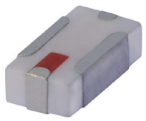
Ceramic

Bandpass Filter

BFCN-3700+

50Ω 3000 to 4600 MHz



CASE STYLE: FV1206-4

The Big Deal

- LTCC construction
- Temperature stable from -55 to +100°C
- Small size (0.126 x .063 X .037")

Product Overview

The BFCN-3700+ LTCC bandpass filter covers the 3000 to 4600 MHz passband with 1.9 dB passband insertion loss and 28 dB lower stopband rejection, and 24 dB upper stopband rejection. This model handles up to 2.5W RF input power and provides a wide operating temperature range from -55 to +100°C. Utilizing LTCC multi-layer construction, the filter achieves excellent repeatability of performance and comes in a tiny 1206 ceramic package with wraparound terminations, minimizing performance variations due to parasitics and saving space in dense PCB layouts.

Key Features

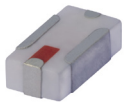
Feature	Advantages
LTCC Construction	Provides a rugged package well suited for tough environments such as high humidity and temperature extremes.
Tiny size (0.126 x .063 x .037")	Saves space in dense circuit boards and minimizes the effects of parasitics.
Wrap-around terminations	Provides excellent solderability and easy visual inspection
Wide operating temperature range, -55 to +100°C	Enables reliable performance in extreme environments

Ceramic

Bandpass Filter

BFCN-3700+

50Ω 3000 to 4600 MHz



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

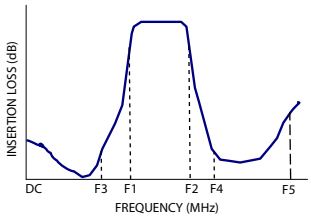
Features

- Small size(0.126 x .063 x .037)
- Temperature stable
- LTCC construction

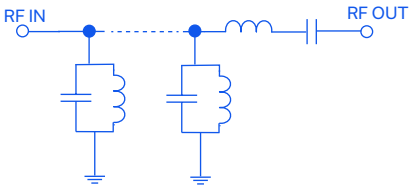
Applications

- Harmonic rejection
- Transmitters / Receivers

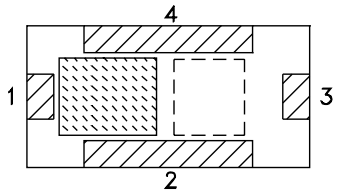
Specification Definition



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	—			3700		MHz
	Insertion Loss	F1 - F2	3000 - 4600	—	1.9	3.5	dB
	VSWR	F1 - F2	3000 - 4600	—	2.26	—	:1
Stop Band, Lower	Insertion Loss	DC - F3	2100	21	28	—	dB
	VSWR	DC - F3	2100	—	23	—	:1
Stop Band, Upper	Insertion Loss	F4 - F5	5600 - 8000	10	24	—	dB
	VSWR	F4 - F5	5600 - 8000	—	16	—	:1

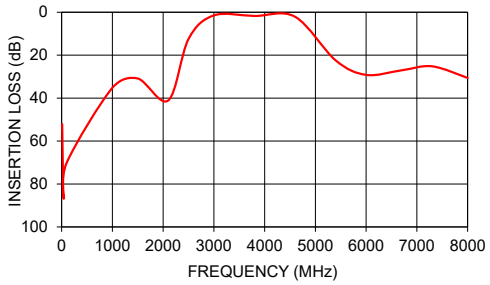
1. Measured on Mini-Circuits Characterization Test Board TB-824+.
2. This filter is not intended for use as a DC Blocking circuit element. In Application where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

Maximum Ratings

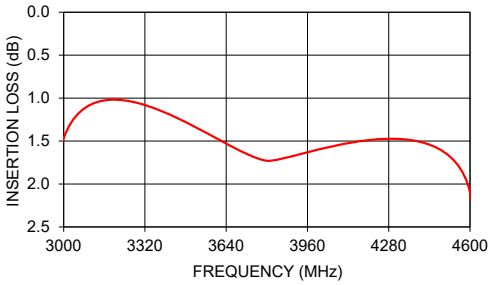
Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°C
RF Power Input*	2.5 W at 25°C

*Passband rating, derate linearly to 0.7 W at 100°C ambient
Permanent damage may occur if any of these limits are exceeded.

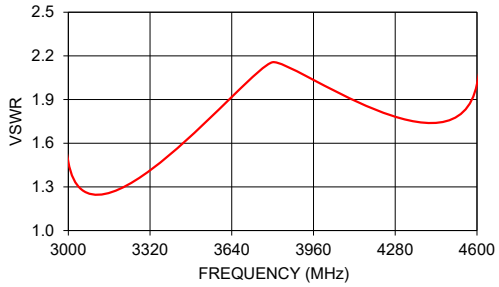
BFCN-3700+
INSERTION LOSS (Full Band)



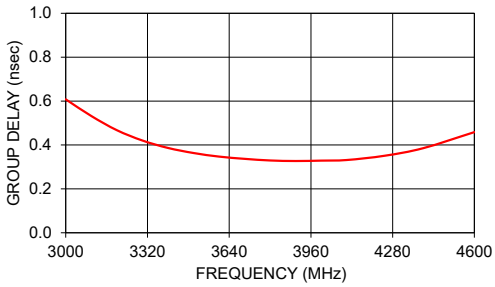
BFCN-3700+
INSERTION LOSS (Pass Band)



BFCN-3700+
VSWR



BFCN-3700+
GROUP DELAY



Full Band Performance / Pass Band Performance

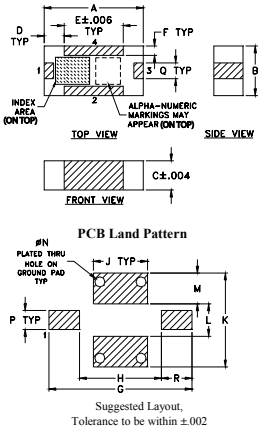
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Insertion Loss (dB)	Group Delay (nsec)
10	52.11	164.39	3000	1.47	0.61
40	86.34	64.21	3100	1.25	0.53
100	70.07	63.01	3200	1.22	0.47
1000	35.19	45.24	3300	1.26	0.42
1500	30.86	41.09	3400	1.34	0.39
2100	41.10	34.12	3500	1.43	0.36
2500	12.46	15.28	3600	1.53	0.35
3000	1.47	1.47	3700	1.64	0.34
3800	1.73	2.16	3800	1.73	0.33
4600	2.10	2.01	3900	1.84	0.33
5400	22.42	16.29	4000	1.92	0.33
6000	29.18	26.35	4100	2.00	0.33
6700	27.04	24.76	4250	2.08	0.35
7300	25.18	14.98	4400	2.11	0.39
8000	30.58	4.62	4600	2.10	0.46

Pad Connections

Input	1
Output	3
Ground	2,4

Product Marking: GP

Outline Drawing

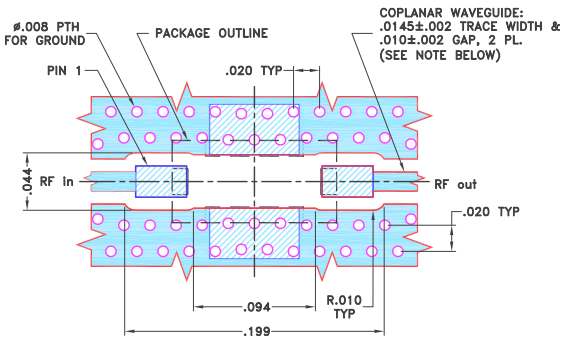


Outline Dimensions (inch / mm)

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

Demo Board MCL P/N: TB-824+
Suggested PCB Layout (PL-454)



NOTES:
1. TRACE WIDTH PARAMETERS ARE SHOWN FOR ROGERS RO4350B 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.

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

Ceramic Bandpass Filter BFCN-3700+

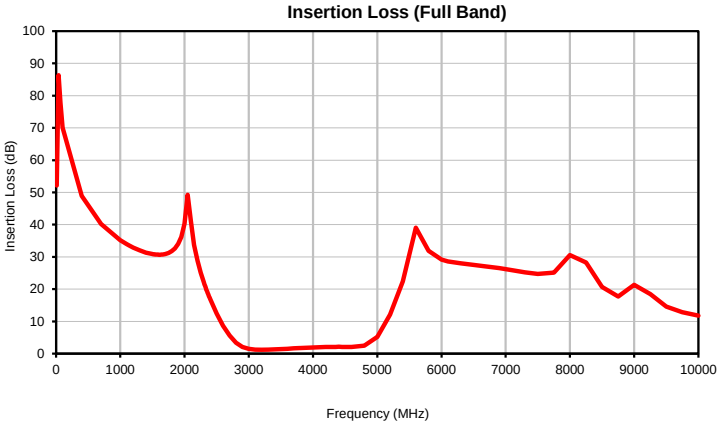
Typical Performance Data

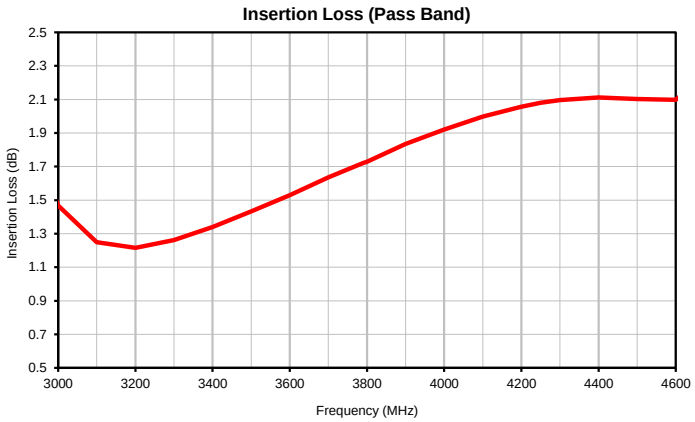
FREQUENCY (MHz)	INSERTION LOSS (dB)	VSWR (:1)
10	52.11	164.39
40	86.34	64.21
70	77.73	63.07
100	70.07	63.01
400	48.91	54.71
700	40.21	48.90
1000	35.19	45.24
1100	33.96	44.62
1140	33.52	43.91
1200	32.91	43.71
1300	32.04	42.65
1400	31.34	42.04
1500	30.86	41.09
1510	30.83	41.12
1520	30.80	40.85
1530	30.78	40.66
1540	30.75	40.54
1550	30.73	40.32
1560	30.72	40.34
1570	30.70	40.40
1580	30.69	40.29
1590	30.69	40.26
1600	30.68	40.29
1620	30.68	40.03
1640	30.71	40.07
1660	30.73	40.04
1680	30.80	39.76
1700	30.89	39.38
1750	31.22	38.69
1800	31.79	38.53
1850	32.66	37.72
1950	36.20	36.49
2000	40.25	36.40
2100	41.10	34.12
2200	28.87	31.15
2300	22.07	27.38
2350	19.34	24.80
2360	18.83	24.21
2370	18.33	23.58
2380	17.83	22.93
2390	17.34	22.30
2400	16.87	21.63
2500	12.46	15.28
2600	8.66	9.54
2700	5.57	5.48
2800	3.37	3.19
2900	2.07	2.01
3000	1.47	1.47
3100	1.25	1.32
3200	1.22	1.42
3300	1.26	1.57
3400	1.34	1.71
3500	1.43	1.85
3600	1.53	1.96
3700	1.64	2.08
3790	1.72	2.15
3800	1.73	2.16
3900	1.84	2.24
4000	1.92	2.30
4100	2.00	2.34
4200	2.06	2.35
4250	2.08	2.34
4300	2.10	2.33
4350	2.10	2.31
4400	2.11	2.27
4450	2.11	2.22
4500	2.10	2.16
4600	2.10	2.01
4800	2.47	1.88
5000	5.19	3.62
5200	12.10	9.23
5400	22.42	16.29
5600	39.09	21.23
5800	31.85	24.16
6000	29.18	26.35
6500	27.54	26.47
6900	26.50	22.40
7100	25.86	19.14
7500	24.72	10.92
8000	30.58	4.62
8500	20.68	8.75
9000	21.30	13.11
9500	14.56	12.13
10000	11.80	10.55

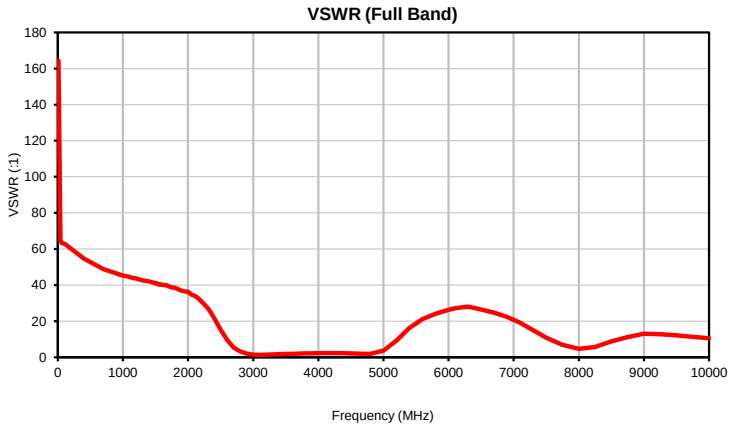
FREQUENCY (MHz)	GROUP DELAY (ns)
3000	0.61
3100	0.53
3200	0.47
3300	0.42
3400	0.39
3500	0.36
3600	0.35
3700	0.34
3790	0.33
3800	0.33
3900	0.33
4000	0.33
4100	0.33
4200	0.34
4250	0.35
4300	0.36
4350	0.37
4400	0.39
4450	0.40
4500	0.42
4600	0.46

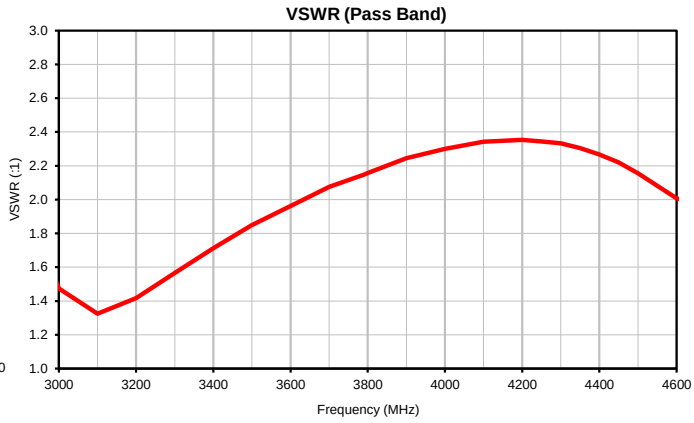
Ceramic Bandpass Filter BFCN-3700+

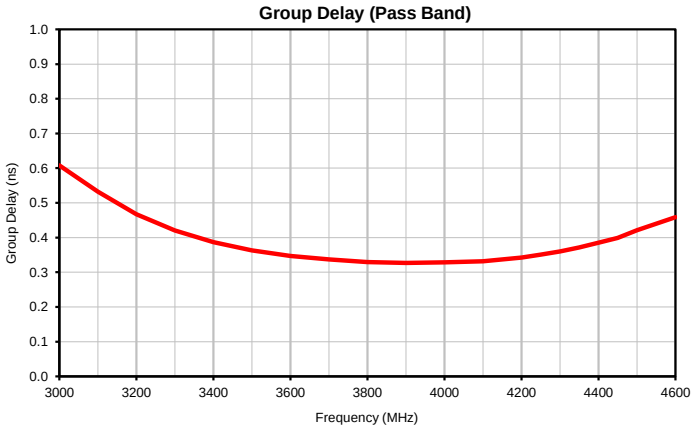
Typical Performance Curves







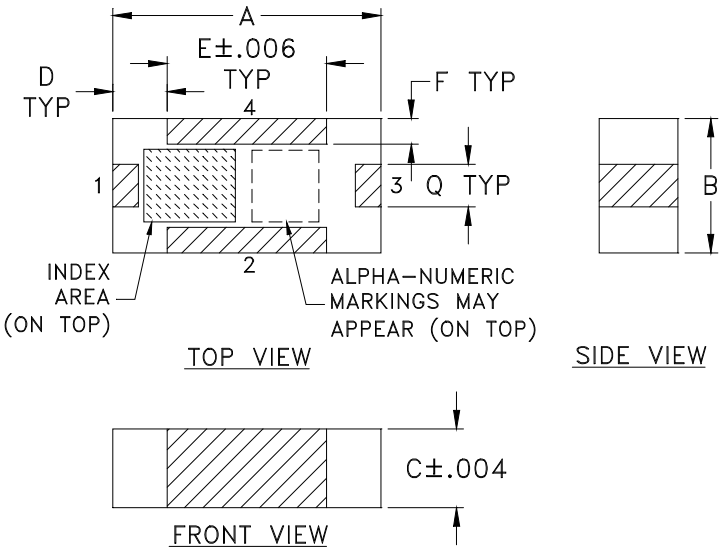




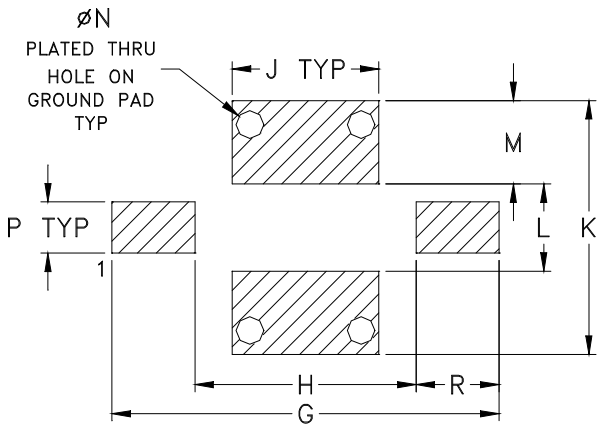
Case Style FV

FV1206-4

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
FV1206-4	.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. ± .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.

Tape & Reel Packaging TR-F75

DEVICE ORIENTATION IN T&R

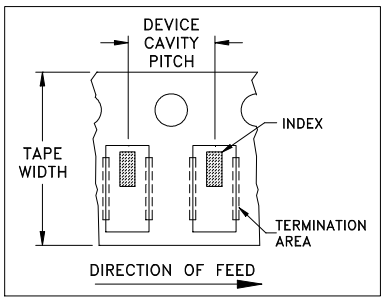


ILLUSTRATION 1

Applicable Case Styles
FV1206-1
FV1206-3

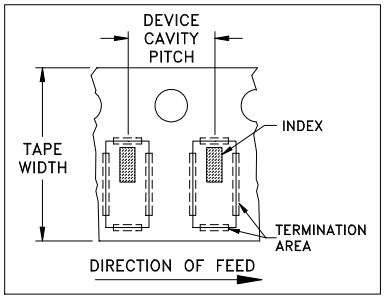


ILLUSTRATION 2

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

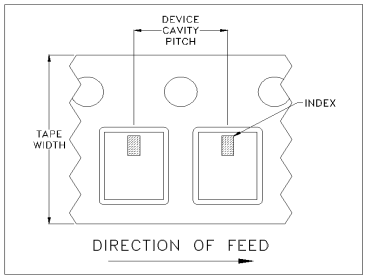


ILLUSTRATION 3

Applicable Case Styles
NL1008C-6
FV1206-12
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.

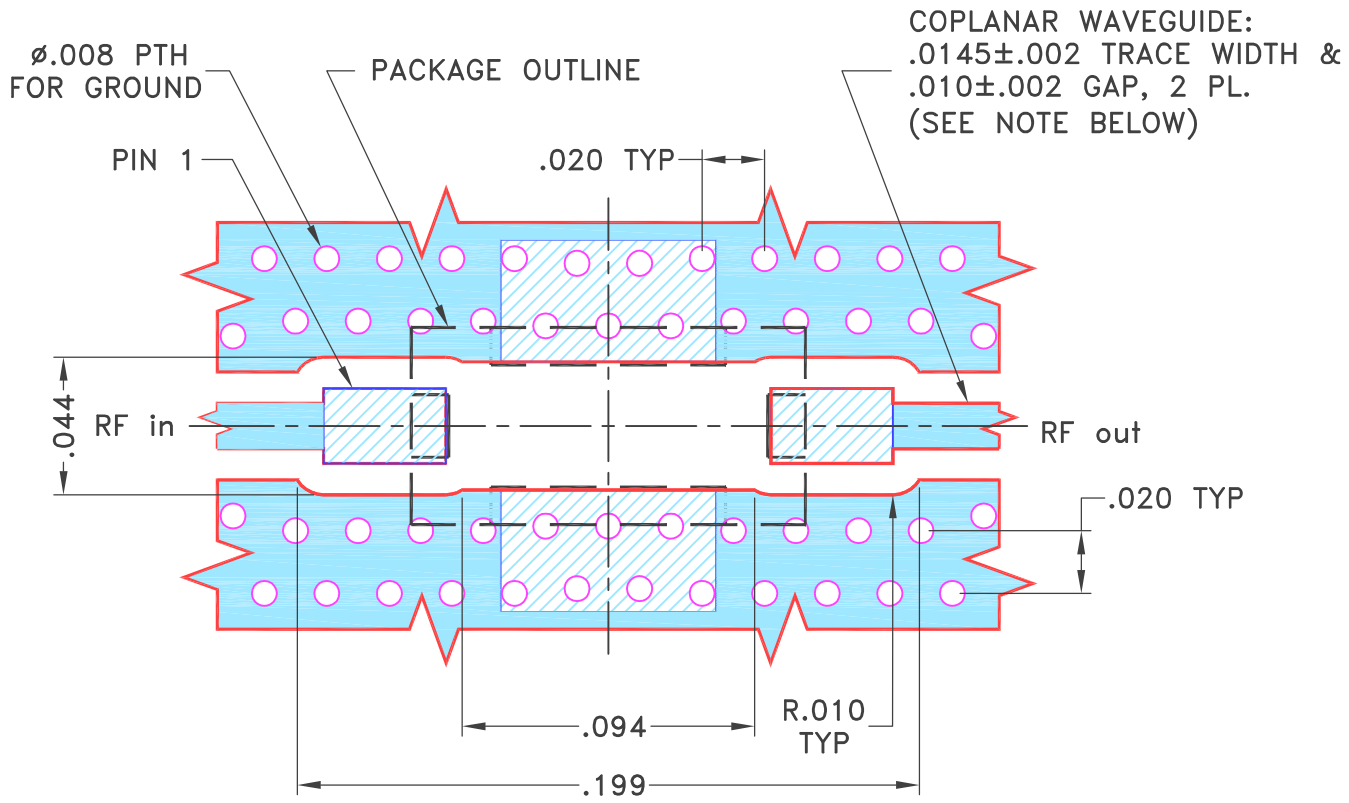
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M152168	NEW RELEASE	07/31/15	ITG	AVB

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



NOTES:

1. TRACE WIDTH PARAMETERS ARE SHOWN FOR ROGERS RO4350B 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.

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	ITG	07/30/15
TOLERANCES ON:	CHECKED	GF	07/31/15
2 PL DECIMALS ±	APPROVED	AVB	07/31/15
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

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

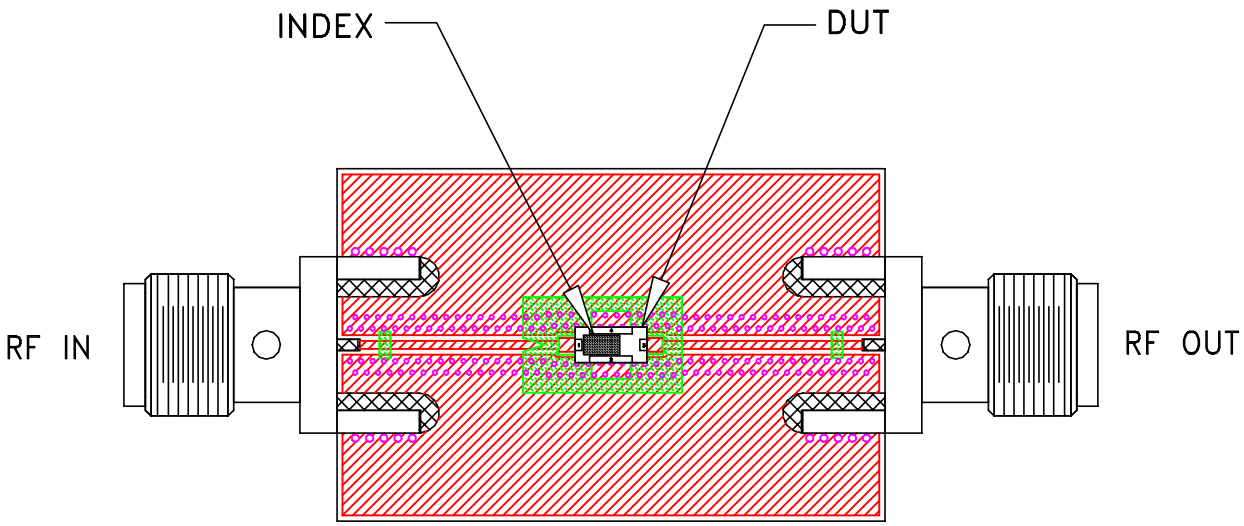
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

PL, 04FL01, FV1206-4, TB-824+

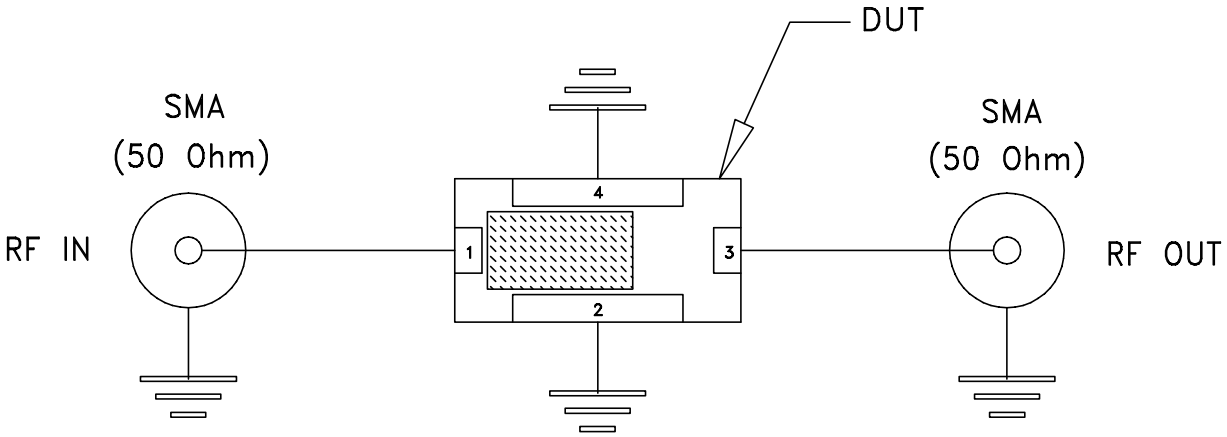
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-454	OR

FILE:	SCALE:	SHEET:
98PL454	16:1	1 OF 1

Evaluation Board and Circuit



TB-824+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.0066 inch.

Mini-Circuits®

Mini-Circuits

Environmental Specifications ENV02T1

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 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
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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, 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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215