

Ceramic

# Bandpass Filter

75Ω 950 to 1970 MHz

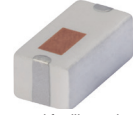
## Features

- Wideband, 950-1970 MHz
- Low loss, 1.9 dB typ.
- Small size, 1206 (3.2mm x 1.6mm)
- Temperature stable
- LTCC construction

## Applications

- CATV/MOCA
- Harmonic Rejection
- Transmitters / receivers

# BFCN-152W-75+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-7

**+RoHS Compliant**

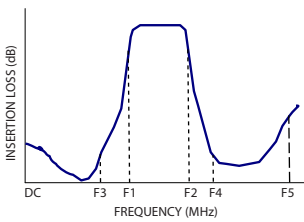
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Available Tape and Reel at no extra cost

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

## Specification Definition



## Electrical Specifications<sup>1,2</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	1460	—	MHz
	Insertion Loss	F1 - F2	—	1.9	2.5	dB
	VSWR	F1 - F2	—	1.6	—	:1
Stop Band, Lower	Insertion Loss	DC - F3	38	44	—	dB
		470 - 630	50	60	—	dB
		630 - 730	—	22	—	dB
Stop Band, Upper	Insertion Loss	F4 - F5	18	22	—	dB
		2300 - 2500	—	20	—	dB
		2500 - 3000	—	20	—	dB

1. Measured on Mini-Circuits Characterization Test Board TB-812+.

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

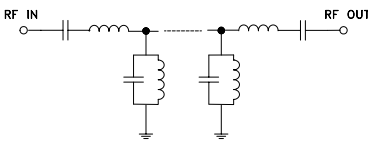
Operating Temperature	-55°C to +100°C
Storage Temperature*	-55°C to +100°C
RF Power Input**	1W at 25°C

\* 12 months max.

\*\*Passband rating, derate linearly to 0.5W at 100°C ambient

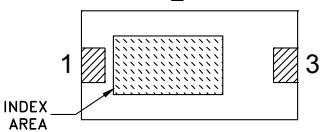
Permanent damage may occur if any of these limits are exceeded.

## Functional Schematic



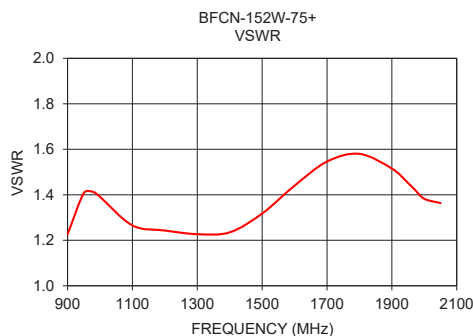
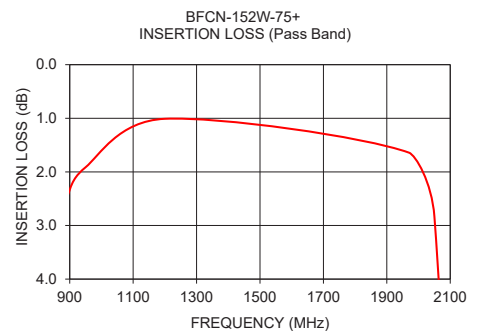
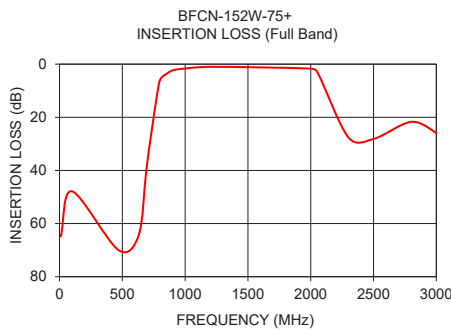
## Top View

2



## Pad Connections

Input	1
Output	3
Ground	2



### Full Band Performance

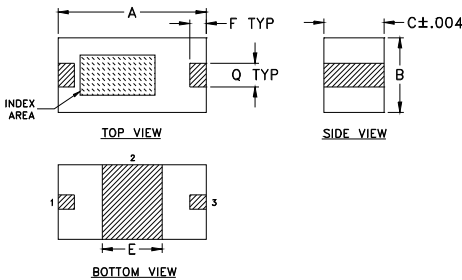
### Pass Band Performance

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	64.84	162.19	900	2.39	1.23
100	47.86	361.27	950	1.91	1.41
470	70.01	76.30	980	1.72	1.41
630	64.47	27.45	1100	1.22	1.27
690	40.38	16.60	1200	1.01	1.24
730	26.32	10.08	1300	0.88	1.23
790	7.63	2.27	1400	0.82	1.23
810	5.17	1.80	1500	0.82	1.32
1200	1.01	1.24	1600	0.88	1.44
1970	1.64	1.42	1700	0.99	1.55
2050	2.83	1.36	1800	1.12	1.58
2300	27.57	9.19	1900	1.32	1.52
2500	28.16	19.37	1970	1.64	1.42
2800	21.71	31.77	2000	1.91	1.38
3000	25.87	34.97	2050	2.83	1.36

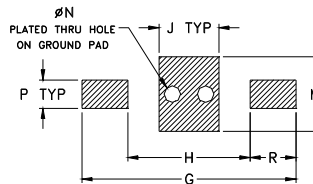
### Pad Connections

Input	1
Output	3
Ground	2

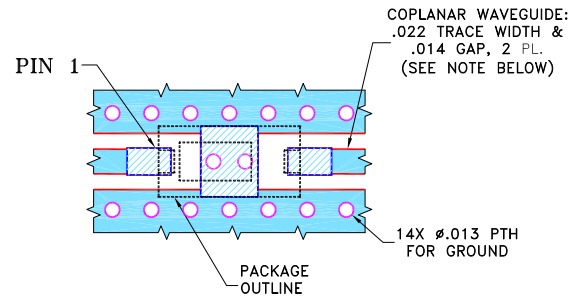
### Outline Drawing



### PCB Land Pattern



### Demo Board MCL P/N: TB-812+ Suggested PCB Layout (PL-439)



### NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .010"  $\pm$  .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 (inch/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

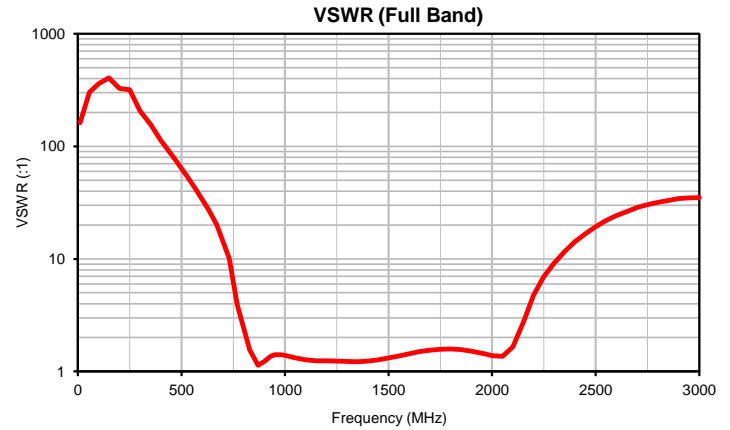
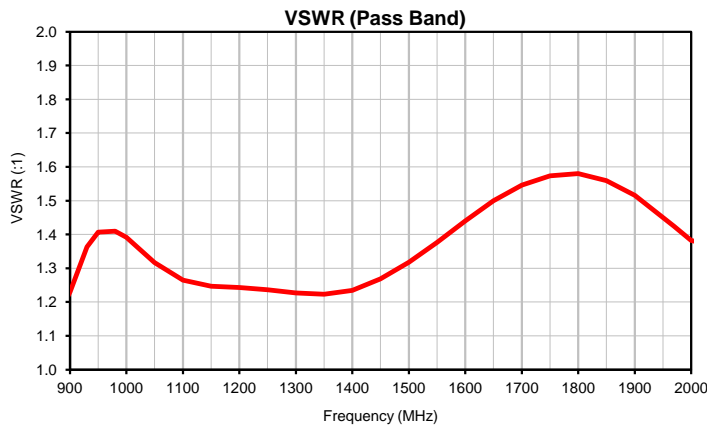
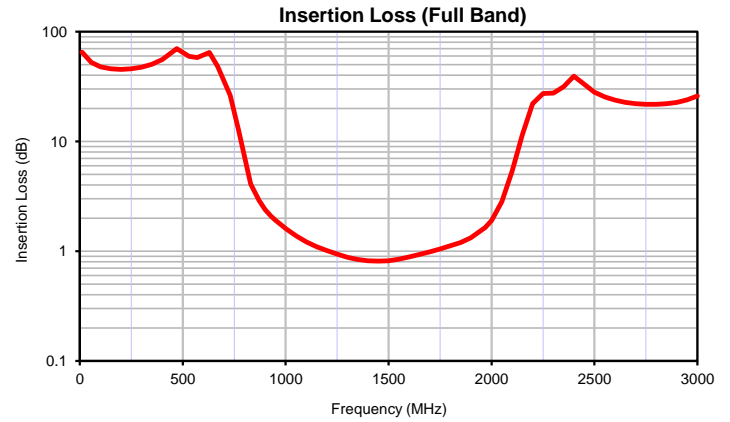
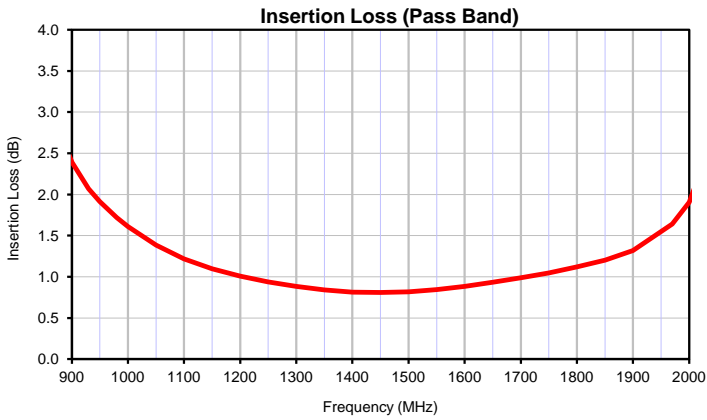
### Additional Notes

- 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](http://www.minicircuits.com/MCLStore/terms.jsp)

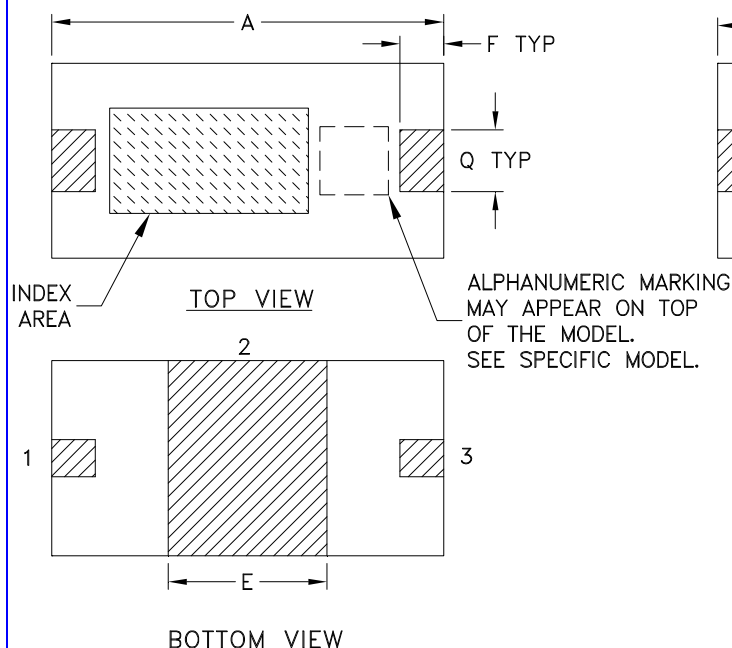
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	VSWR (:1)
10.0	64.84	162.19
55.0	52.36	301.74
100.0	47.86	361.27
150.0	45.79	404.03
200.0	45.17	327.48
250.0	45.75	318.39
300.0	47.47	206.14
350.0	50.50	156.54
400.0	55.72	113.05
470.0	70.01	76.30
530.0	59.64	53.17
570.0	58.08	41.36
630.0	64.47	27.45
670.0	48.08	20.04
730.0	26.32	10.08
770.0	12.70	3.91
830.0	4.10	1.56
870.0	2.91	1.13
900.0	2.39	1.23
930.0	2.07	1.36
950.0	1.91	1.41
980.0	1.72	1.41
1000.0	1.61	1.39
1050.0	1.38	1.32
1100.0	1.22	1.27
1150.0	1.10	1.25
1200.0	1.01	1.24
1250.0	0.94	1.24
1300.0	0.88	1.23
1350.0	0.84	1.22
1400.0	0.82	1.23
1450.0	0.81	1.27
1500.0	0.82	1.32
1550.0	0.84	1.38
1600.0	0.88	1.44
1650.0	0.93	1.50
1700.0	0.99	1.55
1750.0	1.05	1.57
1800.0	1.12	1.58
1850.0	1.20	1.56
1900.0	1.32	1.52
1970.0	1.64	1.42
2000.0	1.91	1.38
2050.0	2.83	1.36
2100.0	5.37	1.64
2150.0	11.53	2.73
2200.0	22.00	4.76
2250.0	27.28	6.98
2300.0	27.57	9.19
2350.0	31.52	11.59
2400.0	39.32	14.16
2450.0	33.30	16.74
2500.0	28.16	19.37
2550.0	25.35	21.82
2600.0	23.67	24.24
2650.0	22.63	26.34
2700.0	22.01	28.52
2750.0	21.72	30.26
2800.0	21.71	31.77
2850.0	22.02	33.10
2900.0	22.68	34.25
2950.0	23.86	34.82
3000.0	25.87	34.97

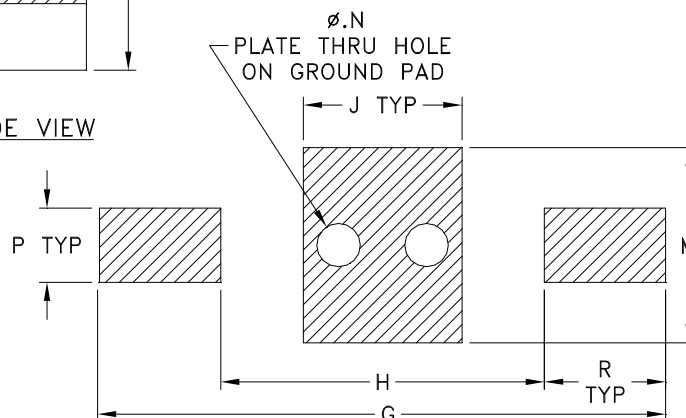
## Typical Performance Curves



### 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
FV1206-7	.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.  $\pm .01$ ; 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.
- Line width should be designed to match 50 $\Omega$  characteristic impedance, depending on PCB material and thickness.



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



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RF/IF MICROWAVE COMPONENTS

## DEVICE ORIENTATION IN T&R

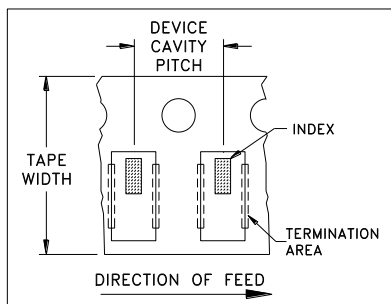


ILLUSTRATION 1

Applicable Case Styles
FV1206-1 FV1206-3

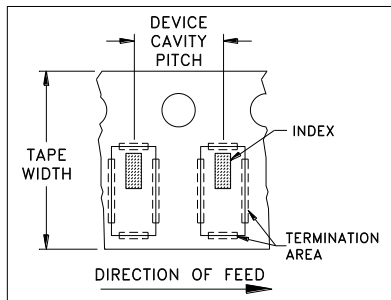


ILLUSTRATION 2

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

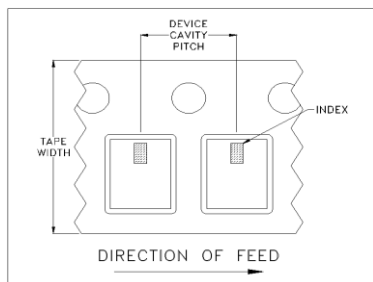


ILLUSTRATION 3

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](http://www.minicircuits.com/pages/pdfs/tape.pdf)

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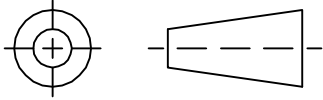
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THIRD ANGLE PROJECTION

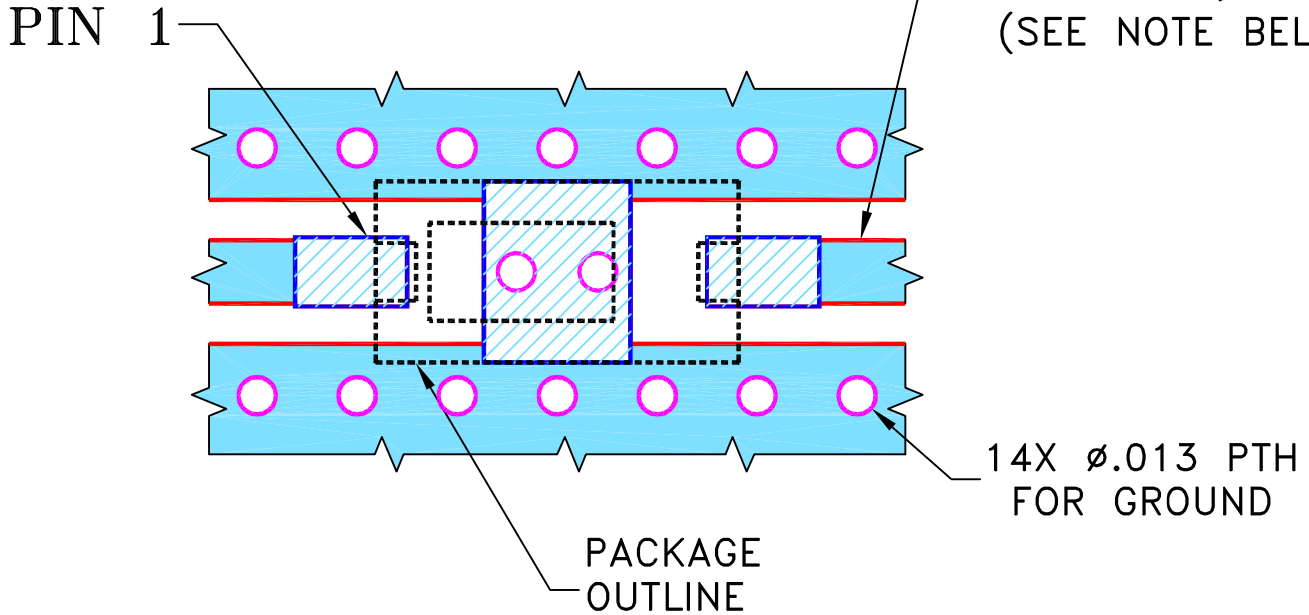


REVISIONS

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

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

COPLANAR WAVEGUIDE:  
.022 TRACE WIDTH &  
.014 GAP, 2 PL.  
(SEE NOTE BELOW)



NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B 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.

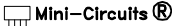
 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ±	DRAWN	GF	10/07/14
	CHECKED	AV	10/14/14
	APPROVED	MY	10/14/14

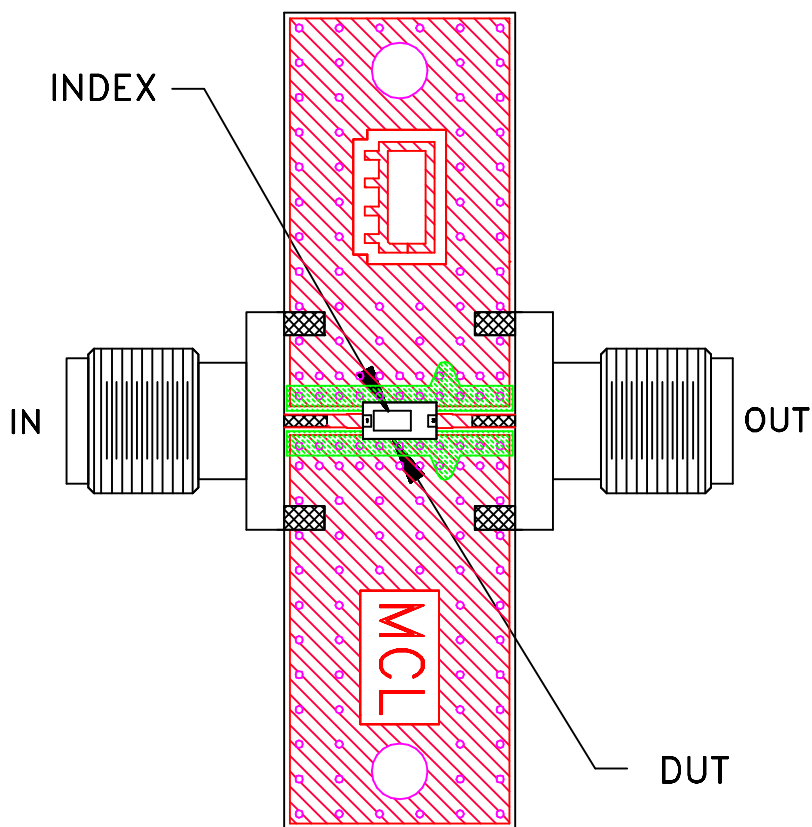
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PL, 03FL02, FV1206-7, TB-812+

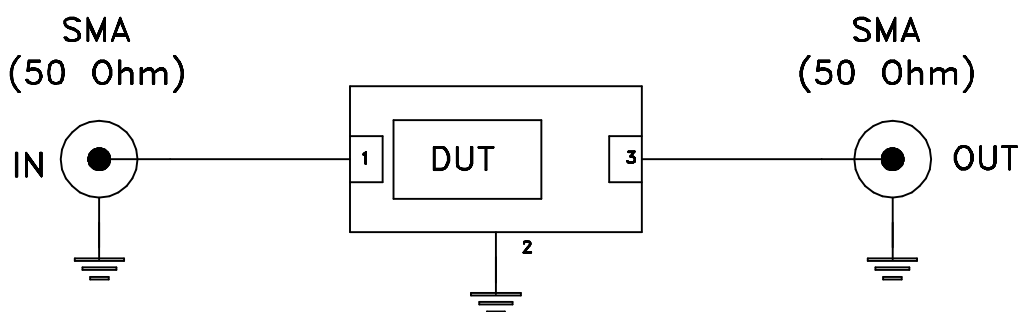
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SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-439	REV: OR
FILE:	98PL439	SCALE: 15:1	SHEET: 1 OF 1

# Evaluation Board and Circuit




TB-812+



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.010 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