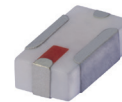


Ceramic Bandpass Filter

50Ω 2400 to 2550 MHz

BFCN-2450+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-4

+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, 3000 |

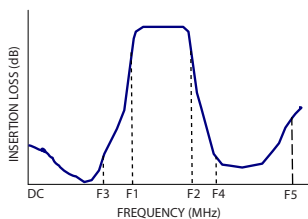
Features

- Small size (0.126"x0.063"x0.037")
- Temperature stable
- Hermetically sealed
- LTCC construction

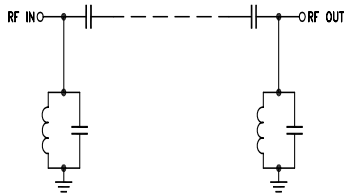
Applications

- Harmonic rejection
- Transmitters / Receivers
- ISM band
- Blue tooth

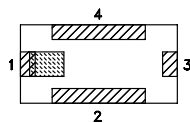
Specification Definition



Functional Schematic



Top View



Pad Connections

| | |
|--------|-----|
| Input | 1 |
| Output | 3 |
| Ground | 2,4 |

Electrical Specifications^{1,2} at 25°C

| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|--------------|------|------|------|
| Pass Band | Center Frequency | — | — | 2450 | — | MHz |
| | Insertion Loss | F1 - F2 | 2400 - 2550 | — | 2.0 | dB |
| | VSWR | F1 - F2 | 2400 - 2550 | — | 1.4 | :1 |
| Stop Band, Lower | Insertion Loss | DC - F3 | DC - 2100 | — | 30 | dB |
| | VSWR | DC - F3 | DC - 2100 | — | 30 | :1 |
| Stop Band, Upper | Insertion Loss | F4 - F5 | 3400 - 12000 | — | 20 | dB |
| | VSWR | F4 - F5 | 3400 - 12000 | — | 30 | :1 |

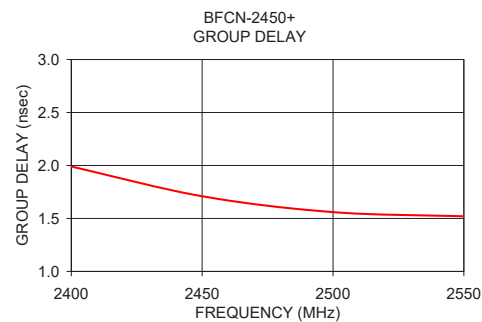
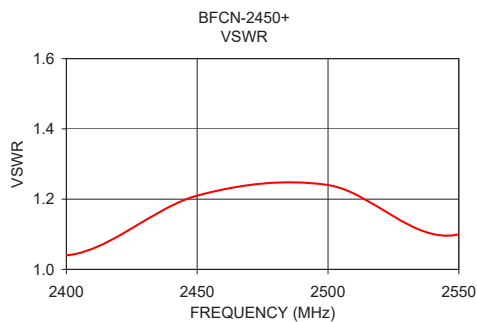
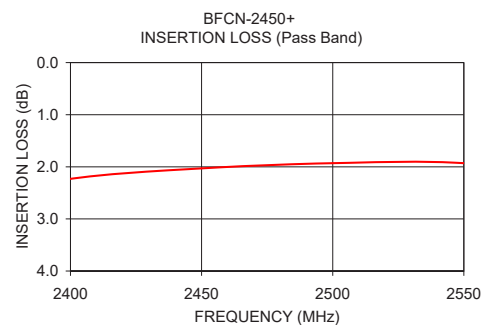
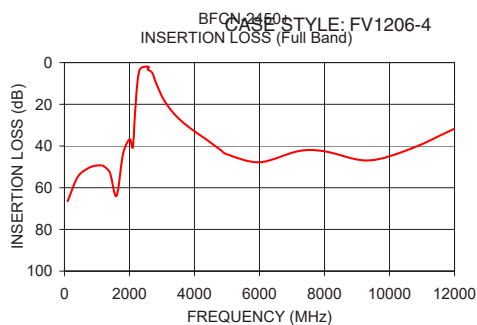
1. Measured on Mini-Circuits Characterization Test Board TB-518+.

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 | -40°C to +85°C |
| Storage Temperature | -55°C to +100°C |
| RF Power Input* | 2W at 25°C |

*Passband rating, derate linearly to 0.5W at 85°C ambient
Permanent damage may occur if any of these limits are exceeded.



Full Band Performance

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 100.00 | 66.45 | 179.21 |
| 700.00 | 50.93 | 91.48 |
| 1200.00 | 49.59 | 77.10 |
| 2000.00 | 36.75 | 32.32 |
| 2150.00 | 29.41 | 14.28 |
| 2300.00 | 3.98 | 1.43 |
| 2400.00 | 2.23 | 1.04 |
| 2550.00 | 1.93 | 1.10 |
| 2560.00 | 3.22 | 2.35 |
| 3000.00 | 16.22 | 28.51 |
| 3400.00 | 24.98 | 51.59 |
| 4000.00 | 32.93 | 57.94 |
| 5000.00 | 44.03 | 51.22 |
| 8000.00 | 42.55 | 51.41 |
| 12000.00 | 31.70 | 16.01 |

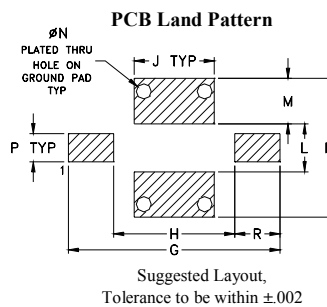
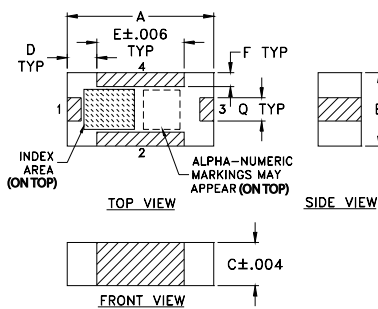
Pass Band Performance

| Frequency (MHz) | Insertion Loss (dB) | Group Delay (nsec) |
|-----------------|---------------------|--------------------|
| 2400.00 | 2.23 | 1.99 |
| 2450.00 | 2.03 | 1.71 |
| 2500.00 | 1.93 | 1.56 |
| 2550.00 | 1.93 | 1.52 |

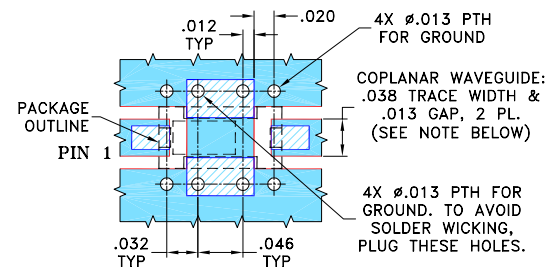
Pad Connections

| | |
|--------|-----|
| Input | 1 |
| Output | 3 |
| Ground | 2,4 |

Outline Drawing



Demo Board MCL P/N: TB-518+ Suggested PCB Layout (PL-305)



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" ± .0015". 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

Outline Dimensions (inch/mm)

| | | | | | | | | |
|------|------|------|------|------|------|------|------|-------|
| A | B | C | D | E | F | G | H | J |
| .126 | .063 | .037 | .026 | .075 | .012 | .182 | .104 | .069 |
| 3.20 | 1.60 | 0.94 | 0.66 | 1.91 | 0.30 | 4.62 | 2.64 | 1.75 |
| K | L | M | N | P | Q | R | | wt |
| .119 | .041 | .039 | .013 | .024 | .020 | .039 | | grams |
| 3.02 | 1.04 | 0.99 | 0.33 | 0.61 | 0.51 | 0.99 | | .020 |

Additional Notes

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

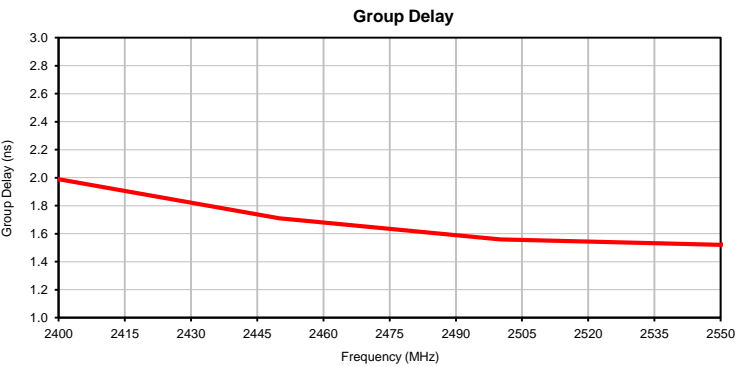
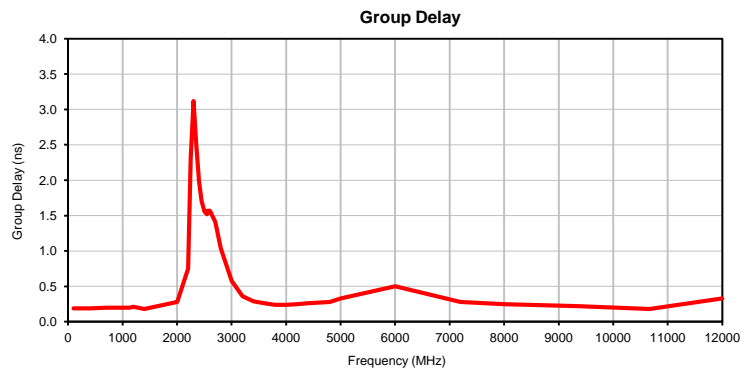
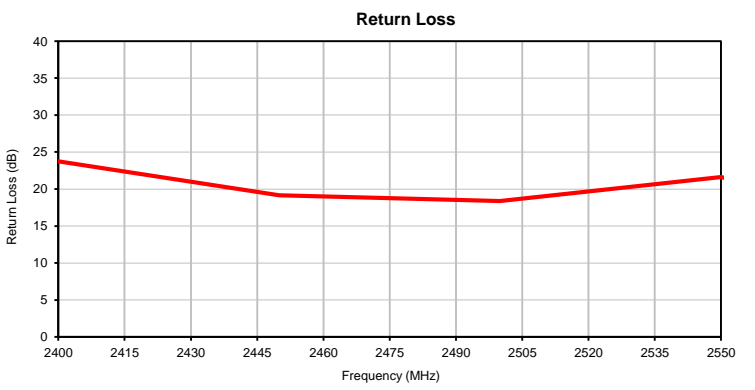
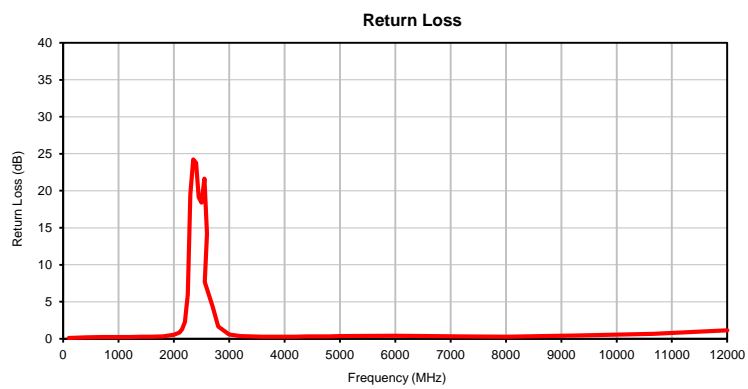
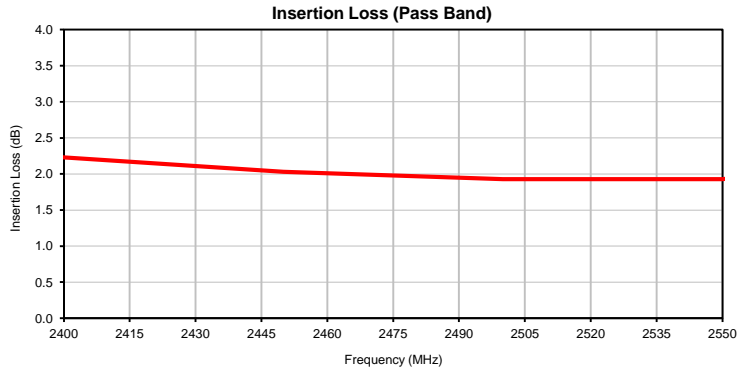
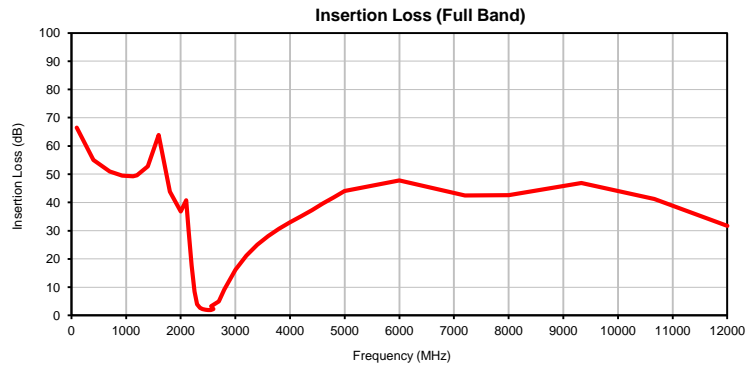
BFCN-2450+

Typical Performance Data

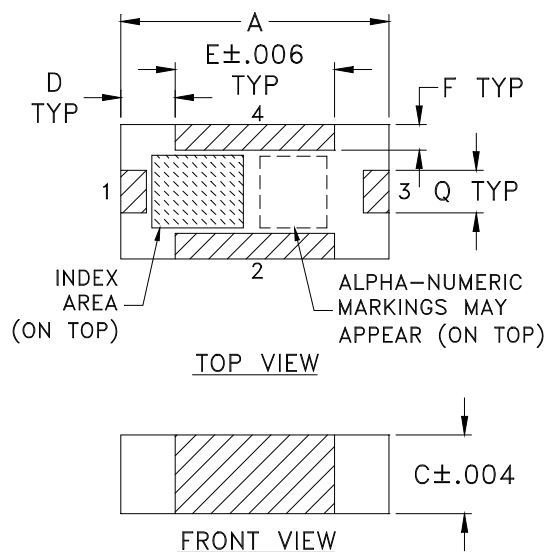
| FREQUENCY (MHz) | INSERTION LOSS (dB) | RETURN LOSS (dB) | FREQUENCY (MHz) | GROUP DELAY (ns) |
|--------------------|------------------------|---------------------|--------------------|---------------------|
| 100.0 | 66.45 | 0.11 | 100.0 | 0.19 |
| 400.0 | 55.04 | 0.20 | 400.0 | 0.19 |
| 700.0 | 50.93 | 0.23 | 700.0 | 0.20 |
| 929.0 | 49.50 | 0.24 | 929.0 | 0.20 |
| 1128.0 | 49.31 | 0.25 | 1128.0 | 0.20 |
| 1200.0 | 49.59 | 0.25 | 1200.0 | 0.21 |
| 1400.0 | 52.82 | 0.26 | 1400.0 | 0.18 |
| 1600.0 | 63.92 | 0.29 | 2000.0 | 0.28 |
| 1800.0 | 43.87 | 0.34 | 2200.0 | 0.75 |
| 2000.0 | 36.75 | 0.53 | 2250.0 | 2.30 |
| 2100.0 | 40.72 | 0.85 | 2300.0 | 3.12 |
| 2150.0 | 29.41 | 1.25 | 2350.0 | 2.53 |
| 2200.0 | 17.61 | 2.26 | 2400.0 | 1.99 |
| 2250.0 | 8.52 | 5.98 | 2450.0 | 1.71 |
| 2300.0 | 3.98 | 19.55 | 2500.0 | 1.56 |
| 2350.0 | 2.71 | 24.22 | 2550.0 | 1.52 |
| 2400.0 | 2.23 | 23.76 | 2560.0 | 1.57 |
| 2450.0 | 2.03 | 19.14 | 2600.0 | 1.57 |
| 2500.0 | 1.93 | 18.39 | 2700.0 | 1.41 |
| 2550.0 | 1.93 | 21.63 | 2800.0 | 1.04 |
| 2600.0 | 2.25 | 14.20 | 3000.0 | 0.58 |
| 2560.0 | 3.22 | 7.67 | 3200.0 | 0.36 |
| 2700.0 | 4.91 | 4.28 | 3400.0 | 0.29 |
| 2800.0 | 9.12 | 1.67 | 3600.0 | 0.26 |
| 3000.0 | 16.22 | 0.59 | 3800.0 | 0.24 |
| 3200.0 | 21.19 | 0.38 | 4000.0 | 0.24 |
| 3400.0 | 24.98 | 0.32 | 4200.0 | 0.25 |
| 3600.0 | 28.03 | 0.28 | 4400.0 | 0.26 |
| 3800.0 | 30.63 | 0.27 | 4600.0 | 0.27 |
| 4000.0 | 32.93 | 0.28 | 4800.0 | 0.28 |
| 4200.0 | 35.08 | 0.29 | 5000.0 | 0.33 |
| 4400.0 | 37.27 | 0.32 | 6000.0 | 0.50 |
| 4600.0 | 39.59 | 0.33 | 7200.0 | 0.28 |
| 4800.0 | 41.83 | 0.34 | 8000.0 | 0.25 |
| 5000.0 | 44.03 | 0.37 | 9333.0 | 0.22 |
| 6000.0 | 47.77 | 0.39 | 10666.0 | 0.18 |
| 7200.0 | 42.46 | 0.32 | 12000.0 | 0.33 |
| 8000.0 | 42.55 | 0.29 | | |
| 9333.0 | 46.92 | 0.47 | | |
| 10666.0 | 41.21 | 0.68 | | |
| 12000.0 | 31.70 | 1.12 | | |



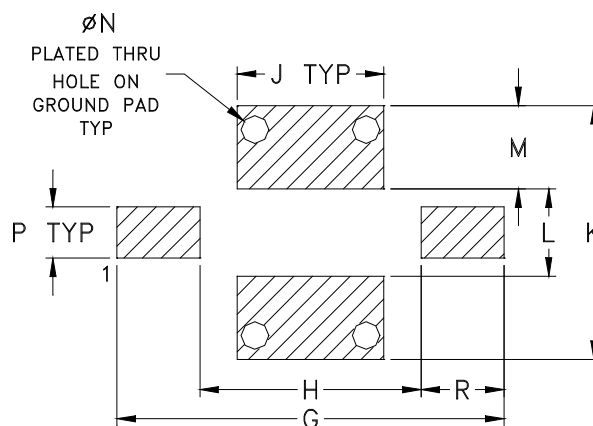
Typical Performance Curves



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 |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| FV1206-4 | .126 (3.20) | .063 (1.60) | .037 (0.94) | .026 (0.66) | .075 (1.91) | .012 (0.30) | .182 (4.62) | .104 (2.64) | .069 (1.75) | .119 (3.02) | .041 (1.04) | .039 (0.99) |

| CASE # | N | P | Q | R | WT. GRAM |
|----------|----------------|----------------|----------------|----------------|----------|
| FV1206-4 | .013 (0.33) | .024 (0.61) | .020 (0.51) | .039 (0.99) | .020 |

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

Notes:

- Open style, ceramic base.
- 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.



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



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

RF/IF MICROWAVE COMPONENTS

DEVICE ORIENTATION IN T&R

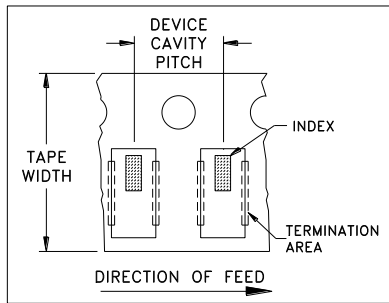


ILLUSTRATION 1

Applicable Case Styles

FV1206-1
FV1206-3

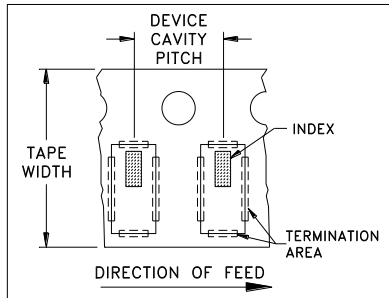


ILLUSTRATION 2

Applicable Case Styles

FV1206-4
FV1206-5
FV1206-6
FV1206-7
FV1206-9

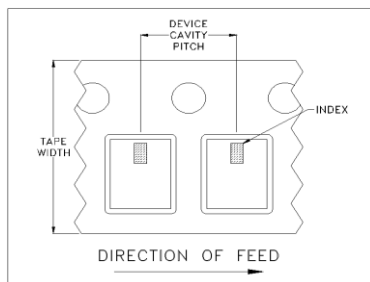


ILLUSTRATION 3

Applicable Case Styles

FV1206-12
GE0805C-18
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

Mini-Circuits ISO 9001 & ISO 14001 Certified

Mini-Circuits[®]

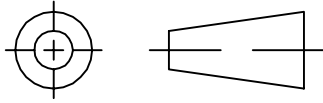
INTERNET <http://www.minicircuits.com>

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Mini-Circuits ISO 9001 & ISO 14001 Certified

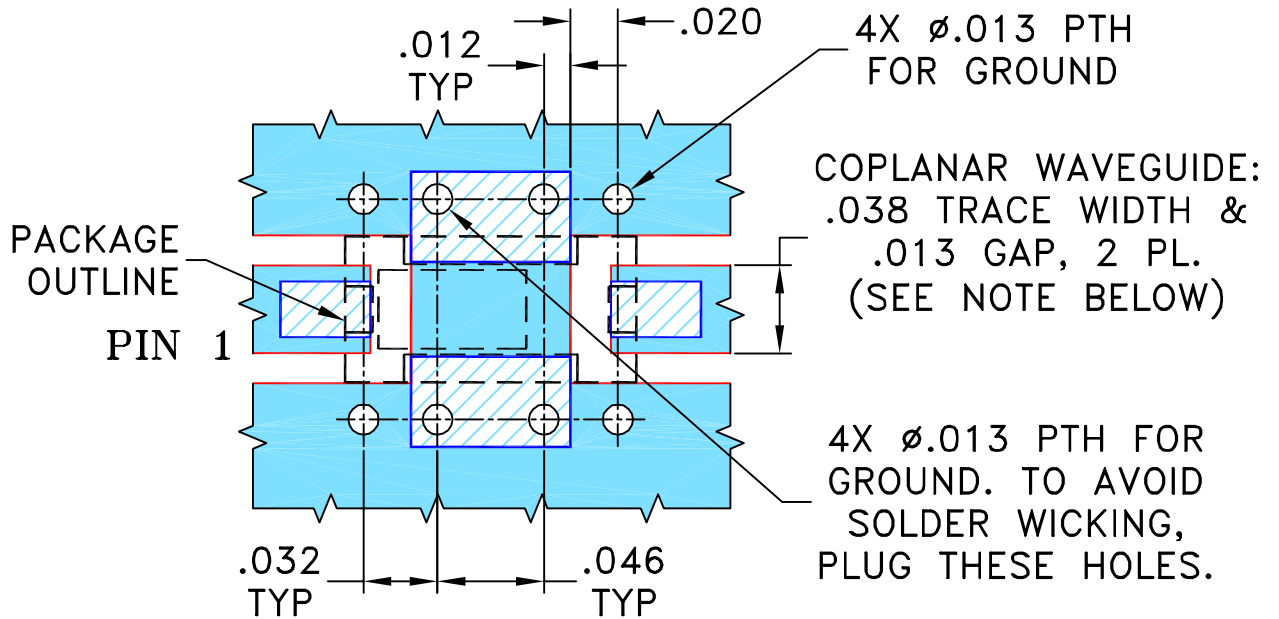
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|-------------|----------|----|------|
| OR | M123589 | NEW RELEASE | 01/15/09 | AV | ABD |
| | | | | | |
| | | | | | |

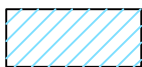
**SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-4 CASE STYLE, "04FL01" PIN CODE**



- NOTE:** 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020" ± .0015". 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

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

DRAWN

AV

07/10/09

TOLERANCES ON:

CHECKED

IL

01/15/09

2 PL DECIMALS ±

APPROVED

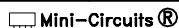
ABD

01/15/09

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, 04FL01, FV1206-4, BFCN, TB-518+

SIZE
A

CODE IDENT
15542

DRAWING NO:

98-PL-305

REV:

OR

FILE: 98PL305

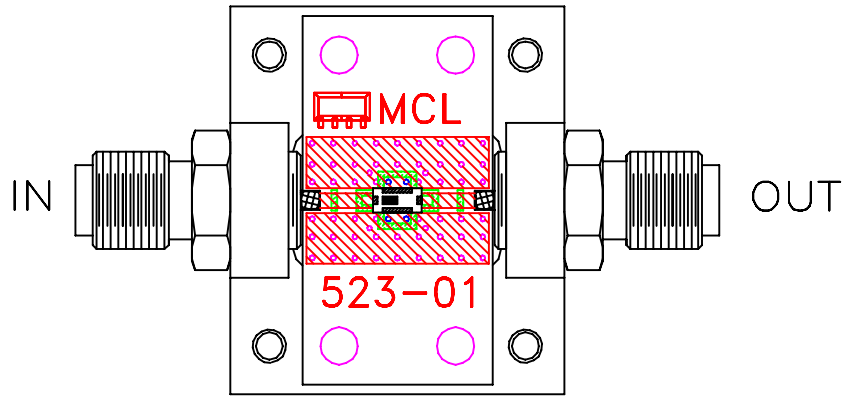
SCALE:

12:1

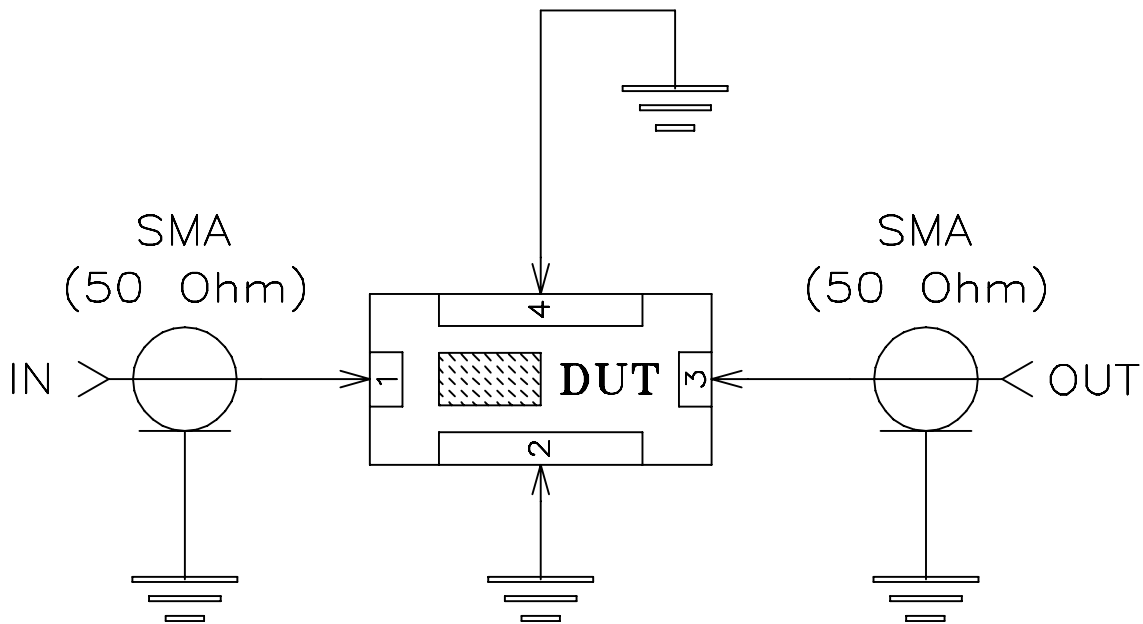
SHEET:

1 OF 1

Evaluation Board and Circuit




TB-518+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 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 | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Barometric Pressure | 100,000 Feet | MIL-STD-202, Method 105, Condition D |
| Humidity | 90% RH, 65°C Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103 |
| Thermal Shock | -65° to 125°C, 5 cycles | MIL-STD-202, Method 107, Condition B |
| 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 | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition I |