Ceramic

Bandpass Filter

BFCN-5100+

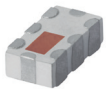
50Ω 3100 to 7100 MHz

Features

- Extremely wide passband, 3100-7100 MHz
- Low loss <1.3 dB typ.
- Small size (0.126”x0.063”x0.037”)
- Temperature stable
- Hermetically sealed

Applications

- Harmonic Rejection
- Transmitters / receivers
- EW



Generic photo used for illustration purposes only

CASE STYLE: FV1206-6

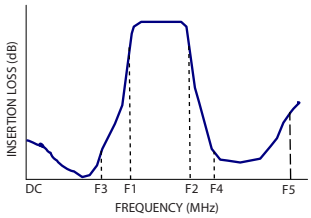
+RoHS Compliant

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

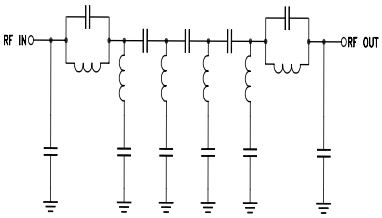
Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7”	20, 50, 100, 200, 500,1000, 3000

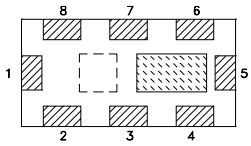
Specification Definition



Functional Schematic



Top View



Pad Connections

Input	1
Output	5
Ground	2,3,4,6,7,8

Electrical Specifications[1,2] at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—			5100		MHz
	Insertion Loss	F1 - F2	3100 - 7100	—	1.5	2.1	dB
	VSWR	F1 - F2	3100 - 7100	—	2.0	—	:1
Stop Band, Lower	Insertion Loss	DC - F3	DC - 2100	—	25	—	dB
	VSWR	DC - F3	DC - 2100	—	20	—	:1
Stop Band, Upper	Insertion Loss	F4 - F5	9500 - 17000	—	20	—	dB
	VSWR	F4 - F5	9500 - 17000	—	30	—	:1

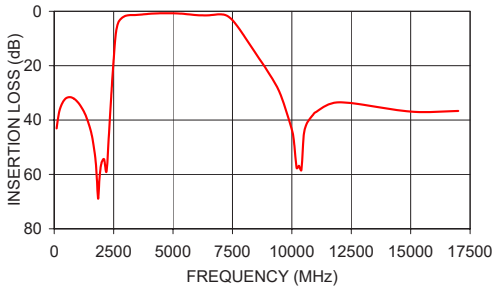
1. Measured on Mini-Circuits Characterization Test Board TB-712+.
2. This filter is not intended for use as a DC Blocking circuit element. In Application where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

Maximum Ratings

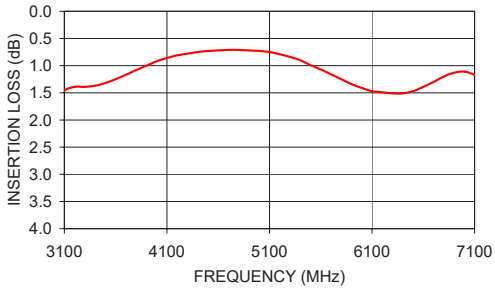
Operating Temperature	-40°C to +85°C
Storage Temperature*	-55°C to +100°C
RF Power Input**	2W at 25°C

* 12 months max.
**Passband rating, derate linearly to 0.5W at 85°C ambient
Permanent damage may occur if any of these limits are exceeded.

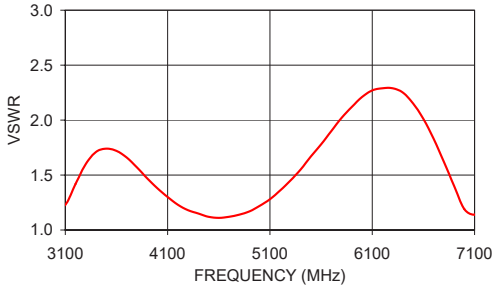
BFCN-5100+
INSERTION LOSS (Full Band)



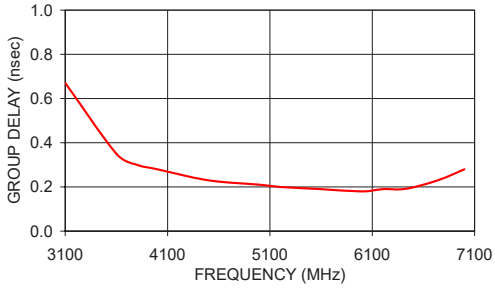
BFCN-5100+
INSERTION LOSS (Pass Band)



BFCN-5100+
VSWR



BFCN-5100+
GROUP DELAY



Full Band Performance

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
100.00	43.08	331.23
1000.00	33.50	69.18
2000.00	55.46	29.88
2100.00	54.46	25.43
3100.00	1.46	1.23
5000.00	0.73	1.22
6000.00	1.41	2.21
7000.00	1.11	1.19
7100.00	1.17	1.14
9000.00	22.35	32.17
9500.00	30.15	38.73
11000.00	37.13	57.48
12000.00	33.46	102.12
15000.00	36.89	39.53
17000.00	36.67	54.34

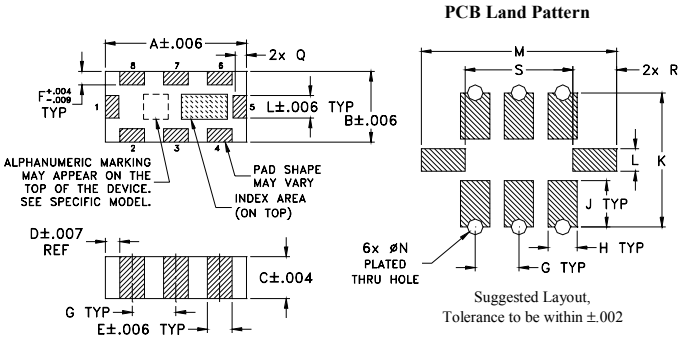
Pass Band Performance

Frequency (MHz)	Insertion Loss (dB)	Group Delay (nsec)
3100.00	1.46	0.67
3600.00	1.25	0.35
3800.00	1.08	0.30
4000.00	0.92	0.28
4500.00	0.73	0.23
5000.00	0.73	0.21
5200.00	0.79	0.20
5600.00	1.07	0.19
6000.00	1.41	0.18
6200.00	1.49	0.19
6400.00	1.51	0.19
6600.00	1.39	0.21
6800.00	1.20	0.24
7000.00	1.11	0.28
7100.00	1.17	0.31

Pad Connections

Input	1
Output	5
Ground	2,3,4,6,7,8

Outline Drawing

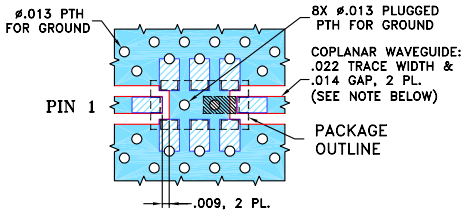


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.126	.063	.037	.013	.022	.012	.039	.026	.041
3.20	1.60	0.94	0.33	0.56	0.30	0.99	0.66	1.04

K	L	M	N	P	Q	R	S	wt
.119	.020	.174	.014	--	.012	.039	.096	grams
3.02	0.51	4.42	0.36	--	0.30	0.99	2.44	.017

Demo Board MCL P/N: TB-712-D+
Suggested PCB Layout (PL-393)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". 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-5100+

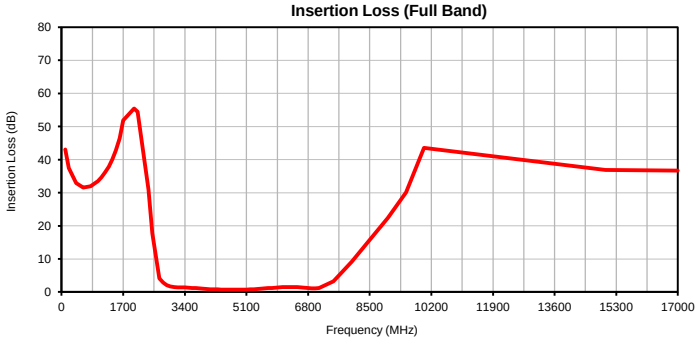
Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	RETURN LOSS (dB)	FREQUENCY (MHz)	GROUP DELAY (ns)
100.0	43.08	0.05	100.0	0.40
200.0	37.45	0.06	200.0	0.38
400.0	32.87	0.10	400.0	0.36
600.0	31.60	0.15	600.0	0.31
800.0	31.97	0.20	800.0	0.27
1000.0	33.50	0.25	1000.0	0.24
1100.0	34.66	0.28	1100.0	0.21
1200.0	36.09	0.30	1200.0	0.21
1300.0	37.85	0.32	1300.0	0.19
1400.0	40.03	0.34	1400.0	0.19
1500.0	42.76	0.36	1500.0	0.17
1600.0	46.44	0.39	1600.0	0.14
1700.0	51.83	0.42	1700.0	0.03
2000.0	55.46	0.58	2000.0	0.10
2100.0	54.46	0.68	2100.0	0.05
2400.0	30.96	1.74	2400.0	0.87
2500.0	17.75	3.39	2500.0	1.60
2700.0	4.08	11.38	2700.0	1.71
2800.0	2.82	12.08	2800.0	1.22
2900.0	2.12	14.84	2900.0	0.96
3000.0	1.68	20.20	3000.0	0.79
3100.0	1.46	19.59	3100.0	0.67
3200.0	1.39	15.13	3200.0	0.56
3300.0	1.39	12.72	3300.0	0.48
3400.0	1.37	11.68	3400.0	0.42
3500.0	1.32	11.36	3500.0	0.38
3600.0	1.25	11.55	3600.0	0.35
3700.0	1.17	12.14	3700.0	0.32
3800.0	1.08	13.08	3800.0	0.30
3900.0	1.00	14.34	3900.0	0.29
4000.0	0.92	15.96	4000.0	0.28
4100.0	0.86	17.74	4100.0	0.26
4200.0	0.81	19.77	4200.0	0.25
4300.0	0.78	21.63	4300.0	0.24
4400.0	0.75	23.36	4400.0	0.24
4500.0	0.73	24.92	4500.0	0.23
4600.0	0.72	25.50	4600.0	0.22
4700.0	0.71	25.01	4700.0	0.22
4800.0	0.71	23.91	4800.0	0.22
4900.0	0.72	22.14	4900.0	0.21
5000.0	0.73	20.12	5000.0	0.21
5100.0	0.75	18.12	5100.0	0.21
5200.0	0.79	16.37	5200.0	0.20
5300.0	0.84	14.75	5300.0	0.20
5400.0	0.90	13.29	5400.0	0.20
5500.0	0.99	11.99	5500.0	0.19
5600.0	1.07	11.01	5600.0	0.19
5700.0	1.16	10.14	5700.0	0.19
5800.0	1.25	9.42	5800.0	0.18
5900.0	1.34	8.90	5900.0	0.18
6000.0	1.41	8.49	6000.0	0.18
6100.0	1.47	8.23	6100.0	0.18
6200.0	1.49	8.13	6200.0	0.19
6300.0	1.51	8.13	6300.0	0.19
6400.0	1.51	8.31	6400.0	0.19
6500.0	1.47	8.76	6500.0	0.19
6600.0	1.39	9.51	6600.0	0.21
6700.0	1.30	10.66	6700.0	0.22
6800.0	1.20	12.50	6800.0	0.24
6900.0	1.13	15.52	6900.0	0.26
7000.0	1.11	21.42	7000.0	0.28
7100.0	1.17	23.92	7100.0	0.31
7500.0	3.25	5.41	7500.0	0.31
8000.0	9.18	1.50	8000.0	0.19
8500.0	15.75	0.76	8500.0	0.11
9000.0	22.35	0.54	9000.0	0.10
9500.0	30.15	0.45	9500.0	0.10
10000.0	43.55	0.38	10000.0	0.25
15000.0	36.89	0.44	15000.0	0.21
17000.0	36.67	0.32		

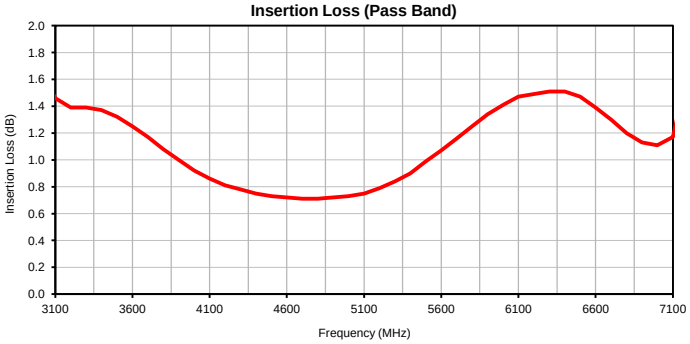
Ceramic Bandpass Filter BFCN-5100+

Typical Performance Curves

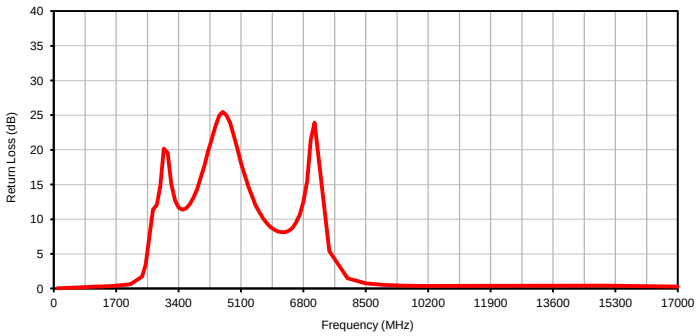
Insertion Loss (Full Band)



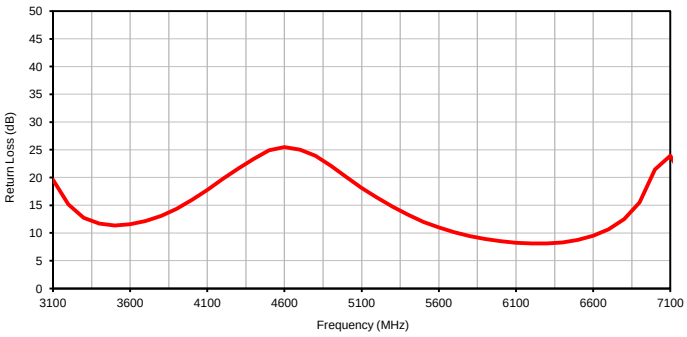
Insertion Loss (Pass Band)



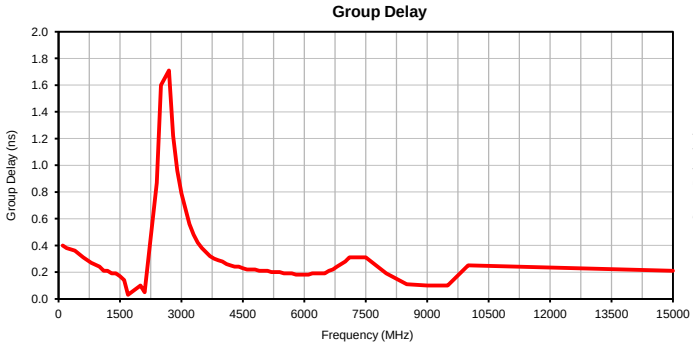
Return Loss



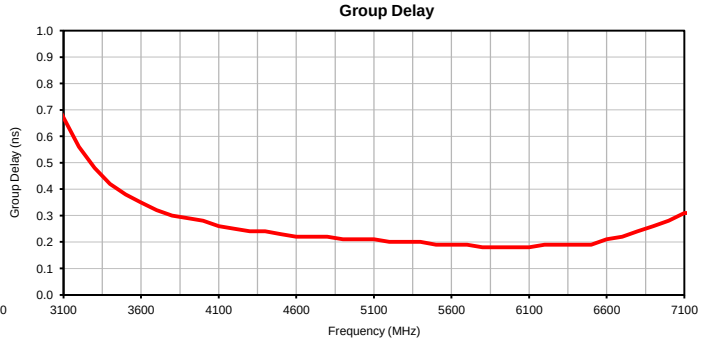
Return Loss



Group Delay



Group Delay

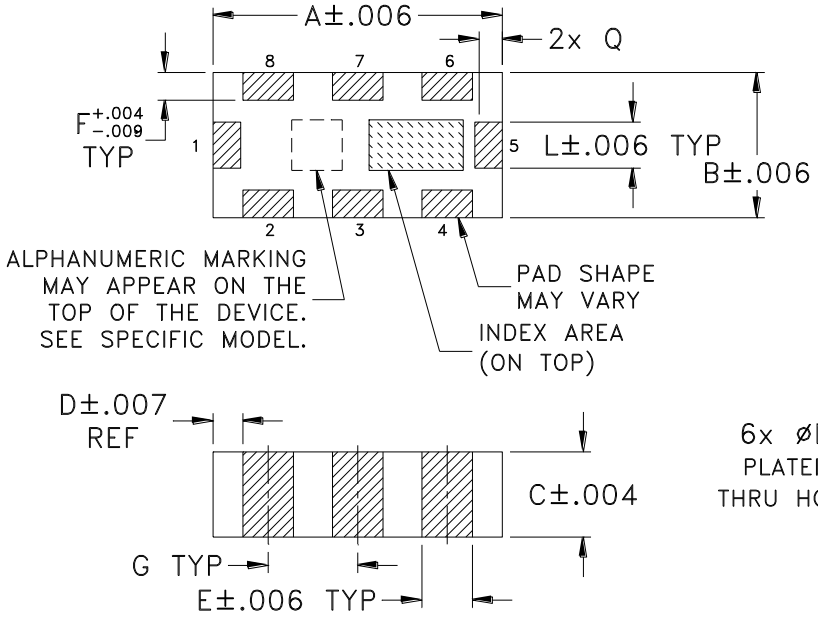


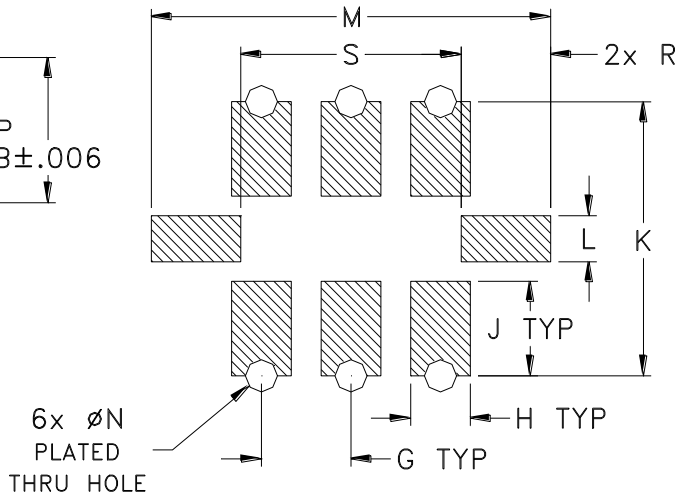
Case Style FV

FV1206-6

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
FV1206-6	.126 (3.20)	.063 (1.60)	.037 (0.95)	.013 (0.33)	.022 (0.56)	.012 (0.30)	.039 (0.99)	.026 (0.65)	.041 (1.05)	.119 (3.02)	.020 (0.50)	.174 (4.42)

CASE #	N	P	Q	R	S	WT. GRAM
FV1206-6	.014 (0.35)	-- --	.012 (0.30)	.039 (0.99)	.096 (2.44)	.017

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005

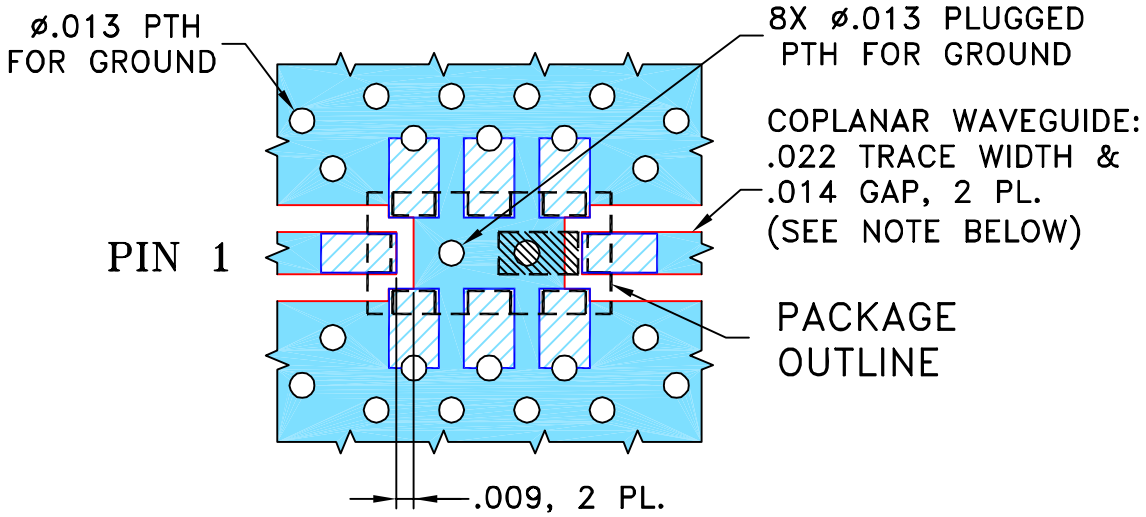
Notes:

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.

THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M143026	NEW RELEASE	08/21/13	AV	CH

SUGGESTED MOUNTING CONFIGURATION
FOR FV1206-6 CASE STYLE, "08FL05" PIN CODE



NOTE:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". 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	AV	08/20/13
TOLERANCES ON:	CHECKED	IL	08/21/13
2 PL DECIMALS ±	APPROVED	CH	08/21/13
3 PL DECIMALS ± .005			
ANGLES ± 1°			
FRACTIONS ±			

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

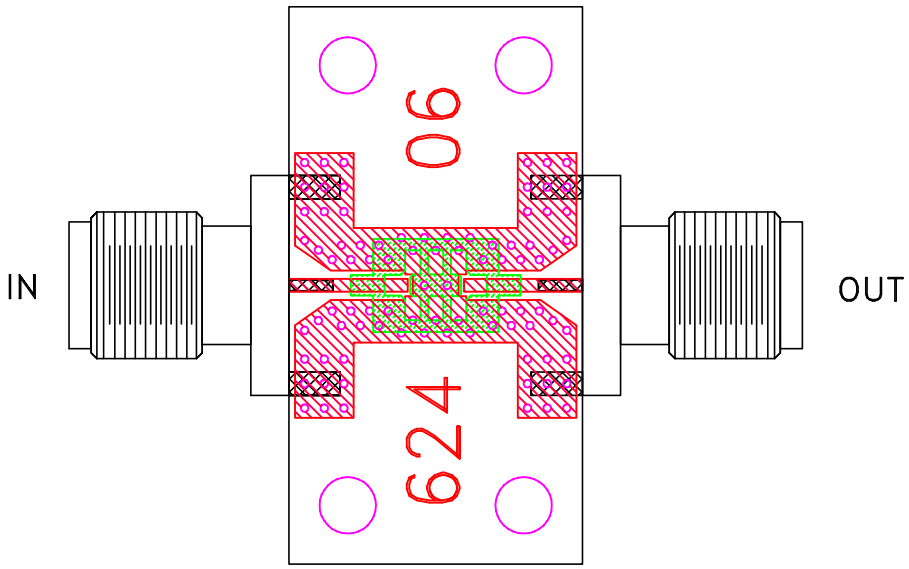
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 08FL05, FV1206-6, TB-712-D+

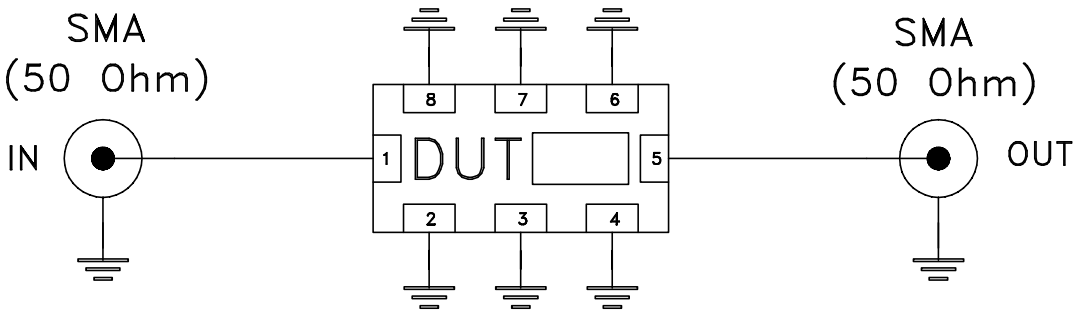
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-393	OR

FILE:	SCALE:	SHEET:
98PL393	10:1	1 OF 1

Evaluation Board and Circuit



TB-712-D+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.5, Thickness=.010 inch.

Mini-Circuits®

Mini-Circuits

Environmental Specifications **ENV28T5**

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	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I