



LTCC SURFACE MOUNT

Band Pass Filter

BFCV-8750+

50Ω 8.45 to 8.80 GHz

THE BIG DEAL

- 8.45 to 8.80 GHz Passband
- Wide Stopband Rejection up to 18 GHz
- Compact 3.2×2.5 mm Package
- Rugged, Temperature-stable LTCC Construction

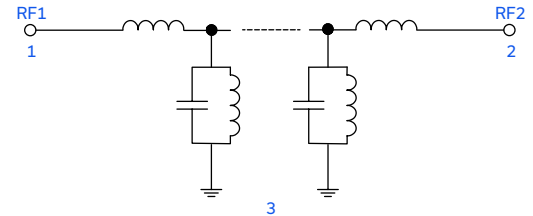


Generic photo used for illustration purposes only

APPLICATIONS

- Surveillance Radar Platforms
- Perimeter and Border Security Sensors
- UAV Payload Radars
- X-Band Receivers

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The BFCV-8750+ LTCC bandpass filter provides a passband from 8.45 to 8.8 GHz with as low as 3 dB loss in the passband and up to 63 dB stopband rejection. This model handles up to 6.3 W RF input power and provides a wide operating temperature range from -55 to +125°C. Utilizing a proprietary LTCC material system and a distributed filter topology, this filter achieves highly repeatable performance on a lot-to-lot basis.

ELECTRICAL SPECIFICATIONS^{1,2,3} AT +25°C, Z₀ = 50Ω

Parameter	F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency ⁴		—	8.625	—	GHz
	Insertion Loss	F4-F5	—	3	4	dB
	Return Loss	F4-F5	—	9.5	—	dB
Stopband, Lower	Attenuation	DC-F1	50	63	—	dB
		F1-F2	45	55	—	
		F2-F3	30	38	—	
Stopband, Upper	Attenuation	F6-F7	30	44	—	dB
		F7-F8	50	60	—	

1. Tested on Evaluation Board P/N TB-BFCV-8750C+ with the connector and feedline effects de-embedded using the 2X Thru IEEE P370 method.

2. This filter is bi-directional. RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

3. 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 port, an external DC blocking capacitor is required.

4. Typical variation ± 3 %.

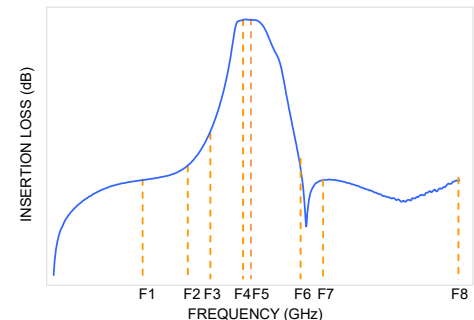
ABSOLUTE MAXIMUM RATINGS⁵

Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
Input Power ⁶	6.3 W at +25 °C

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

6. Power rating applies only to signals within the passband. Power rating above +25 °C operating temperature decreases linearly to 2.57 W at +125 °C.

TYPICAL FREQUENCY RESPONSE





LTCC SURFACE MOUNT

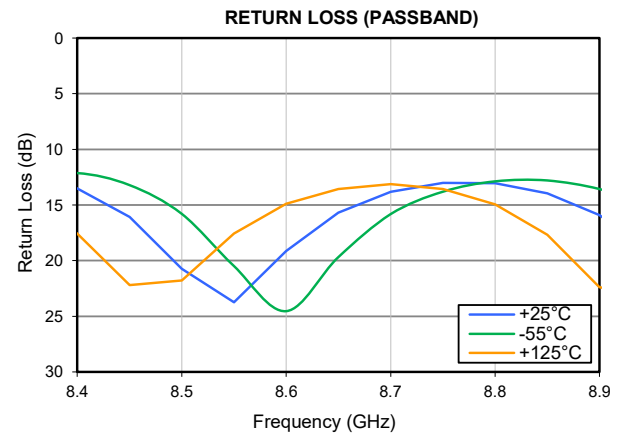
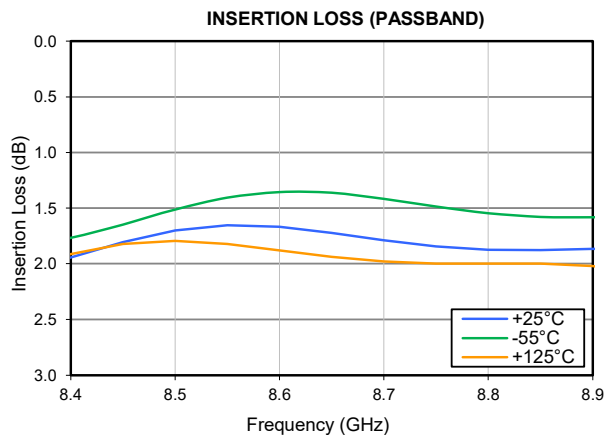
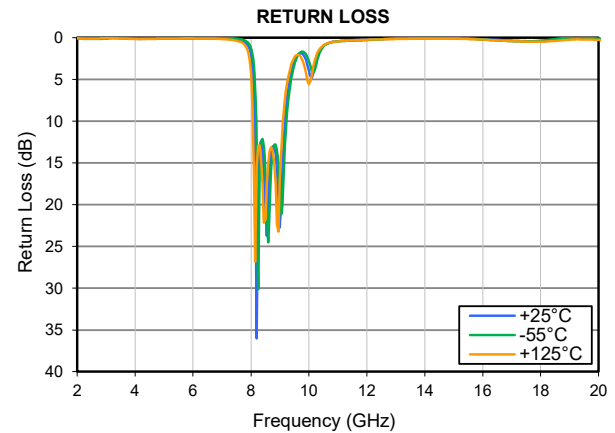
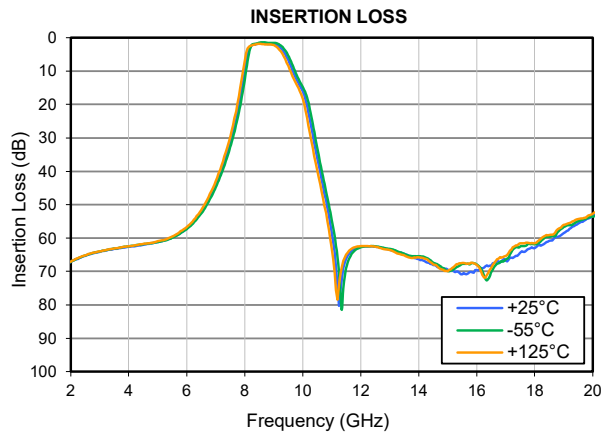
Band Pass Filter

BFCV-8750+

Mini-Circuits

50Ω 8.45 to 8.80 GHz

TYPICAL PERFORMANCE GRAPHS





LTCC SURFACE MOUNT

Band Pass Filter

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FUNCTIONAL DIAGRAM

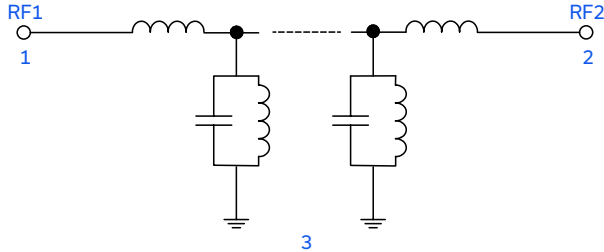
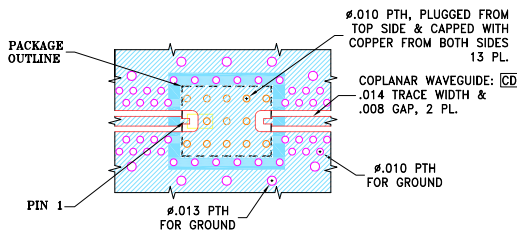


Figure 1. BFCV-8750+ Functional Diagram

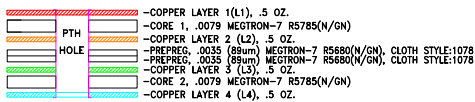
PAD DESCRIPTION

Function	Pad Number	Description
RF1 ²	1	Connects to RF Input Port
RF2 ²	2	Connects to RF Output Port
GROUND	3	Connects to Ground on PCB, (See drawing PL-743)

SUGGESTED PCB LAYOUT: PL-743



STACK-UP DIAGRAM



- TOTAL FINISHED THICKNESS 0.026 ± 10%.
- PTH PRESENT FROM COPPER LAYER 1 TO COPPER LAYER 4.
- INDICATED ON TOP VIEW PTH'S ARE PLUGGED WITH EPOXY AND CAPPED WITH COPPER FROM TOP SIDE.
- L2, L3 AND L4 ARE CONTINUOUS GROUND PLANES.

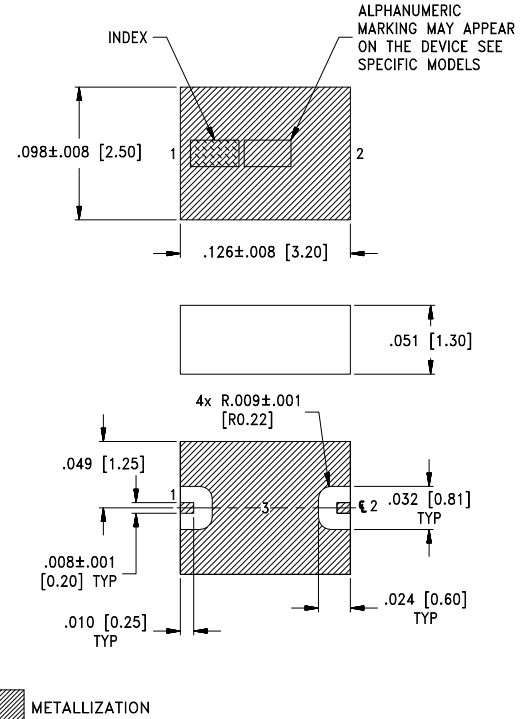
NOTES:

- PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
- TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR MEGTRON-7 R-5785(N/GN), WITH DIELECTRIC THICKNESS .0079; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Figure 2. Suggested PCB Layout

CASE STYLE DRAWING



Weight: .040 grams

Dimensions are in inches [mm]. Tolerances: 3 PL. ±.005 Inches

PRODUCT MARKING*: X4

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

Mini-Circuits

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PAGE 3 OF 4



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Mini-Circuits

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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-15 Finish: Tin over Nickel plating
RoHS/REACH Status	Compliant
Tape and Reel	TR-F74
Suggested Layout for PCB Design	PL-743
Evaluation Board	TB-BFCV-8750C+
	Gerber File
Environmental Rating	ENV163

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-Circuits' 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/terms/viewterm.html



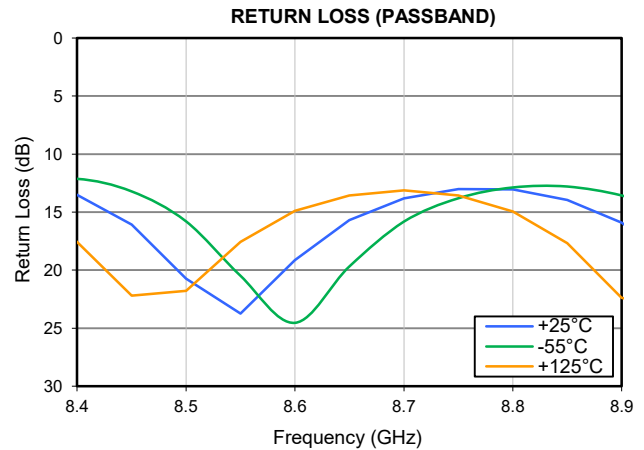
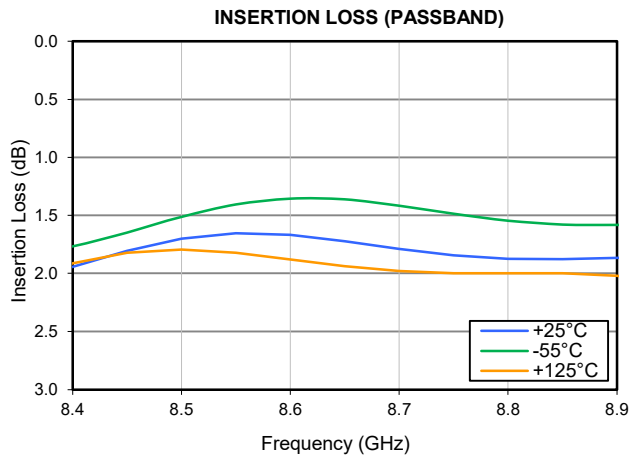
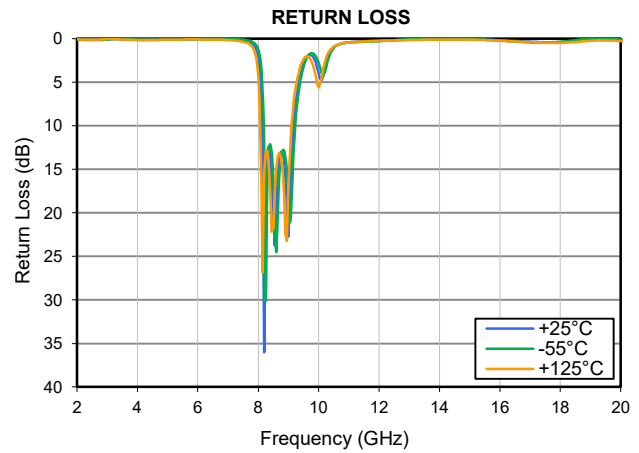
LTCC Bandpass Filter

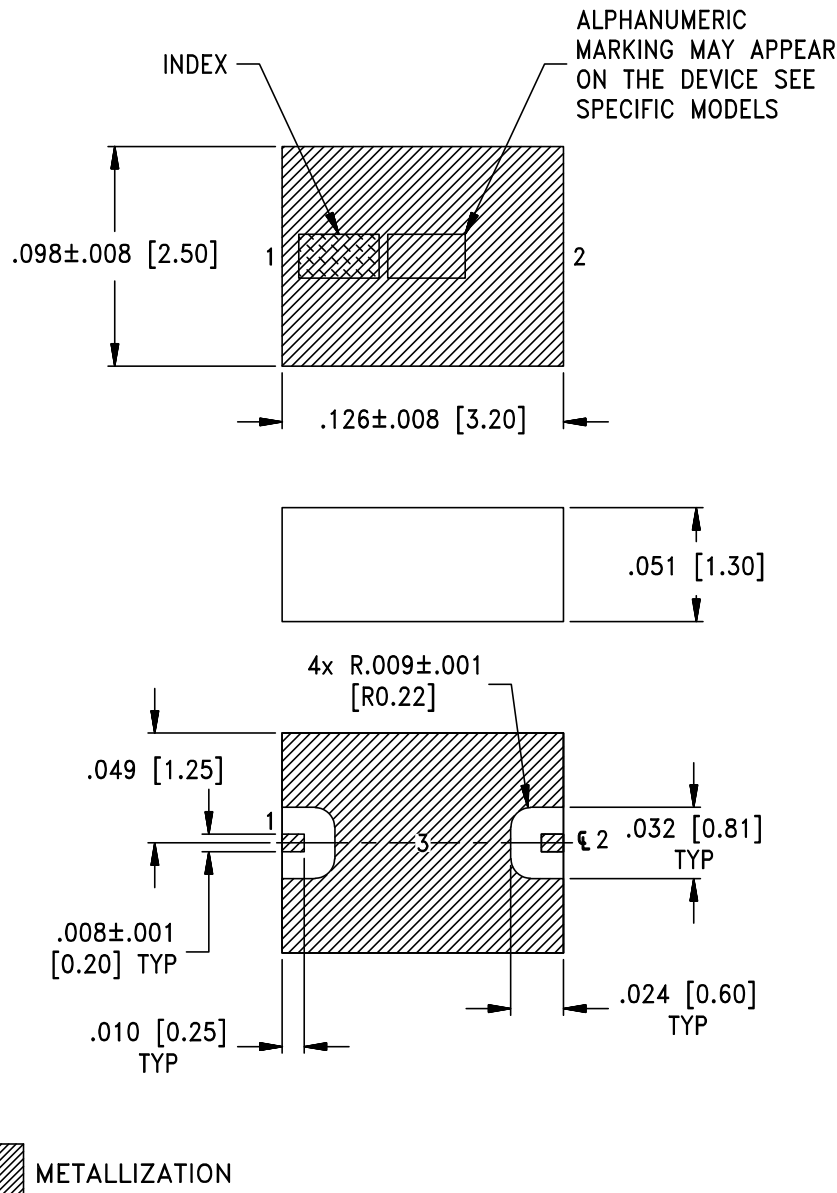
Typical Performance Data

BFCV-8750+

FREQUENCY (GHz)	INSERTION LOSS (dB)			RETURN LOSS (dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
0.05	98.73	97.35	95.80	0.05	0.03	0.05
0.10	93.27	92.43	91.79	0.06	0.04	0.06
0.20	86.87	86.32	86.38	0.09	0.07	0.10
0.30	83.20	83.21	83.02	0.11	0.09	0.11
0.40	80.80	80.84	80.81	0.13	0.10	0.13
0.50	79.04	79.02	78.71	0.13	0.11	0.14
0.60	77.49	77.38	77.35	0.12	0.14	0.15
0.70	76.30	76.07	76.13	0.12	0.15	0.15
0.80	75.04	75.02	74.88	0.15	0.12	0.15
0.90	74.14	74.13	74.05	0.15	0.13	0.15
1.00	73.22	73.21	73.06	0.14	0.12	0.14
1.50	77.49	77.38	77.35	0.12	0.14	0.15
2.00	67.13	67.13	67.00	0.06	0.09	0.07
2.50	76.30	76.07	76.13	0.12	0.15	0.15
3.00	64.08	63.98	63.95	1.12	0.11	0.04
3.50	63.21	63.10	63.09	0.07	0.01	0.09
4.00	74.58	74.49	74.32	0.13	0.15	0.15
4.50	62.00	61.84	61.80	0.14	0.13	0.16
5.00	73.56	73.52	73.46	0.12	0.15	0.14
5.50	59.84	59.90	59.55	0.07	0.09	0.08
6.00	57.10	57.30	56.71	0.07	0.07	0.08
6.50	52.22	52.66	51.62	0.09	0.06	0.11
7.00	44.19	44.88	43.01	0.13	0.06	0.18
7.50	32.84	31.67	29.60	0.11	0.24	0.35
8.00	10.23	12.59	6.89	2.07	1.23	4.38
8.45	1.65	1.81	1.82	13.19	16.07	22.17
8.50	1.70	1.51	1.79	20.71	15.80	21.78
8.55	1.65	1.41	1.82	23.74	20.49	17.57
8.60	1.36	1.67	1.88	24.52	19.10	14.89
8.65	1.72	1.36	1.94	15.67	19.67	13.58
8.70	1.42	1.79	1.98	15.82	13.79	13.13
8.75	1.84	1.48	2.00	13.00	13.80	13.58
8.80	1.87	1.54	2.00	13.04	12.87	14.92
8.90	1.87	1.58	2.02	15.89	13.57	22.38
9.00	1.90	1.57	2.24	22.75	18.04	17.18
9.50	6.70	5.31	8.42	2.79	3.24	2.36
10.00	16.14	14.77	18.31	3.95	2.78	5.58
10.50	36.00	32.98	39.71	1.01	1.05	0.91
11.00	58.16	54.51	62.93	0.41	0.45	0.44
11.50	66.21	68.99	64.93	0.30	0.35	0.31
12.00	62.63	62.75	62.38	0.24	0.28	0.25
12.50	62.61	62.49	62.61	0.19	0.18	0.21
13.00	63.48	63.21	63.62	0.13	0.06	0.17
13.50	64.78	64.67	65.10	0.08	0.04	0.14
14.00	66.26	65.38	65.79	0.04	0.07	0.11
14.50	68.02	67.35	67.87	0.04	0.03	0.09
15.00	69.50	69.87	69.92	0.07	0.04	0.11
15.50	70.86	67.72	67.44	0.12	0.12	0.17
16.00	69.61	67.93	68.01	0.19	0.21	0.24
16.50	68.36	70.15	68.92	0.26	0.32	0.32
17.00	66.75	66.42	65.24	0.34	0.41	0.39
17.50	64.39	62.48	61.59	0.41	0.43	0.44
18.00	62.99	61.79	61.55	0.41	0.36	0.46

Typical Performance Data





Weight: .040 grams

Dimensions are in inches [mm]. Tolerances: 3 Pl. $\pm .005$ Inches

Notes:

1. Open style, Ceramic base.
2. Termination finish: **as shown below or indicated on Data Sheet.**
For RoHS Case Styles: Tin-Nickel plate. All models, (+) suffix.
3. Primary dimensions are in Inches[millimeters]. Inch equivalents are calculated and subject to roundoff errors.

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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F74

DEVICE ORIENTATION IN T&R

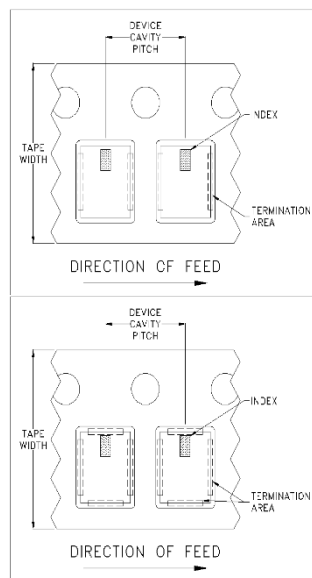


ILLUSTRATION 1

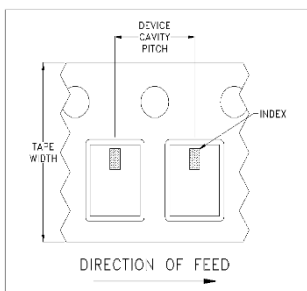


ILLUSTRATION 2

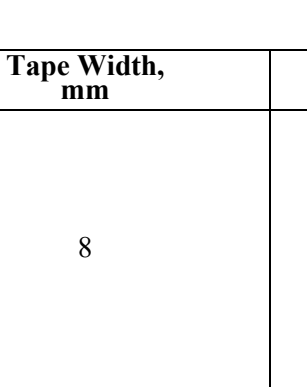


ILLUSTRATION 3

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

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

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.

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

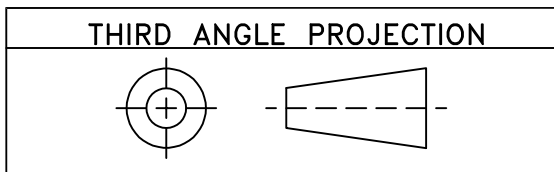


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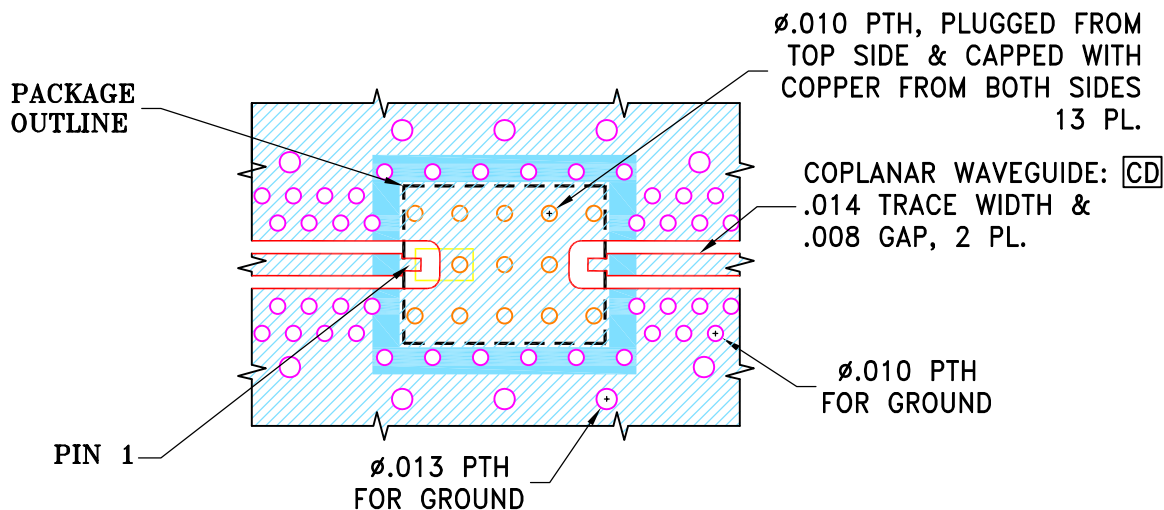
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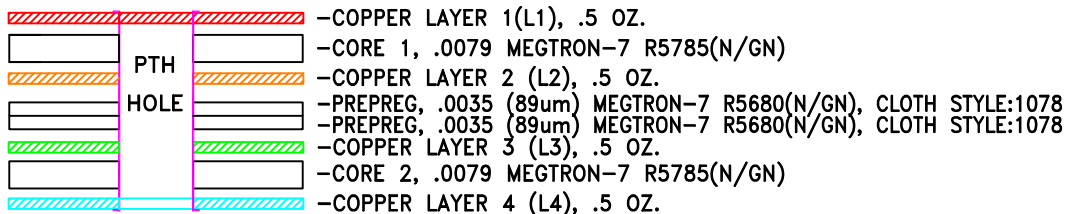


REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-015970	NEW RELEASE	12/06/22	GF	IL

SUGGESTED MOUNTING CONFIGURATION FOR
JV1210C-13 CASE STYLE



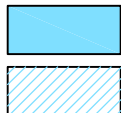
STACK-UP DIAGRAM



1. TOTAL FINISHED THICKNESS $0.026 \pm 10\%$.
2. PTH PRESENT FROM COPPER LAYER 1 TO COPPER LAYER 4.
3. INDICATED ON TOP VIEW PTH'S ARE PLUGGED WITH EPOXY AND CAPPED WITH COPPER FROM TOP SIDE.
4. L2, L3 AND L4 ARE CONTINUOUS GROUND PLANES.

NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR MEGTRON-7 R-5785(N/GN), WITH DIELECTRIC THICKNESS .0079; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.



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 $\pm$ 3 PL DECIMALS $\pm$.005 ANGLES $\pm$ FRACTIONS $\pm$	DRAWN	GF	12/06/22
	CHECKED	IL	12/06/22
	APPROVED	IL	12/06/22



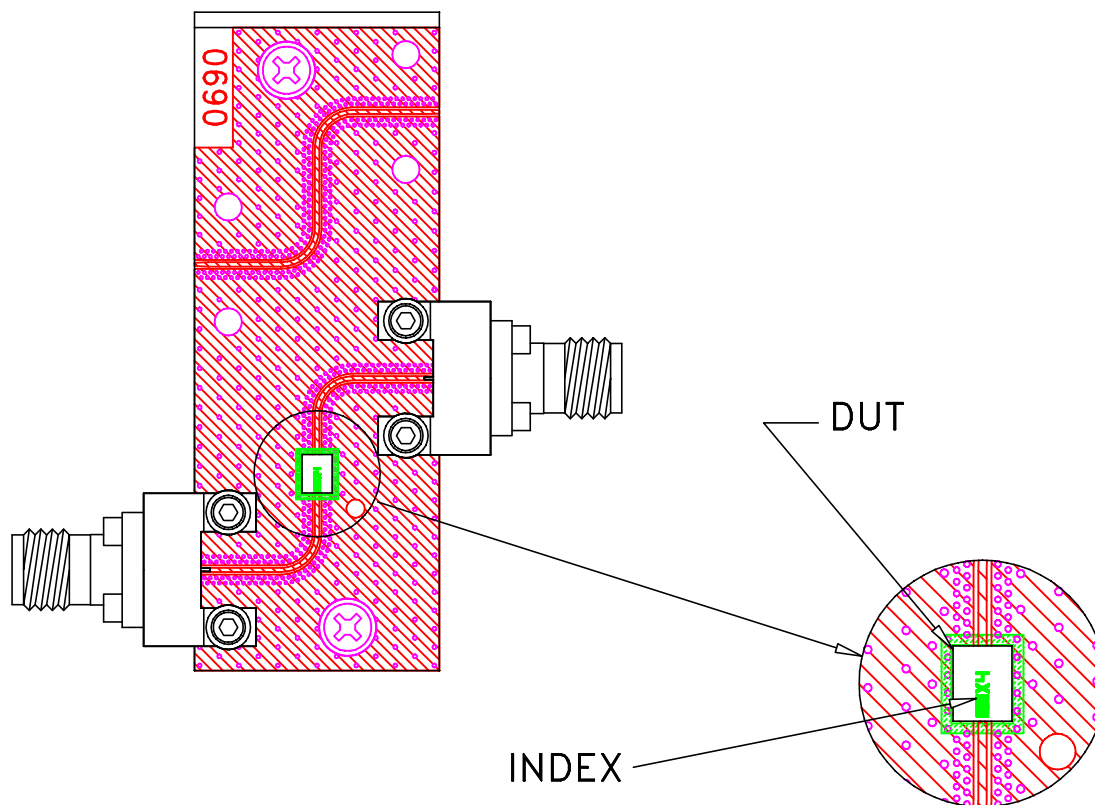
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PL, JV1210C-13, TB-HFCV-2002+

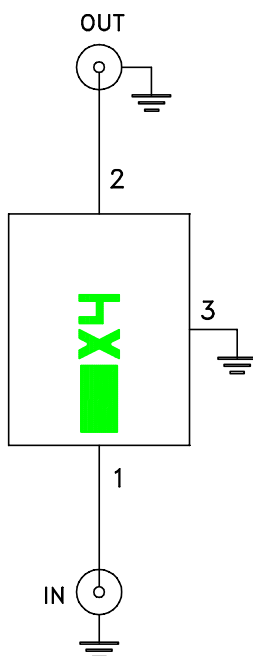
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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-743	OR
FILE:	98PL743	SCALE: 8:1	SHEET: 1 OF 1

Evaluation Board and Circuit



TB-BFCV-8750C+



Schematic Diagram

1. 50 Ohm 2.92 End Launch Female connectors.
2. PCB Material: Megtron 7(N) or equivalent,
Dielectric Constant=3.4, Thickness=.0079 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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Thermal Cycling	-55 to 125°C, 500 cycles, Dwell Time 15 minutes.	MIL-STD-202, Method 107, Condition A-3
Solderability	10X / 30X Magnification	J-STD-002 Method B, B1
Bend Test	1mm, deflection for 5 seconds	
Solder Reflow Heat	Pb-Free Process 245° - 250°C peak, 3X Reflow	J-STD-020