LTCC SURFACE MOUNT

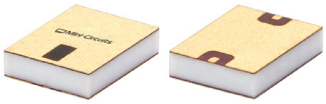
# Low Pass Filter

# LFCV-1852+

50Ω DC to 18.5 GHz

## THE BIG DEAL

- Low Insertion Loss, 1.1 dB Typ.
- Pass Band Return Loss, 15 dB Typ.
- Stop Band Rejection, 40 dB Typ.
- 1210 Surface Mount Footprint
- Power Handling: 4.5 W

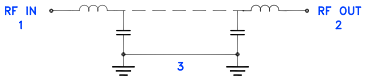


*Generic photo used for illustration purposes only*

## APPLICATIONS

- 5G MIMO and Back Haul Radio Systems
- Test and Measurement Equipment
- Radar, EW, and ECM Defense Systems

## FUNCTIONAL DIAGRAM




## PRODUCT OVERVIEW

Mini-Circuits' LFCV-1852+ is a miniature low temperature co-fired ceramic (LTCC) low pass filter with a DC to 18.5 GHz passband that supports a variety of applications. This model provides 1.1 dB typical insertion loss over a wide band due to its rugged monolithic construction. Housed in a 1210 ceramic form factor which is ideal for dense signal chain PCB layouts where it complements MMIC size and performance. The LTCC fabrication process assures minimal RF performance variation while delivering a product that is well suited for environmental extremes of high humidity and temperature.

## KEY FEATURES

| Features | Advantages |
|---|---|
| Ultra-wide Stopband | The LTCC lowpass filter provides a very good stopband rejection upto 50 GHz which is suitable for wide band applications. |
| LTCC Construction | The use of LTCC technology allows for repeatable performance in a rugged ceramic package, well suited for tough environments such as high humidity and temperature extremes. See Mini-Circuits Environmental Rating ENV06T10 for more information. |
| Small Size, 1210 | 1210 package allows for space to be saved in dense circuit board layouts, while also minimizing the effects of parasitics. |
| Rugged Power Handling, 4.5 W | Handles up to 4.5 Watts in a small 1210 package. |

REV. OR
ECO-019931
LFCV-1852+
EDU4633
URJ
231213

# Low Pass Filter

# LFCV-1852+

50Ω DC to 18.5 GHz

## ELECTRICAL SPECIFICATIONS[1,2,3] AT +25°C

| Parameter | | F# | Frequency (GHz) | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Passband | Insertion Loss | DC-F1 | DC - 18.5 | — | 1.1 | 1.9 | dB |
| | Freq. Cut-Off[4] | Fc | 20.25 | — | 3 | — | dB |
| | Return Loss | DC-F1 | DC - 18.5 | — | 15 | — | dB |
| Stopband | Rejection | F2-F3 | 23.7 - 26.5 | 20 | 38 | — | dB |
| | | F3-F4 | 26.5 - 32 | 30 | 40 | — | |
| | | F4-F5 | 32 - 50 | — | 34 | — | |

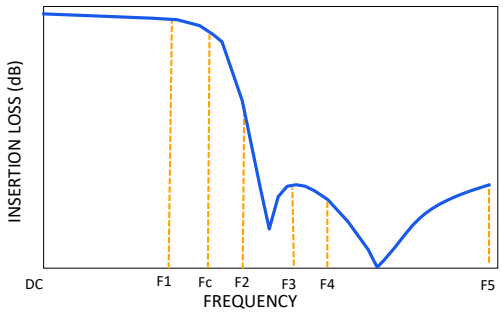
1. Tested on Evaluation Board P/N TB-LFCV-1852+
2. Bi-directional RF1 and RF2 ports can be interchanged.
3. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
4. Typical variation ±5%.

## ABSOLUTE MAXIMUM RATINGS[5]

| Parameter | Ratings |
|---|---|
| Operating Temperature | -55°C to +125°C |
| Storage Temperature | -55°C to +125°C |
| Input Power[6] | 4.5 W @+25°C |

5. Permanent damage may occur if any of these limits are exceeded.
6. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1.6 W at +125°C.

## TYPICAL FREQUENCY RESPONSE AT +25°C



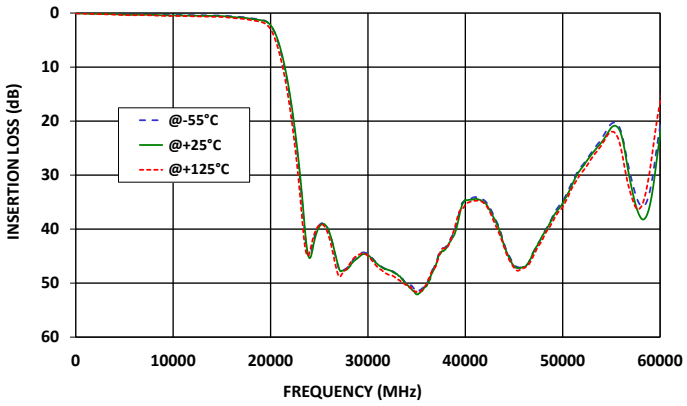
# Low Pass Filter

# LFCV-1852+

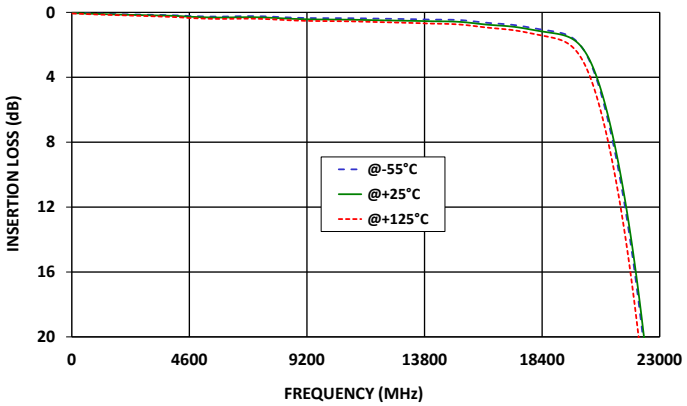
50Ω DC to 18.5 GHz

## TYPICAL PERFORMANCE GRAPHS

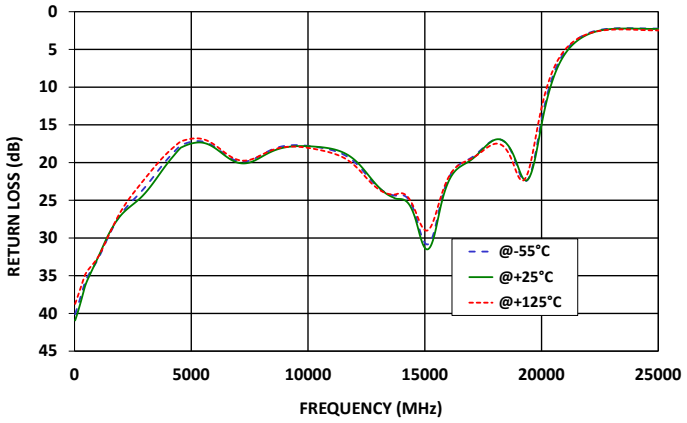
LFCV-1852+
INSERTION LOSS



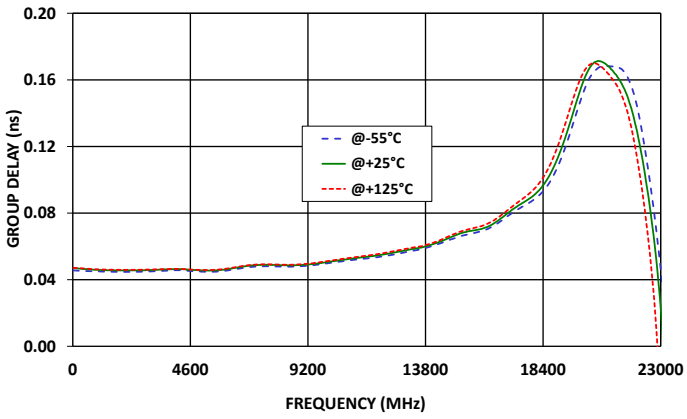

LFCV-1852+
INSERTION LOSS (Zoomed)




LFCV-1852+
RETURN LOSS




LFCV-1852+
GROUP DELAY



# Low Pass Filter

# LFCV-1852+

50Ω DC to 18.5 GHz

## FUNCTIONAL DIAGRAM

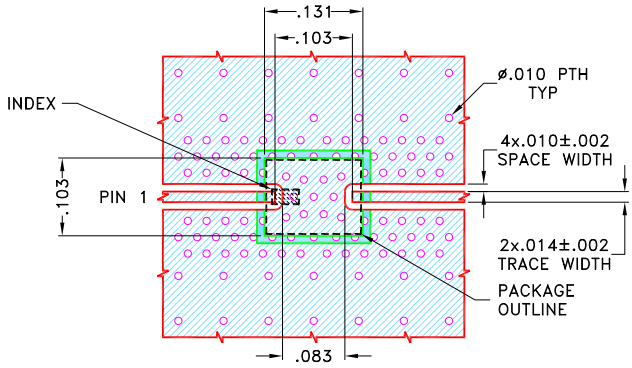



Figure 1. LFCV-1852+ Functional Diagram

## PAD DESCRIPTION

| Function | Pad Number | Description |
|---|---|---|
| RF1[2] | 1 | Connects to RF Input Port |
| RF2[2] | 2 | Connects to RF Output Port |
| GROUND | 3 | Connects to Ground on PCB, (See drawing PL-679) |

## SUGGESTED PCB LAYOUT (PL-679)



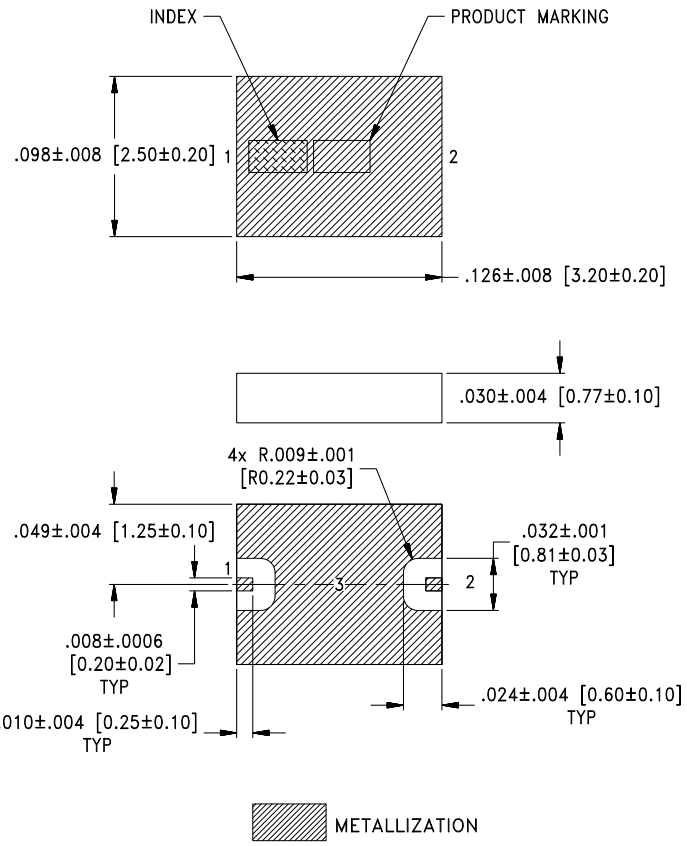

NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4835 Lo Pro) WITH DIELECTRIC THICKNESS .0073±.0007. COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout PL-679

## CASE STYLE DRAWING




Weight: .024 grams

Dimensions are in inches (mm). Tolerances: 2 Pl.±.010; 3 Pl. ±.005

## PRODUCT MARKING*: XU

*Marking may contain other features or characters for internal lot control.

# Low Pass Filter

# LFCV-1852+

50Ω DC to 18.5 GHz

**ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.** CLICK HERE

| | |
|---|---|
| **Performance Data and Graphs** | Data<br>Graphs<br>S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads |
| **Case Style** | JV1210C-13 Lead Finish: Gold over Nickel Plating. |
| **RoHS Status** | Compliant |
| **Tape and Reel** | F74 |
| **Suggested Layout for PCB Design** | PL-679 |
| **Evaluation Board** | TB-LFCV-1852+ |
| | Gerber File |
| **Environmental Rating** | ENV06T10 |

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-Circuits' applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

# Ceramic Low Pass Filter LFCV-1852+

*Typical Performance Data*

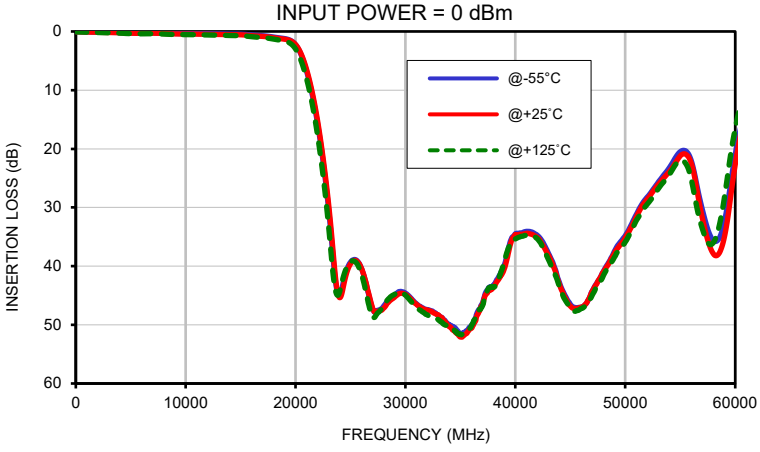
| FREQ. | INSERTION LOSS | | | INPUT RETURN LOSS | | | OUTPUT RETURN LOSS | | |
|---|---|---|---|---|---|---|---|---|---|
| (MHz) | (dB) | | | (dB) | | | (dB) | | |
| | @-55°C | @+25˚C | @+125˚C | @-55°C | @+25˚C | @+125˚C | @-55°C | @+25˚C | @+125˚C |
| 25 | 0.05 | 0.05 | 0.07 | 40.11 | 40.93 | 38.74 | 40.00 | 40.71 | 38.62 |
| 50 | 0.05 | 0.05 | 0.07 | 39.88 | 40.70 | 38.52 | 39.74 | 40.47 | 38.39 |
| 100 | 0.05 | 0.05 | 0.07 | 39.40 | 40.23 | 38.08 | 39.22 | 39.97 | 37.91 |
| 200 | 0.05 | 0.05 | 0.08 | 38.42 | 39.20 | 37.17 | 38.14 | 38.91 | 36.93 |
| 300 | 0.05 | 0.06 | 0.09 | 37.40 | 38.11 | 36.25 | 37.04 | 37.79 | 35.95 |
| 400 | 0.05 | 0.06 | 0.09 | 36.34 | 36.95 | 35.32 | 35.90 | 36.60 | 34.96 |
| 500 | 0.06 | 0.07 | 0.10 | 35.47 | 35.97 | 34.60 | 34.94 | 35.56 | 34.17 |
| 1000 | 0.07 | 0.09 | 0.13 | 32.82 | 32.61 | 32.57 | 32.34 | 32.37 | 32.21 |
| 1500 | 0.10 | 0.12 | 0.16 | 29.51 | 29.27 | 29.41 | 29.67 | 29.62 | 29.68 |
| 2000 | 0.11 | 0.14 | 0.18 | 26.80 | 26.94 | 26.39 | 27.07 | 27.31 | 26.71 |
| 2500 | 0.13 | 0.16 | 0.21 | 25.00 | 25.55 | 24.12 | 24.82 | 25.44 | 24.04 |
| 3000 | 0.15 | 0.18 | 0.23 | 23.34 | 24.13 | 22.18 | 22.88 | 23.72 | 21.91 |
| 3500 | 0.16 | 0.19 | 0.26 | 21.40 | 22.15 | 20.30 | 21.24 | 22.10 | 20.30 |
| 4000 | 0.18 | 0.22 | 0.29 | 19.47 | 20.02 | 18.65 | 19.82 | 20.54 | 19.07 |
| 4500 | 0.21 | 0.26 | 0.34 | 17.85 | 18.19 | 17.31 | 18.45 | 18.90 | 17.96 |
| 5000 | 0.24 | 0.29 | 0.37 | 17.25 | 17.48 | 16.84 | 17.86 | 18.13 | 17.51 |
| 6000 | 0.26 | 0.32 | 0.40 | 17.93 | 18.05 | 17.66 | 18.63 | 18.65 | 18.50 |
| 7000 | 0.23 | 0.30 | 0.39 | 19.81 | 20.02 | 19.64 | 21.33 | 21.31 | 21.31 |
| 8000 | 0.28 | 0.35 | 0.44 | 19.00 | 19.26 | 19.00 | 19.93 | 20.02 | 19.80 |
| 9000 | 0.34 | 0.42 | 0.52 | 17.79 | 18.00 | 17.95 | 17.31 | 17.41 | 17.46 |
| 10000 | 0.36 | 0.44 | 0.54 | 17.79 | 17.83 | 18.05 | 17.77 | 17.72 | 18.37 |
| 11000 | 0.36 | 0.46 | 0.56 | 18.33 | 18.17 | 18.72 | 19.94 | 19.71 | 20.48 |
| 12000 | 0.38 | 0.49 | 0.60 | 19.96 | 19.66 | 20.41 | 21.34 | 21.06 | 21.42 |
| 13000 | 0.41 | 0.51 | 0.64 | 23.26 | 23.17 | 23.49 | 22.71 | 22.46 | 22.97 |
| 14000 | 0.44 | 0.55 | 0.69 | 24.30 | 24.85 | 24.06 | 24.39 | 24.71 | 24.86 |
| 15000 | 0.46 | 0.57 | 0.73 | 30.64 | 31.29 | 28.95 | 35.29 | 35.71 | 33.93 |
| 16000 | 0.60 | 0.72 | 0.89 | 22.22 | 22.63 | 22.05 | 22.16 | 22.24 | 22.69 |
| 18500 | 1.09 | 1.20 | 1.46 | 17.53 | 17.48 | 18.32 | 15.63 | 15.70 | 15.62 |
| 19300 | 1.34 | 1.44 | 1.82 | 22.49 | 22.35 | 22.11 | 16.76 | 16.83 | 16.05 |
| 20250 | 2.97 | 2.90 | 3.86 | 10.90 | 11.46 | 9.80 | 10.11 | 10.50 | 9.27 |
| 21400 | 9.81 | 9.41 | 11.34 | 3.94 | 4.18 | 3.89 | 4.56 | 4.68 | 4.62 |
| 22000 | 15.74 | 15.23 | 17.73 | 2.85 | 2.99 | 2.92 | 3.37 | 3.40 | 3.47 |
| 22800 | 26.78 | 26.05 | 29.52 | 2.28 | 2.35 | 2.42 | 2.54 | 2.52 | 2.67 |
| 23000 | 30.23 | 29.40 | 33.20 | 2.23 | 2.29 | 2.38 | 2.47 | 2.44 | 2.61 |
| 23500 | 40.36 | 39.45 | 42.74 | 2.18 | 2.23 | 2.35 | 2.46 | 2.43 | 2.64 |
| 23700 | 43.49 | 43.06 | 44.64 | 2.18 | 2.23 | 2.36 | 2.51 | 2.48 | 2.72 |
| 24000 | 44.98 | 45.36 | 44.41 | 2.19 | 2.24 | 2.39 | 2.64 | 2.61 | 2.89 |
| 24200 | 43.94 | 44.71 | 42.89 | 2.21 | 2.26 | 2.42 | 2.74 | 2.72 | 3.03 |
| 24400 | 42.27 | 43.00 | 41.47 | 2.22 | 2.27 | 2.44 | 2.86 | 2.83 | 3.19 |
| 24600 | 40.90 | 41.44 | 40.42 | 2.23 | 2.28 | 2.46 | 2.97 | 2.95 | 3.33 |
| 24800 | 39.94 | 40.33 | 39.70 | 2.23 | 2.29 | 2.47 | 3.07 | 3.05 | 3.46 |
| 25000 | 39.30 | 39.59 | 39.26 | 2.24 | 2.29 | 2.48 | 3.14 | 3.12 | 3.54 |
| 26500 | 43.69 | 43.55 | 45.22 | 2.16 | 2.23 | 2.33 | 2.73 | 2.69 | 2.91 |
| 28000 | 46.85 | 47.18 | 46.85 | 2.24 | 2.32 | 2.43 | 3.53 | 3.39 | 4.12 |
| 30000 | 44.61 | 44.83 | 44.97 | 2.11 | 2.19 | 2.33 | 5.33 | 5.34 | 5.38 |
| 32000 | 47.42 | 47.50 | 48.32 | 2.25 | 2.32 | 2.47 | 3.15 | 3.15 | 3.44 |
| 34000 | 50.15 | 50.35 | 50.44 | 2.66 | 2.73 | 2.88 | 3.03 | 3.03 | 3.19 |
| 36000 | 50.14 | 50.59 | 50.16 | 2.37 | 2.49 | 2.64 | 2.45 | 2.45 | 2.78 |
| 38000 | 43.27 | 43.64 | 43.54 | 2.84 | 2.92 | 3.03 | 2.69 | 2.68 | 2.90 |
| 40000 | 34.47 | 34.65 | 35.36 | 3.01 | 3.17 | 3.13 | 2.86 | 2.85 | 3.11 |
| 41000 | 34.07 | 34.41 | 34.75 | 3.17 | 3.31 | 3.44 | 3.06 | 3.05 | 3.44 |
| 42000 | 34.76 | 35.12 | 35.35 | 3.54 | 3.65 | 3.85 | 3.26 | 3.25 | 3.65 |
| 43000 | 37.80 | 38.12 | 38.86 | 3.72 | 3.82 | 3.97 | 3.24 | 3.22 | 3.54 |
| 44000 | 42.76 | 43.11 | 43.44 | 3.52 | 3.62 | 3.72 | 2.97 | 2.95 | 3.14 |
| 45000 | 46.52 | 46.81 | 47.15 | 3.11 | 3.19 | 3.37 | 2.61 | 2.61 | 2.79 |
| 46000 | 47.00 | 47.02 | 47.19 | 3.18 | 3.25 | 3.56 | 2.86 | 2.85 | 3.23 |
| 47000 | 44.21 | 44.24 | 44.90 | 3.51 | 3.55 | 3.98 | 3.44 | 3.43 | 3.89 |
| 48000 | 40.92 | 40.97 | 41.62 | 4.43 | 4.47 | 4.81 | 3.78 | 3.77 | 4.14 |
| 49000 | 37.49 | 37.87 | 38.50 | 5.66 | 5.67 | 5.99 | 3.85 | 3.85 | 4.04 |
| 50000 | 34.80 | 35.16 | 35.87 | 7.67 | 7.44 | 8.60 | 3.68 | 3.64 | 3.97 |

## Typical Performance Data

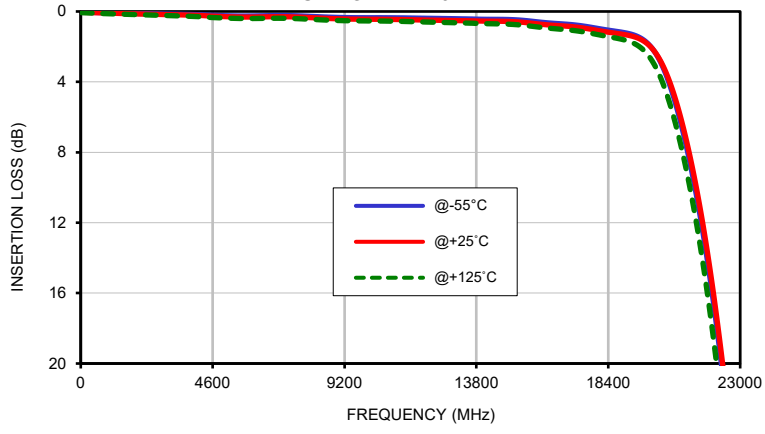
| FREQ. (MHz) | GROUP DELAY (nsec) | | |
|---|---|---|---|
| | @-55°C | @+25°C | @+125°C |
| 25 | 0.05 | 0.05 | 0.05 |
| 50 | 0.05 | 0.05 | 0.05 |
| 100 | 0.05 | 0.05 | 0.05 |
| 200 | 0.05 | 0.05 | 0.05 |
| 300 | 0.05 | 0.05 | 0.05 |
| 400 | 0.05 | 0.05 | 0.05 |
| 500 | 0.05 | 0.05 | 0.05 |
| 1000 | 0.04 | 0.05 | 0.05 |
| 1500 | 0.04 | 0.05 | 0.05 |
| 2000 | 0.04 | 0.05 | 0.05 |
| 2500 | 0.04 | 0.05 | 0.05 |
| 3000 | 0.04 | 0.05 | 0.05 |
| 3500 | 0.05 | 0.05 | 0.05 |
| 4000 | 0.05 | 0.05 | 0.05 |
| 4500 | 0.05 | 0.05 | 0.05 |
| 5000 | 0.04 | 0.05 | 0.05 |
| 5500 | 0.04 | 0.05 | 0.05 |
| 6000 | 0.05 | 0.05 | 0.05 |
| 6500 | 0.05 | 0.05 | 0.05 |
| 7000 | 0.05 | 0.05 | 0.05 |
| 7500 | 0.05 | 0.05 | 0.05 |
| 8000 | 0.05 | 0.05 | 0.05 |
| 8500 | 0.05 | 0.05 | 0.05 |
| 9000 | 0.05 | 0.05 | 0.05 |
| 9500 | 0.05 | 0.05 | 0.05 |
| 10000 | 0.05 | 0.05 | 0.05 |
| 10500 | 0.05 | 0.05 | 0.05 |
| 11000 | 0.05 | 0.05 | 0.05 |
| 11500 | 0.05 | 0.05 | 0.05 |
| 12000 | 0.05 | 0.05 | 0.06 |
| 12500 | 0.05 | 0.06 | 0.06 |
| 13000 | 0.06 | 0.06 | 0.06 |
| 13500 | 0.06 | 0.06 | 0.06 |
| 14000 | 0.06 | 0.06 | 0.06 |
| 14500 | 0.06 | 0.06 | 0.06 |
| 15000 | 0.07 | 0.07 | 0.07 |
| 15500 | 0.07 | 0.07 | 0.07 |
| 16000 | 0.07 | 0.07 | 0.07 |
| 16500 | 0.07 | 0.07 | 0.08 |
| 18500 | 0.10 | 0.10 | 0.10 |

*Typical Performance Curves*

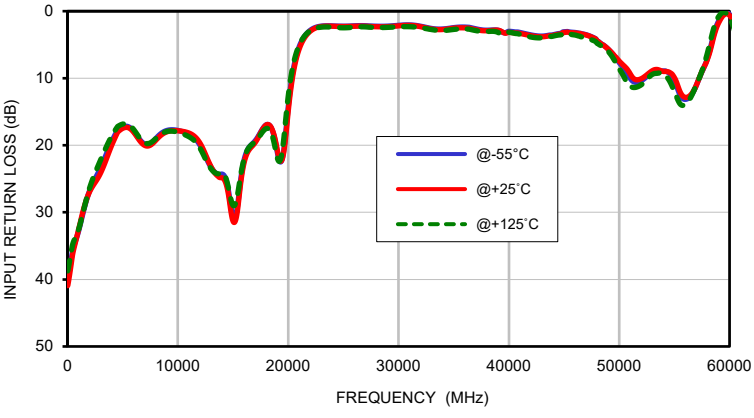
**INSERTION LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm



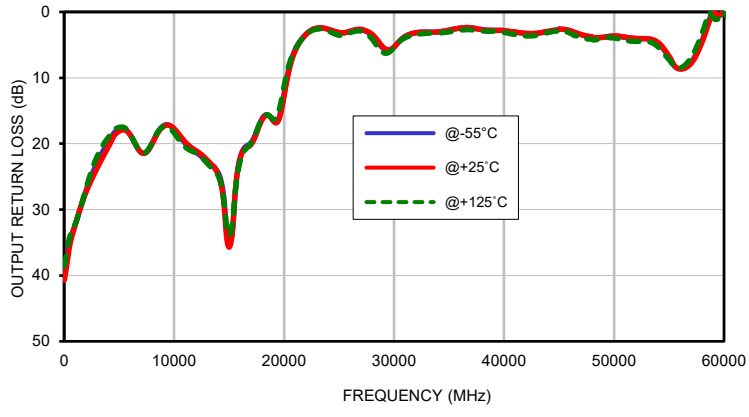

**INSERTION LOSS vs. TEMPERATURE (Zoomed)**
INPUT POWER = 0 dBm



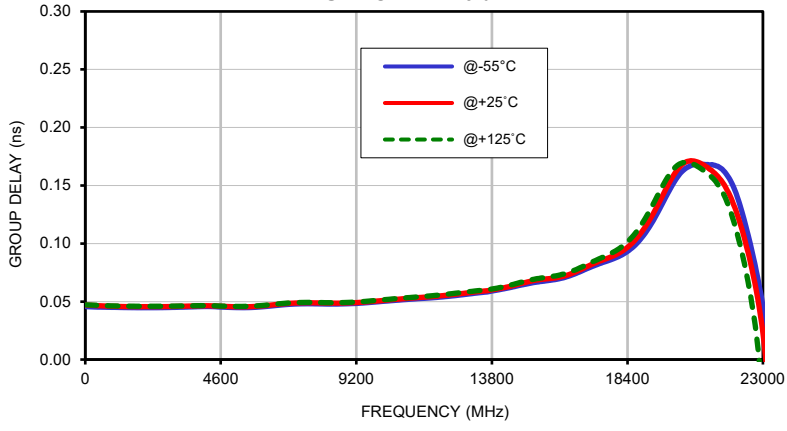

**INPUT RETURN LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm




**OUTPUT RETURN LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm



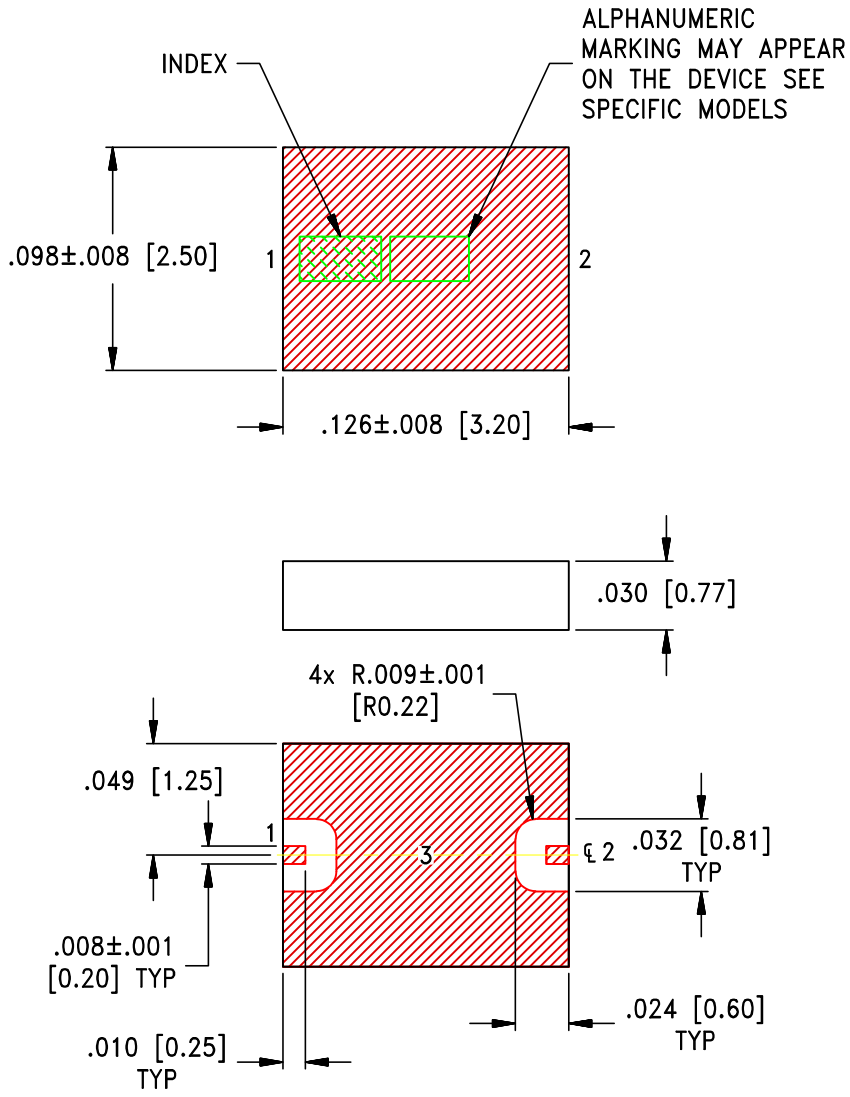

**GROUP DELAY vs. TEMPERATURE**
**INPUT POWER = 0 dBm**



# Case Style JV

## Outline Dimensions

## JV1210C-13




Weight: .024 grams

Dimensions are in inches [mm]. Tolerances: 3 Pl. ±.005 Inches

Notes:

1. Open style, Ceramic base.
2. Termination finish: **as shown below or indicated on Data Sheet**.
   For RoHS Case Styles: Gold plate over Nickel plate. All models, (+) suffix.
3. Primary dimensions are in Inches[millimeters]. Inch equivalents are calculated and subject to roundoff errors.

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RF/IF MICROWAVE COMPONENTS


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# Tape & Reel Packaging TR-F74

## DEVICE ORIENTATION IN T&R

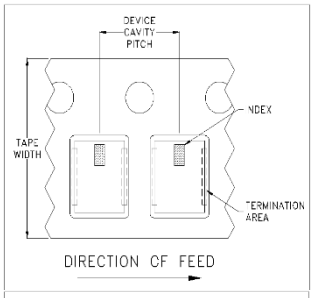



**ILLUSTRATION 1**

| Applicable Case Styles |
|---|
| GE0805C-1 |
| GE0805C-1AP |
| JV1210C-1 |
| GU2939 |

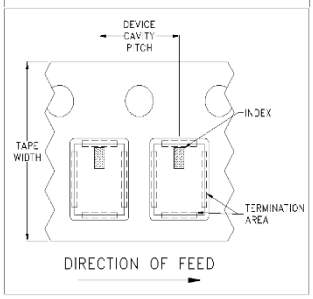



**ILLUSTRATION 2**

| Applicable Case Styles |
|---|
| JV1210C |
| JV1210C-2 |
| JV1210C-3 |
| JV1210C-4 |
| JV1210C-5 |
| JV1210C-6 |
| JV1210C-11 |

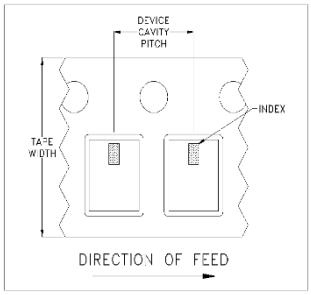



**ILLUSTRATION 3**

| Applicable Case Styles |
|---|
| JC0603C-8 |
| JC0603C-9 |
| JV1210C-7 |
| JV1210C-8 |
| JV1210C-9 |
| JV1210C-10 |
| JV1210C-13 |
| GE0805C-13 |
| GE0805C-19 |
| GE0805C-20 |

| Tape Width, mm | Device Cavity Pitch, mm | Real Size, inches | Devices per Reel | |
|---|---|---|---|---|
| 8 | 4 | 7 | Small quantity standards **(see note)** | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | | | 500 |
| | | | | 1000 |
| | | | Standard | 2000 |
| | | | | 4000 |

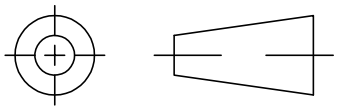
Note: Small reel availability varies by model. Refer to pricing and availability on individual model dashboard.

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

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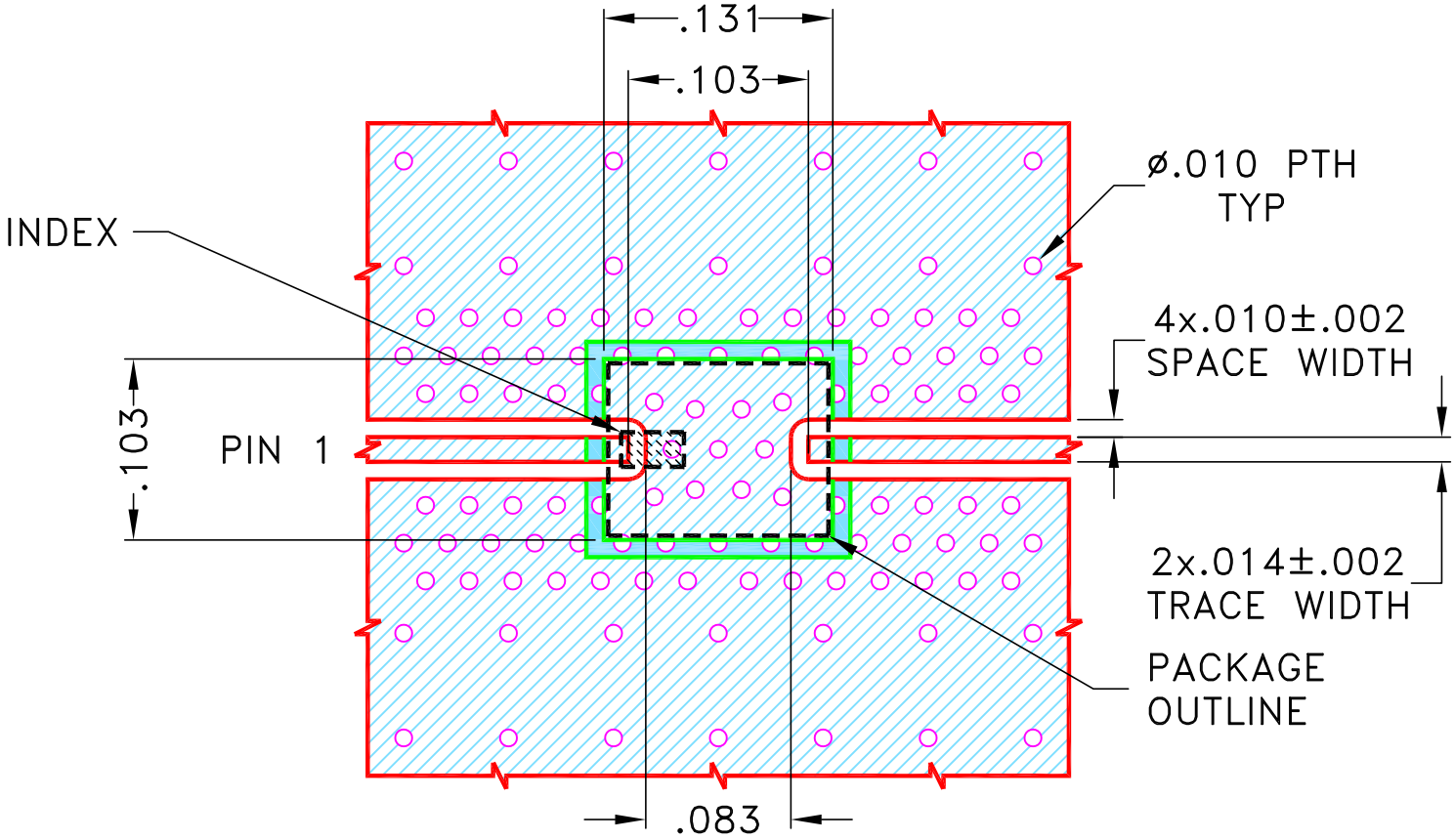
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|---|---|---|---|---|---|
| OR | ECO-003129 | NEW RELEASE | JUL 20 | DDR | VC |
| OR1 | ECO-019409 | JV1210C-13 ADDED | OCT 23 | AGS | VC |
| | | | | | |
| | | | | | |

## SUGGESTED MOUNTING CONFIGURATION FOR JV1210C-7, JV1210C-13 CASE STYLE




NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (RO4835 Lo Pro) WITH DIELECTRIC THICKNESS .0073±.0007. COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

| UNLESS OTHERWISE SPECIFIED | | INITIALS | DATE |
|---|---|---|---|
| DIMENSIONS ARE IN INCHES | DRAWN | DDR | 02 JUL 20 |
| TOLERANCES ON: | CHECKED | RV | 02 JUL 20 |
| 2 PL DECIMALS ± | APPROVED | RKS | 02 JUL 20 |
| 3 PL DECIMALS ± .005" | | | |
| ANGLES ± | | | |
| FRACTIONS ± | | | |

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

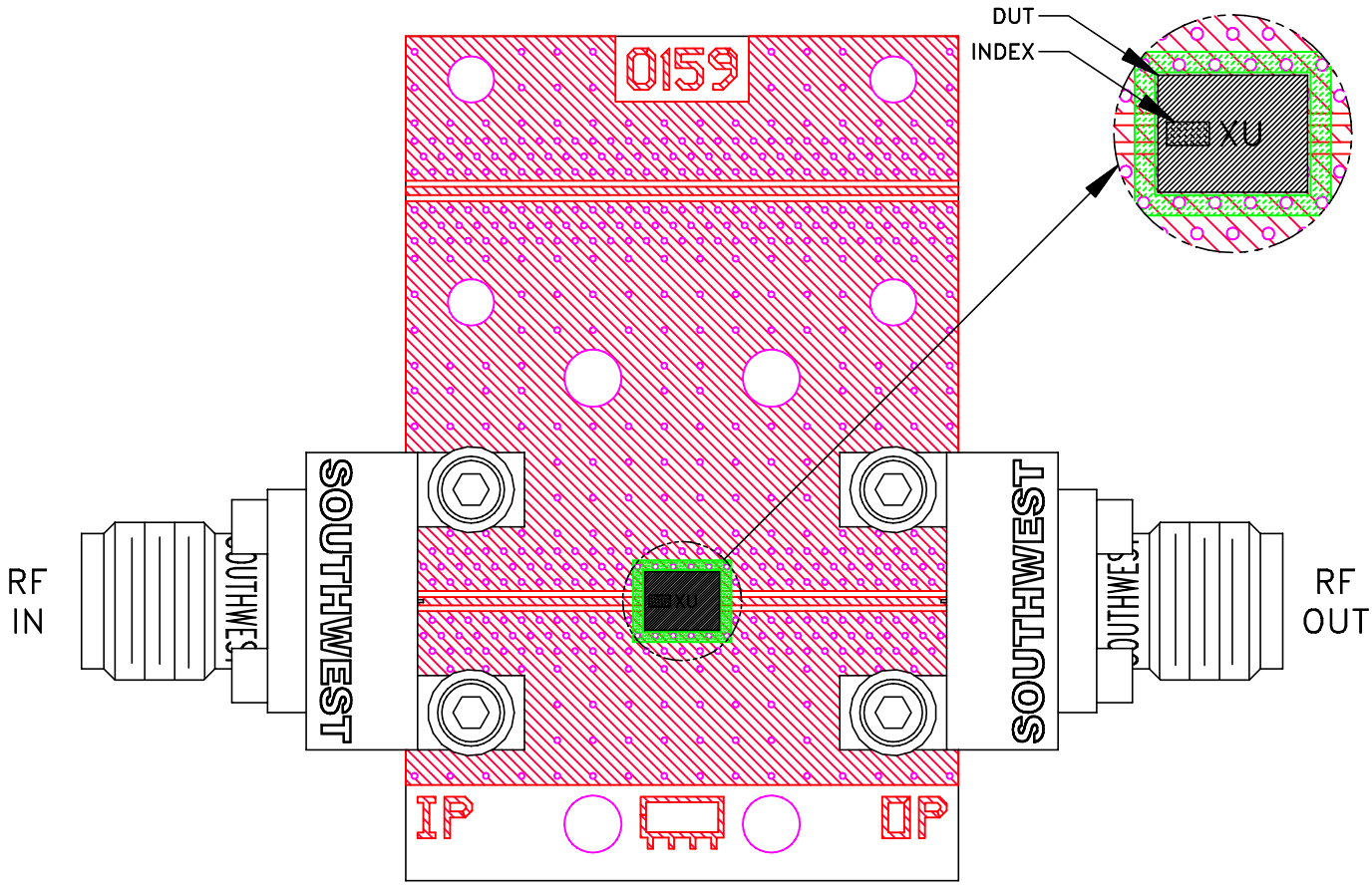
PL, JV1210C-7, JV1210C-13, TB-LFCV-X+

| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---|---|---|---|
| A | 15542 | 98-PL-679 | OR1 |

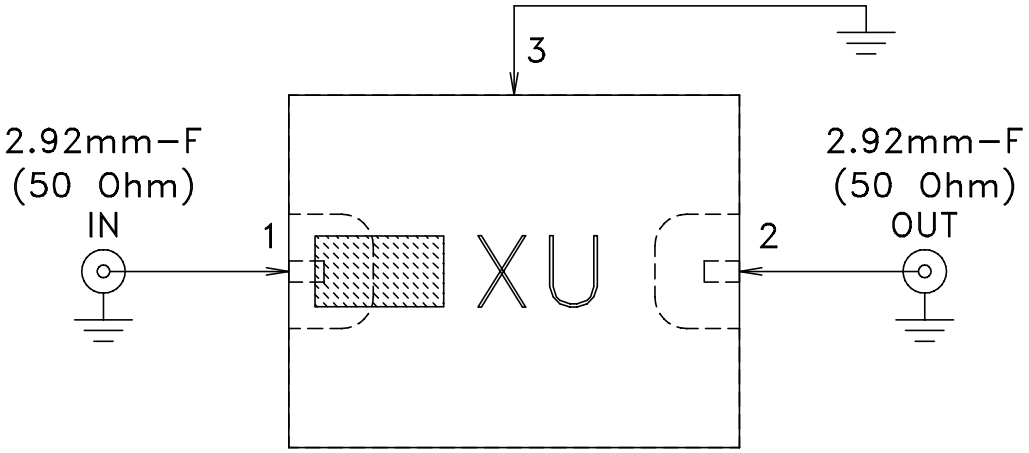
| FILE: | SCALE: | SHEET: |
|---|---|---|
| 98PL679 | 9:1 | 1 OF 1 |

# Evaluation Board and Circuit

TB-LFCV-1852+




## Schematic diagram




Notes:

1. PCB Material: ROGERS (RO4835 Lo Pro) OR Equivalent, Dielectric Constant=3.48±.05 Dielectric Thickness: .0073
2. 50 Ohm 2.92mm Female Connectors.
3. Connectors on the test board shall not be subjected to temperature greater than 200°C to avoid permanent damage to the connectors.

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# Environmental Specifications ENV06T10

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 | -55° to 125° C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 125° 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 |
| Solder Reflow Heat | Sn-Pb Eutectic Process 225°C peak<br>Pb-Free Process 245° - 250°C peak | J-STD-020C, Table 4-1, 4-2 and 5-2, Figure 5-1 |
| Solderability | 10X Magnification | J-STD-002, Test B,B1, 95% Coverage |
| Thermal Shock | -55° to +125°C, 15 min dwell,250 cycles | MIL-STD-202, Method 107 |
| Bend Test | 1mm, deflection for 5 seconds<br>Span of bending: 2.75" | -- |
| High Temp Storage | 125°C to 1000 Hrs | --- |


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