LTCC SURFACE MOUNT

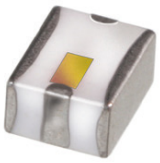
Band Pass Filter

BFCV-4085+

50Ω 3130 to 5040 MHz

THE BIG DEAL

- Low Insertion Loss, 1.5 dB Typ.
- Passband Return Loss, 9 dB Typ.
- Stopband Rejection, 20 dB Typ.
- 1210 Surface Mount Footprint

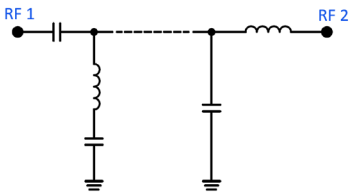


Generic photo used for illustration purposes only

APPLICATIONS

- Software Defined Radio
- Satellite Television Broadcast
- WLAN

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The BFCV-4085+ is a passive RF component optimized for band-pass filter applications in low-frequency circuits. Its ceramic-based construction ensures stable electrical performance across a wide operating range, supporting consistent center frequency and bandwidth characteristics under varying environmental conditions. Its internal structure is engineered to minimize parasitic effects, which is critical for maintaining sharp filter response and low insertion loss. The compact form factor and controlled electrical behavior contribute to high reliability and repeatable filter performance that is well suited for dense PCB layouts.

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

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency[3]	—	—	—	4085	—	MHz
	Insertion Loss	F1-F2	3130 - 5040	—	1.5	—	dB
		F3-F4	3330 - 4840	—	1.5	4.0	
	Return Loss	F1-F2	3130 - 5040	—	9	—	dB
Stopband, Lower	Rejection	DC-F5	DC - 2520	15	17	—	dB
Stopband, Upper	Rejection	F6	6260	—	17	—	dB
		F7-F8	6380 - 8000	15	20	—	
		F8-F9	8000 - 11000	—	14	—	

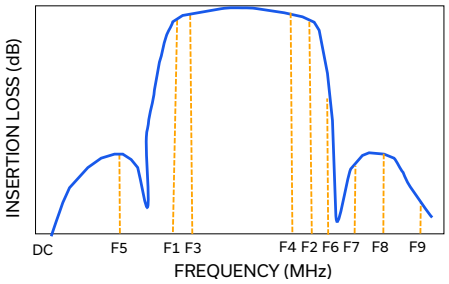
1. Tested in Evaluation Board P/N TB-BFCV-4085+.
2. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
3. Typical variation ± 5%

ABSOLUTE MAXIMUM RATINGS[4]

Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°C
Input Power[5]	5 W @ +25°C

4. Permanent damage may occur if any of these limits are exceeded.
5. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.25 W at +100°C.

TYPICAL FREQUENCY RESPONSE



REV. B
ECO-030331
BFCV-4085+
EDU2450_6
MCINU
260720

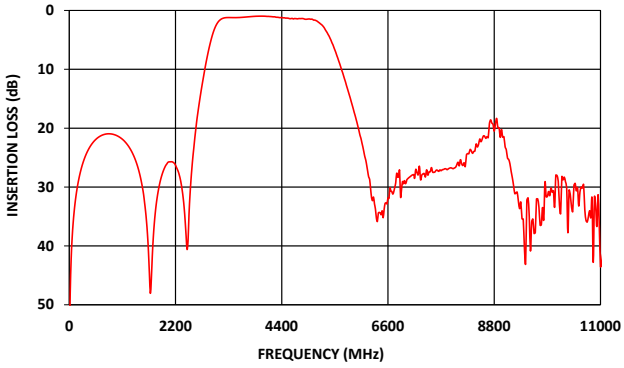
Band Pass Filter

BFCV-4085+

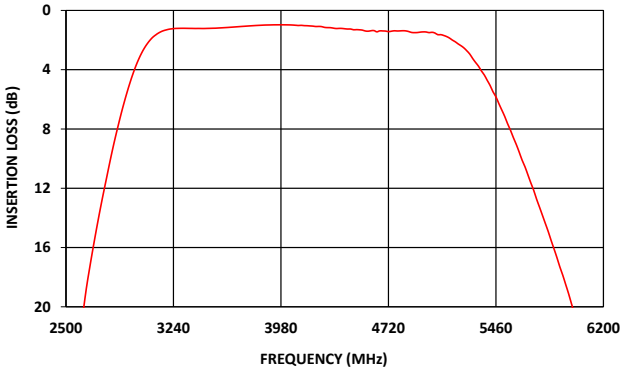
50Ω 3130 to 5040 MHz

TYPICAL PERFORMANCE GRAPHS AT +25°C

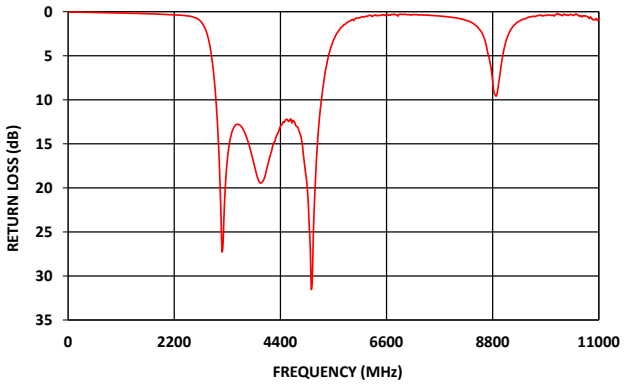
BFCV-4085+
INSERTION LOSS



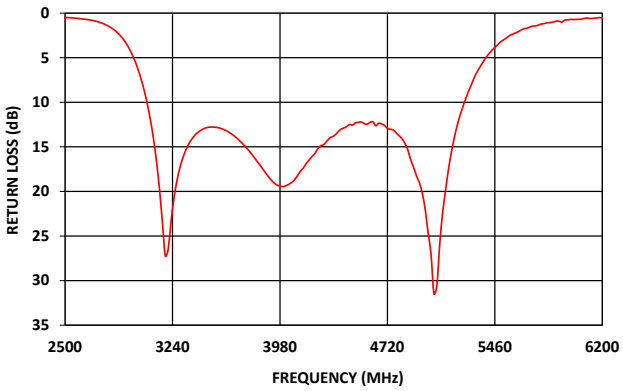
BFCV-4085+
INSERTION LOSS (Zoomed)



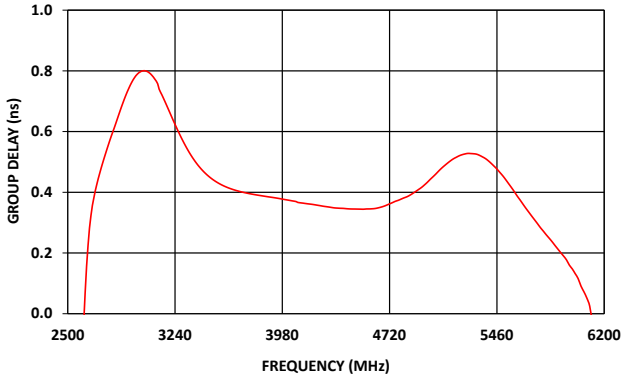
BFCV-4085+
RETURN LOSS



BFCV-4085+
RETURN LOSS (Zoomed)



BFCV-4085+
GROUP DELAY



Band Pass Filter

BFCV-4085+

50Ω 3130 to 5040 MHz

FUNCTIONAL DIAGRAM

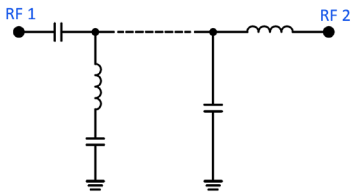
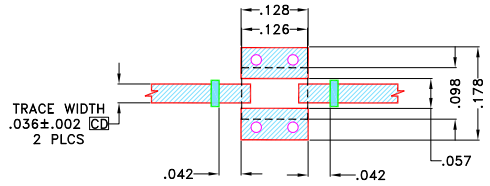


Figure 1. BFCV-4085+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1	1	Connects to RF Input Port
RF2	3	Connects to RF Output Port
GROUND	2,4	Connects to Ground on PCB, (See drawing PL-502)

SUGGESTED PCB LAYOUT



NOTES:

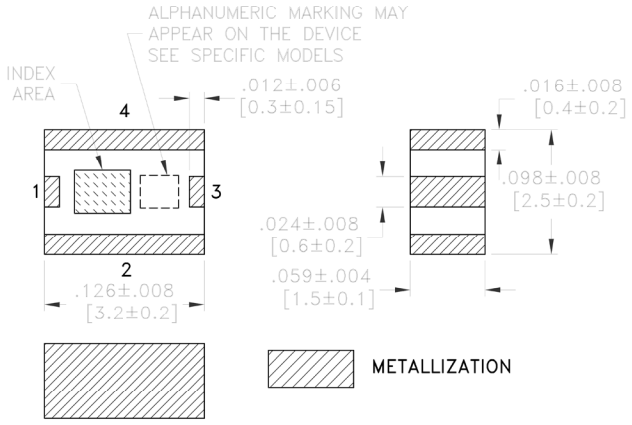
1. TRACE WIDTH & SPACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .0166"±.0015". COPPER 1/2 Oz. EACH SIDE FOR OTHER MATERIALS TRACE WIDTH & SPACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



WEIGHT: .03 grams.
DIMENSIONS ARE IN INCH [MM].

PRODUCT MARKING*: L7

*Marking may contain other features or characters for internal lot control.

LTCC SURFACE MOUNT

Band Pass Filter

BFCV-4085+

50Ω 3130 to 5040 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	JV1210C Lead Finish: Tin over Nickel Plate
RoHS/REACH Status	Compliant
Tape and Reel	F74
Suggested Layout for PCB Design	PL-502
Evaluation Board	TB-BFCV-4085+ Gerber File
Environmental Rating	ENV02T1

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

Surface Mount Band Pass Filter BFCV-4085+

Typical Performance Data

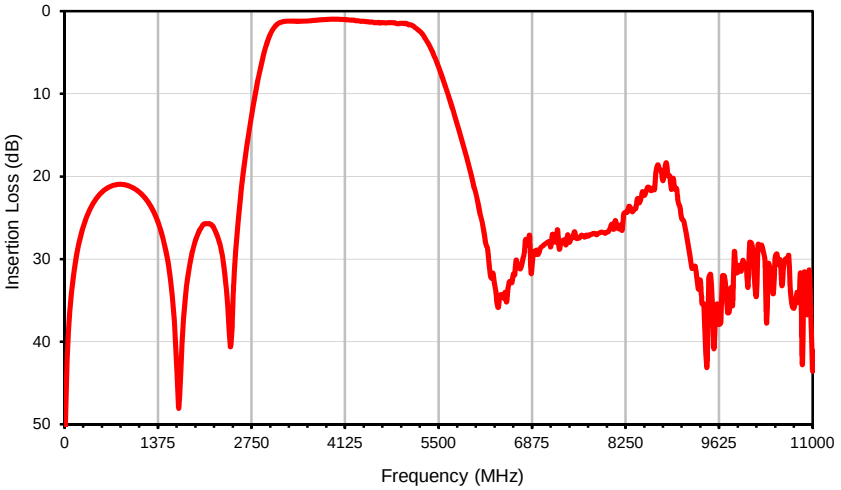
FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)
10	54.23	0.05
20	48.07	0.05
40	42.16	0.05
120	32.77	0.05
160	30.38	0.05
200	28.58	0.05
500	22.35	0.08
800	20.96	0.12
940	21.12	0.13
1500	29.37	0.20
1680	48.06	0.23
1900	28.50	0.28
2000	26.31	0.31
2080	25.72	0.34
2100	25.71	0.33
2200	26.28	0.36
2340	30.61	0.40
2520	28.88	0.50
2620	20.21	0.66
2700	15.29	0.86
2800	10.32	1.48
3000	3.30	6.19
3130	1.57	16.69
3330	1.21	15.42
4085	1.00	18.60
4840	1.38	14.59
5040	1.53	31.47
5300	3.25	7.96
5600	9.05	2.24
5800	14.38	1.18
6000	20.46	0.71
6240	30.30	0.41
6380	35.84	0.38
6400	34.41	0.45
6500	35.21	0.34
7000	28.66	0.32
7250	26.45	0.34
7500	26.69	0.42
8000	26.64	0.67
8500	21.84	1.84
8100	25.35	0.76
8250	24.32	0.96
8500	21.84	1.84
8600	21.36	2.68
8800	20.51	7.93
9000	21.46	5.26
9200	29.73	1.82
9400	35.45	0.93
9600	35.44	0.55
9800	33.48	0.37
9900	31.61	0.45
10000	30.89	0.38
10200	28.25	0.32
10300	30.18	0.36
10400	33.38	0.33
10500	30.66	0.37
10600	30.02	0.51
10700	35.66	0.49
10800	35.20	0.77
11000	43.50	0.88

FREQUENCY (MHz)	GROUP DELAY (nsec)
3130	0.74
3150	0.72
3190	0.68
3210	0.66
3250	0.61
3290	0.57
3330	0.54
3370	0.51
3410	0.48
3450	0.46
3490	0.45
3530	0.43
3570	0.42
3610	0.41
3650	0.41
3690	0.40
3730	0.40
3770	0.39
3810	0.39
3850	0.39
3890	0.38
3930	0.38
3970	0.38
4010	0.38
4030	0.37
4050	0.37
4070	0.37
4100	0.37
4120	0.36
4140	0.36
4160	0.36
4180	0.36
4200	0.36
4220	0.36
4240	0.36
4260	0.35
4280	0.35
4300	0.35
4320	0.35
4340	0.35
4360	0.35
4380	0.35
4400	0.35
4440	0.35
4480	0.34
4520	0.34
4560	0.35
4600	0.35
4640	0.35
4680	0.35
4720	0.36
4760	0.37
4800	0.38
4840	0.39
4880	0.40
4920	0.41
4960	0.42
5000	0.44
5020	0.45
5040	0.46

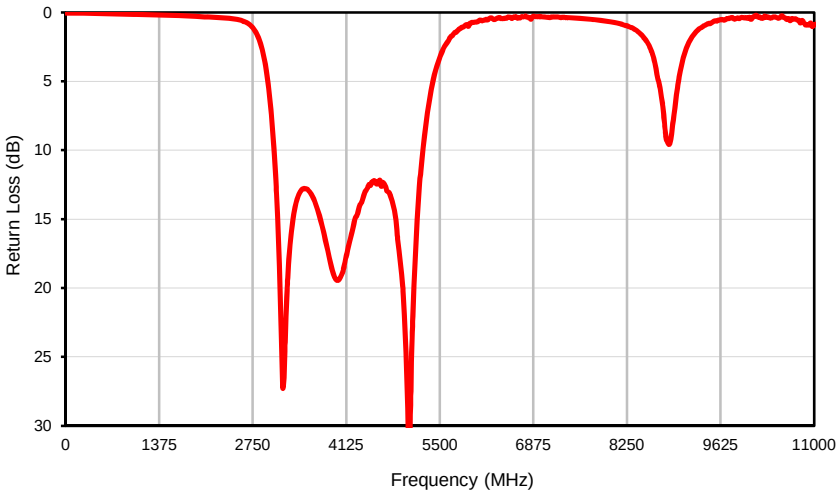
Surface Mount Band Pass Filter BFCV-4085+

Typical Performance Curves

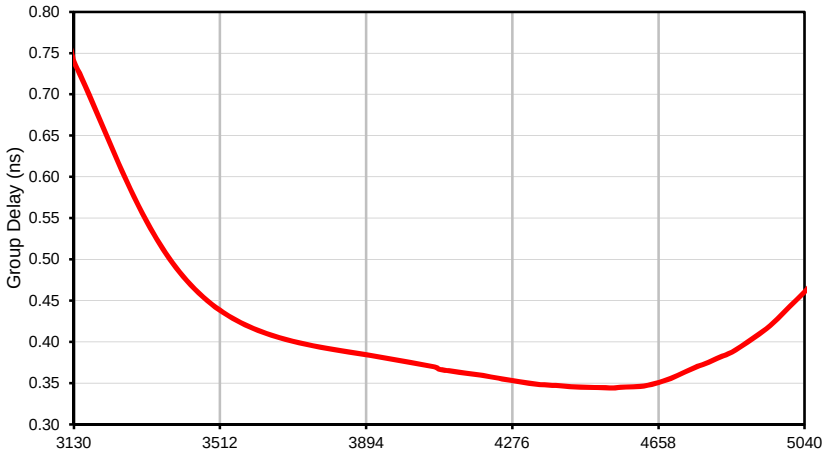
Insertion Loss



Return Loss



Group Delay

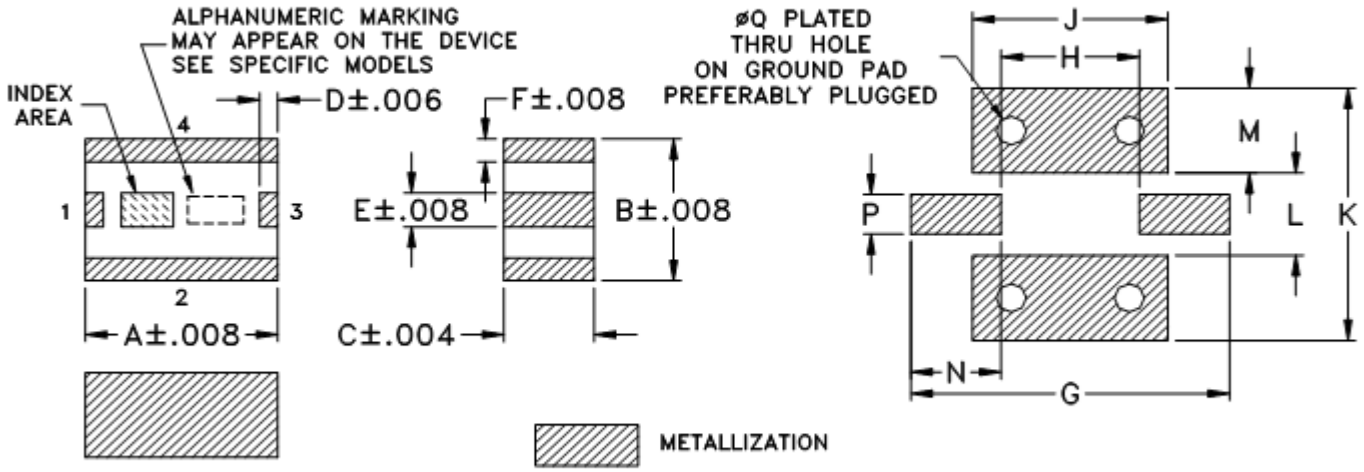


Case Style JV

Outline Dimensions

JV1210C

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	WT. GRAM
JV1210C	.126 (3.2)	.098 (2.5)	.059 (1.5)	.012 (.3)	.024 (.6)	.016 (.4)	.209 (5.3)	.091 (2.3)	.128 (3.25)	.175 (4.45)	.057 (1.45)	.059 (1.5)	.059 (1.5)	.028 (.7)	.020 (.5)	.03

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. Pad tolerance is non-cumulative. Minimum spacing between each pad is .004.

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Tape & Reel Packaging TR-F74

DEVICE ORIENTATION IN T&R

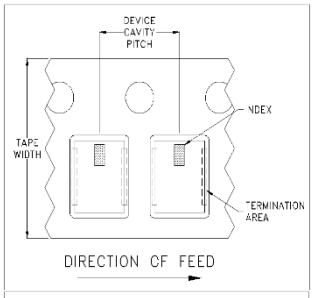


ILLUSTRATION 1

Applicable Case Styles
GE0805C-1
GE0805C-1AP
JV1210C-1
GU2939

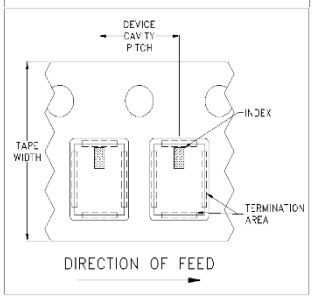


ILLUSTRATION 2

Applicable Case Styles
JV1210C
JV1210C-2
JV1210C-3
JV1210C-4
JV1210C-5
JV1210C-6
JV1210C-11

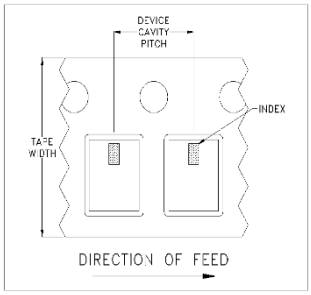


ILLUSTRATION 3

Applicable Case Styles
JC0603C-8
JC0603C-9
JV1210C-7
JV1210C-8
JV1210C-9
JV1210C-10
JV1210C-13
GE0805C-13
GE0805C-19
GE0805C-20

Tape Width, mm	Device Cavity Pitch, mm	Real Size, inches	Devices per Reel	
8	4	7	Small quantity standards **(see note)**	20
				50
				100
				200
				500
				1000
			Standard	2000
				4000

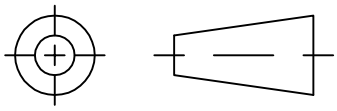
Note: Small reel availability varies by model. Refer to pricing and availability on individual model dashboard.

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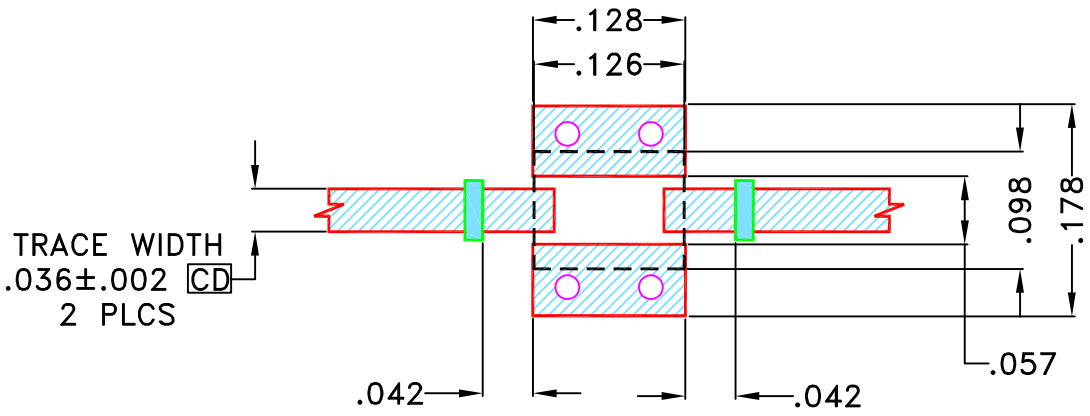
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M160679	NEW RELEASE	MAR 17	TM	MD

SUGGESTED MOUNTING CONFIGURATION FOR JV1210C CASE STYLE



NOTES:

1. TRACE WIDTH & SPACE WIDTH IS SHOWN FOR ROGERS (RO4350B) WITH DIELECTRIC THICKNESS .0166"±.0015". COPPER 1/2 Oz. EACH SIDE
   FOR OTHER MATERIALS TRACE WIDTH & SPACE 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 SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	TM	8 MAR 17
TOLERANCES ON:	CHECKED	MD	8 MAR 17
2 PL DECIMALS ±	APPROVED	RV	8 MAR 17
3 PL DECIMALS ± .005"			
ANGLES ±			
FRACTIONS ±			

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

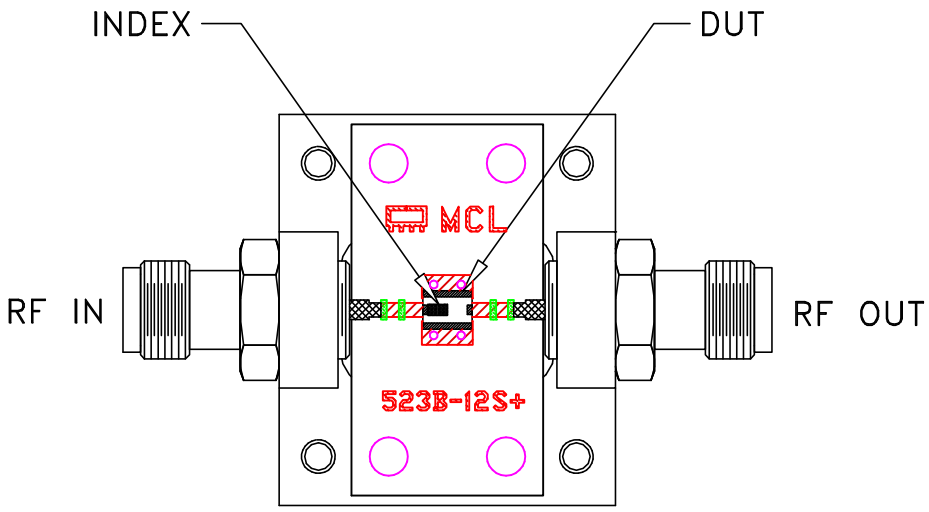
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

PL, JV1210C, BFCV-4085+, BFCV-2895+, BFCV-3350+, BFCV-2610+, TB-946+
50 OHM

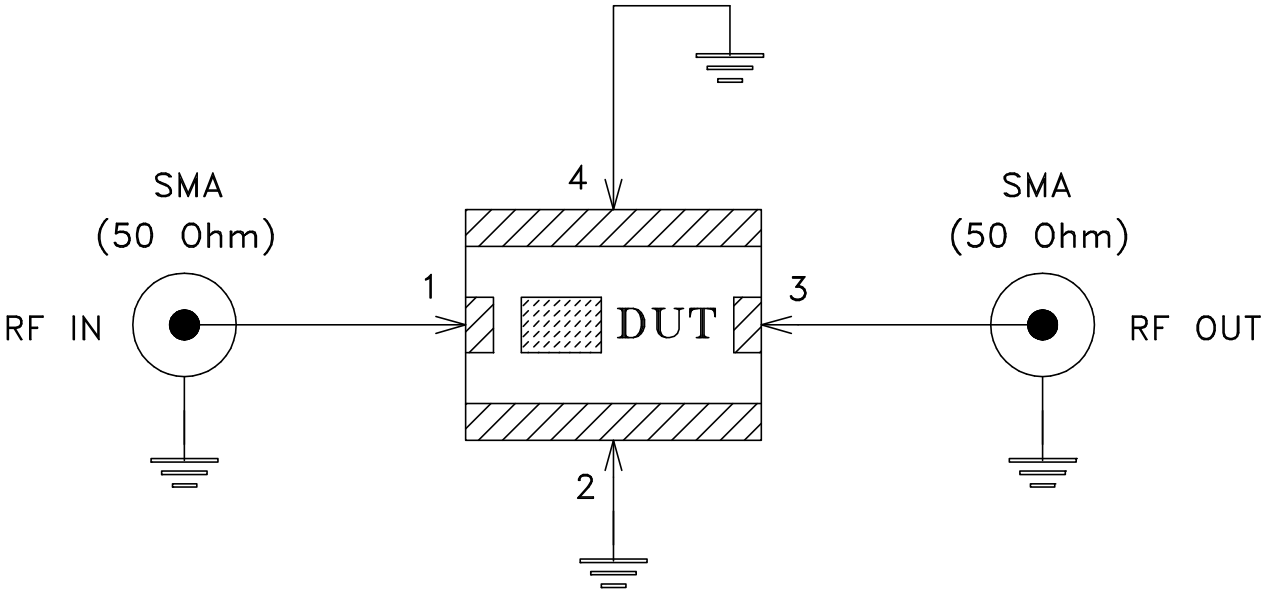
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-502	OR

FILE:	SCALE:	SHEET:
98PL502	6:1	1 OF 1

Evaluation Board and Circuit



TB-946+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.48, Thickness=.0166 inch.

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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

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