CERAMIC

Band Pass Filter

BFCN-2491+

50Ω 1950 to 3190 MHz

FEATURES

- Small Size, 3.2 × 1.6 mm
- Passband, 1950 to 3190 MHz
- High Rejection in Upper Stop Band
- Temperature Stable
- Hermetically Sealed
- LTCC Construction



Generic photo used for illustration purposes only

CASE STYLE: FV1206-7

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Harmonic Rejection
- Transmitters / Receivers

PRODUCT OVERVIEW

Mini-Circuits' BFCN-2491+ LTCC band pass filter achieves a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. Covering 1950 to 3190 MHz, these units offer excellent rejection over a deep stop band.

KEY FEATURES

Features	Advantages
Small Size, 3.2 × 1.6 mm	Allows for high layout density of circuit boards, while minimizing effects of parasitics.
Rejection Peaks Close to Passband	Provides good rejection of signals close to the passband, for improved system performance.
Wide Stop Band	No regrowth out to 3rd harmonics 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.

REV. A
ECO-030938
BFCN-2491+
MCL NY
260914

Band Pass Filter

BFCN-2491+

50Ω 1950 to 3190 MHz

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

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
	Center Frequency				2491		MHz
Passband	Insertion Loss	F1–F2	1950–3190		1.2	3.0	dB
	Return Loss	F1–F2	1950–3190		15		dB
Stop Band, Lower	Insertion Loss	DC–F3	DC–1440	20	22		dB
Stop Band, Upper	Insertion Loss	F4–F5	4500–10000	20	29		dB

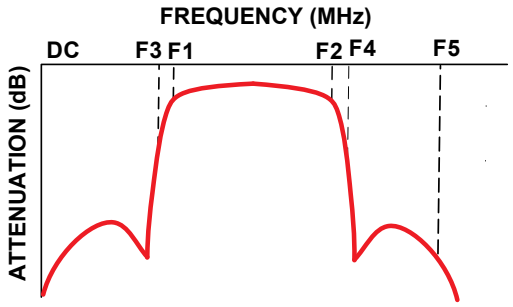
1. Measured on Mini-Circuits Characterization Test Board TB-BFCN-2491+.
2. This filter is not intended for use as a DC blocking circuit element. In applications where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-55 °C to +100 °C
Storage Temperature	-55 °C to +100 °C
RF Power Input	1 W max.

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

TYPICAL FREQUENCY RESPONSE



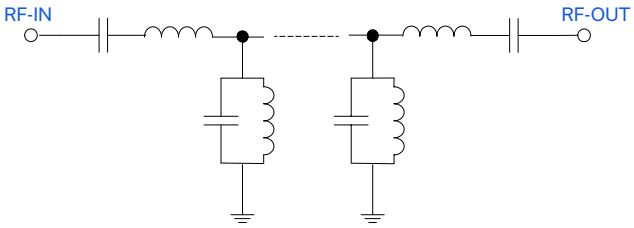
CERAMIC

Band Pass Filter

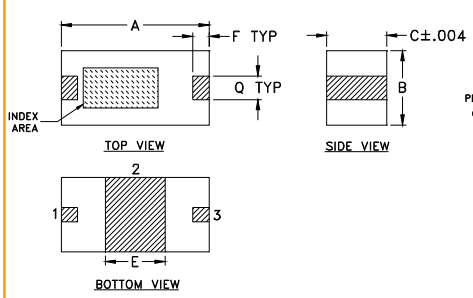
BFCN-2491+

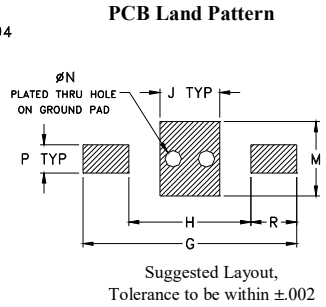
50Ω 1950 to 3190 MHz

FUNCTIONAL SCHEMATIC



CASE STYLE DRAWING





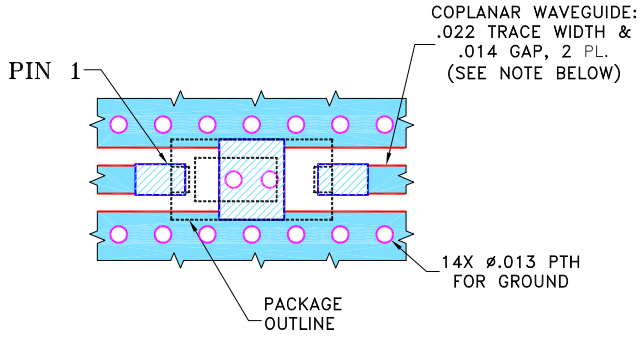
Suggested Layout,
Tolerance to be within ±.002

PIN CONNECTIONS

RF-IN	1
RF-OUT	3
GROUND	2

PRODUCT MARKING: N/A

DEMO BOARD P/N: TB-BFCN-2491+
SUGGESTED PCB LAYOUT (PL-439)



NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". 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 LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	E	F	G	H
.126	.063	.051	.051	.014	.183	.104
3.20	1.60	1.30	1.30	0.36	4.65	2.64

J	M	N	P	Q	R	wt
.051	.063	.014	.024	.020	.039	grams
1.30	1.60	0.36	0.61	0.51	0.99	.020

TAPE & REEL INFORMATION: F75

CERAMIC

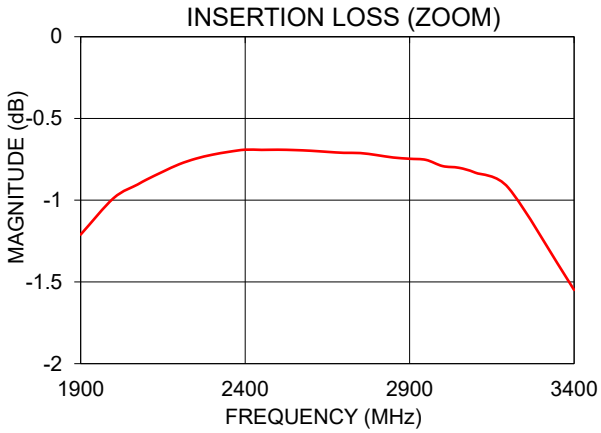
Band Pass Filter

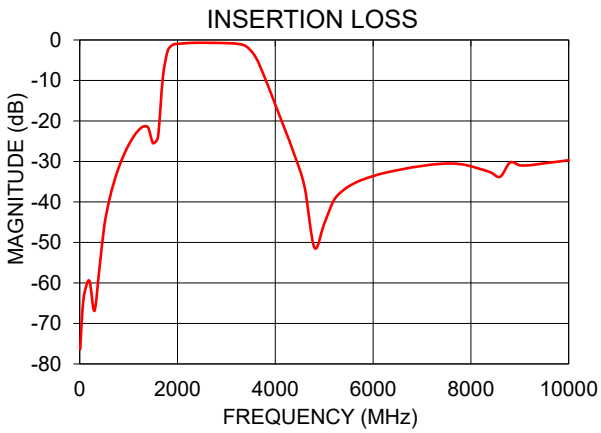
BFCN-2491+

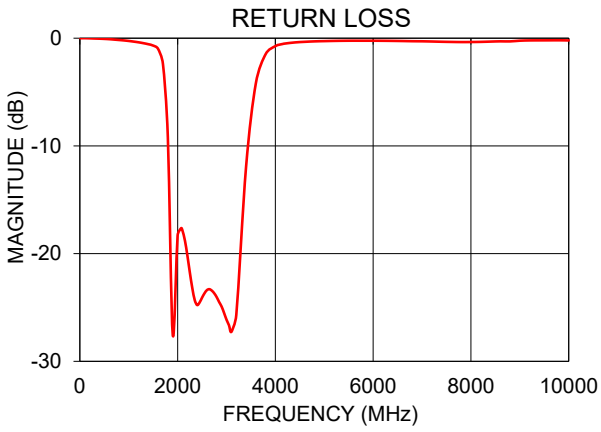
50Ω 1950 to 3190 MHz

TYPICAL PERFORMANCE DATA AT +25 °C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
500	46.14	0.06
1000	25.95	0.26
1400	21.64	0.56
1700	9.28	2.41
1800	2.67	9.20
2200	0.78	20.19
2600	0.70	23.38
3200	0.92	25.70
3400	1.55	11.95
3600	4.30	4.19
4200	22.20	0.49
4600	36.37	0.34
7000	31.12	0.29
8600	33.77	0.29
10000	29.70	0.21







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

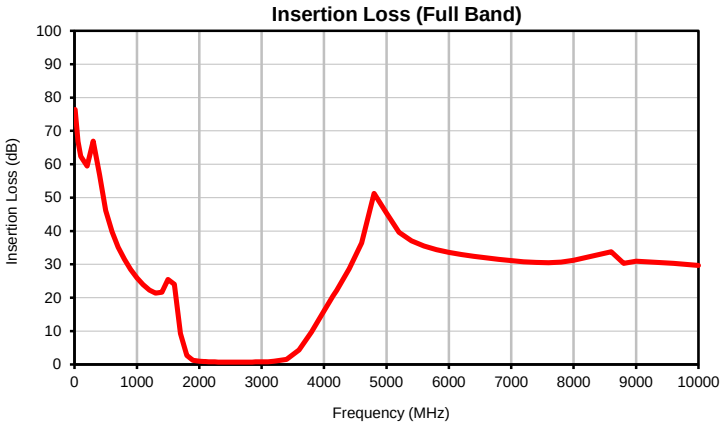
Ceramic Bandpass Filter BFCN-2491+

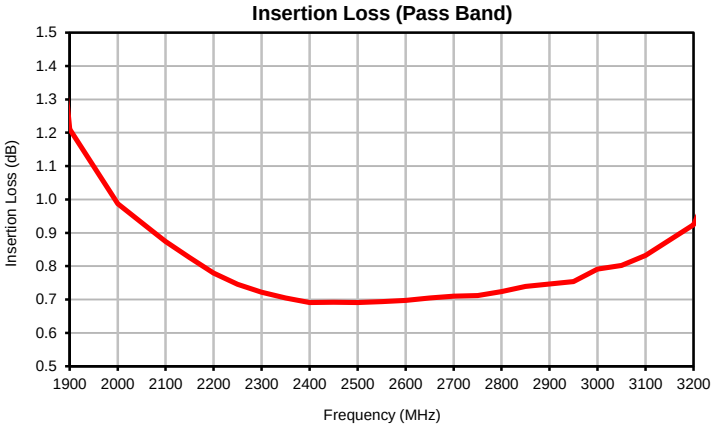
Typical Performance Data

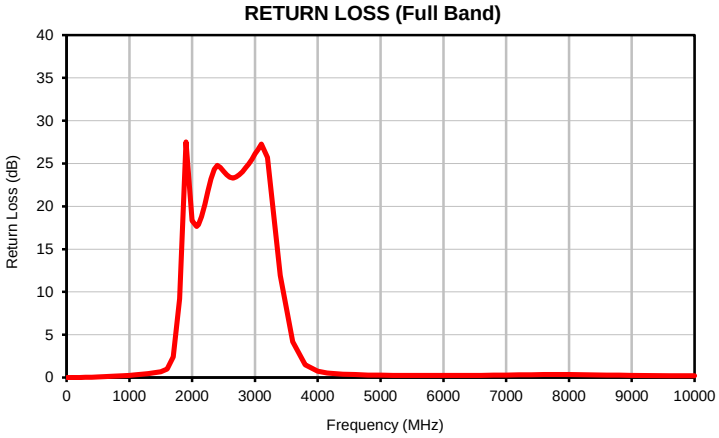
FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
10	76.41	0.00
55	66.83	0.00
100	62.35	0.00
200	59.49	0.01
300	66.91	0.03
400	56.80	0.04
500	46.14	0.06
600	39.80	0.09
700	35.15	0.13
800	31.46	0.17
900	28.46	0.21
1000	25.95	0.26
1100	23.89	0.32
1200	22.32	0.38
1300	21.38	0.46
1400	21.64	0.56
1500	25.51	0.69
1600	24.02	0.99
1700	9.28	2.41
1800	2.67	9.20
1900	1.21	27.52
2000	0.99	18.31
2073	0.90	17.64
2100	0.87	17.87
2150	0.83	18.80
2200	0.78	20.19
2250	0.75	21.75
2300	0.72	23.19
2350	0.70	24.32
2400	0.69	24.78
2450	0.69	24.53
2500	0.69	24.09
2550	0.69	23.68
2600	0.70	23.38
2650	0.70	23.30
2700	0.71	23.44
2750	0.71	23.69
2800	0.72	24.05
2850	0.74	24.50
2900	0.75	24.91
2950	0.75	25.50
3000	0.79	26.13
3050	0.80	26.65
3100	0.83	27.26
3200	0.92	25.70
3400	1.55	11.95
3600	4.30	4.19
3800	9.74	1.48
4000	15.98	0.74
4146	20.52	0.54
4200	22.20	0.49
4400	28.64	0.39
4600	36.37	0.34
4800	51.28	0.29
5000	45.37	0.27
5200	39.56	0.25
5400	37.02	0.24
5600	35.48	0.23
5800	34.42	0.23
6000	33.62	0.23
6200	32.93	0.24
6400	32.40	0.25
6600	31.92	0.26
6800	31.46	0.28
7000	31.12	0.29
7200	30.78	0.31
7400	30.58	0.33
7600	30.50	0.35
7800	30.68	0.36
8000	31.18	0.35
8600	33.77	0.29
8800	30.27	0.30
9000	30.95	0.23
9600	30.31	0.20
10000	29.70	0.21

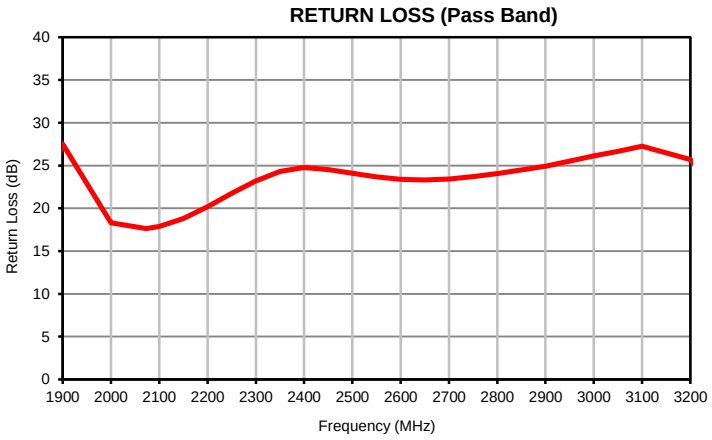
Ceramic Bandpass Filter BFCN-2491+

Typical Performance Curves





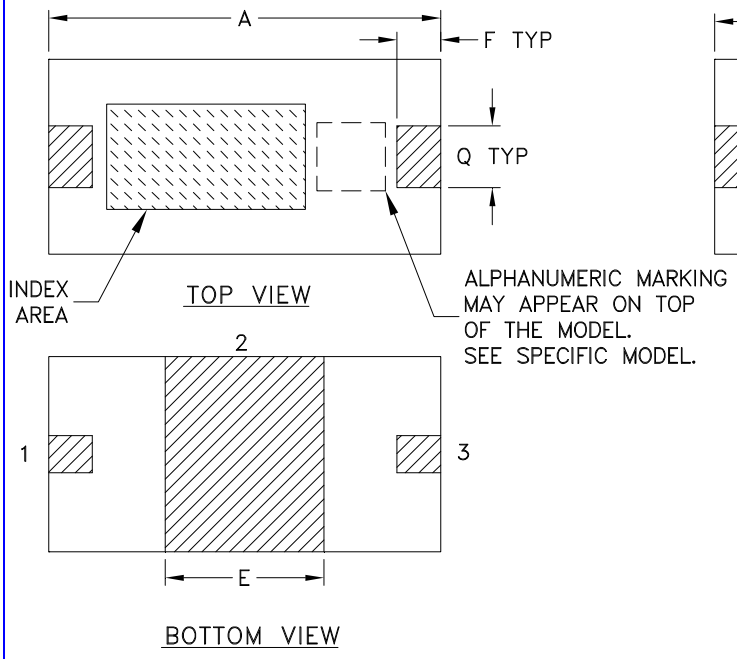




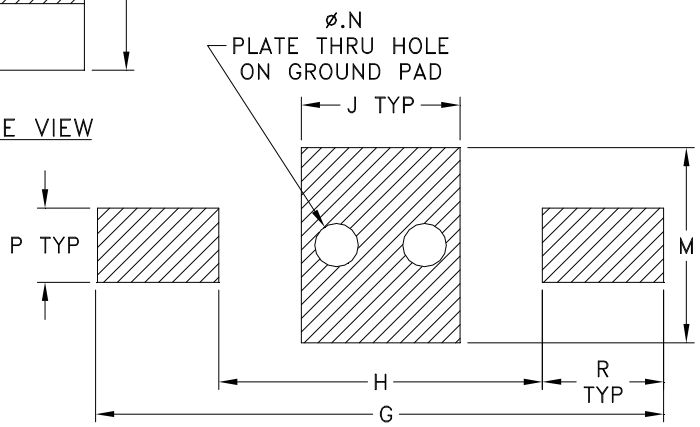
Case Style FV

FV1206-7

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M
FV1206-7	.126 (3.20)	.063 (1.60)	.051 (1.30)	-- --	.051 (1.30)	.014 (0.35)	.183 (4.65)	.104 (2.65)	.051 (1.30)	-- --	-- --	.063 (1.60)

CASE #	N	P	Q	R	S	WT. GRAM
FV1206-7	.014 (0.35)	.024 (0.60)	.020 (0.50)	.039 (1.00)	-- --	.020

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: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.
3. Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

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Tape & Reel Packaging TR-F75

DEVICE ORIENTATION IN T&R

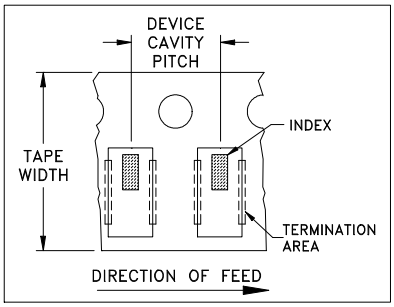


ILLUSTRATION 1

Applicable Case Styles
FV1206-1
FV1206-3

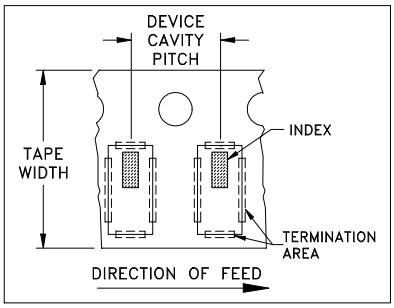


ILLUSTRATION 2

Applicable Case Styles
FV1206-4
FV1206-5
FV1206-6
FV1206-7
FV1206-9

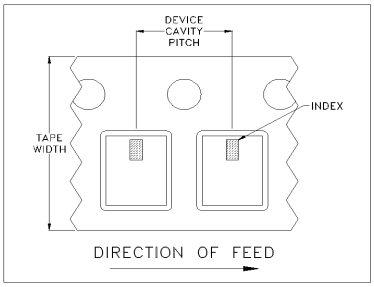


ILLUSTRATION 3

Applicable Case Styles
FV1206-11
FV1206-12
GE0805C-18
NL1008C-6
NL1008C-7
NL1008C-9
NL1008C-10
NL1008C-12

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.

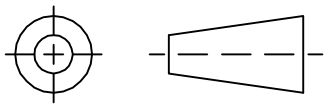
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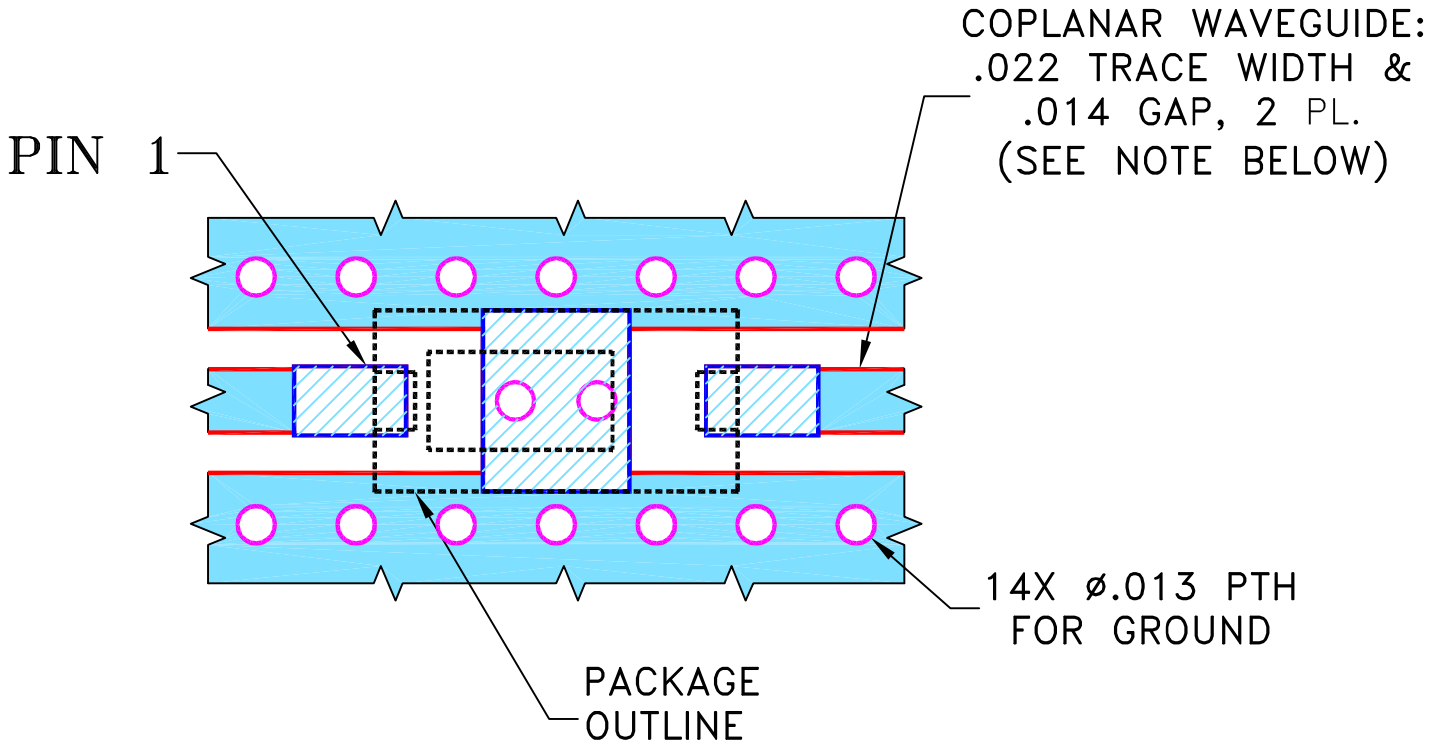
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THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M148536	NEW RELEASE	10/14/14	GF	MY

SUGGESTED MOUNTING CONFIGURATION FOR FV1206-7 CASE STYLE, "03FL02" PIN CODE



NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". 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 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	GF	10/07/14
TOLERANCES ON:	CHECKED	AV	10/14/14
2 PL DECIMALS ±	APPROVED	MY	10/14/14
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

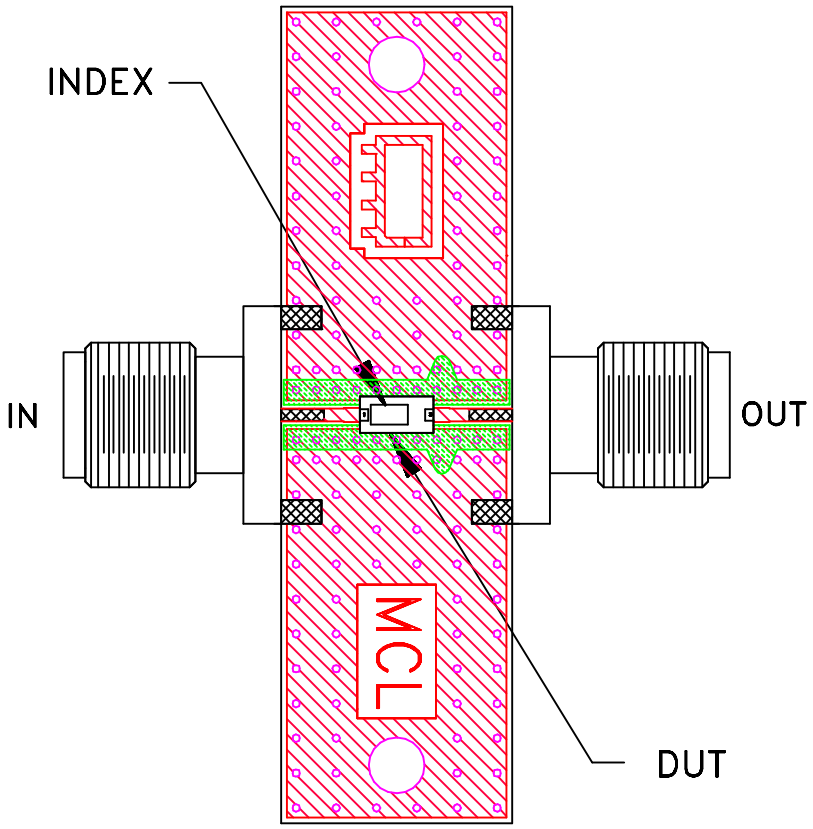
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 03FL02, FV1206-7, TB-812+

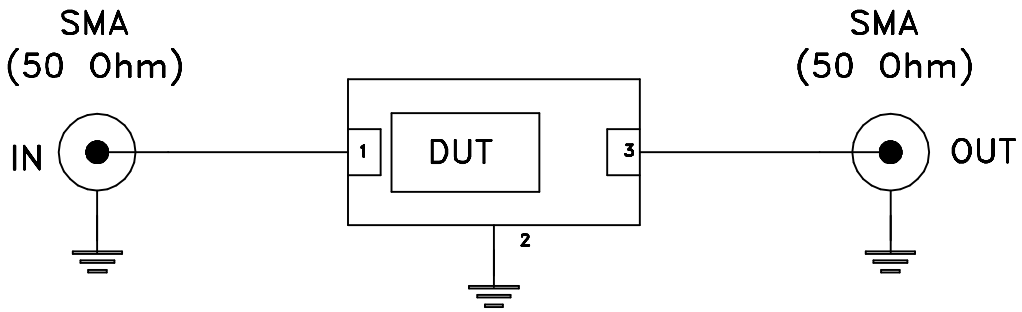
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-439	OR

FILE:	SCALE:	SHEET:
98PL439	15:1	1 OF 1

Evaluation Board and Circuit



TB-812+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.5, Thickness=.010 inch.

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Mini-Circuits

Environmental Specifications ENV06

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

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