

Ceramic

LTCC Bandpass Filter

BFCV-5270+

50Ω

4040 to 6500 MHz



Generic photo used for illustration purposes only
CASE STYLE: JV1210C

The Big Deal

- Small size 3.2mm x 2.5mm
- Wide passband (4040-6500 MHz)
- Low Insertion Loss (1.5 dB typical)
- Wide stopband rejection up to 14 GHz

Product Overview

The BFCV-5270+ LTCC Band Pass Filter is constructed with multiple layers in order to achieve a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. These units offer low insertion loss and very good wide band rejection.

Key Features

Feature	Advantages
Small Size (3.20mm x2.5 mm)	Allows for high layout density of circuit boards, while minimizing the effects of parasitics.
Wrap around termination	Provides excellent solderability and easy visual inspection capability.
Wide bandwidth	Enables high data rate in communication systems.
LTCC construction	Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes.

Notes

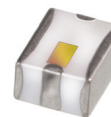
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Features

- Small size
- Temperature stable
- Hermetically sealed
- LTCC construction

Applications

- Software defined radio
- Satellite television broadcast
- Weather Radar

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

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	5270	—	MHz
	Insertion Loss	F2-F5	4040-6500	—	1.5	dB
	VSWR	F2-F5	4040-6500	—	2.3	:1
Stop Band, Lower	Insertion Loss	DC-F1	DC-3250	14	17	dB
	VSWR	DC-F1	DC-3250	—	20	:1
Stop Band, Upper	Insertion Loss	F6	8080	—	17	dB
		F7-F8	8500-12000	15	20	dB
	VSWR	F8-F9	12000-14000	—	17	dB
		F7-F8	8500-12000	—	20	:1

1. Measured on Mini-Circuits Characterization Test Board TB-945+

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.

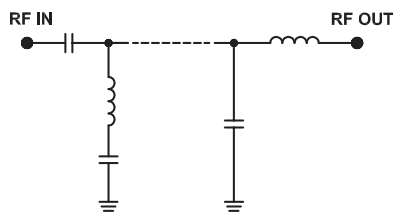
Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	6 W max @ +25°C

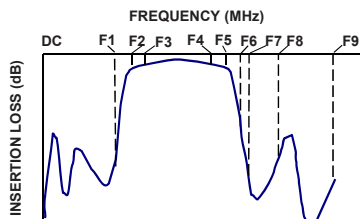
*Passband rating, derate linearly to 0.25W at 100°C ambient

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

Functional Schematic



Typical Frequency Response

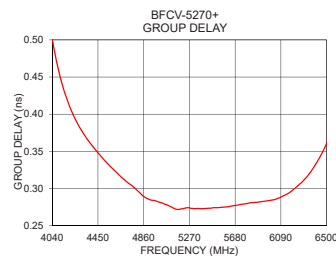
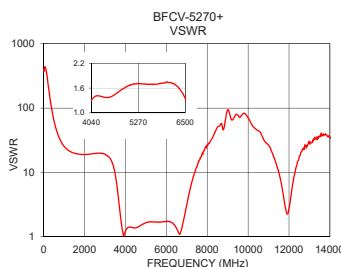
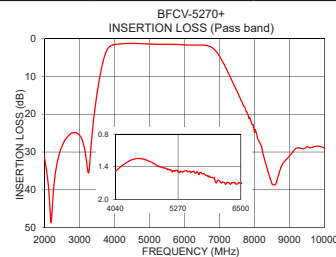
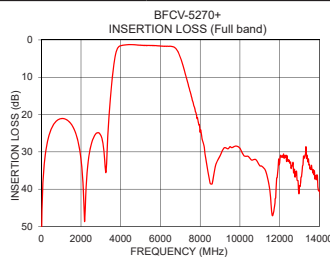


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	56.84	393.65	4040	0.50
2000	31.98	18.97	4100	0.46
3000	25.61	19.22	4150	0.43
3250	35.57	16.50	4250	0.39
3410	20.55	12.58	4300	0.38
3600	8.95	5.72	4500	0.34
3750	3.62	2.17	4750	0.30
4040	1.49	1.30	4850	0.29
4150	1.40	1.40	5000	0.28
5270	1.49	1.71	5270	0.27
6300	1.72	1.64	5500	0.27
6500	1.70	1.35	5700	0.28
6900	3.34	2.19	5800	0.28
7200	8.11	6.17	5900	0.28
7500	13.92	12.09	6000	0.28
7820	20.31	21.29	6100	0.29
8080	25.93	28.55	6200	0.30
8500	38.40	50.73	6300	0.31
12000	32.92	2.75	6400	0.33
14000	40.35	35.35	6500	0.36

+RoHS Compliant

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



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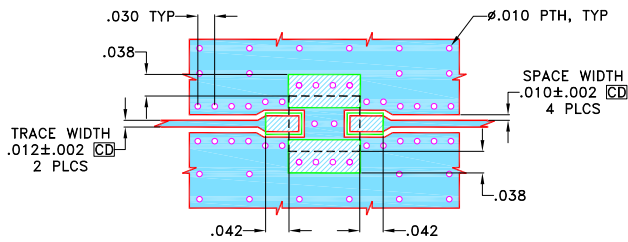


Pad Connections

RF IN	1
RF OUT	3
GROUND	2,4

Product Marking: HW

Demo Board MCL P/N: TB-945+
Suggested PCB Layout (PL-503)

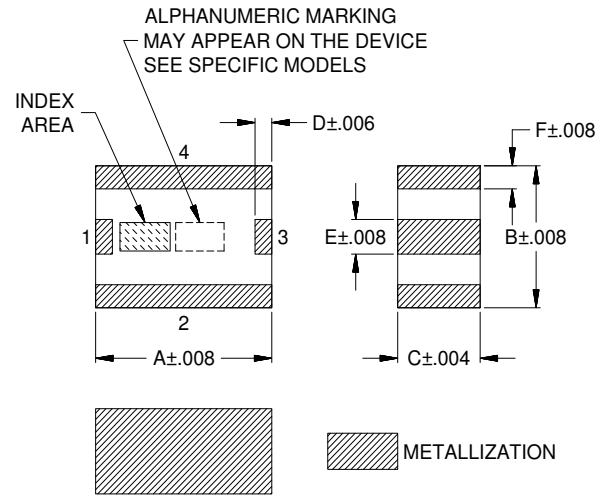


NOTES:

- TRACE WIDTH & SPACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .0066"±.0007". COPPER 1/2 Oz. EACH SIDE FOR OTHER MATERIALS TRACE WIDTH & SPACE WIDTH MAY NEED TO BE MODIFIED.
- 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

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	Wt.
.126	.098	.059	.012	.024	.016	grams
3.2	2.5	1.5	.3	.6	.4	.03

Note: Please refer to case style drawing for details

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Surface Mount Band Pass Filter

BFCV-5270+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)	FREQUENCY (MHz)	GROUP DELAY (nsec)
10	56.84	0.04	4040	0.50
100	36.74	0.03	4080	0.47
200	30.85	0.03	4120	0.45
500	23.90	0.05	4160	0.43
1000	21.08	0.14	4200	0.41
1200	21.20	0.18	4240	0.40
1400	21.89	0.21	4280	0.38
1500	22.50	0.23	4320	0.37
1600	23.36	0.25	4360	0.37
1800	26.13	0.28	4400	0.36
2000	31.98	0.31	4440	0.35
2200	47.35	0.34	4480	0.34
2500	28.39	0.39	4520	0.34
2800	24.96	0.45	4560	0.33
3000	25.61	0.49	4600	0.32
3250	35.57	0.61	4640	0.32
3500	14.38	1.27	4680	0.31
3600	8.95	2.30	4720	0.31
3700	4.97	4.82	4760	0.30
3750	3.62	7.00	4800	0.30
4000	1.54	16.20	4840	0.29
4040	1.49	15.35	4880	0.29
4150	1.40	14.01	4920	0.28
5270	1.49	10.15	4960	0.28
6300	1.72	11.03	5000	0.28
6500	1.70	13.95	5040	0.28
6900	3.34	7.75	5080	0.28
7000	4.63	5.13	5120	0.27
7100	6.29	3.49	5160	0.27
7300	10.04	1.85	5200	0.27
7500	13.92	1.28	5240	0.27
7820	20.31	1.01	5280	0.27
8000	24.78	1.10	5320	0.27
8500	38.40	1.77	5360	0.27
8750	34.36	1.89	5400	0.27
8800	33.20	1.88	5440	0.27
9000	31.08	1.67	5480	0.27
9500	28.62	0.83	5520	0.27
10000	29.01	0.45	5560	0.27
10250	30.17	0.31	5600	0.28
10500	31.70	0.25	5640	0.28
10750	32.48	0.21	5680	0.28
11000	33.72	0.22	5720	0.28
11250	34.59	0.26	5760	0.28
11500	40.04	0.22	5800	0.28
11750	44.35	0.27	5840	0.28
12000	32.92	0.35	5880	0.28
12100	31.41	0.32	5920	0.28
12200	30.59	0.35	5960	0.28
12300	31.16	0.34	6000	0.28
12400	32.37	0.39	6040	0.29
12500	32.98	0.46	6080	0.29
12600	34.02	0.50	6120	0.29
12700	35.58	0.63	6160	0.29
12800	35.35	0.82	6200	0.30
13000	39.12	2.06	6240	0.30
13200	31.18	8.29	6300	0.31
13400	31.89	2.17	6360	0.32
13600	33.60	0.95	6400	0.33
14000	40.35	0.51	6500	0.36



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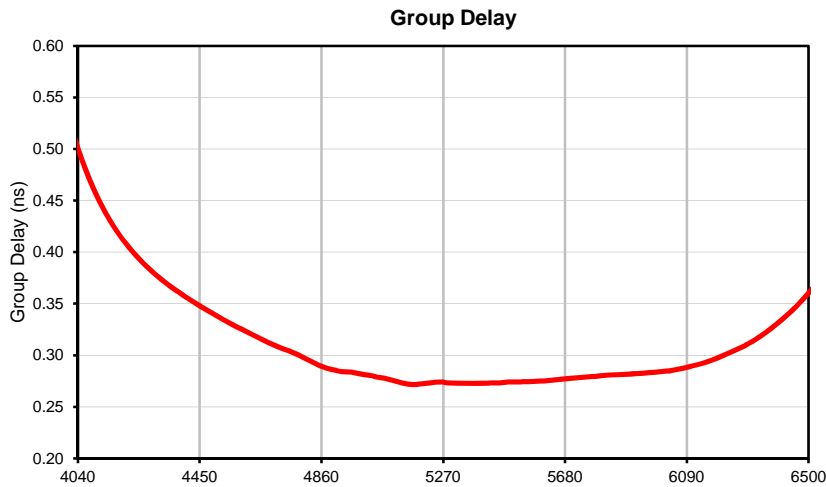
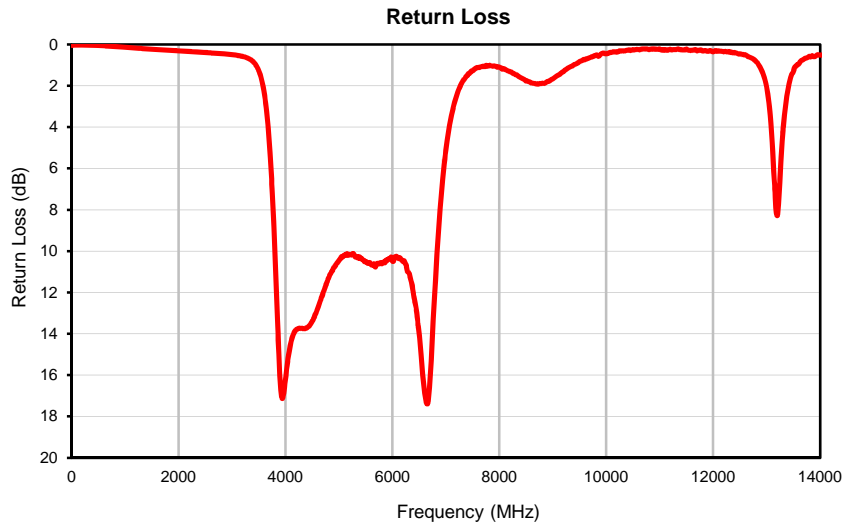
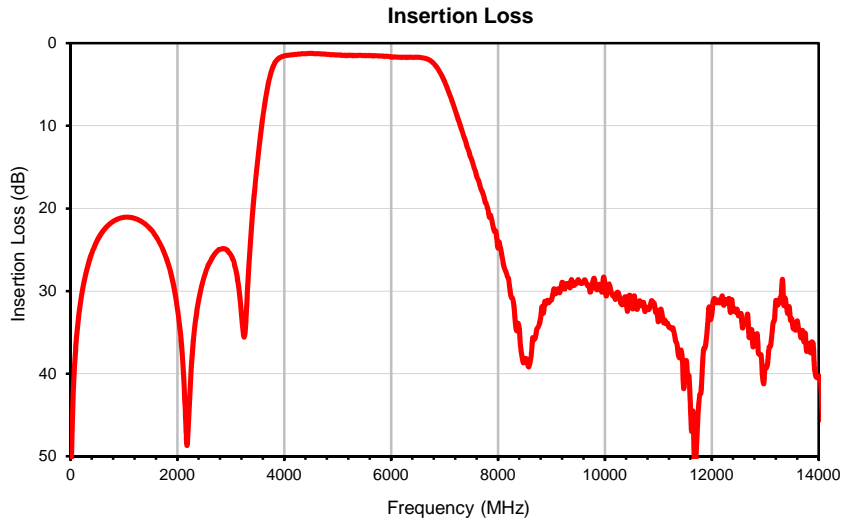


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IF/RF MICROWAVE COMPONENTS

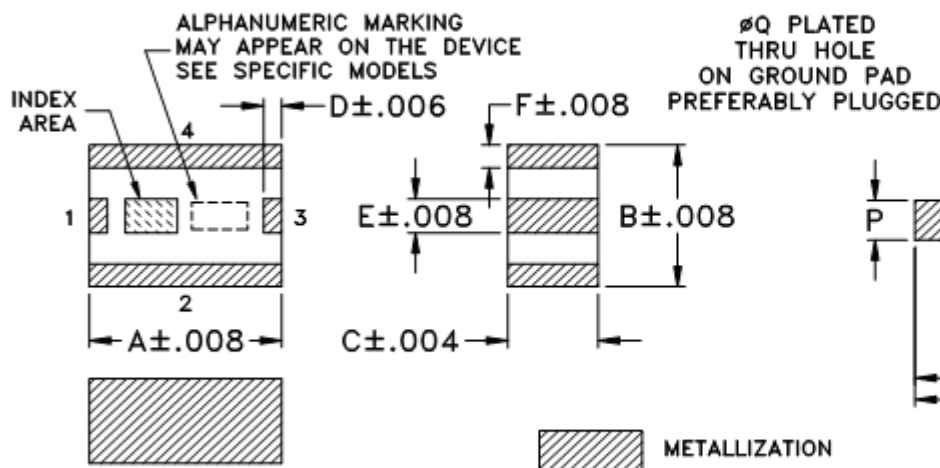
REV.OR
BFCV-5270+
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Page 1 of 1

Typical Performance Curves

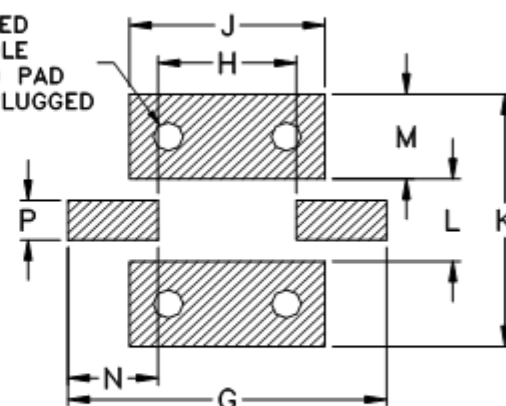


Outline Dimensions

JV1210C



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	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. $\pm .01$; 3 Pl. $\pm .005$

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.



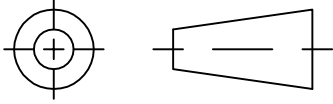
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RF/IF MICROWAVE COMPONENTS

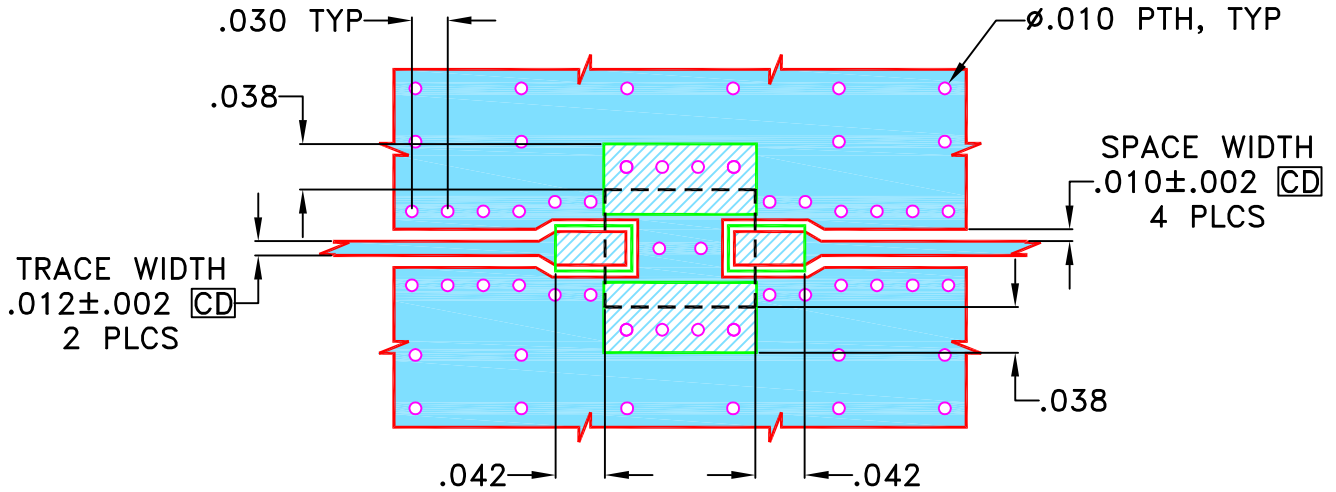
THIRD ANGLE PROJECTION



REVISIONS

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

**SUGGESTED MOUNTING CONFIGURATION FOR
JV1210C CASE STYLE**



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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	9 MAR 17
TOLERANCES ON:	CHECKED MD	9 MAR 17
2 PL DECIMALS ±	APPROVED RV	9 MAR 17
3 PL DECIMALS ± .005"		
ANGLES ±		
FRACTIONS ±		



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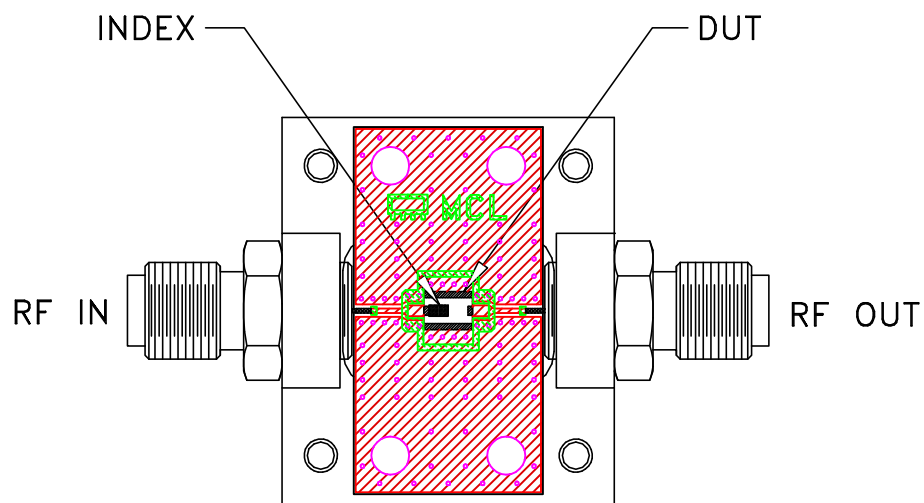
**PL, JV1210C, BFCV-5270+,
TB-945+, 50 OHM**

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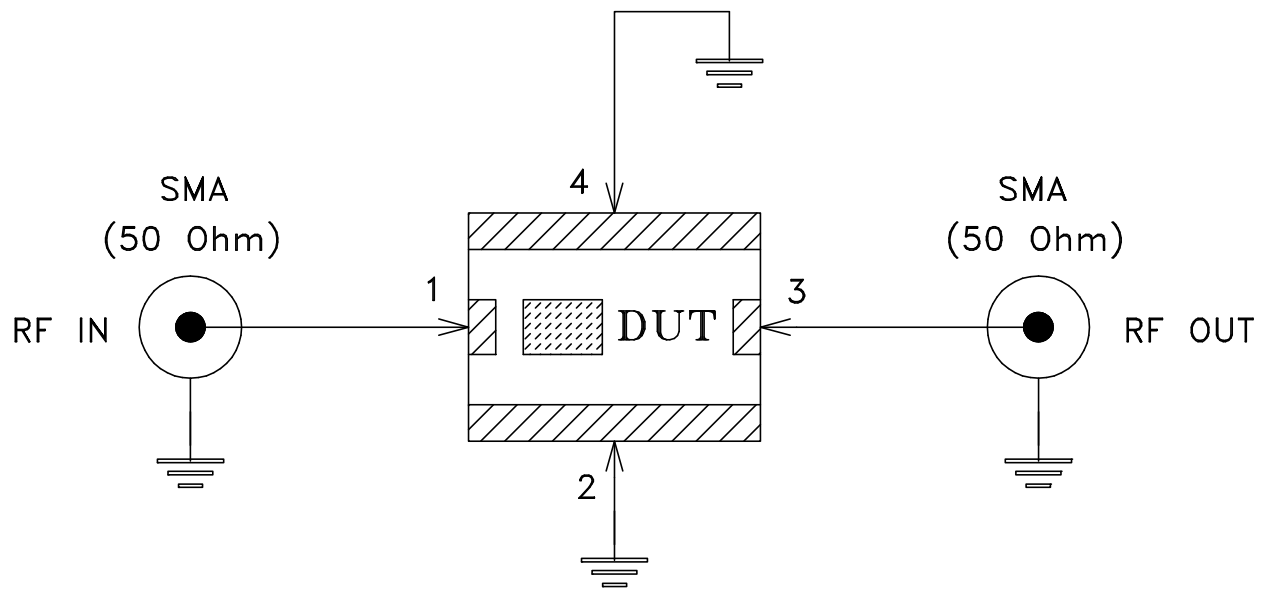
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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-503	OR
FILE:	98PL503	SCALE: 6:1	SHEET: 1 OF 1

Evaluation Board and Circuit




TB-945+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,
Dielectric Constant=3.48, Thickness=.0066 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	-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