*Ceramic*

# Balance Filter

## BLFCV-1570+

50Ω 690 to 1570 MHz

*Generic photo used for illustration purposes only*

CASE STYLE: JV1210C-4

***+RoHS Compliant***

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

*Available Tape and Reel at no extra cost*

| Reel Size | Devices/Reel |
|---|---|
| 7" | 20, 50, 100, 200, 500,1000, 4000 |

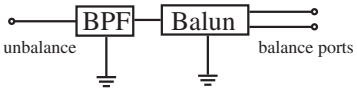
### Features

- Small size (0.126"x0.098"x0.039")
- Temperature stable
- Hermetically sealed
- LTCC construction

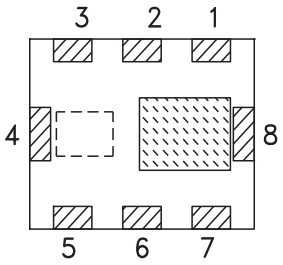
### Applications

- ISM
- Cellular

### Simplified Schematic




### Top View




### Pad Connections

| | |
|---|---|
| Unbalanced Port | 7 |
| Balanced Port | 3, 5 |
| GND | 2, 4, 8 |
| GNC or DC Feed | 6 |
| NC | 1 |

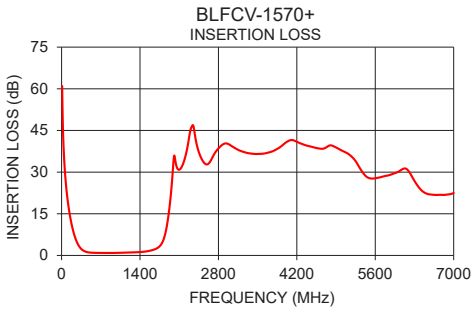
### Electrical Specifications at 25°C

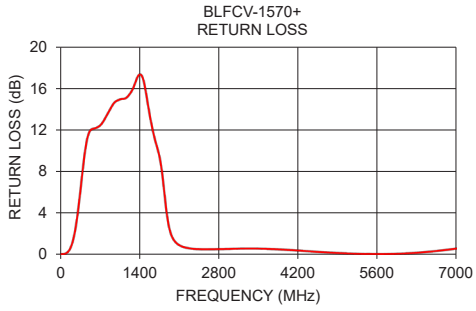
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Impedance Ratio** | | | | 2:1 | | |
| **Insertion Loss** | F1-F2 | 690 - 1570 | — | — | 3.0 | dB |
| **Attenuation** | | 2200-5050 | 25 | — | — | dB |
| | | 5050-6000 | 20 | — | — | |
| **Amplitude Unbalance** | | 690 - 1570 | — | — | 1.5 | dB |
| **Phase Unbalance** | | 690 - 1570 | — | — | 15 | degree |
| **Input VSWR** | | 690 - 1570 | — | 1.78 | — | :1 |

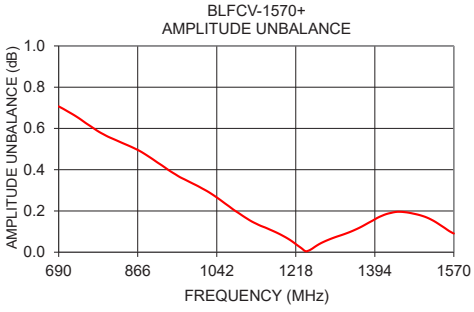
### Maximum Ratings

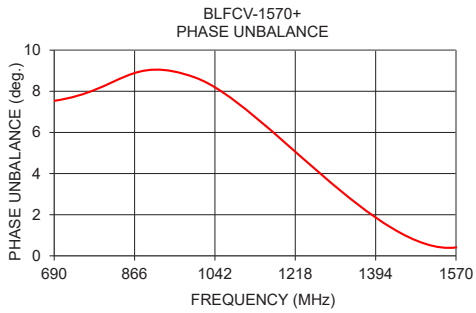
| | |
|---|---|
| Operating Temperature | -55°C to +105°C |
| Storage Temperature | -55°C to +105°C |
| RF Power Input* | 1W @25°C |

* Refer to product storage temperature after installation
Suggestion for T&R unused product storage condition: +5 ~ +35 °C, Humidity 45~75%RH, 12 month Max



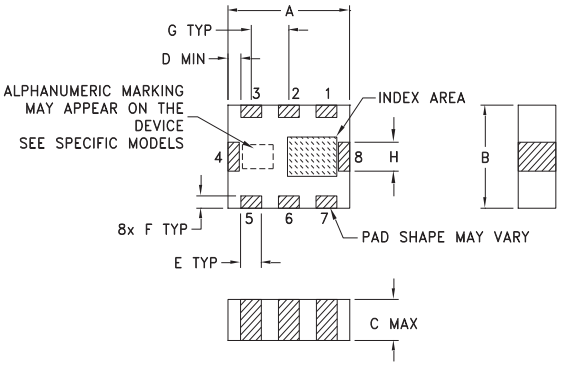



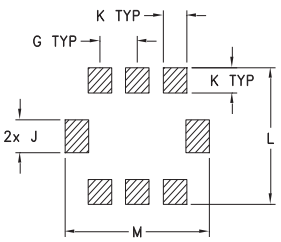



## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) | Amplitude Unbalance (dB) | Phase Unbalance (Deg,) |
|---|---|---|---|---|
| 10 | 60.98 | 0.04 | 2.72 | 31.03 |
| 50 | 33.22 | 0.05 | 2.49 | 9.47 |
| 100 | 21.27 | 0.14 | 2.27 | 5.68 |
| 690 | 0.91 | 12.38 | 0.71 | 7.54 |
| 1000 | 0.93 | 14.80 | 0.32 | 8.66 |
| 1570 | 1.67 | 13.49 | 0.09 | 0.41 |
| 2000 | 34.43 | 1.38 | 6.11 | 11.55 |
| 2500 | 34.77 | 0.51 | 3.43 | 27.47 |
| 3000 | 39.84 | 0.55 | 3.20 | 37.34 |
| 3500 | 36.52 | 0.57 | 1.36 | 30.47 |
| 4000 | 40.59 | 0.45 | 9.38 | 85.68 |
| 4500 | 38.92 | 0.27 | 0.20 | 158.12 |
| 5000 | 37.79 | 0.12 | 4.09 | 170.46 |
| 5500 | 27.79 | 0.05 | 0.06 | 65.38 |
| 6000 | 30.01 | 0.08 | 10.33 | 69.21 |
| 7000 | 22.48 | 0.58 | 4.00 | 84.49 |

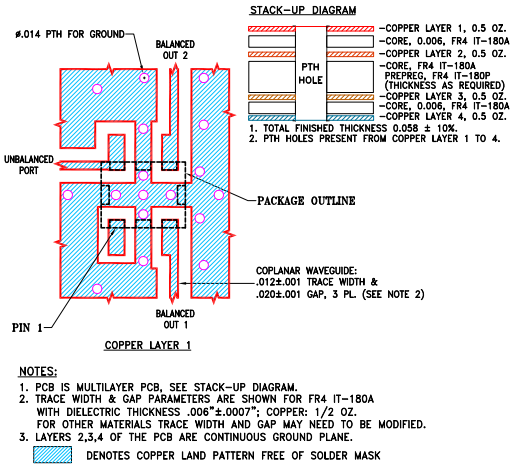
## Outline Drawing




Suggested Layout,
Tolerance to be within .002

***Demo Board MCL P/N: TB-1053+***
***Suggested PCB Layout (PL-632)***




NOTES:
1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR FR4 IT-180A WITH DIELECTRIC THICKNESS .006"±.0007"; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
3. LAYERS 2,3,4 OF THE PCB ARE CONTINUOUS GROUND PLANE.

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Outline Dimensions ( inch / mm )

| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| .126 | .098 | .039 | .004 | .022 | .012 | .039 |
| 3.2 | 2.5 | 1.0 | 0.1 | 0.56 | 0.3 | 1.0 |
| H | J | K | L | M | | wt |
| .028 | .031 | .024 | .130 | 0.15 | | grams |
| 0.7 | 0.8 | 0.6 | 3.30 | 3.81 | | 0.030 |

## Additional 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.

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/MCLStore/terms.jsp

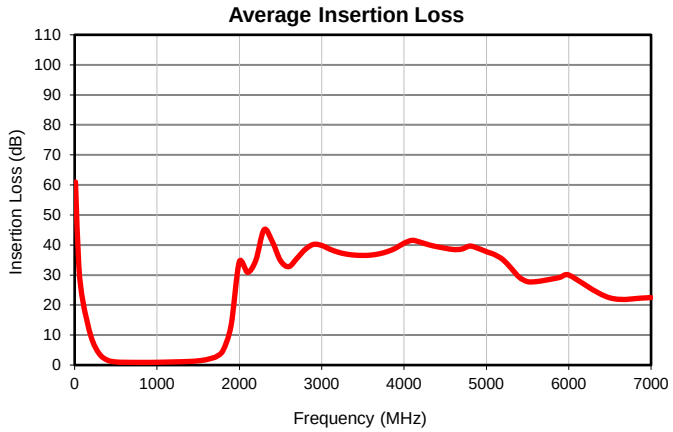
# Ceramic Balance Filter BLFCV-1570+

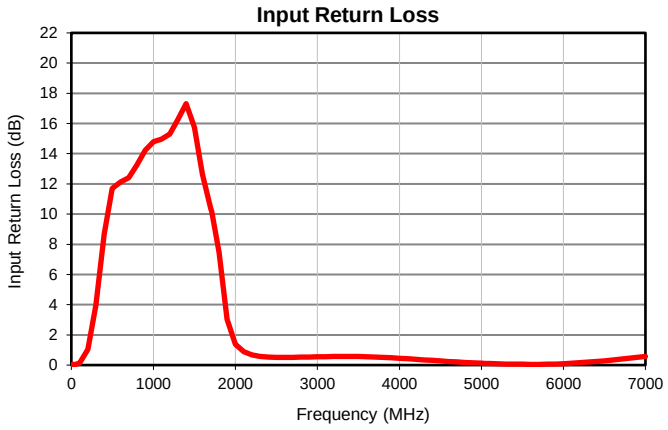
*Typical Performance Data*

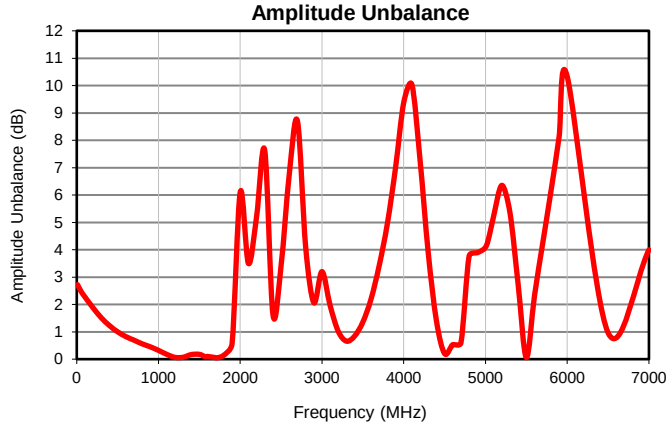
| FREQUENCY (MHz) | INSERTION LOSS (dB) | RETURN LOSS (dB) | AMPLITUDE UNBALANCE (dB) | PHASE UNBALANCE (deg.) |
|---|---|---|---|---|
| 10 | 60.98 | 0.04 | 2.72 | 31.03 |
| 50 | 33.22 | 0.05 | 2.49 | 9.47 |
| 100 | 21.27 | 0.14 | 2.27 | 5.68 |
| 200 | 9.39 | 1.03 | 1.87 | 2.89 |
| 300 | 3.73 | 3.96 | 1.51 | 0.53 |
| 400 | 1.61 | 8.66 | 1.23 | 1.91 |
| 500 | 1.05 | 11.70 | 1.00 | 4.26 |
| 600 | 0.93 | 12.13 | 0.83 | 6.13 |
| 690 | 0.91 | 12.38 | 0.71 | 7.54 |
| 700 | 0.91 | 12.43 | 0.70 | 7.64 |
| 800 | 0.89 | 13.25 | 0.56 | 8.53 |
| 900 | 0.89 | 14.23 | 0.45 | 8.79 |
| 1000 | 0.93 | 14.80 | 0.32 | 8.66 |
| 1100 | 0.98 | 14.97 | 0.18 | 7.97 |
| 1200 | 1.05 | 15.30 | 0.07 | 6.88 |
| 1300 | 1.12 | 16.26 | 0.07 | 5.54 |
| 1400 | 1.21 | 17.31 | 0.17 | 3.77 |
| 1500 | 1.41 | 15.75 | 0.18 | 2.17 |
| 1570 | 1.67 | 13.49 | 0.09 | 0.41 |
| 1600 | 1.81 | 12.63 | 0.10 | 0.57 |
| 1700 | 2.55 | 10.37 | 0.05 | 2.68 |
| 1710 | 2.67 | 10.18 | 0.04 | 2.87 |
| 1800 | 4.76 | 7.46 | 0.15 | 3.87 |
| 1900 | 13.24 | 3.02 | 0.56 | 3.02 |
| 2000 | 34.43 | 1.38 | 6.11 | 11.55 |
| 2100 | 30.86 | 0.88 | 3.50 | 26.13 |
| 2200 | 34.90 | 0.67 | 5.21 | 30.26 |
| 2300 | 45.08 | 0.57 | 7.62 | 87.33 |
| 2400 | 41.15 | 0.53 | 1.63 | 31.89 |
| 2500 | 34.77 | 0.51 | 3.43 | 27.47 |
| 2600 | 32.78 | 0.51 | 6.76 | 37.30 |
| 2700 | 35.56 | 0.51 | 8.70 | 67.12 |
| 2800 | 38.52 | 0.52 | 4.11 | 95.36 |
| 2900 | 40.19 | 0.53 | 2.06 | 76.46 |
| 3000 | 39.84 | 0.55 | 3.20 | 37.34 |
| 3100 | 38.59 | 0.56 | 1.95 | 12.72 |
| 3200 | 37.60 | 0.57 | 1.01 | 1.95 |
| 3300 | 36.97 | 0.57 | 0.66 | 13.30 |
| 3400 | 36.63 | 0.57 | 0.85 | 22.77 |
| 3500 | 36.52 | 0.57 | 1.36 | 30.47 |
| 3600 | 36.64 | 0.56 | 2.19 | 38.18 |
| 3700 | 37.08 | 0.53 | 3.42 | 45.34 |
| 3800 | 37.82 | 0.51 | 4.95 | 53.38 |
| 3900 | 38.98 | 0.48 | 7.00 | 65.09 |
| 4000 | 40.59 | 0.45 | 9.38 | 85.68 |
| 4100 | 41.54 | 0.42 | 10.03 | 120.42 |
| 4200 | 40.91 | 0.38 | 7.27 | 149.15 |
| 4300 | 40.07 | 0.34 | 3.88 | 159.95 |
| 4400 | 39.43 | 0.31 | 1.41 | 161.02 |
| 4500 | 38.92 | 0.27 | 0.20 | 158.12 |
| 4600 | 38.49 | 0.24 | 0.53 | 157.91 |
| 4700 | 38.63 | 0.20 | 0.60 | 143.86 |
| 4800 | 39.64 | 0.17 | 3.77 | 154.04 |
| 4900 | 38.87 | 0.14 | 3.89 | 177.87 |
| 5000 | 37.79 | 0.12 | 4.09 | 170.46 |
| 5050 | 37.31 | 0.11 | 4.56 | 163.68 |
| 5100 | 36.79 | 0.10 | 5.23 | 155.47 |
| 5200 | 35.15 | 0.08 | 6.35 | 129.43 |
| 5300 | 32.28 | 0.07 | 5.35 | 98.13 |
| 5400 | 29.25 | 0.06 | 2.72 | 76.35 |
| 5500 | 27.79 | 0.05 | 0.06 | 65.38 |
| 5600 | 27.79 | 0.05 | 2.32 | 59.43 |
| 5700 | 28.19 | 0.05 | 4.23 | 57.15 |
| 5800 | 28.69 | 0.05 | 6.12 | 58.10 |
| 5900 | 29.26 | 0.07 | 8.10 | 60.37 |
| 6000 | 30.01 | 0.08 | 10.33 | 69.21 |
| 6500 | 22.39 | 0.27 | 0.96 | 126.10 |
| 7000 | 22.48 | 0.58 | 4.00 | 84.49 |

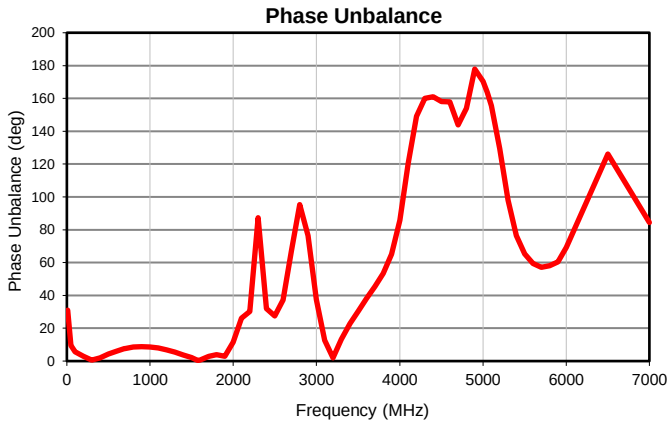
# Ceramic Balance Filter BLFCV-1570+

*Typical Performance Data*



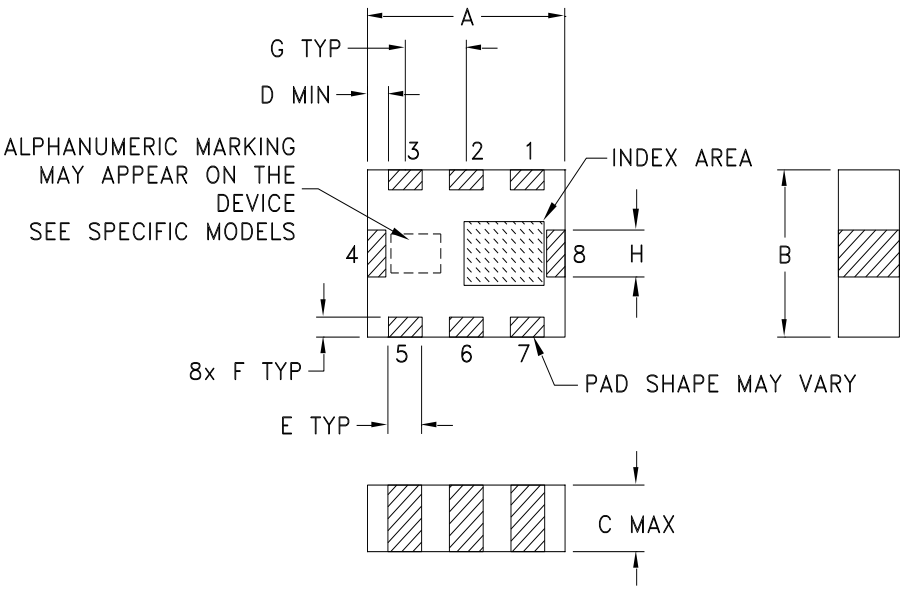



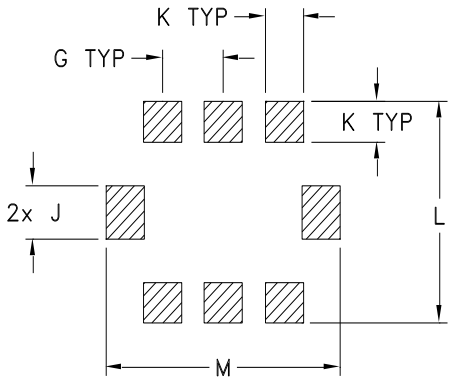



# Case Style JV

## Outline Dimensions JV1210C-4




### PCB Land Pattern




Suggested Layout,
Tolerance to be within ±.002

| CASE # | A | B | C | D | E | F | G | H | J | K | L | M | WT. GRAM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JV1210C-4 | .126 (3.2) | .098 (2.5) | .039 (1.00) | .004 (.1) | .022 (.56) | .012 (.3) | .039 (1.0) | .028 (.71) | .031 (.79) | .024 (.61) | .130 (3.30) | .150 (3.81) | .03 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005**

**Notes:**

1. Open style, ceramic base.
2. Termination finish: **as shown below or indicated on Data Sheet.**
   For RoHS Case Styles: Matte-Tin. 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.

# Tape & Reel Packaging TR-F74

## DEVICE ORIENTATION IN T&R

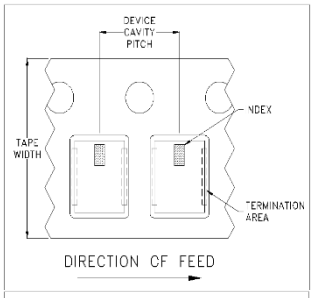



**ILLUSTRATION 1**

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

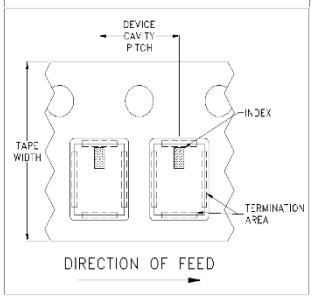



**ILLUSTRATION 2**

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

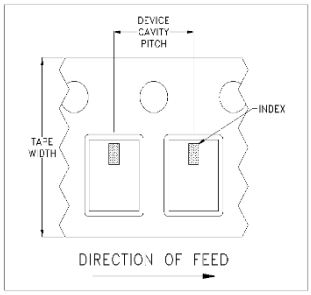



**ILLUSTRATION 3**

| 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.
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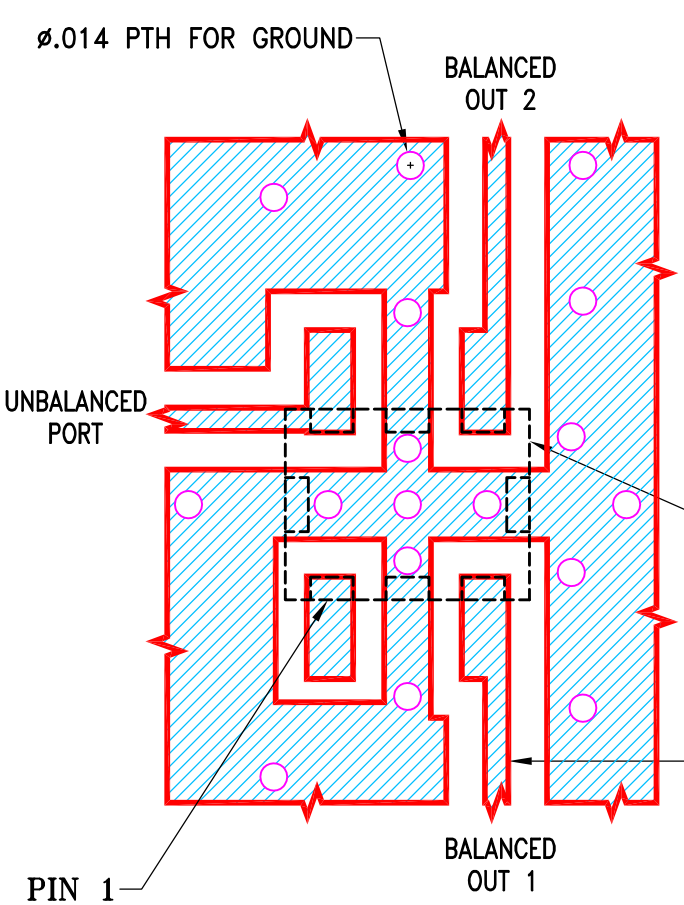
THIRD ANGLE PROJECTION

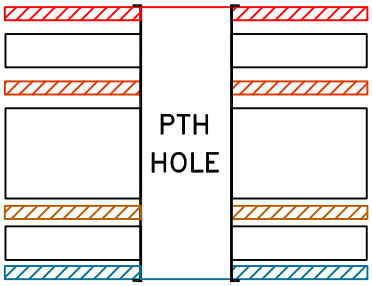
| REVISIONS | | | | | |
|---|---|---|---|---|---|
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
| OR | M174716 | NEW RELEASE | 06/10/19 | ITG | SL |

# SUGGESTED MOUNTING CONFIGURATION FOR JV1210C-4 CASE STYLE




COPPER LAYER 1

## STACK-UP DIAGRAM




- COPPER LAYER 1, 0.5 OZ.
- CORE, 0.006, FR4 IT-180A
- COPPER LAYER 2, 0.5 OZ.
- CORE, FR4 IT-180A PREPREG, FR4 IT-180P (THICKNESS AS REQUIRED)
- COPPER LAYER 3, 0.5 OZ.
- CORE, 0.006, FR4 IT-180A
- COPPER LAYER 4, 0.5 OZ.

1. TOTAL FINISHED THICKNESS 0.058 ± 10%.
2. PTH HOLES PRESENT FROM COPPER LAYER 1 TO 4.

## NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR FR4 IT-180A WITH DIELECTRIC THICKNESS .006"±.0007"; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
3. LAYERS 2,3,4 OF THE PCB ARE CONTINUOUS GROUND PLANE.

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

| UNLESS OTHERWISE SPECIFIED | | INITIALS | DATE |
|---|---|---|---|
| DIMENSIONS ARE IN INCHES | DRAWN | ITG | 06/04/19 |
| TOLERANCES ON: | CHECKED | GF | 06/10/19 |
| 2 PL DECIMALS ± | APPROVED | SL | 06/10/19 |
| 3 PL DECIMALS ± .005 | | | |
| ANGLES ± | | | |
| FRACTIONS ± | | | |



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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

# PL, JV1210C-4, TB-BLFCV/BBFCV

| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---|---|---|---|
| A | 15542 | 98-PL-632 | OR |

| FILE: | SCALE: | SHEET: |
|---|---|---|
| 98PL632 | 10:1 | 1 OF 1 |

Mini-Circuits

# Environmental Specifications ENV06T6

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 105°C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 105°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, Para 4.2.5, Test S, 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 |