



LTCC SURFACE MOUNT

# Band Pass Filter

## BFCV-5270+

50Ω 4040 to 6500 MHz

### THE BIG DEAL

- Low Insertion Loss, 1.5 dB Typ.
- Passband Return Loss, 8 dB Typ.
- Stopband Rejection, 20 dB Typ.
- 1210 Surface Mount Footprint



Generic photo used for illustration purposes only

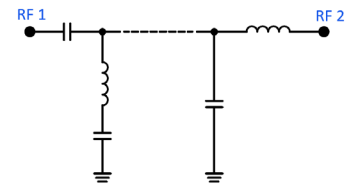
### APPLICATIONS

- Software Defined Radio
- Satellite Television Broadcast
- Weather Radar

### PRODUCT OVERVIEW

The BFCV-5270+ is a passive RF component optimized for band-pass filter applications in low-frequency circuits. Its ceramic-based construction ensures stable electrical performance across a wide operating range, supporting consistent center frequency and bandwidth characteristics under varying environmental conditions. Its internal structure is engineered to minimize parasitic effects, which is critical for maintaining sharp filter response and low insertion loss. The compact form factor and controlled electrical behavior contribute to high reliability and repeatable filter performance that is well suited for dense PCB layouts.

### FUNCTIONAL DIAGRAM



### ELECTRICAL SPECIFICATIONS<sup>1,2</sup> AT +25°C

| Parameter                     | F#        | Frequency (MHz) | Min. | Typ. | Max. | Units |
|-------------------------------|-----------|-----------------|------|------|------|-------|
| Center Frequency <sup>3</sup> | —         | —               | —    | 5270 | —    | MHz   |
| Passband                      | F1-F2     | 4040 - 6500     | —    | 1.5  | —    | dB    |
|                               | F3-F4     | 4150 - 6300     | —    | 1.5  | 4.0  |       |
|                               | F1-F2     | 4040 - 6500     | —    | 8    | —    | dB    |
| Stopband, Lower               | Rejection | DC - F5         | 14   | 17   | —    | dB    |
| Stopband, Upper               | Rejection | F6              | —    | 17   | —    | dB    |
|                               |           | F7-F8           | 15   | 20   | —    |       |
|                               |           | F8-F9           | —    | 17   | —    |       |

1. Tested in Evaluation Board P/N TB-BFCV-5270+.

2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

3. Typical variation ± 5%

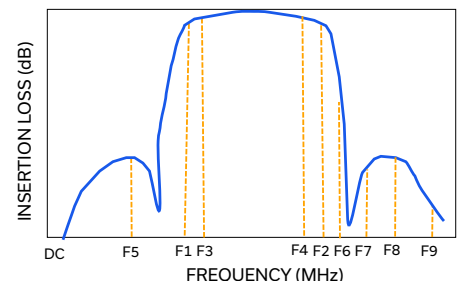
### ABSOLUTE MAXIMUM RATINGS<sup>4</sup>

|                          |                 |
|--------------------------|-----------------|
| Operating Temperature    | -55°C to +100°C |
| Storage Temperature      | -55°C to +100°C |
| Input Power <sup>5</sup> | 6 W @ +25°C     |

4. Permanent damage may occur if any of these limits are exceeded.

5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.25 W at +100°C.

### TYPICAL FREQUENCY RESPONSE





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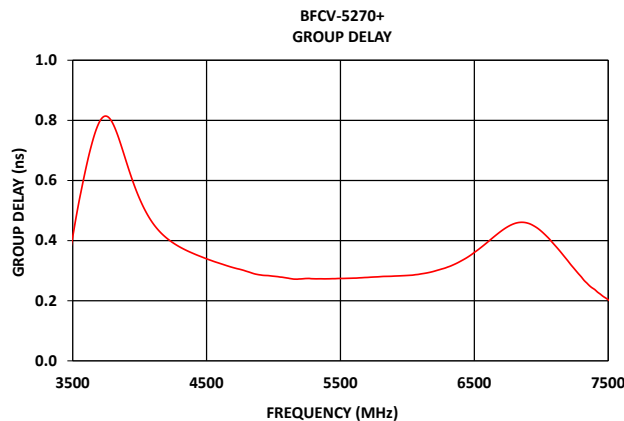
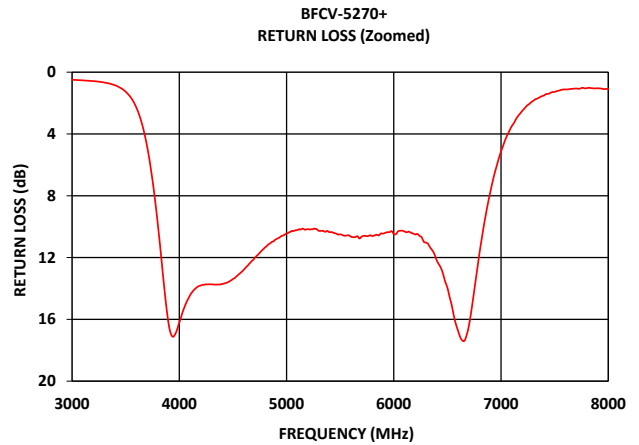
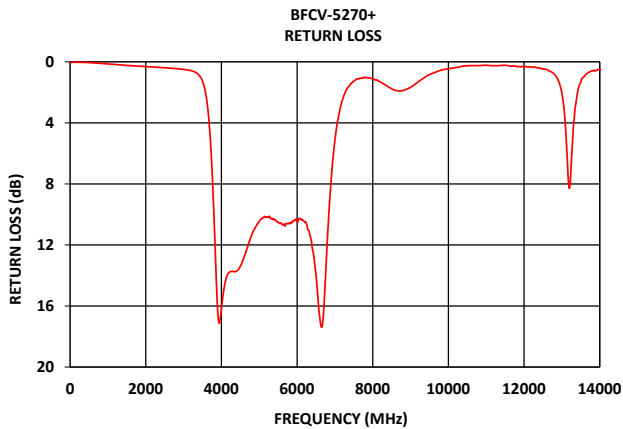
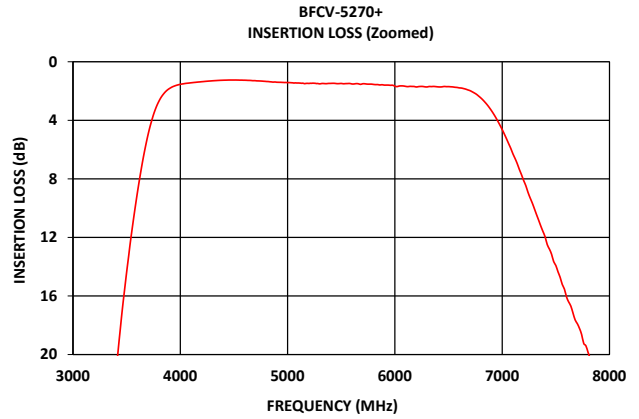
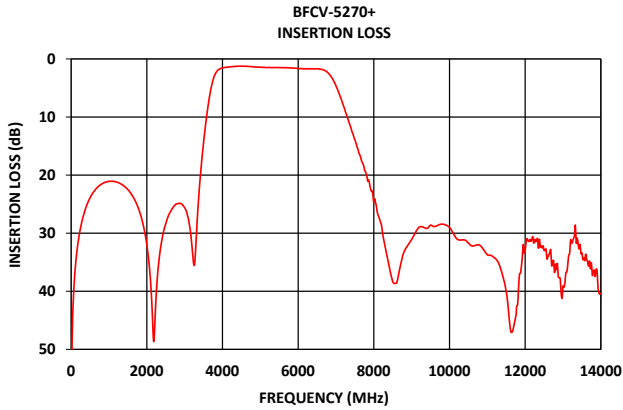
# Band Pass Filter

## BFCV-5270+

Mini-Circuits

50Ω 4040 to 6500 MHz

### TYPICAL PERFORMANCE GRAPHS AT +25°C





### FUNCTIONAL DIAGRAM

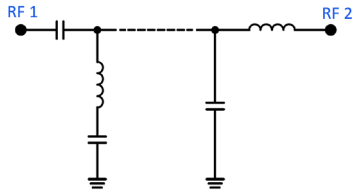
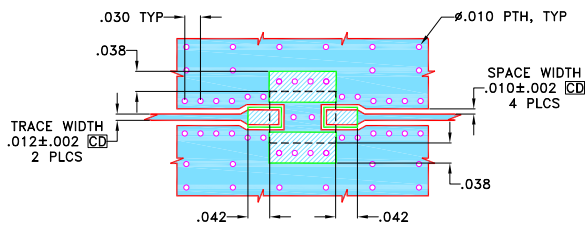


Figure 1. BFCV-5270+ Functional Diagram

### PAD DESCRIPTION

| Function | Pad Number | Description  |
|----------|------------|--|
| RF1      | 1          | Connects to RF Input Port                          |
| RF2      | 3          | Connects to RF Output Port                         |
| GROUND   | 2,4        | Connects to Ground on PCB,<br>(See drawing PL-503) |

### SUGGESTED PCB LAYOUT



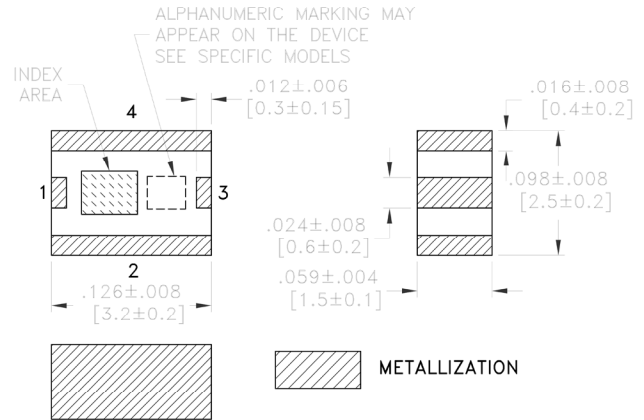
**NOTES:**

- TRACE WIDTH & SPACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .0066"±.0007". COPPER 1/2 Oz. EACH SIDE FOR OTHER MATERIALS TRACE WIDTH & SPACE WIDTH MAY NEED TO BE MODIFIED.
- 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 SOLDERMASK

Figure 2. Suggested PCB Layout

### CASE STYLE DRAWING



WEIGHT: .03 grams.  
DIMENSIONS ARE IN INCH [MM].

### PRODUCT MARKING\*: NC

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



LTCC SURFACE MOUNT

# Band Pass Filter

## BFCV-5270+

Mini-Circuits

50Ω 4040 to 6500 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

|                                 |   |
|---------------------------------|---|
| Performance Data & Graphs       | Data<br>Graphs<br>S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads |
| Case Style                      | JV1210C Lead Finish: Tin over Nickel Plate  |
| RoHS/REACH Status               | Compliant   |
| Tape and Reel                   | F74   |
| Suggested Layout for PCB Design | PL-503  |
| Evaluation Board                | TB-BFCV-5270+<br>Gerber File  |
| Environmental Rating            | ENV02T1   |

### 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.
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# Surface Mount Band Pass Filter

# BFCV-5270+

## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | RETURN<br>LOSS<br>(dB) | FREQUENCY<br>(MHz) | GROUP<br>DELAY<br>(nsec) |
|--------------------|---------------------------|------------------------|--------------------|--------------------------|
| 10                 | 56.84                     | 0.04                   | 4040               | 0.50                     |
| 100                | 36.74                     | 0.03                   | 4080               | 0.47                     |
| 200                | 30.85                     | 0.03                   | 4120               | 0.45                     |
| 500                | 23.90                     | 0.05                   | 4160               | 0.43                     |
| 1000               | 21.08                     | 0.14                   | 4200               | 0.41                     |
| 1200               | 21.20                     | 0.18                   | 4240               | 0.40                     |
| 1400               | 21.89                     | 0.21                   | 4280               | 0.38                     |
| 1500               | 22.50                     | 0.23                   | 4320               | 0.37                     |
| 1600               | 23.36                     | 0.25                   | 4360               | 0.37                     |
| 1800               | 26.13                     | 0.28                   | 4400               | 0.36                     |
| 2000               | 31.98                     | 0.31                   | 4440               | 0.35                     |
| 2200               | 47.35                     | 0.34                   | 4480               | 0.34                     |
| 2500               | 28.39                     | 0.39                   | 4520               | 0.34                     |
| 2800               | 24.96                     | 0.45                   | 4560               | 0.33                     |
| 3000               | 25.61                     | 0.49                   | 4600               | 0.32                     |
| 3250               | 35.57                     | 0.61                   | 4640               | 0.32                     |
| 3500               | 14.38                     | 1.27                   | 4680               | 0.31                     |
| 3600               | 8.95                      | 2.30                   | 4720               | 0.31                     |
| 3700               | 4.97                      | 4.82                   | 4760               | 0.30                     |
| 3750               | 3.62                      | 7.00                   | 4800               | 0.30                     |
| 4000               | 1.54                      | 16.20                  | 4840               | 0.29                     |
| 4040               | 1.49                      | 15.35                  | 4880               | 0.29                     |
| 4150               | 1.40                      | 14.01                  | 4920               | 0.28                     |
| 5270               | 1.49                      | 10.15                  | 4960               | 0.28                     |
| 6300               | 1.72                      | 11.03                  | 5000               | 0.28                     |
| 6500               | 1.70                      | 13.95                  | 5040               | 0.28                     |
| 6900               | 3.34                      | 7.75                   | 5080               | 0.28                     |
| 7000               | 4.63                      | 5.13                   | 5120               | 0.27                     |
| 7100               | 6.29                      | 3.49                   | 5160               | 0.27                     |
| 7300               | 10.04                     | 1.85                   | 5200               | 0.27                     |
| 7500               | 13.92                     | 1.28                   | 5240               | 0.27                     |
| 7820               | 20.31                     | 1.01                   | 5280               | 0.27                     |
| 8000               | 24.78                     | 1.10                   | 5320               | 0.27                     |
| 8500               | 38.40                     | 1.77                   | 5360               | 0.27                     |
| 8750               | 34.36                     | 1.89                   | 5400               | 0.27                     |
| 8800               | 33.20                     | 1.88                   | 5440               | 0.27                     |
| 9000               | 31.08                     | 1.67                   | 5480               | 0.27                     |
| 9500               | 28.62                     | 0.83                   | 5520               | 0.27                     |
| 10000              | 29.01                     | 0.45                   | 5560               | 0.27                     |
| 10250              | 30.17                     | 0.31                   | 5600               | 0.28                     |
| 10500              | 31.70                     | 0.25                   | 5640               | 0.28                     |
| 10750              | 32.48                     | 0.21                   | 5680               | 0.28                     |
| 11000              | 33.72                     | 0.22                   | 5720               | 0.28                     |
| 11250              | 34.59                     | 0.26                   | 5760               | 0.28                     |
| 11500              | 40.04                     | 0.22                   | 5800               | 0.28                     |
| 11750              | 44.35                     | 0.27                   | 5840               | 0.28                     |
| 12000              | 32.92                     | 0.35                   | 5880               | 0.28                     |
| 12100              | 31.41                     | 0.32                   | 5920               | 0.28                     |
| 12200              | 30.59                     | 0.35                   | 5960               | 0.28                     |
| 12300              | 31.16                     | 0.34                   | 6000               | 0.28                     |
| 12400              | 32.37                     | 0.39                   | 6040               | 0.29                     |
| 12500              | 32.98                     | 0.46                   | 6080               | 0.29                     |
| 12600              | 34.02                     | 0.50                   | 6120               | 0.29                     |
| 12700              | 35.58                     | 0.63                   | 6160               | 0.29                     |
| 12800              | 35.35                     | 0.82                   | 6200               | 0.30                     |
| 13000              | 39.12                     | 2.06                   | 6240               | 0.30                     |
| 13200              | 31.18                     | 8.29                   | 6300               | 0.31                     |
| 13400              | 31.89                     | 2.17                   | 6360               | 0.32                     |
| 13600              | 33.60                     | 0.95                   | 6400               | 0.33                     |
| 14000              | 40.35                     | 0.51                   | 6500               | 0.36                     |



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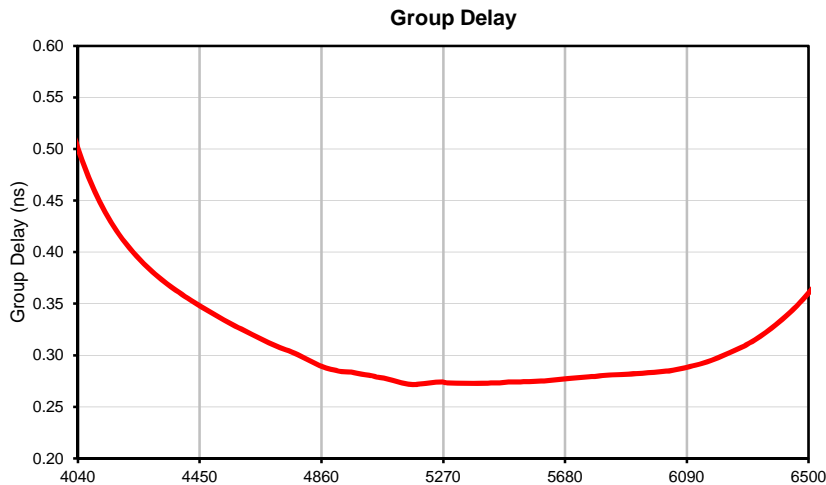
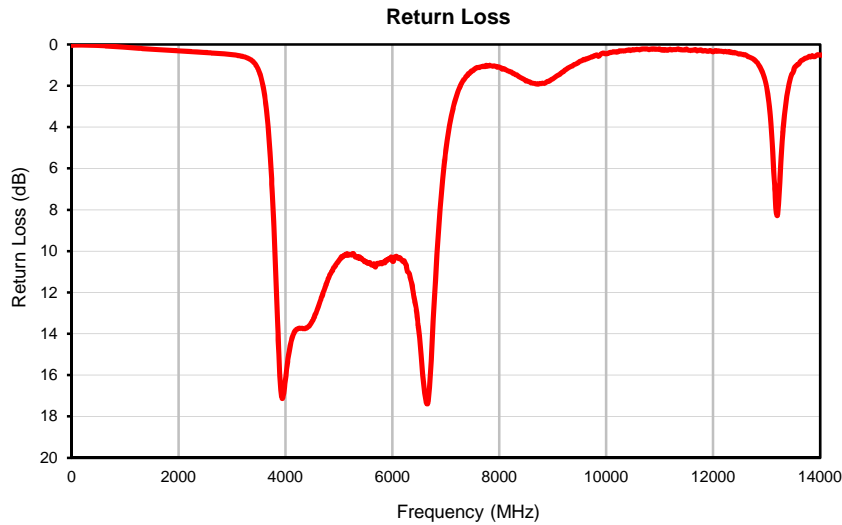
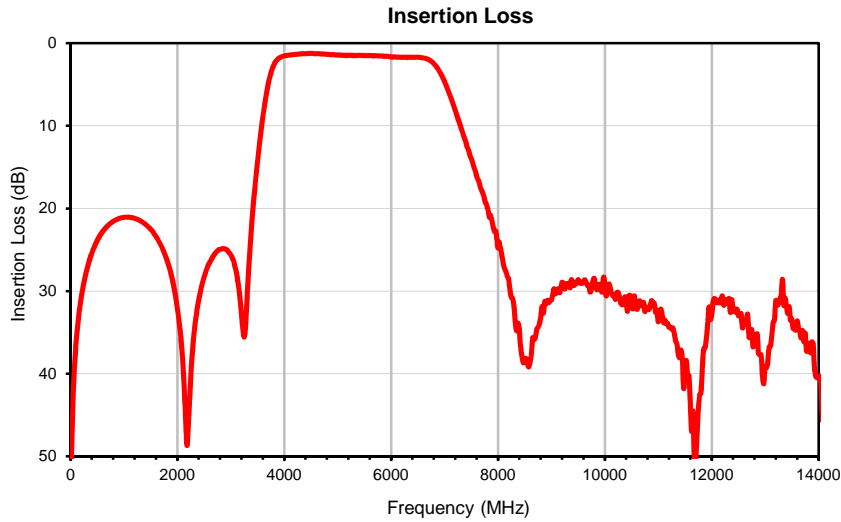


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IF/RF MICROWAVE COMPONENTS

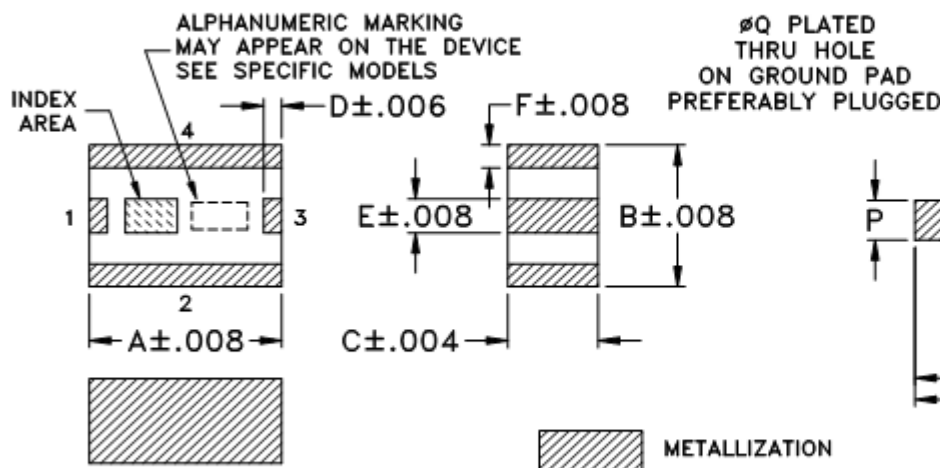
REV.OR  
BFCV-5270+  
URJ  
170310  
Page 1 of 1

## Typical Performance Curves

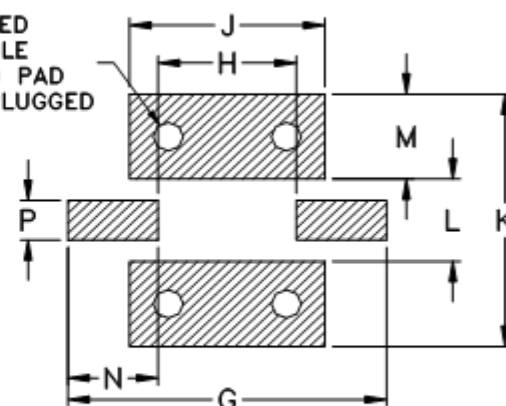


## Outline Dimensions

JV1210C



## PCB Land Pattern



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

| CASE #  | A             | B             | C             | D            | E            | F            | G             | H             | J              | K              | L              | M             | N             | P            | Q            | WT. GRAM |
|---------|---------------|---------------|---------------|--------------|--------------|--------------|---------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|----------|
| JV1210C | .126<br>(3.2) | .098<br>(2.5) | .059<br>(1.5) | .012<br>(.3) | .024<br>(.6) | .016<br>(.4) | .209<br>(5.3) | .091<br>(2.3) | .128<br>(3.25) | .175<br>(4.45) | .057<br>(1.45) | .059<br>(1.5) | .059<br>(1.5) | .028<br>(.7) | .020<br>(.5) | .03      |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; 3 Pl.  $\pm .005$

### Notes:

1. Open style, ceramic base.
2. Termination finish: **as shown below or indicated on Data Sheet.**  
For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.  
For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.
3. Pad tolerance is non-cumulative. Minimum spacing between each pad is .004.



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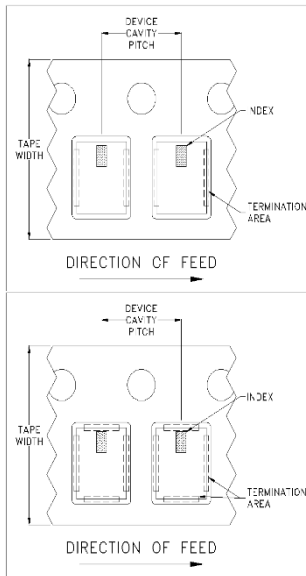


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RF/IF MICROWAVE COMPONENTS

# Tape & Reel Packaging TR-F74

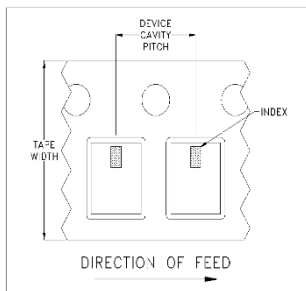
## DEVICE ORIENTATION IN T&R



**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,<br>mm | Device Cavity Pitch,<br>mm | Real Size,<br>inches | Devices per Reel                             |      |
|-------------------|----------------------------|----------------------|--|------|
| 8                 | 4                          | 7                    | Small<br>quantity<br>standards<br>(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.

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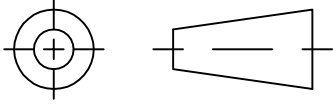
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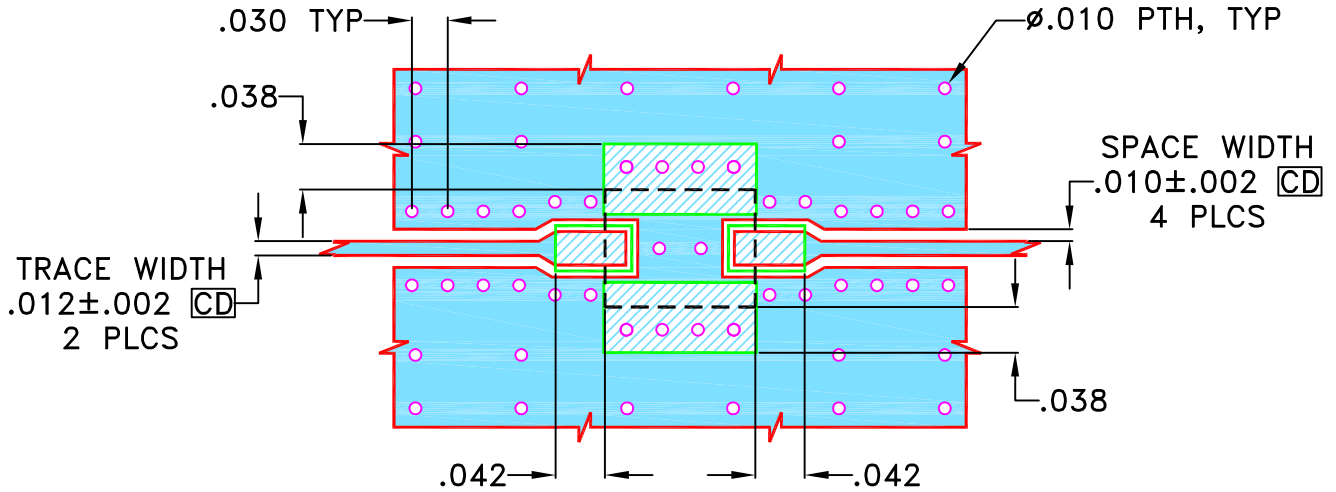
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE   | DR | AUTH |
|-----|---------|-------------|--------|----|------|
| OR  | M160679 | NEW RELEASE | MAR 17 | TM | MD   |
|     |         |             |        |    |      |
|     |         |             |        |    |      |

**SUGGESTED MOUNTING CONFIGURATION FOR JV1210C CASE STYLE**



**NOTES:**

1. TRACE WIDTH & SPACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS  $.0066 \pm .0007$ ". COPPER 1/2 Oz. EACH SIDE FOR OTHER MATERIALS TRACE WIDTH & SPACE 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 SOLDERMASK

| UNLESS OTHERWISE SPECIFIED | INITIALS    | DATE     |
|----------------------------|-------------|----------|
| DIMENSIONS ARE IN INCHES   | DRAWN TM    | 9 MAR 17 |
| TOLERANCES ON:             | CHECKED MD  | 9 MAR 17 |
| 2 PL DECIMALS ±            | APPROVED RV | 9 MAR 17 |
| 3 PL DECIMALS ± .005"      |             |          |
| ANGLES ±                   |             |          |
| FRACTIONS ±                |             |          |



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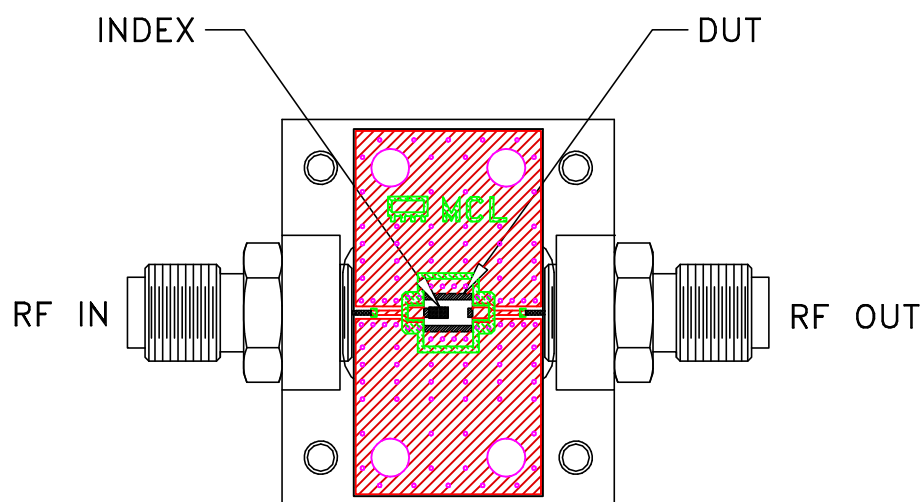
**PL, JV1210C, BFCV-5270+,  
TB-945+, 50 OHM**

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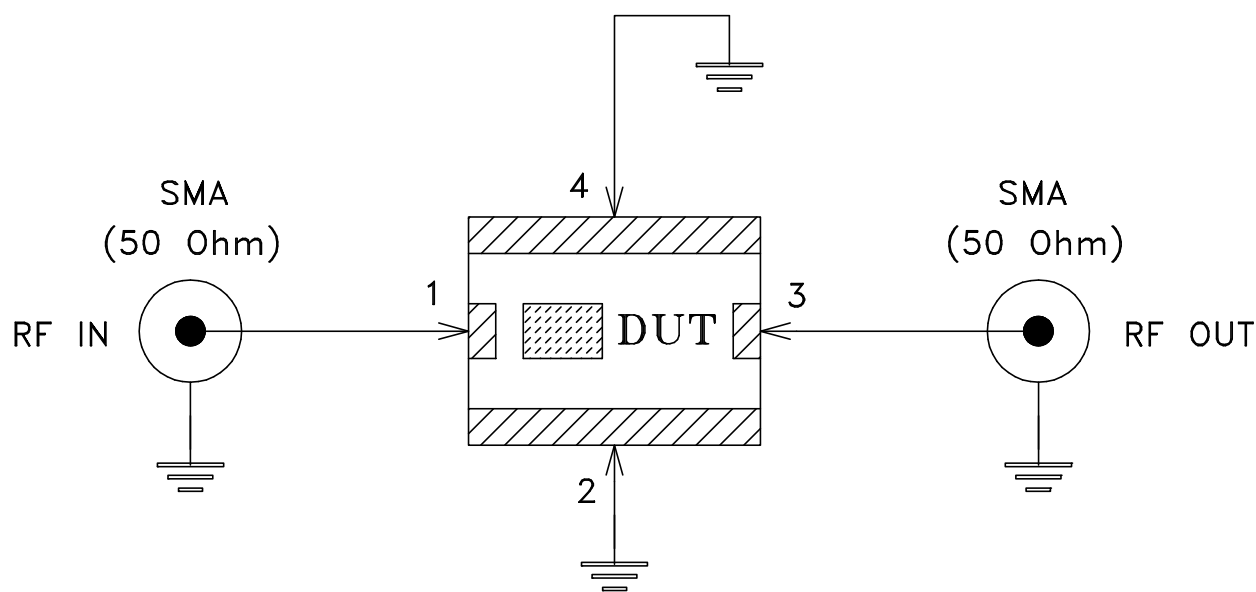
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| SIZE  | CODE IDENT | DRAWING NO: | REV:          |
|-------|------------|-------------|---------------|
| A     | 15542      | 98-PL-503   | OR            |
| FILE: | 98PL503    | SCALE: 6:1  | SHEET: 1 OF 1 |

# Evaluation Board and Circuit




TB-945+



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,  
Dielectric Constant=3.48, Thickness=.0066 inch.

 **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          | -40° 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 Eutetic Process: 225°C peak<br>Pb-Free Process 245° - 250°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  |