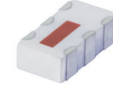


Ceramic

Bandpass Filter

50Ω 1570 to 1810 MHz

BFCN-1690+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

Features

- Good VSWR, 1.29:1 typ. @ passband
- Small size(0.126 x .063 x .035)
- Temperature stable
- LTCC construction

Applications

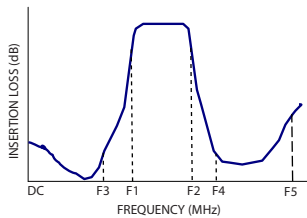
- Harmonic rejection
- Transmitters / Receivers

+RoHS Compliant

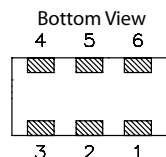
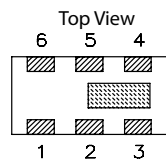
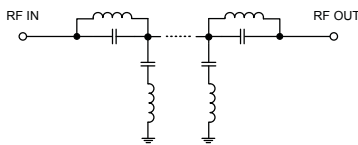
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Specification Definition



Functional Schematic



Pad Connections

Input	1
Output	3
Ground	2,4,5,6

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

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—		1690		MHz
	Insertion Loss	F1 - F2	—	2.5	5.0	dB
	VSWR	F1 - F2	—	1.29	2.0	:1
Stop Band, Lower	Insertion Loss	DC - F3	17	25.5	—	dB
	VSWR	DC - F3	17	24	—	:1
Stop Band, Upper	Insertion Loss	F4 - F5	20	30	—	dB
	VSWR	F4 - F5	5	20	—	:1

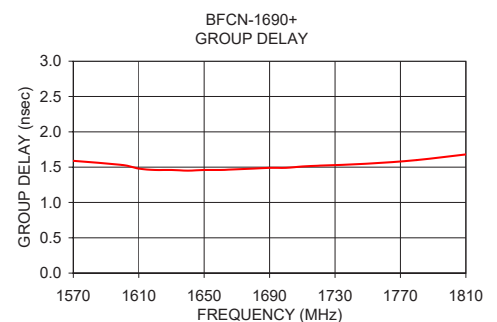
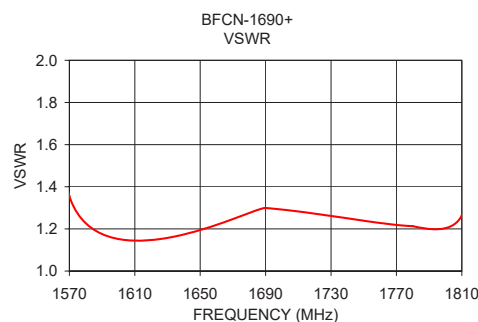
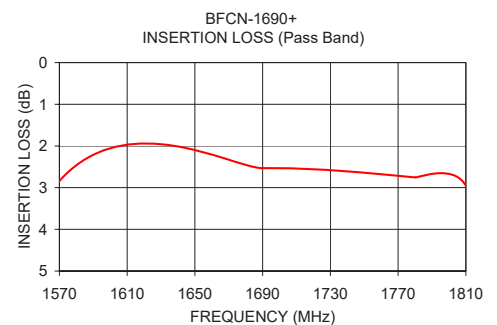
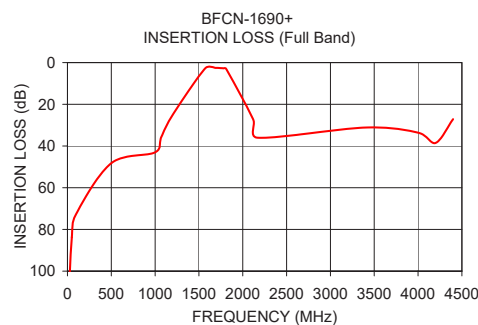
1. Measured on Mini-Circuits Characterization Test Board TB-285.

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*	1.0W at 25°C

*Passband rating, derate linearly to 0.25W at 100°C ambient
Permanent damage may occur if any of these limits are exceeded.



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REV. B
M151107
ED-16214/2
BFCN-1690+
AVM/CP/AM
190725
Page 1 of 2

Full Band Performance

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Insertion Loss (dB)	Group Delay (nsec)
10.00	116.31	177.17	1570.00	2.84	1.59
50.00	83.75	147.73	1600.00	2.72	1.53
100.00	72.51	119.76	1610.00	2.69	1.48
500.00	48.23	62.19	1620.00	2.66	1.46
1000.00	43.02	35.56	1630.00	2.63	1.46
1070.00	35.77	30.60	1640.00	2.61	1.45
1200.00	25.09	20.81	1650.00	2.59	1.46
1570.00	2.84	1.36	1660.00	2.57	1.46
1690.00	2.53	1.30	1670.00	2.55	1.47
1780.00	2.75	1.21	1680.00	2.54	1.48
1810.00	2.95	1.27	1690.00	2.53	1.49
2120.00	27.35	6.94	1700.00	2.53	1.49
2170.00	36.01	8.07	1710.00	2.53	1.51
3400.00	31.15	70.42	1720.00	2.54	1.52
4000.00	33.62	56.00	1750.00	2.62	1.55
4200.00	38.51	39.90	1780.00	2.75	1.60
4400.00	27.14	19.50	1810.00	2.95	1.68

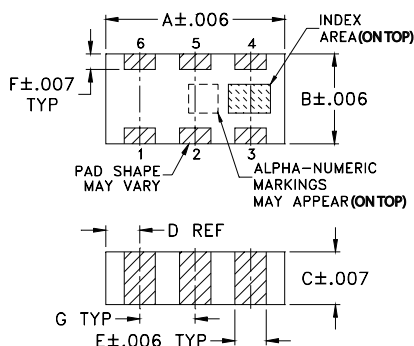
Pass Band Performance

Pad Connections

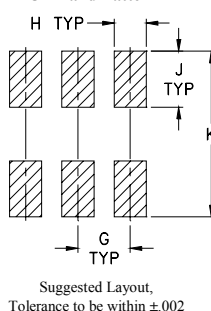
Input	1
Output	3
Ground	2,4,5,6

Product Marking: BL

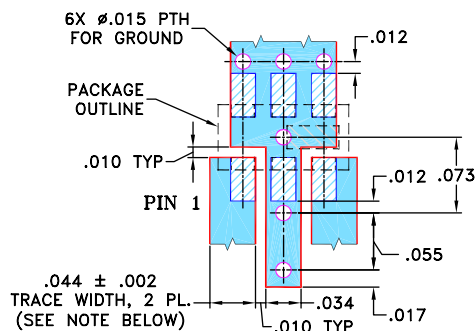
Outline Drawing



PCB Land Pattern



Demo Board MCL P/N: TB-285 Suggested PCB Layout (PL-158)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350 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
 DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Dimensions (inch/mm)

A	B	C	D	E	F
.126	.063	.035	.024	.022	.011
3.20	1.60	0.89	0.61	0.56	0.28
G	H	J	K	wt	
.039	.024	.042	.123	grams	
0.99	0.61	1.07	3.12	.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-1690+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)	FREQUENCY (MHz)	GROUP DELAY (ns)
10.0	116.31	0.10	70.0	0.02
50.0	83.75	0.12	90.0	0.17
100.0	72.51	0.15	300.0	0.19
300.0	54.76	0.23	500.0	0.20
500.0	48.23	0.28	700.0	0.20
700.0	46.75	0.34	900.0	0.21
900.0	57.11	0.42	1000.0	0.21
1000.0	43.02	0.49	1070.0	0.09
1200.0	25.09	0.84	1185.0	0.12
1300.0	17.32	1.40	1200.0	0.23
1400.0	9.34	3.51	1250.0	0.48
1450.0	5.90	6.92	1300.0	0.67
1480.0	4.44	10.98	1350.0	0.94
1510.0	3.54	17.55	1400.0	1.30
1540.0	3.06	20.24	1450.0	1.59
1570.0	2.84	16.41	1480.0	1.87
1600.0	2.72	14.67	1510.0	1.83
1610.0	2.69	14.48	1540.0	1.71
1620.0	2.66	14.45	1570.0	1.59
1630.0	2.63	14.56	1600.0	1.53
1640.0	2.61	14.79	1610.0	1.48
1650.0	2.59	15.13	1620.0	1.46
1660.0	2.57	15.60	1630.0	1.46
1670.0	2.55	16.19	1640.0	1.45
1680.0	2.54	16.90	1650.0	1.46
1690.0	2.53	17.71	1660.0	1.46
1700.0	2.53	18.58	1670.0	1.47
1710.0	2.53	19.48	1680.0	1.48
1720.0	2.54	20.32	1690.0	1.49
1750.0	2.62	21.57	1700.0	1.49
1780.0	2.75	20.32	1710.0	1.51
1810.0	2.95	18.63	1720.0	1.52
1840.0	3.24	17.38	1750.0	1.55
1870.0	3.69	15.48	1780.0	1.60
1920.0	5.32	10.01	1810.0	1.68
1970.0	8.90	5.72	1840.0	1.80
2020.0	14.19	3.82	1870.0	1.90
2070.0	20.36	2.98	1920.0	2.24
2120.0	27.35	2.52	1970.0	2.26
2170.0	36.01	2.16	2020.0	1.84
2200.0	41.68	1.99	2070.0	1.36
2250.0	40.25	1.73	2120.0	0.91
2350.0	35.37	1.31	2170.0	0.43
2450.0	34.04	1.01	2350.0	0.14
2550.0	33.42	0.78	2550.0	0.26
2650.0	33.06	0.62	2650.0	0.22
2750.0	32.72	0.51	2750.0	0.19
2850.0	32.33	0.44	2850.0	0.16
3000.0	31.90	0.37	3000.0	0.13
3200.0	31.44	0.30	3200.0	0.12
3400.0	31.15	0.25	3400.0	0.09
3600.0	31.12	0.27	3600.0	0.11
3800.0	31.87	0.29	3800.0	0.08
4000.0	33.62	0.31	4000.0	0.10
4200.0	38.51	0.44	4200.0	0.08
4400.0	27.14	0.89	4400.0	0.02



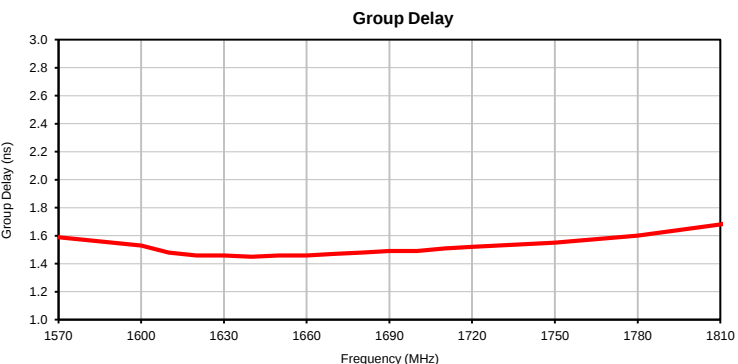
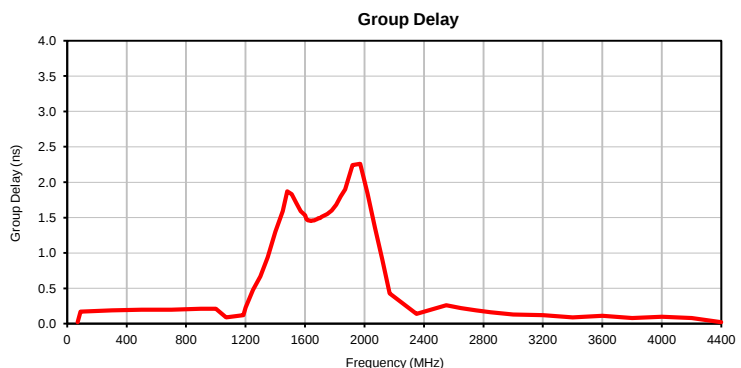
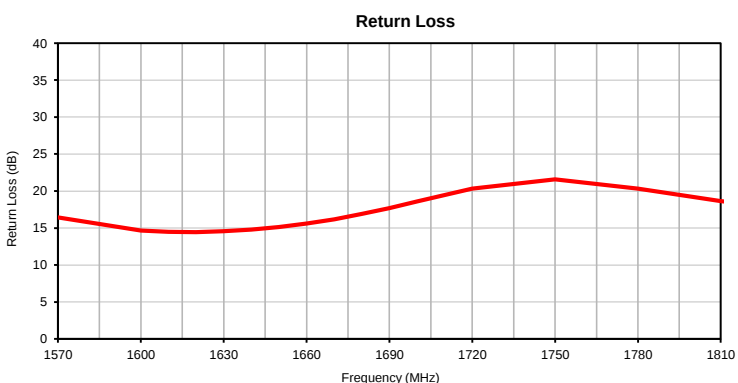
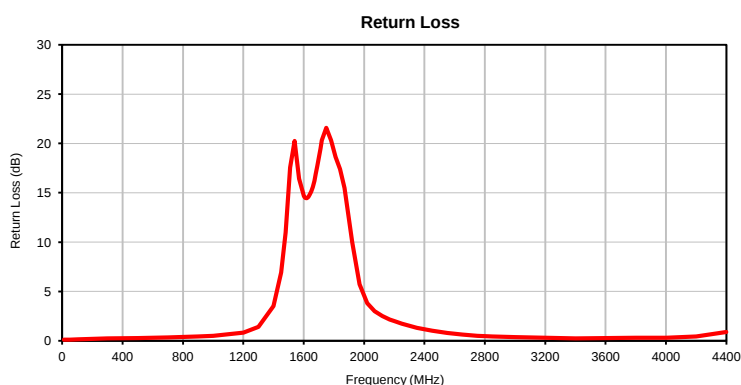
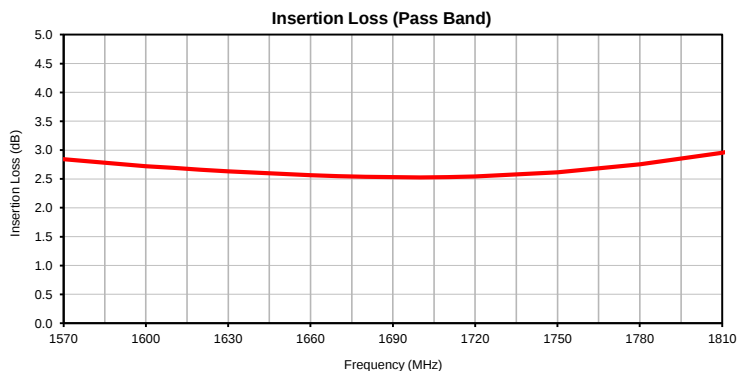
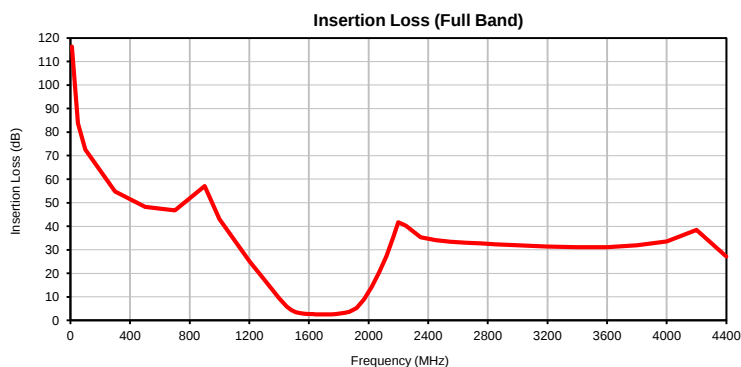
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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com



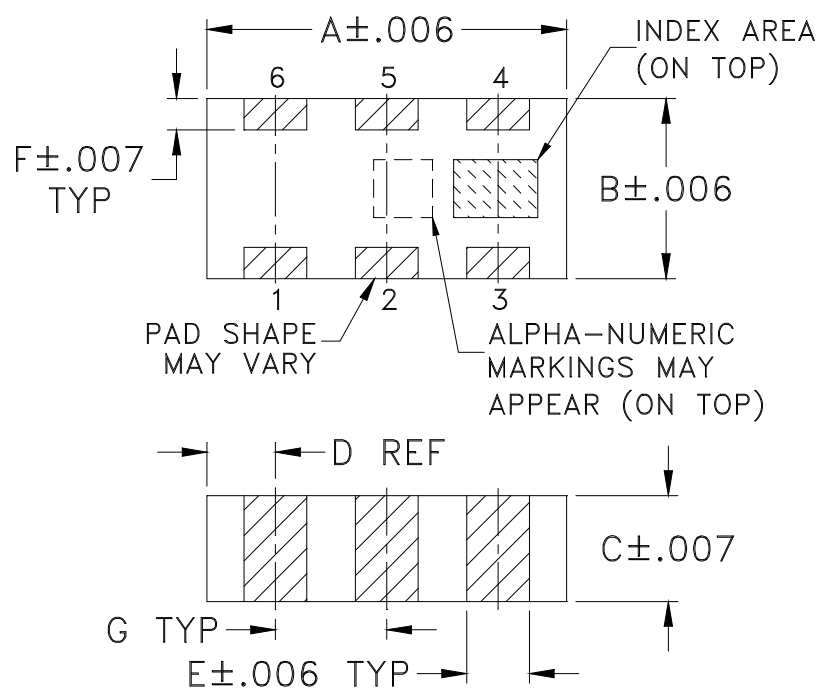
IF/RF MICROWAVE COMPONENTS

REV. OR
BFCN-1690+
9/3/2014
Page 1 of 1

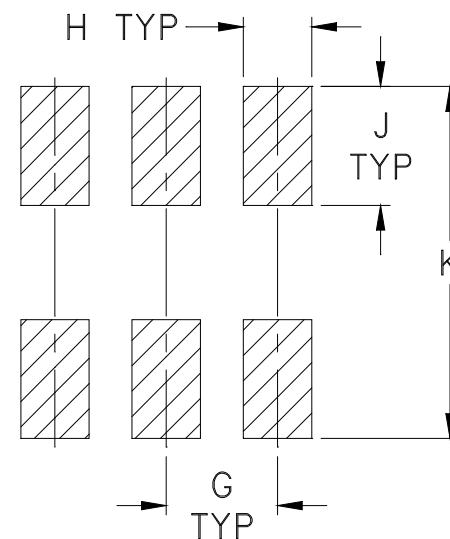
Typical Performance Curves



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	N	P	WT. GRAM
FV1206-1	.126 (3.20)	.063 (1.60)	.035 (0.89)	.024 (0.61)	.022 (0.56)	.011 (0.28)	.039 (0.99)	.024 (0.61)	.042 (1.07)	.123 (3.12)	--	--	--	--	.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.



ISO 9001 ISO 14001 CERTIFIED

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RF/IF MICROWAVE COMPONENTS



Tape & Reel Packaging

TR-F75

DEVICE ORIENTATION IN T&R

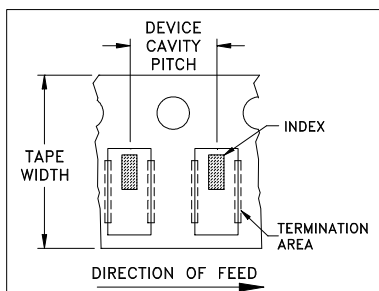


ILLUSTRATION 1

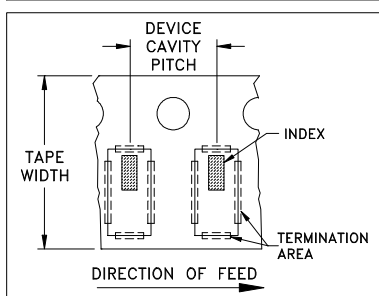


ILLUSTRATION 2

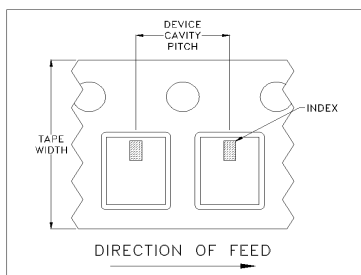


ILLUSTRATION 3

Applicable Case Styles
FV1206-1
FV1206-3

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

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

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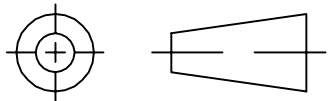
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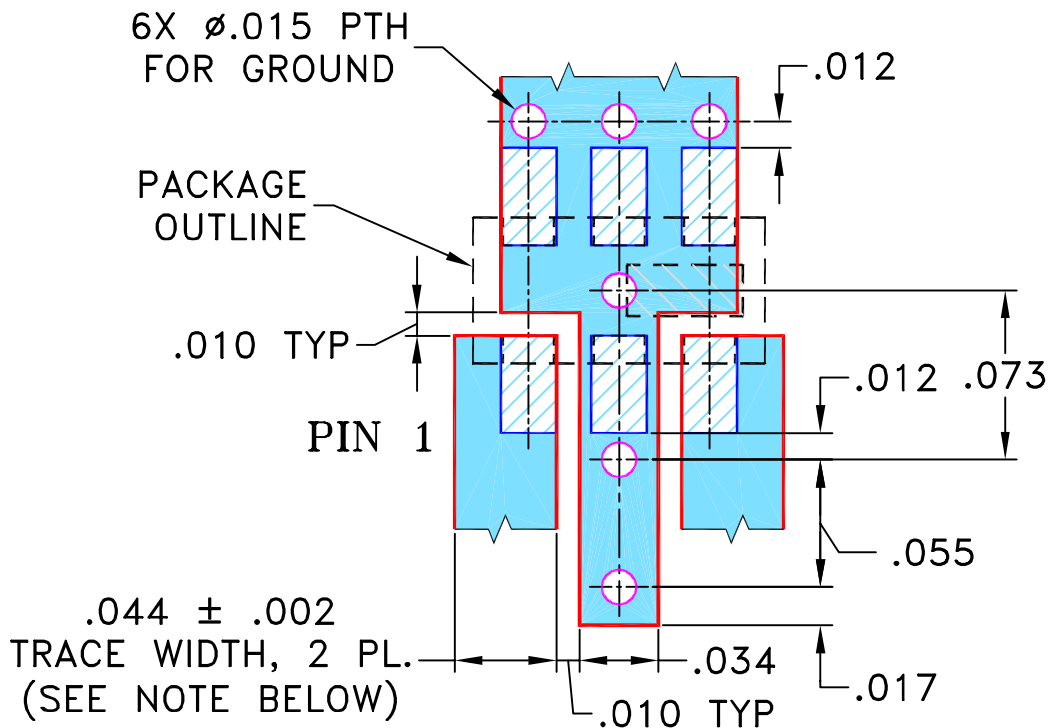
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M92199	NEW RELEASE	05/24/04	AV	ABD
A	M99247	ADD GROUND PTH	06/05	RZ	RZ
A	R60782	ADD GROUND PTH	06/05	RZ	RZ
B	M102713	ADDED "...WITH SMOBC"	01/12/06	GF	IL

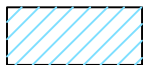
SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-1 CASE STYLE, "pr" PIN CONNECTION.



- NOTE:** 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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

TOLERANCES ON:

2 PL DECIMALS ±

3 PL DECIMALS ± .005

ANGLES ±

FRACTIONS ±

DRAWN

AV

05/03/04

CHECKED

IL

05/24/04

APPROVED

ABD

05/24/04



Mini-Circuits®

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Brooklyn NY 11235

PL, pr, FV1206-1, HFCN, TB-285

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

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-158

REV:

B

FILE:

98PL158

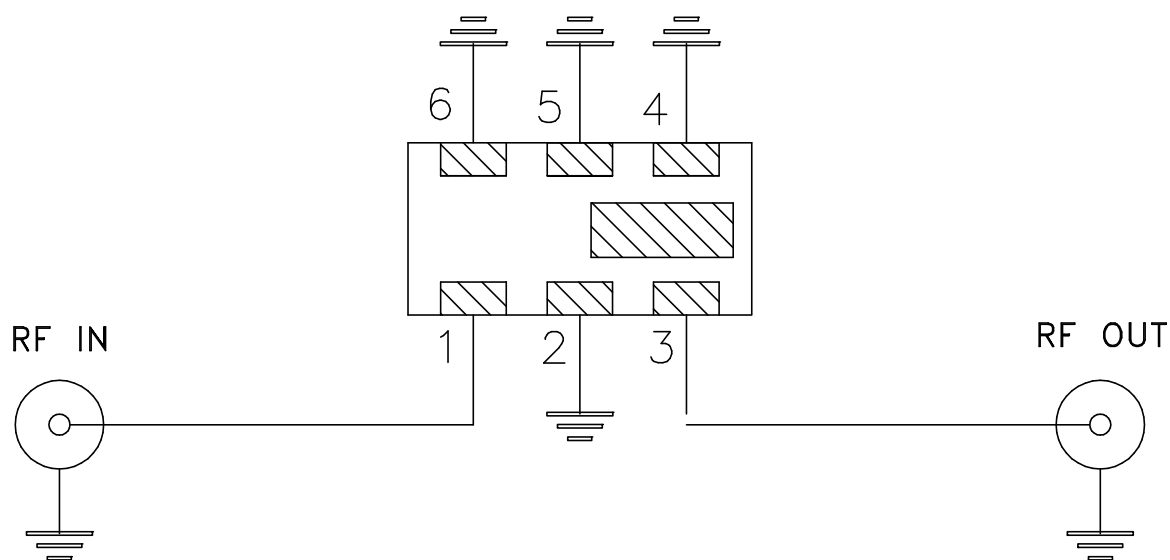
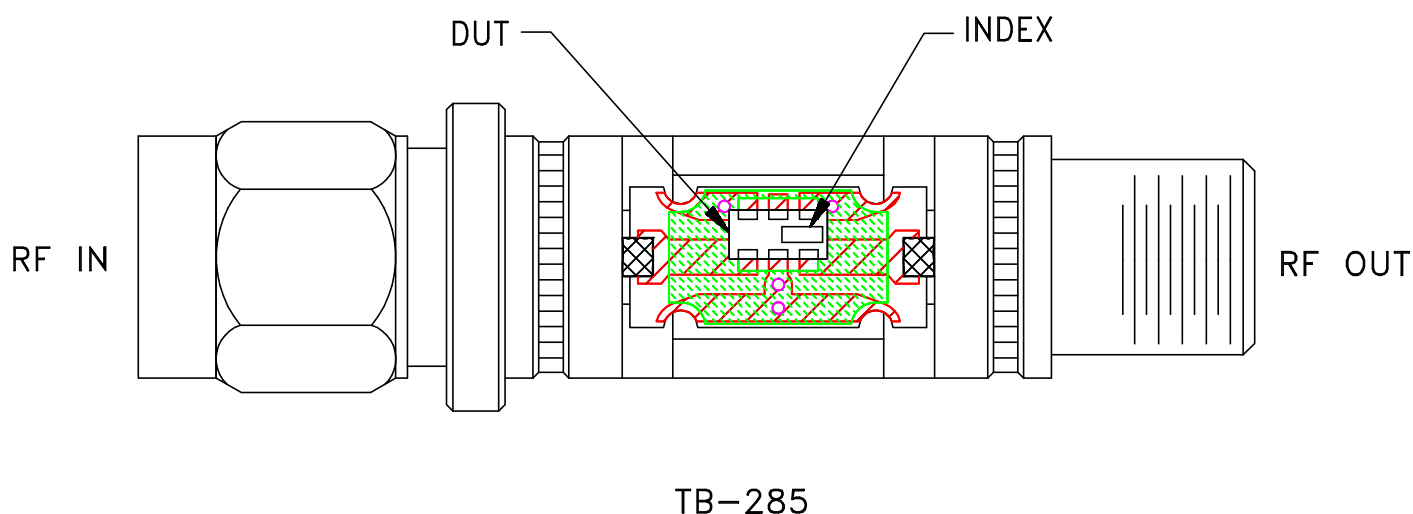
SCALE:

12:1

SHEET:

1 OF 1

Evaluation Board and Circuit



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

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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