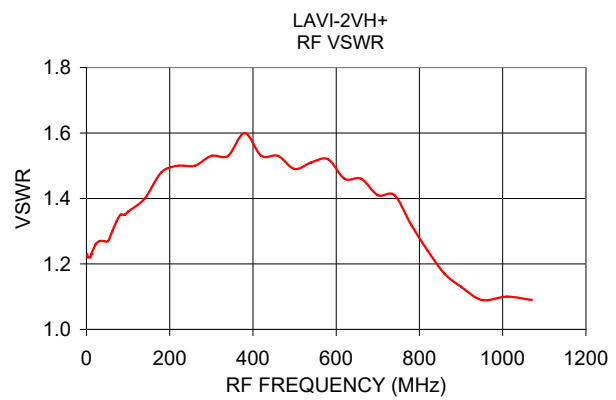
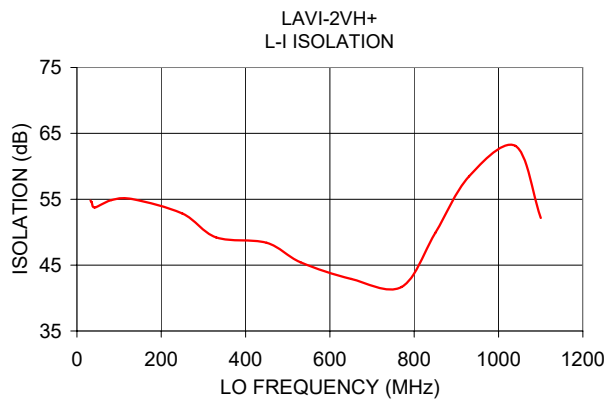
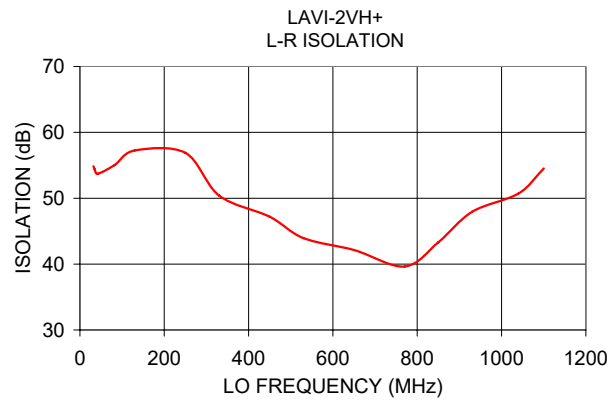
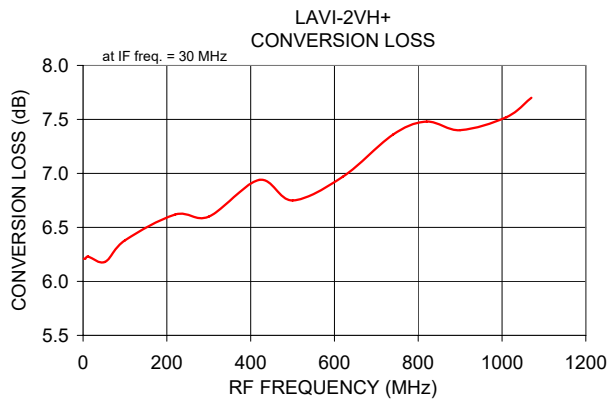
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CASE STYLE: CK605

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