

# Frequency Mixer

# LAVI-U252VH+

Level 21 (LO Power +21 dBm) 10 to 2500 MHz

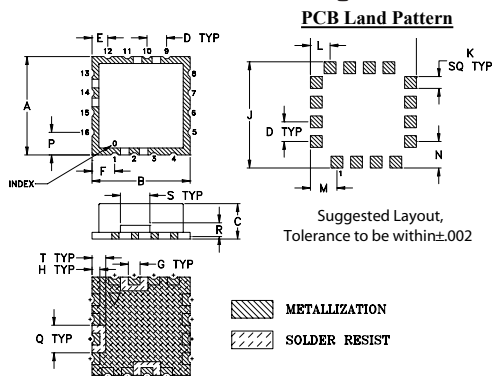
## Maximum Ratings

|                                                                |                |
|----------------------------------------------------------------|----------------|
| Operating Temperature                                          | -45°C to 85°C  |
| Storage Temperature                                            | -55°C to 100°C |
| LO Power                                                       | +24 dBm        |
| IF Power                                                       | +21 dBm        |
| Permanent damage may occur if any of these limits are exceeded |                |

## Pin Connections

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

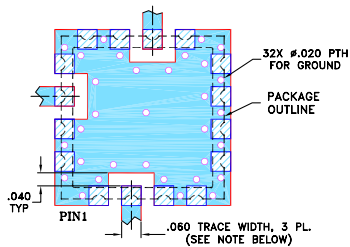
## Outline Drawing



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

| 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

- up converter mixer
- wide input frequency range
- very high IP3, 30 dBm typ.
- excellent L-R isolation, 45 dB typ;  
L-I isolation, 51 dB typ.
- good 1 dB compression, 16 dBm typ.
- shielded metal cover
- aqueous washable
- protected by US Patent 6,807,407

## Applications

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

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

| FREQUENCY<br>(MHz) |           |           | CONVERSION<br>LOSS*<br>(dB) |      |      | LO-IF (IN)<br>ISOLATION<br>(dB) |      | LO-RF (OUT)<br>ISOLATION<br>(dB) |      | IP3<br>at center<br>band<br>(dBm) |
|--------------------|-----------|-----------|-----------------------------|------|------|---------------------------------|------|----------------------------------|------|-----------------------------------|
| IF (IN)            | LO        | RF (OUT)  | Typ.                        | σ**  | Max. | Typ.                            | Min. | Typ.                             | Min. | Typ.                              |
| 10-1300            | 1800-2800 | 1500-2500 | 7.8                         | 0.15 | 9.5  | 51                              | 33   | 45                               | 27   | 30                                |

1 dB COMPR. +16 dBm typ.

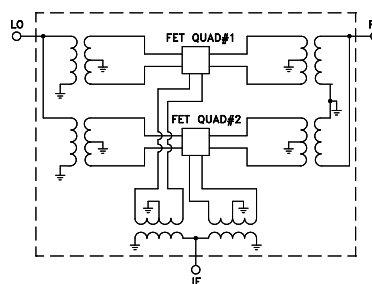
\* Conversion Loss at 300 MHz IF

\*\*  $\sigma$  is a standard deviation.

## Typical Performance Data

| Frequency (MHz) |         |          | Conversion Loss (dB) | Isolation L-I (dB) | Isolation L-R (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) | IP3 (dBm) |
|-----------------|---------|----------|----------------------|--------------------|--------------------|-------------------|-------------------|-----------|
| IF (IN)         | LO      | RF (OUT) | LO +21dBm            | LO +21dBm          | LO +21dBm          | LO +21dBm         | LO +21dBm         | LO +21dBm |
| 300.00          | 1800.00 | 1500.00  | 7.23                 | 55.10              | 49.97              | 2.01              | 3.15              | 29.03     |
| 300.00          | 1850.00 | 1550.00  | 7.05                 | 53.96              | 48.85              | 1.95              | 3.51              | 30.35     |
| 300.00          | 1900.00 | 1600.00  | 7.10                 | 55.08              | 50.06              | 1.84              | 3.04              | 29.42     |
| 300.00          | 1950.00 | 1650.00  | 7.05                 | 54.08              | 49.09              | 1.72              | 3.95              | 30.71     |
| 300.00          | 2050.00 | 1750.00  | 7.13                 | 55.63              | 48.31              | 1.49              | 4.07              | 30.90     |
| 300.00          | 2100.00 | 1800.00  | 7.14                 | 57.37              | 47.58              | 1.38              | 3.72              | 29.99     |
| 300.00          | 2150.00 | 1850.00  | 7.07                 | 56.86              | 45.18              | 1.27              | 4.13              | 30.44     |
| 300.00          | 2200.00 | 1900.00  | 7.06                 | 57.94              | 44.09              | 1.19              | 4.12              | 29.92     |
| 300.00          | 2300.00 | 2000.00  | 7.14                 | 57.28              | 41.15              | 1.09              | 4.37              | 30.36     |
| 300.00          | 2400.00 | 2100.00  | 7.33                 | 55.34              | 38.74              | 1.21              | 4.92              | 31.47     |
| 300.00          | 2450.00 | 2150.00  | 7.44                 | 53.11              | 38.21              | 1.31              | 4.21              | 31.32     |
| 300.00          | 2500.00 | 2200.00  | 7.62                 | 49.33              | 36.92              | 1.40              | 5.85              | 31.99     |
| 300.00          | 2600.00 | 2300.00  | 7.95                 | 44.55              | 36.63              | 1.57              | 5.54              | 32.82     |
| 300.00          | 2700.00 | 2400.00  | 8.14                 | 42.26              | 38.18              | 1.62              | 4.41              | 33.63     |
| 300.00          | 2750.00 | 2450.00  | 8.08                 | 42.86              | 40.66              | 1.60              | 5.42              | 32.28     |
| 300.00          | 2800.00 | 2500.00  | 7.96                 | 41.67              | 40.72              | 1.52              | 3.70              | 32.62     |

## Electrical Schematic



Generic photo used for illustration purposes only

CASE STYLE: CK605

**+RoHS Compliant**

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

## 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.

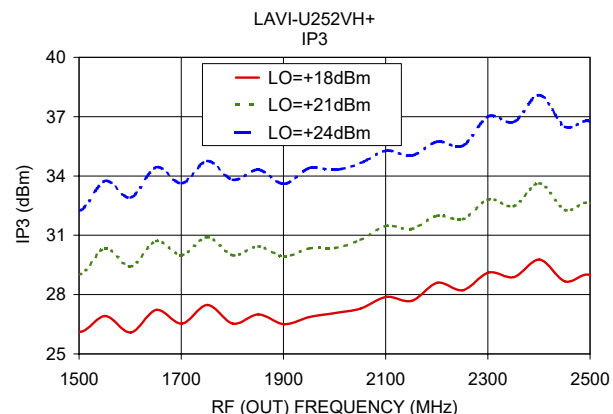
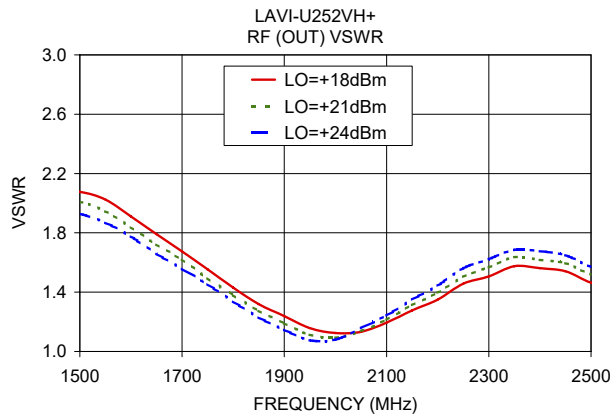
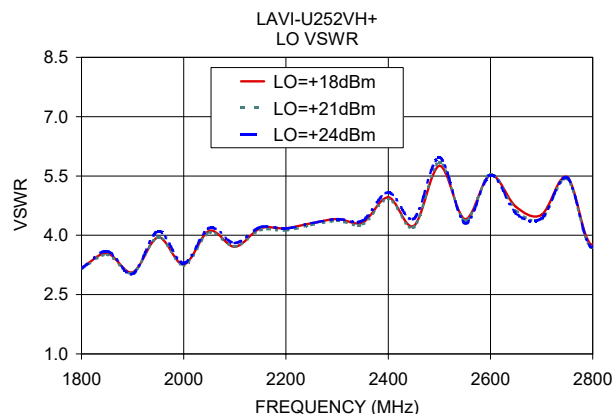
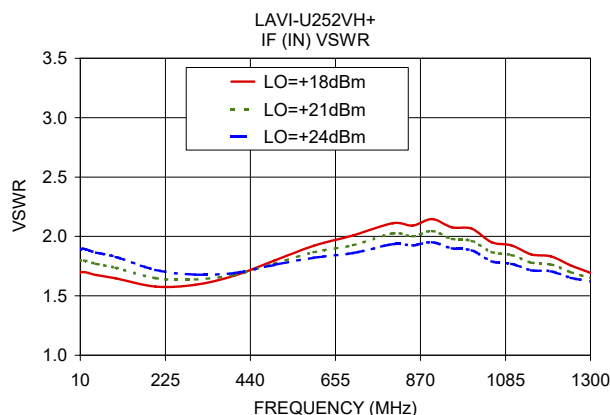
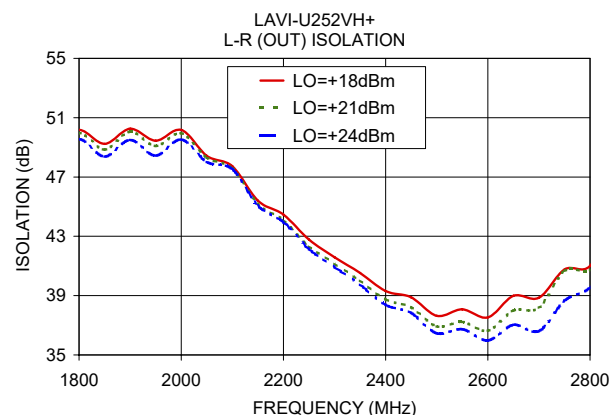
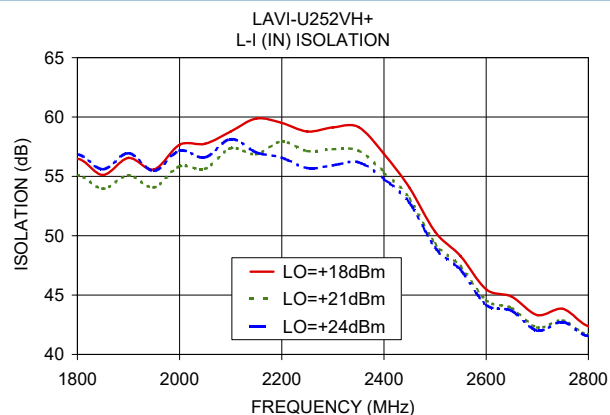
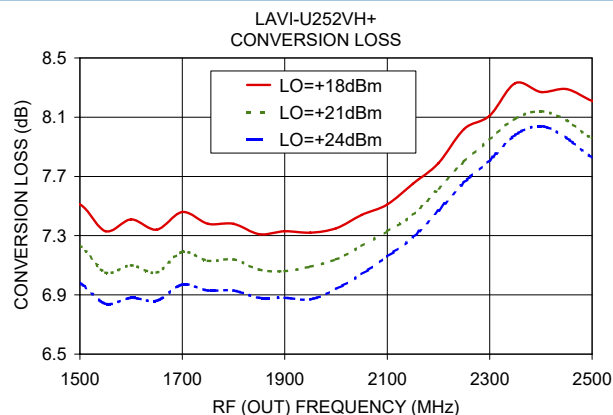
**B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.**

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# Performance Charts

## LAVI-U252VH+



### Notes

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# Frequency Mixer (Upconverter)

LAVI-U252VH+

## Typical Performance Data

| IF<br>INPUT<br>(MHz) | LO<br>INPUT<br>(MHz) | RF<br>OUTPUT<br>(MHz) | CONVERSION LOSS<br>(dB) |      |      | LO-IF ISOLATION<br>(dB) |       |       | LO-RF ISOLATION<br>(dB) |       |       | IP3 INPUT<br>(dBm) |       |       |
|----------------------|----------------------|-----------------------|-------------------------|------|------|-------------------------|-------|-------|-------------------------|-------|-------|--------------------|-------|-------|
|                      |                      |                       | @LO (dBm)               |      |      | @LO (dBm)               |       |       | @LO (dBm)               |       |       | @LO (dBm)          |       |       |
|                      |                      |                       | +18                     | +21  | +24  | +18                     | +21   | +24   | +18                     | +21   | +24   | +18                | +21   | +24   |
| 300.0                | 1600.0               | 1300.0                | 7.94                    | 7.70 | 7.54 | 55.75                   | 54.86 | 57.52 | 59.52                   | 59.31 | 58.14 | 28.04              | 30.71 | 33.47 |
| 300.0                | 1650.0               | 1350.0                | 7.69                    | 7.50 | 7.31 | 54.94                   | 54.07 | 56.56 | 51.53                   | 50.89 | 50.22 | 28.76              | 31.33 | 34.24 |
| 300.0                | 1700.0               | 1400.0                | 7.73                    | 7.50 | 7.27 | 56.78                   | 55.62 | 57.46 | 50.85                   | 50.58 | 50.03 | 27.18              | 29.89 | 32.64 |
| 300.0                | 1750.0               | 1450.0                | 7.48                    | 7.24 | 7.03 | 55.09                   | 53.93 | 55.51 | 49.19                   | 48.87 | 48.41 | 27.18              | 30.20 | 33.17 |
| 300.0                | 1800.0               | 1500.0                | 7.51                    | 7.23 | 6.98 | 56.47                   | 55.10 | 56.83 | 50.17                   | 49.97 | 49.55 | 26.12              | 29.03 | 32.25 |
| 300.0                | 1850.0               | 1550.0                | 7.33                    | 7.05 | 6.84 | 55.12                   | 53.96 | 55.60 | 49.24                   | 48.85 | 48.37 | 26.92              | 30.35 | 33.75 |
| 300.0                | 1900.0               | 1600.0                | 7.41                    | 7.10 | 6.88 | 56.56                   | 55.08 | 56.96 | 50.25                   | 50.06 | 49.50 | 26.08              | 29.42 | 32.90 |
| 300.0                | 1950.0               | 1650.0                | 7.34                    | 7.05 | 6.86 | 55.58                   | 54.08 | 55.47 | 49.45                   | 49.09 | 48.44 | 27.23              | 30.71 | 34.44 |
| 300.0                | 2000.0               | 1700.0                | 7.46                    | 7.19 | 6.97 | 57.67                   | 55.85 | 57.17 | 50.17                   | 49.95 | 49.53 | 26.53              | 30.00 | 33.63 |
| 300.0                | 2050.0               | 1750.0                | 7.38                    | 7.13 | 6.93 | 57.75                   | 55.63 | 56.59 | 48.43                   | 48.31 | 48.01 | 27.48              | 30.90 | 34.76 |
| 300.0                | 2100.0               | 1800.0                | 7.38                    | 7.14 | 6.93 | 58.78                   | 57.37 | 58.14 | 47.73                   | 47.58 | 47.53 | 26.53              | 29.99 | 33.81 |
| 300.0                | 2150.0               | 1850.0                | 7.31                    | 7.07 | 6.88 | 59.86                   | 56.86 | 57.02 | 45.41                   | 45.18 | 45.07 | 27.00              | 30.44 | 34.31 |
| 300.0                | 2200.0               | 1900.0                | 7.33                    | 7.06 | 6.88 | 59.50                   | 57.94 | 56.57 | 44.46                   | 44.09 | 43.96 | 26.50              | 29.92 | 33.60 |
| 300.0                | 2250.0               | 1950.0                | 7.32                    | 7.09 | 6.87 | 58.77                   | 57.13 | 55.69 | 42.78                   | 42.31 | 42.15 | 26.87              | 30.34 | 34.40 |
| 300.0                | 2300.0               | 2000.0                | 7.35                    | 7.14 | 6.94 | 59.12                   | 57.28 | 55.93 | 41.59                   | 41.15 | 40.92 | 27.07              | 30.36 | 34.30 |
| 300.0                | 2350.0               | 2050.0                | 7.44                    | 7.23 | 7.04 | 59.16                   | 57.17 | 56.20 | 40.53                   | 40.01 | 39.75 | 27.30              | 30.77 | 34.65 |
| 300.0                | 2400.0               | 2100.0                | 7.51                    | 7.33 | 7.16 | 56.89                   | 55.34 | 54.78 | 39.31                   | 38.74 | 38.38 | 27.88              | 31.47 | 35.28 |
| 300.0                | 2450.0               | 2150.0                | 7.65                    | 7.44 | 7.29 | 54.04                   | 53.11 | 52.76 | 38.88                   | 38.21 | 37.84 | 27.68              | 31.32 | 35.03 |
| 300.0                | 2500.0               | 2200.0                | 7.79                    | 7.62 | 7.47 | 50.33                   | 49.33 | 48.99 | 37.64                   | 36.92 | 36.46 | 28.60              | 31.99 | 35.74 |
| 300.0                | 2550.0               | 2250.0                | 8.02                    | 7.80 | 7.66 | 48.28                   | 47.43 | 47.10 | 38.08                   | 37.23 | 36.74 | 28.22              | 31.81 | 35.53 |
| 300.0                | 2600.0               | 2300.0                | 8.11                    | 7.95 | 7.81 | 45.48                   | 44.55 | 44.17 | 37.53                   | 36.63 | 35.98 | 29.12              | 32.82 | 37.02 |
| 300.0                | 2650.0               | 2350.0                | 8.33                    | 8.09 | 7.98 | 44.87                   | 43.91 | 43.67 | 38.99                   | 38.00 | 37.03 | 28.89              | 32.48 | 36.73 |
| 300.0                | 2700.0               | 2400.0                | 8.27                    | 8.14 | 8.04 | 43.31                   | 42.26 | 42.00 | 38.86                   | 38.18 | 36.60 | 29.77              | 33.63 | 38.09 |
| 300.0                | 2750.0               | 2450.0                | 8.29                    | 8.08 | 7.96 | 43.84                   | 42.86 | 42.74 | 40.76                   | 40.66 | 38.65 | 28.67              | 32.28 | 36.49 |
| 300.0                | 2800.0               | 2500.0                | 8.21                    | 7.96 | 7.83 | 42.38                   | 41.67 | 41.56 | 41.00                   | 40.72 | 39.55 | 28.98              | 32.62 | 36.74 |
| 300.0                | 2850.0               | 2550.0                | 8.17                    | 7.98 | 7.80 | 42.87                   | 42.74 | 42.69 | 44.22                   | 42.54 | 41.83 | 27.46              | 31.08 | 35.03 |
| 300.0                | 2900.0               | 2600.0                | 8.05                    | 7.85 | 7.68 | 41.55                   | 41.92 | 41.81 | 42.70                   | 40.97 | 40.32 | 27.68              | 31.39 | 35.60 |
| 300.0                | 2950.0               | 2650.0                | 8.06                    | 7.87 | 7.74 | 43.22                   | 43.48 | 43.41 | 42.60                   | 41.35 | 40.68 | 25.95              | 29.58 | 33.61 |
| 300.0                | 3000.0               | 2700.0                | 8.06                    | 7.87 | 7.74 | 43.44                   | 43.47 | 43.46 | 40.38                   | 39.48 | 38.80 | 26.08              | 29.85 | 34.42 |



# Frequency Mixer (Upconverter)

LAVI-U252VH+

## Typical Performance Data

| IF<br>INPUT<br>(MHz) | LO<br>INPUT<br>(MHz) | IF VSWR<br>(:1) |      |      | LO<br>INPUT<br>(MHz) | LO VSWR<br>(:1) |      |      | RF<br>OUTPUT<br>(MHz) | RF VSWR<br>(:1) |      |      |
|----------------------|----------------------|-----------------|------|------|----------------------|-----------------|------|------|-----------------------|-----------------|------|------|
|                      |                      | @LO (dBm)       |      |      |                      | @LO (dBm)       |      |      |                       | @LO (dBm)       |      |      |
|                      |                      | +18             | +21  | +24  |                      | +18             | +21  | +24  |                       | +18             | +21  | +24  |
| 1.0                  | 1600.0               | 1.73            | 1.83 | 1.93 | 1600.0               | 4.27            | 4.35 | 4.55 | 1300.0                | 1.63            | 1.56 | 1.51 |
| 3.0                  | 1650.0               | 1.69            | 1.79 | 1.89 | 1650.0               | 2.68            | 2.68 | 2.65 | 1350.0                | 1.87            | 1.79 | 1.74 |
| 5.0                  | 1700.0               | 1.70            | 1.79 | 1.89 | 1700.0               | 3.59            | 3.62 | 3.71 | 1400.0                | 2.01            | 1.93 | 1.87 |
| 8.0                  | 1750.0               | 1.69            | 1.79 | 1.89 | 1750.0               | 2.92            | 2.93 | 2.95 | 1450.0                | 2.07            | 2.01 | 1.94 |
| 10.0                 | 1800.0               | 1.70            | 1.80 | 1.89 | 1800.0               | 3.18            | 3.15 | 3.17 | 1500.0                | 2.08            | 2.01 | 1.93 |
| 20.0                 | 1850.0               | 1.70            | 1.80 | 1.89 | 1850.0               | 3.54            | 3.51 | 3.60 | 1550.0                | 2.03            | 1.95 | 1.87 |
| 50.0                 | 1900.0               | 1.68            | 1.77 | 1.86 | 1900.0               | 3.06            | 3.04 | 3.02 | 1600.0                | 1.91            | 1.84 | 1.77 |
| 100.0                | 1950.0               | 1.65            | 1.74 | 1.83 | 1950.0               | 3.95            | 3.95 | 4.10 | 1650.0                | 1.79            | 1.72 | 1.66 |
| 200.0                | 2000.0               | 1.58            | 1.65 | 1.72 | 2000.0               | 3.26            | 3.24 | 3.30 | 1700.0                | 1.68            | 1.62 | 1.56 |
| 300.0                | 2050.0               | 1.59            | 1.64 | 1.68 | 2050.0               | 4.11            | 4.07 | 4.19 | 1750.0                | 1.55            | 1.49 | 1.45 |
| 400.0                | 2100.0               | 1.67            | 1.68 | 1.69 | 2100.0               | 3.71            | 3.72 | 3.80 | 1800.0                | 1.43            | 1.38 | 1.34 |
| 500.0                | 2150.0               | 1.80            | 1.77 | 1.76 | 2150.0               | 4.18            | 4.13 | 4.21 | 1850.0                | 1.32            | 1.27 | 1.23 |
| 600.0                | 2200.0               | 1.92            | 1.87 | 1.82 | 2200.0               | 4.18            | 4.12 | 4.17 | 1900.0                | 1.24            | 1.19 | 1.15 |
| 700.0                | 2250.0               | 2.01            | 1.93 | 1.86 | 2250.0               | 4.31            | 4.26 | 4.31 | 1950.0                | 1.16            | 1.11 | 1.08 |
| 800.0                | 2300.0               | 2.11            | 2.03 | 1.93 | 2300.0               | 4.41            | 4.37 | 4.41 | 2000.0                | 1.13            | 1.09 | 1.08 |
| 850.0                | 2350.0               | 2.09            | 2.00 | 1.92 | 2350.0               | 4.33            | 4.28 | 4.38 | 2050.0                | 1.13            | 1.14 | 1.16 |
| 900.0                | 2400.0               | 2.15            | 2.04 | 1.95 | 2400.0               | 4.96            | 4.92 | 5.09 | 2100.0                | 1.19            | 1.21 | 1.24 |
| 950.0                | 2450.0               | 2.08            | 1.98 | 1.90 | 2450.0               | 4.24            | 4.21 | 4.42 | 2150.0                | 1.28            | 1.31 | 1.35 |
| 1000.0               | 2500.0               | 2.07            | 1.96 | 1.88 | 2500.0               | 5.75            | 5.85 | 5.97 | 2200.0                | 1.35            | 1.40 | 1.44 |
| 1050.0               | 2550.0               | 1.95            | 1.87 | 1.79 | 2550.0               | 4.41            | 4.37 | 4.31 | 2250.0                | 1.46            | 1.50 | 1.56 |
| 1100.0               | 2600.0               | 1.92            | 1.84 | 1.77 | 2600.0               | 5.52            | 5.54 | 5.52 | 2300.0                | 1.51            | 1.57 | 1.62 |
| 1150.0               | 2650.0               | 1.85            | 1.78 | 1.71 | 2650.0               | 4.72            | 4.63 | 4.55 | 2350.0                | 1.58            | 1.64 | 1.69 |
| 1200.0               | 2700.0               | 1.83            | 1.77 | 1.71 | 2700.0               | 4.52            | 4.41 | 4.43 | 2400.0                | 1.56            | 1.62 | 1.68 |
| 1250.0               | 2750.0               | 1.76            | 1.70 | 1.65 | 2750.0               | 5.47            | 5.42 | 5.46 | 2450.0                | 1.54            | 1.60 | 1.65 |
| 1300.0               | 2800.0               | 1.69            | 1.65 | 1.62 | 2800.0               | 3.77            | 3.70 | 3.71 | 2500.0                | 1.46            | 1.52 | 1.57 |
| 1350.0               | 2850.0               | 1.63            | 1.61 | 1.61 | 2850.0               | 6.19            | 6.21 | 6.32 | 2550.0                | 1.43            | 1.49 | 1.54 |
| 1400.0               | 2900.0               | 1.58            | 1.59 | 1.60 | 2900.0               | 4.03            | 3.96 | 3.94 | 2600.0                | 1.39            | 1.45 | 1.51 |
| 1450.0               | 2950.0               | 1.58            | 1.62 | 1.66 | 2950.0               | 5.63            | 5.61 | 5.74 | 2650.0                | 1.41            | 1.48 | 1.54 |
| 1500.0               | 3000.0               | 1.61            | 1.67 | 1.73 | 3000.0               | 4.39            | 4.36 | 4.35 | 2700.0                | 1.43            | 1.49 | 1.57 |



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IF/RF MICROWAVE COMPONENTS



REV. X1

LAVI-U252VH+

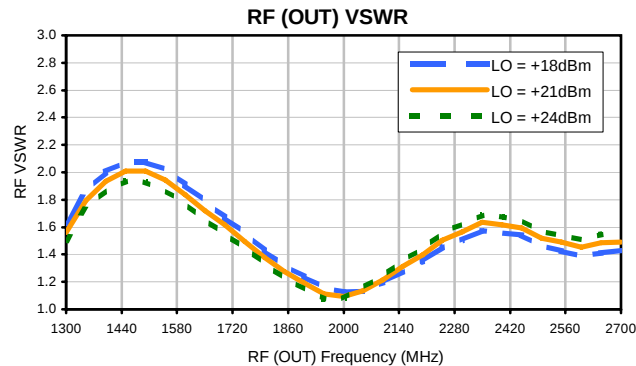
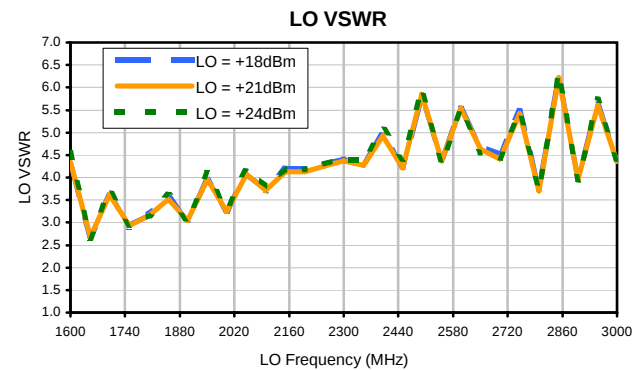
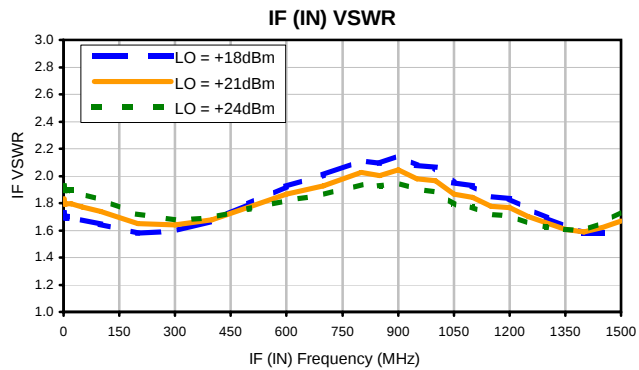
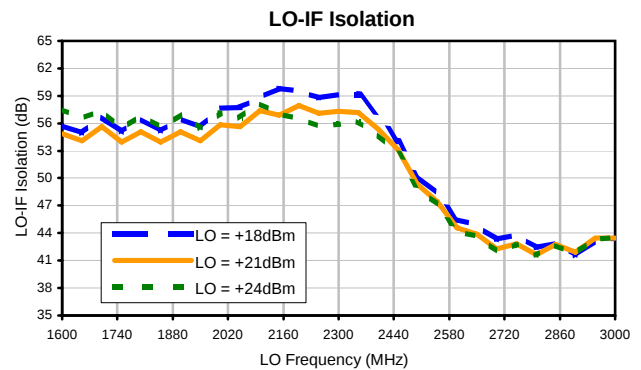
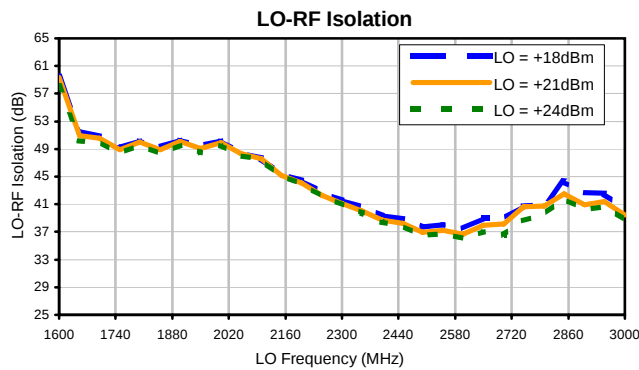
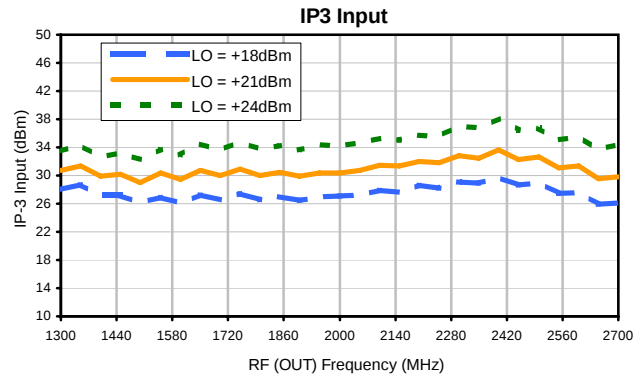
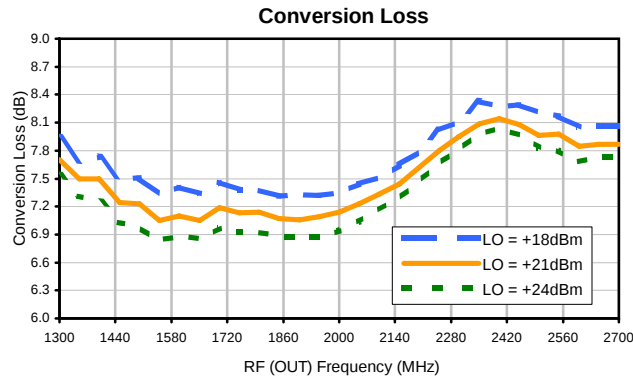
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# Frequency Mixer (Upconverter)

LAVI-U252VH+

## Typical Performance Curves



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IF/RF MICROWAVE COMPONENTS

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REV. X1

LAVI-U252VH+

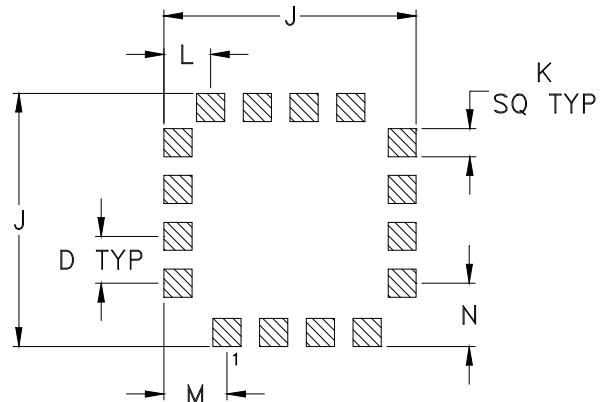
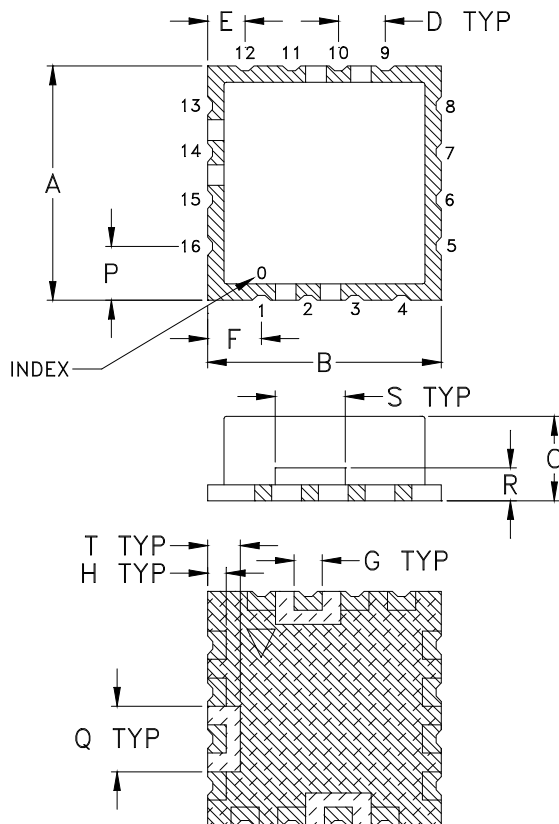
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Page 1 of 1

## Outline Dimensions

CK605

## PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

| CASE # | A               | B               | C              | D              | E              | F              | G              | H              | J               | K              |
|--------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|
| CK605  | .500<br>(12.70) | .500<br>(12.70) | .180<br>(4.57) | .100<br>(2.54) | .080<br>(2.03) | .115<br>(2.92) | .060<br>(1.52) | .040<br>(1.02) | .540<br>(13.72) | .060<br>(1.52) |

| CASE # | L              | M              | N              | P              | Q              | R              | S              | T              | WT. GRAM            |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------|
| CK605  | .100<br>(2.54) | .135<br>(3.43) | .135<br>(3.43) | .115<br>(2.92) | .140<br>(3.56) | .070<br>(1.78) | .150<br>(3.81) | .070<br>(1.78) | 1.2<br>+0.5<br>-0.0 |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .03$ ; 3Pl.  $\pm .015$

### Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:  
For RoHS Case Styles: 3-5  $\mu$  inch (.08-.13 microns) Gold over 120-240  $\mu$  inch (3.05-6.10 microns) Nickel plate.  
All models, (+) suffix.



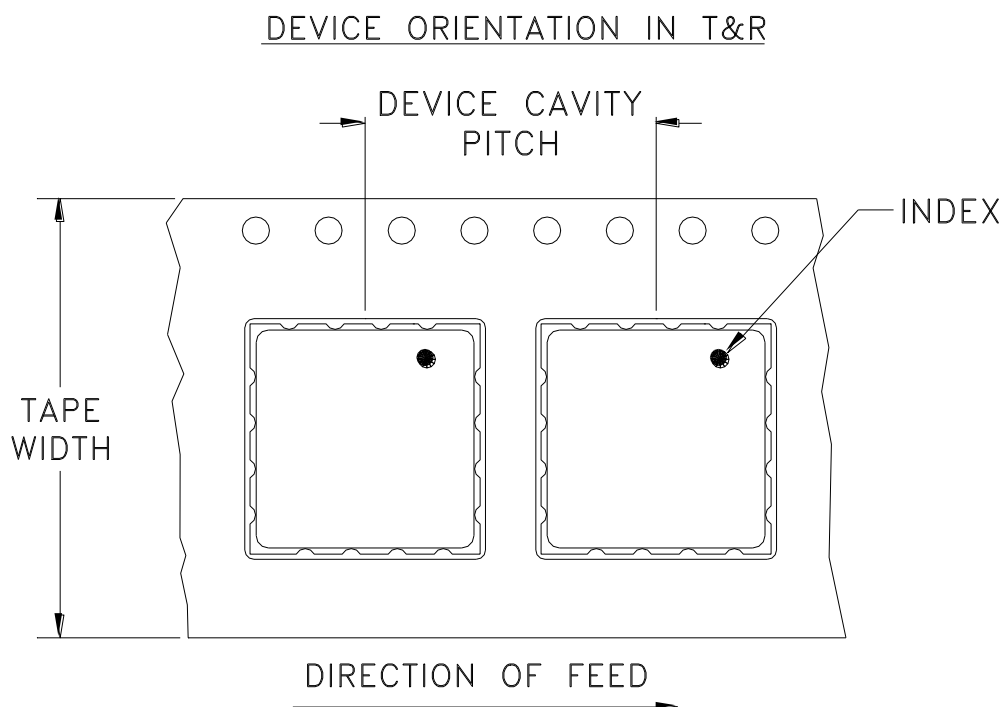
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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RF/IF MICROWAVE COMPONENTS

# Tape & Reel Packaging TR-F37



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel                             |     |
|-------------------|----------------------------|----------------------|----------------------------------------------|-----|
| 24                | 16                         | 7                    | Small<br>quantity<br>standards<br>(see note) | 10  |
|                   |                            |                      |                                              | 20  |
|                   |                            |                      |                                              | 50  |
|                   |                            |                      |                                              | 100 |
|                   |                            | 13                   | Standard                                     | 200 |
|                   |                            |                      |                                              | 500 |

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



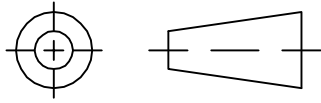
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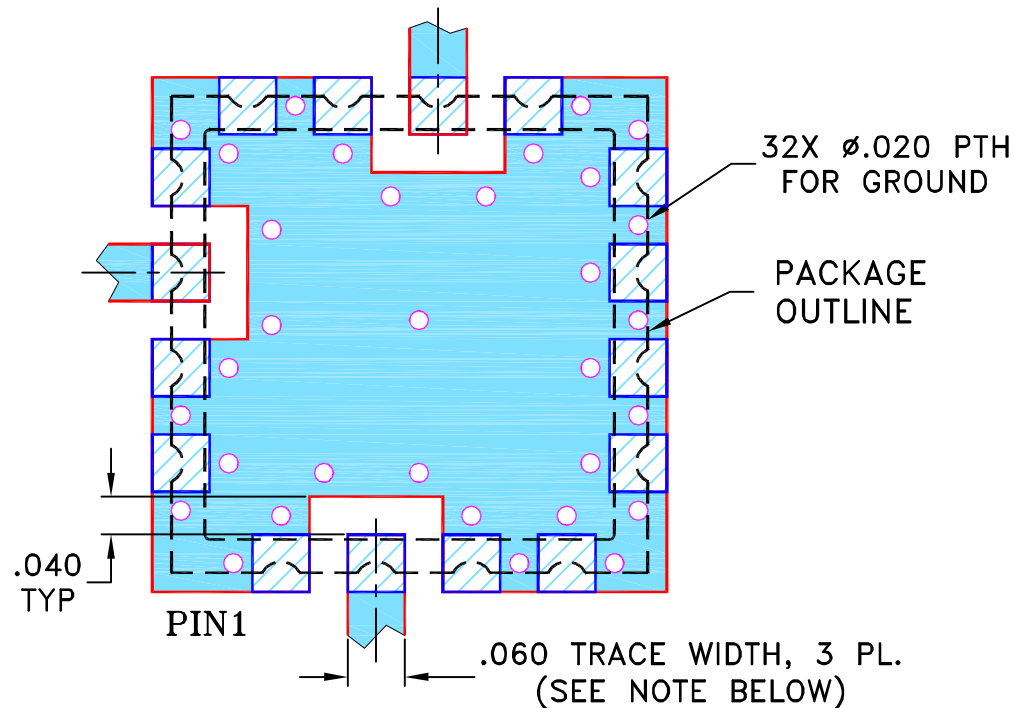
## THIRD ANGLE PROJECTION



## REVISIONS

| REV | ECN No. | DESCRIPTION               | DATE     | DR  | AUTH |
|-----|---------|---------------------------|----------|-----|------|
| E   | M105563 | ADDED "rl" PIN CONNECTION | 06/02/06 | MMG | DJ   |
| F   | M105640 | CORRECTED NOTE 2          | 06/08/06 | MMG | MM   |
| G   | M124395 | ADDED "RAMP"              | 09/09    | EM  | HH   |
| G   | R77589  | ADDED "RAMP"              | 09/09    | EM  | HH   |

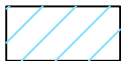
SUGGESTED MOUNTING CONFIGURATION FOR  
CK605 CASE STYLE, "kg/rl/16AM01" PIN CONNECTION

NOTES:

- 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.
- BOTTOM SIDE OF THE BOTTOM IS CONTINUOUS GROUND PLANE.



DENOTES PCB COPPER LAYOUT WITH SMOBC  
(SOLDER MASK OVER BARE COPPER)



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS  $\pm$ 3 PL DECIMALS  $\pm$  .005ANGLES  $\pm$ FRACTIONS  $\pm$ 

DRAWN

AV

08/07/00

CHECKED

SK

08/08/00

APPROVED

DB

08/08/00

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ASHEETA1.DWG REV:A DATE:01/12/95



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PL,kg/rl/16AM01,CK605,ROS/LAVI/RAMP

SIZE  
A

CODE IDENT  
15542

DRAWING NO:  
98-PL-012

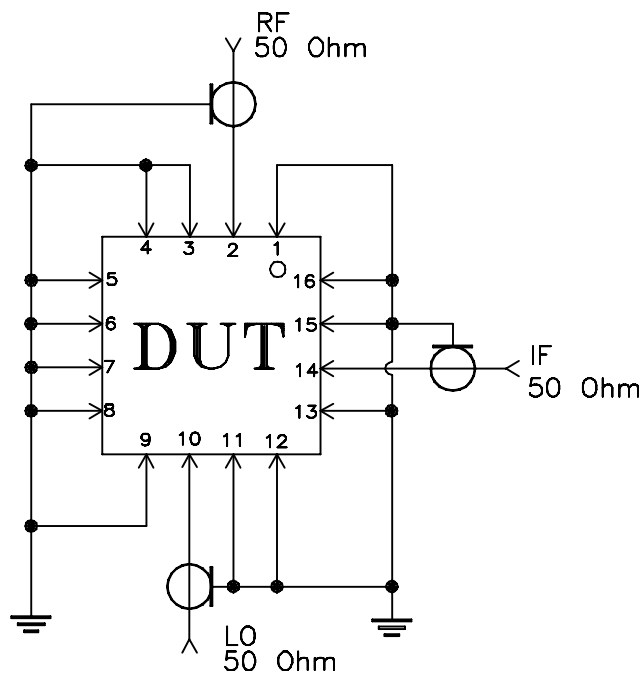
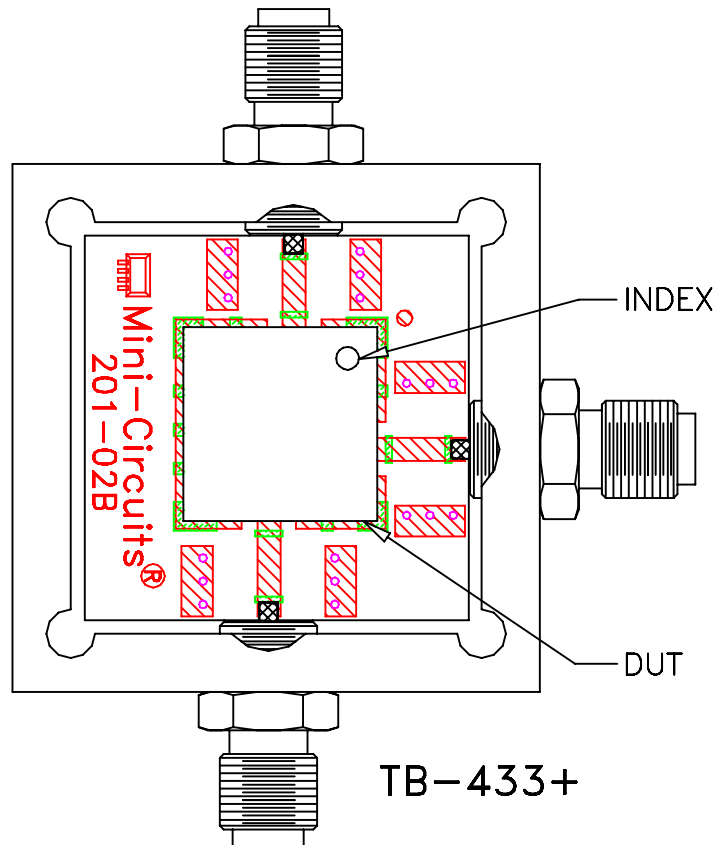
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FILE: 98PL012

SCALE: 5:1

SHEET: 1 OF 1

# Evaluation Board and Circuit



## Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.028 inch.

## Schematic Diagram

 **Mini-Circuits®**



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification                  | Test/Inspection Condition                                                                                                                                       | Reference/Spec                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Operating Temperature          | -45° to 85°C<br>Ambient Environment                                                                                                                             | Individual Model Data Sheet                                                                          |
| Storage Temperature            | -55° to 100° C<br>Ambient Environment                                                                                                                           | Individual Model Data Sheet                                                                          |
| Humidity                       | 90 to 95% RH, 240 hours, 50°C                                                                                                                                   | MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours |
| Thermal Shock                  | -55° to 100°C, 100 cycles                                                                                                                                       | MIL-STD-202, Method 107, Condition A-3, except +100°C                                                |
| Solder Reflow Heat             | Sn-Pb Eutectic Process: 225°C peak<br>Pb-Free Process, 245°C peak                                                                                               | J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1                                                        |
| Solderability                  | 10X Magnification                                                                                                                                               | J-STD-002, 95% Coverage                                                                              |
| Vibration (High Frequency)     | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)                                                                             | MIL-STD-202, Method 204, Condition D                                                                 |
| Mechanical Shock               | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes                                                                                               | MIL-STD-202, Method 213, Condition A                                                                 |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215                                                                              |