

LTCC Bandpass Filter

BFCN-1262+

50Ω 12100 to 13200 MHz



CASE STYLE: FV1206-9

The Big Deal

- Small size 3.2mm x 1.6mm
- Pass band (12100-13200 MHz)
- Very high rejection over wide band
- Sharp rejection peaks close to stop band

Product Overview

The BFCN-1262+ LTCC Band Pass Filter achieves a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. Covering 12100-13200 MHz, these units offer excellent rejection over a wide stopband.

Key Features

| Feature | Advantages |
|------------------------------------|---|
| Small Size (3.20mm x1.6 mm) | Allows for high layout density of circuit boards, while minimizing effects of parasitics. |
| Rejection peaks close to pass band | Provides good rejection of signals close to the pass band, for improved system performance. |
| Wide stopband | No regrowth at 2nd harmonic permits filter to be used in presence of wideband undesired signals. |
| LTCC construction | Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes. |

Ceramic

Bandpass Filter

50Ω 12100 to 13200 MHz

BFCN-1262+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-9

+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

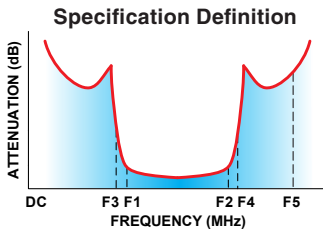
| Reel Size | Devices/Reel |
|-----------|-----------------------------------|
| 7" | 20, 50, 100, 200, 500, 1000, 3000 |

Features

- Small size
- Temperature stable
- Hermetically sealed
- LTCC construction

Applications

- Harmonic Rejection
- Transmitters / Receivers



Electrical Specifications^(1,2) at 25°C

| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|-------------|-------|------|------|
| Pass Band | Center Frequency | — | — | 12600 | — | MHz |
| | Insertion Loss | F1-F2 | 12100-13200 | — | 5 | dB |
| | VSWR | F1-F2 | 12100-13200 | — | 1.7 | :1 |
| | Insertion Loss | — | 12300-13000 | — | 4 | dB |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC-9760 | 30 | 45 | dB |
| | VSWR | DC-F3 | DC-9760 | — | 20 | :1 |
| Stop Band, Upper | Insertion Loss | F4-F5 | 15170-25000 | 20 | 30 | dB |
| | Insertion Loss | F5-F6 | 25000-35000 | 15 | 20 | dB |
| | VSWR | F4-F6 | 15170-35000 | — | 10 | :1 |
| | VSWR | F4-F6 | 15170-35000 | — | 10 | :1 |

1. Measured on Mini-Circuits Characterization Test Board TB-1004+ with feedline losses removed by normalization of S12 and S21 traces to measurement of TB thru-line.

2. This filter is not intended for use as a DC Blocking circuit element. In Application where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

Maximum Ratings

| | |
|-----------------------|-----------------|
| Operating Temperature | -55°C to +100°C |
| Storage Temperature | -55°C to +100°C |
| RF Power Input* | 2W at 25°C |

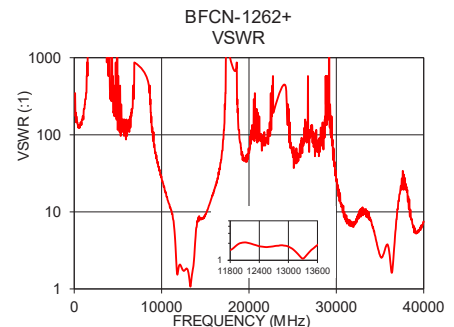
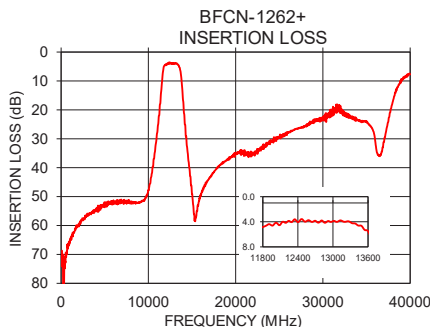
*Passband rating, derate linearly to 0.5W at 100°C ambient
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

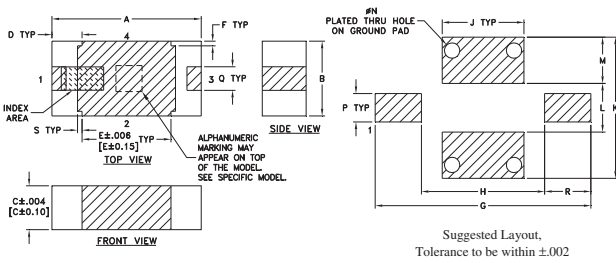
| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 1000 | 65.98 | 157.93 |
| 5000 | 53.71 | 133.63 |
| 9000 | 51.86 | 91.43 |
| 10000 | 47.72 | 27.59 |
| 11200 | 22.02 | 9.38 |
| 11800 | 4.84 | 1.53 |
| 12400 | 4.07 | 1.77 |
| 13000 | 3.90 | 1.75 |
| 13600 | 5.50 | 1.86 |
| 14000 | 17.18 | 6.28 |
| 20000 | 35.36 | 59.91 |
| 25000 | 29.53 | 59.91 |
| 32000 | 18.59 | 6.97 |
| 36000 | 30.91 | 3.34 |
| 40000 | 7.75 | 7.44 |

Pad Connections

| | |
|--------|---|
| Input | 1 |
| Output | 3 |
| Ground | 2 |



Outline Drawing



Pad Connections

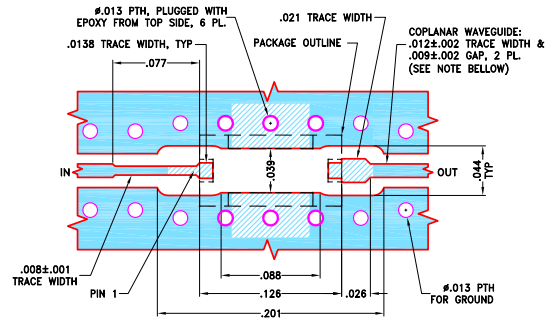
| | |
|--------|---|
| Input | 1 |
| Output | 3 |
| Ground | 2 |

Product Marking: JQ

Outline Dimensions (inch / mm)

| | | | | | | | | |
|-------|-------|------|------|------|------|------|------|-------|
| A | B | C | D | E | F | G | H | J |
| .126 | .063 | .037 | .026 | .075 | .004 | .182 | .104 | .069 |
| 3.20 | 1.60 | 0.94 | 0.66 | 1.91 | 0.10 | 4.62 | 2.64 | 1.753 |
| K | L | M | N | P | Q | R | S | wt |
| 0.119 | 0.041 | .039 | .013 | .024 | .020 | .039 | .004 | grams |
| 3.023 | 1.041 | 0.99 | 0.33 | 0.61 | 0.51 | 0.99 | 0.10 | .020 |

Demo Board MCL P/N: TB-1004+ Suggested PCB Layout (PL-613)



NOTES:

1. TRACE WIDTH AND GAP PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .0066"±.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.
3. UNIT LAND PATTERN WAS OPTIMIZED FOR BETTER PERFORMANCE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

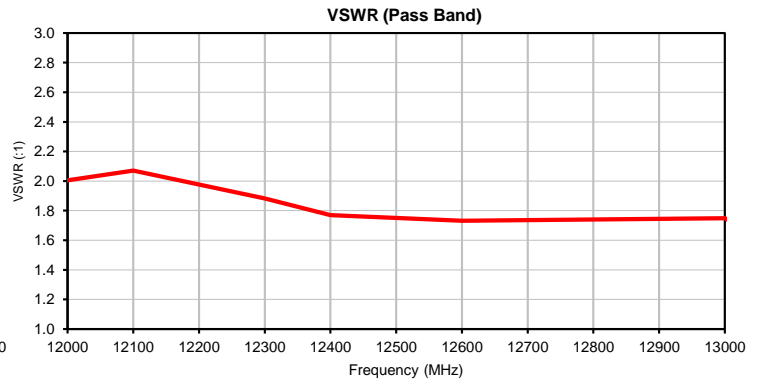
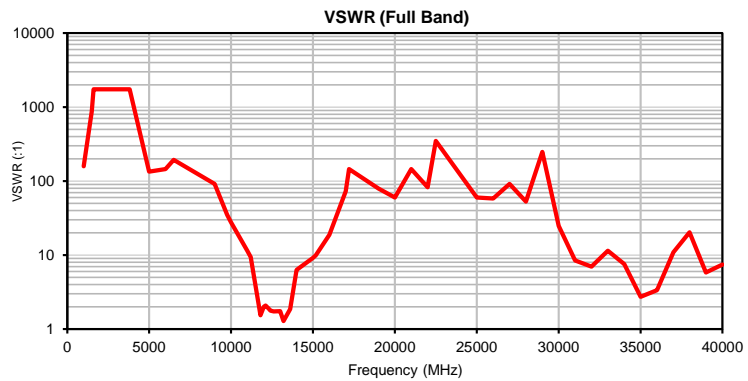
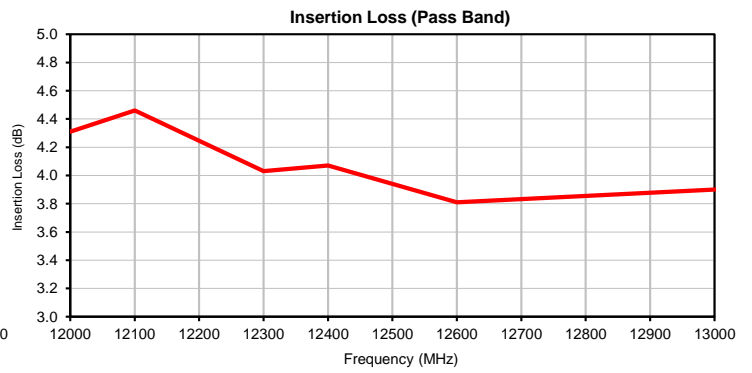
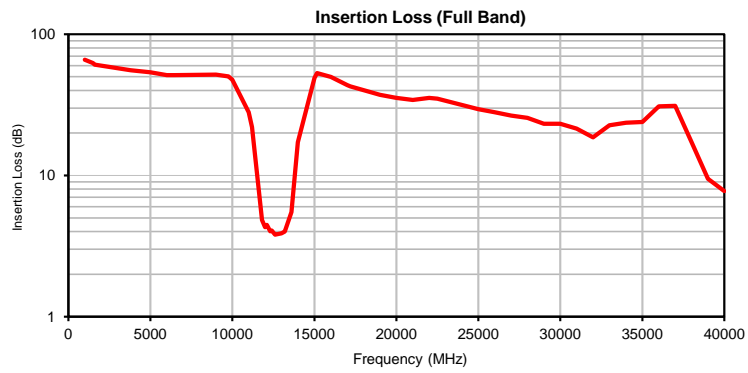
Additional Notes

- 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

Typical Performance Data

| FREQUENCY (MHz) | INSERTION LOSS (dB) | VSWR (:1) |
|--------------------|------------------------|--------------|
| 1000 | 65.98 | 157.93 |
| 1500 | 62.38 | 868.59 |
| 1600 | 61.00 | 1737.18 |
| 3800 | 55.64 | 1737.18 |
| 5000 | 53.71 | 133.63 |
| 6000 | 51.28 | 144.77 |
| 6500 | 51.25 | 193.02 |
| 9000 | 51.86 | 91.43 |
| 9760 | 50.32 | 34.75 |
| 10000 | 47.72 | 27.59 |
| 11000 | 28.02 | 11.31 |
| 11200 | 22.02 | 9.38 |
| 11800 | 4.84 | 1.53 |
| 12000 | 4.31 | 2.00 |
| 12100 | 4.46 | 2.07 |
| 12300 | 4.03 | 1.88 |
| 12400 | 4.07 | 1.77 |
| 12600 | 3.81 | 1.73 |
| 13000 | 3.90 | 1.75 |
| 13200 | 4.01 | 1.28 |
| 13600 | 5.50 | 1.86 |
| 14000 | 17.18 | 6.28 |
| 15000 | 49.12 | 9.13 |
| 15170 | 53.19 | 9.90 |
| 16000 | 49.83 | 18.70 |
| 17000 | 43.66 | 72.39 |
| 17200 | 42.65 | 144.77 |
| 19000 | 37.28 | 78.97 |
| 20000 | 35.36 | 59.91 |
| 21000 | 34.26 | 144.77 |
| 22000 | 35.47 | 82.73 |
| 22500 | 34.94 | 347.44 |
| 25000 | 29.53 | 59.91 |
| 26000 | 28.03 | 57.91 |
| 27000 | 26.51 | 91.43 |
| 28000 | 25.60 | 52.65 |
| 29000 | 23.24 | 248.17 |
| 30000 | 23.23 | 24.83 |
| 31000 | 21.44 | 8.43 |
| 32000 | 18.59 | 6.97 |
| 33000 | 22.68 | 11.46 |
| 34000 | 23.59 | 7.56 |
| 35000 | 23.89 | 2.73 |
| 36000 | 30.91 | 3.34 |
| 37000 | 31.10 | 10.89 |
| 38000 | 17.23 | 20.22 |
| 39000 | 9.48 | 5.81 |
| 40000 | 7.75 | 7.44 |

Typical Performance Curves

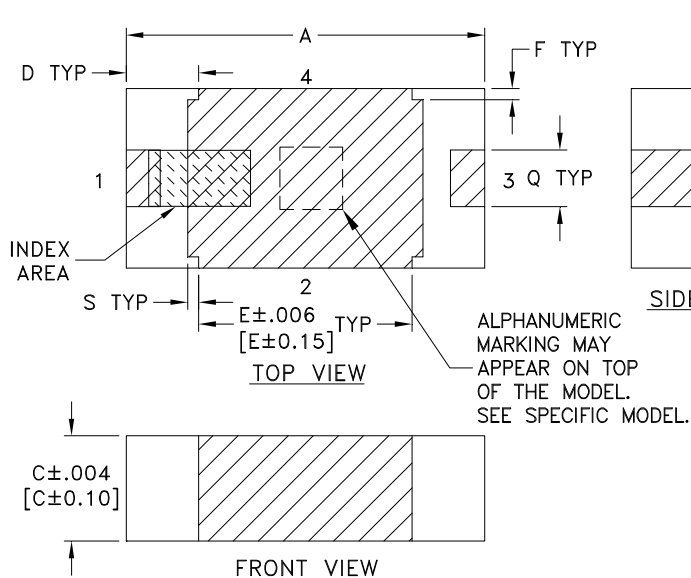


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 The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

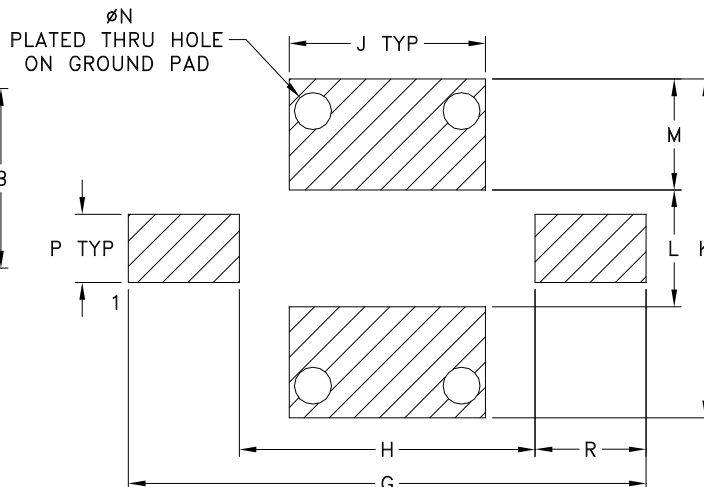


IF/RF MICROWAVE COMPONENTS

Outline Dimensions



PCB Land Pattern



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

| CASE # | A | B | C | D | E | F | G | H | J | K | L | M |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| FV1206-9 | .126 (3.20) | .063 (1.60) | .037 (0.94) | .026 (0.66) | .075 (1.91) | .004 (0.10) | .182 (4.62) | .104 (2.64) | .069 (1.75) | .119 (3.02) | .041 (1.04) | .039 (0.99) |

| CASE # | N | P | Q | R | S | WT. GRAM |
|----------|----------------|----------------|----------------|----------------|----------------|-------------|
| FV1206-9 | .013 (0.33) | .024 (0.61) | .020 (0.51) | .039 (0.99) | .004 (0.10) | .020 |

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.



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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging

TR-F75

DEVICE ORIENTATION IN T&R

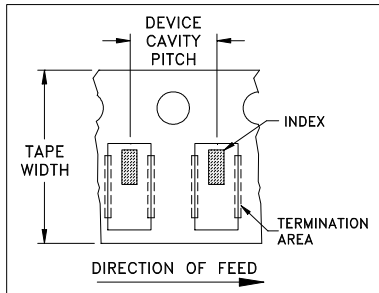


ILLUSTRATION 1

| Applicable Case Styles |
|------------------------|
| FV1206-1 FV1206-3 |

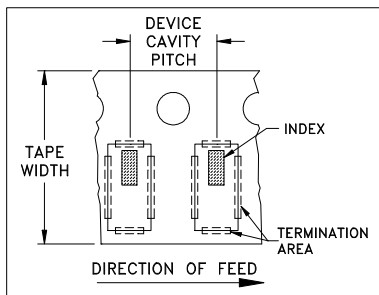


ILLUSTRATION 2

| Applicable Case Styles |
|---|
| FV1206-4 FV1206-5 FV1206-6 FV1206-7 FV1206-9 JC0603C-1 |

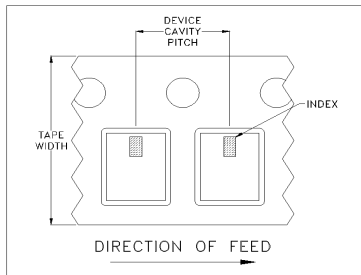


ILLUSTRATION 3

| Applicable Case Styles |
|--|
| FV1206-12 NL1008C-6 NL1008C-7 NL1008C-9 NL1008C-10 |

| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel | |
|----------------|-------------------------|-------------------|-------------------------------------|------|
| 8 | 4 | 7 | Small quantity standards (see note) | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | | | 500 |
| | | | 1000 | |
| | | | Standard | 3000 |

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

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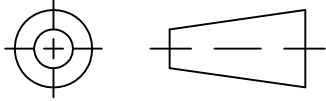


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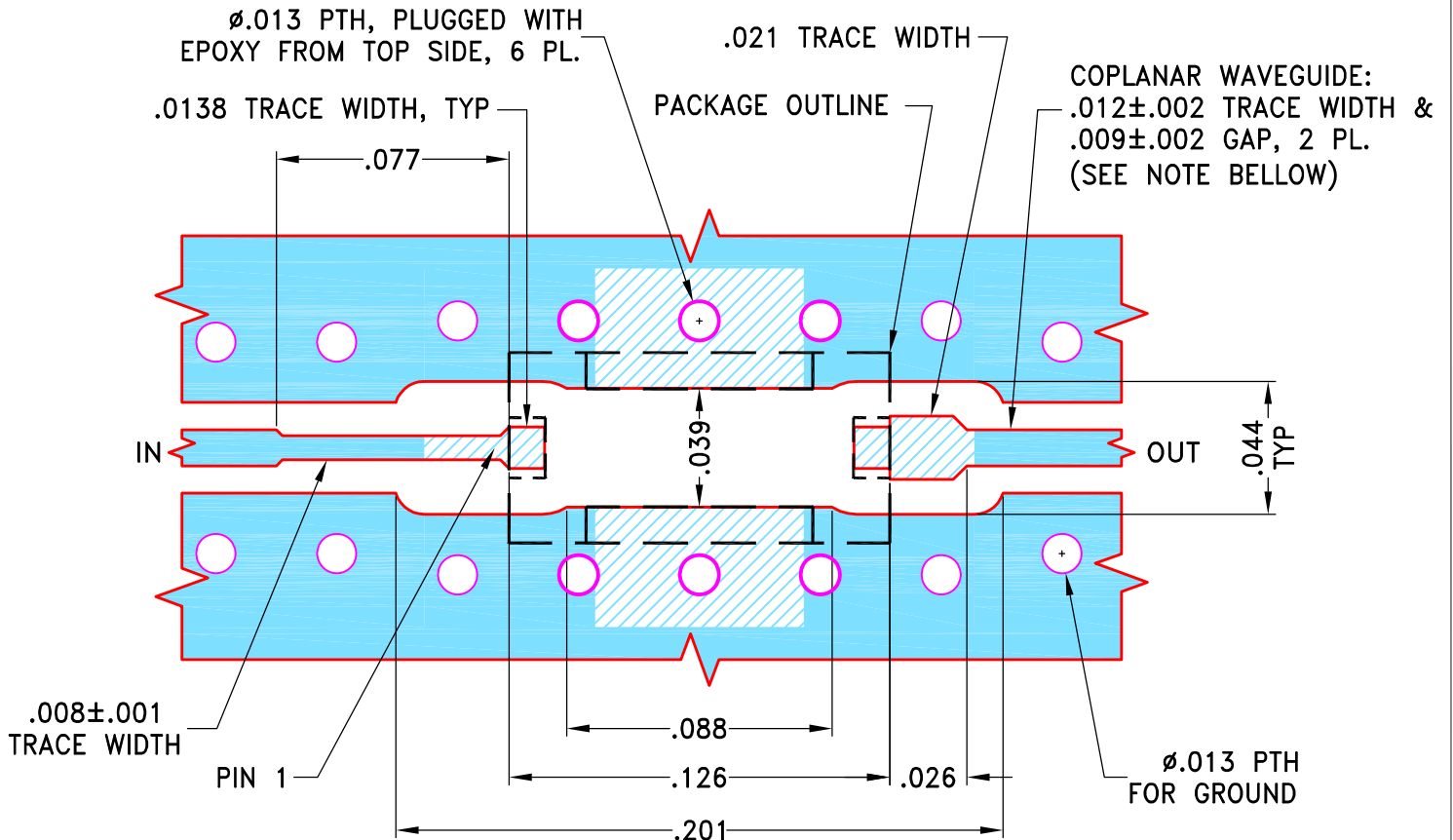
THIRD ANGLE PROJECTION



REVISIONS

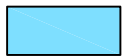
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|-------------|----------|-----|------|
| OR | M170506 | NEW RELEASE | 12/06/18 | ITG | BK |
| | | | | | |
| | | | | | |

**SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-9 CASE STYLE, "04FL01" PIN CODE**

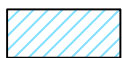


NOTES:

- TRACE WIDTH AND GAP PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.0066 \pm .0007$ ". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- UNIT LAND PATTERN WAS OPTIMIZED FOR BETTER PERFORMANCE.



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 ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ± | DRAWN | ITG 12/05/18 |
| | CHECKED | GF 12/05/18 |
| | APPROVED | BK 12/06/18 |



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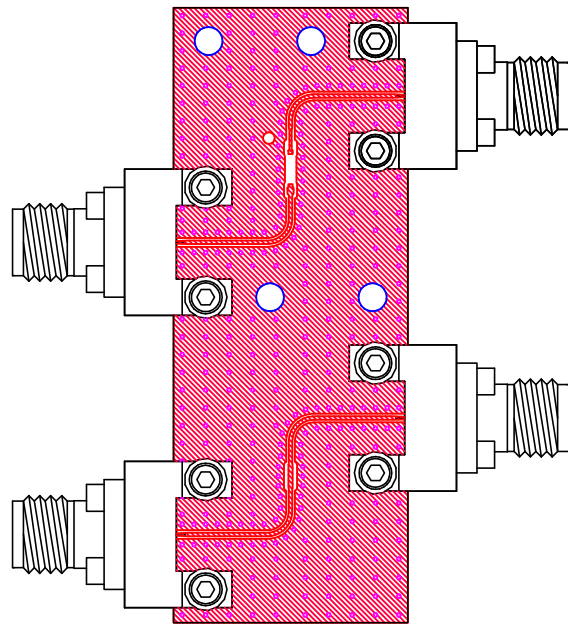
13 Neptune Avenue
Brooklyn NY 11235

PL, 04FL01, FV1206-9, TB-1004+

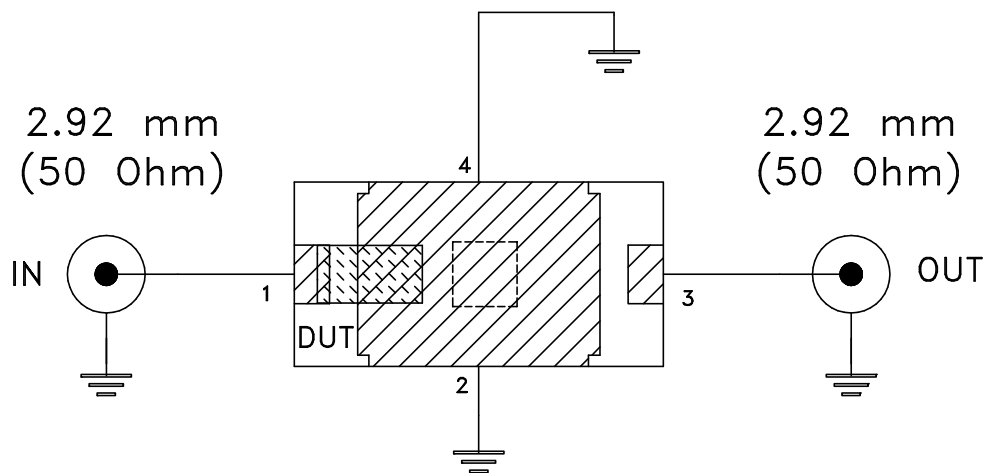
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|------------------|---------------------|--------------------------|------------|
| SIZE A | CODE IDENT 15542 | DRAWING NO: 98-PL-613 | REV: OR |
| FILE: 98PL613 | SCALE: 16:1 | SHEET: 1 OF 1 | |

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Evaluation Board and Circuit




TB-1004+



Schematic Diagram

Notes:

1. 50 Ohm 2.92 mm Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, 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 | -55° to 100°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C 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 Eutetic Process: 225°C peak 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, 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 |