Ceramic

Bandpass Filter

BFCW-542+

50Ω 4700 to 6000 MHz

CASE STYLE:JC0603C-1

Features

- Wide passband, 4700-6000 MHz
- Low loss, 1.3 dB typ.
- Small size 0603(1.6 x 0.8 mm)
- Temperature stable
- LTCC construction

Applications

- Wireless communication (ISM)
- Harmonic Rejection
- Transmitters / receivers

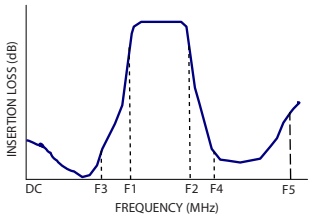
+RoHS Compliant

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

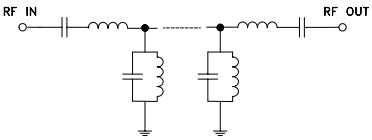
Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500,1000, 4000

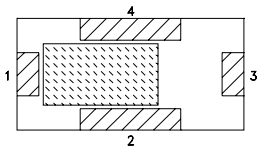
Specification Definition



Functional Schematic



Top View



Pad Connections

Input	1
Output	3
Ground	2,4

Electrical Specifications[1,2] at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—			5350		MHz
	Insertion Loss	F1 - F2	4700 - 6000	—	1.3	1.8	dB
	VSWR	F1 - F2	4700 - 6000	—	1.5	2.0	:1
Stop Band, Lower	Insertion Loss	DC - F3	DC - 2500	30	34	—	dB
Stop Band, Upper	Insertion Loss	F4 - F5	9800 - 12000	26	34	—	dB

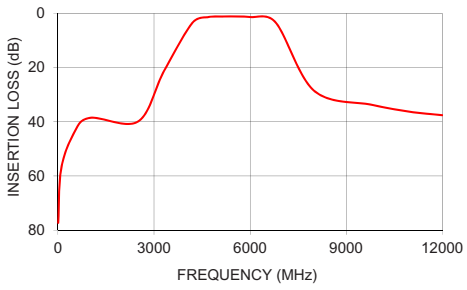
1. Measured on Mini-Circuits Characterization Test Board TB-720+.
2. This filter is not intended for use as a DC Blocking circuit element. In Application where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

Maximum Ratings

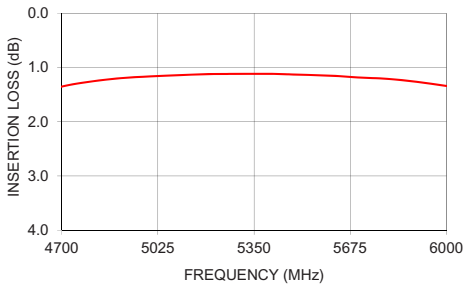
Operating Temperature	-55°C to +100°C
Storage Temperature*	-55°C to +100°C
RF Power Input**	1W at 25°C

* 12 months max.
**Passband rating, derate linearly to 0.5W at 100°C ambient
Permanent damage may occur if any of these limits are exceeded.

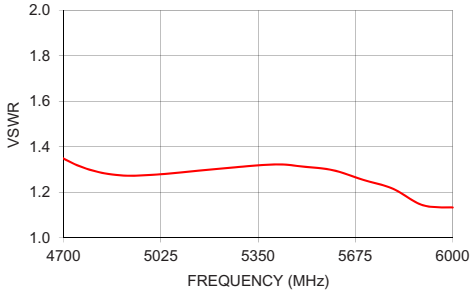
BFCW-542+
INSERTION LOSS (Full Band)



BFCW-542+
INSERTION LOSS (Pass Band)



BFCW-542+
VSWR



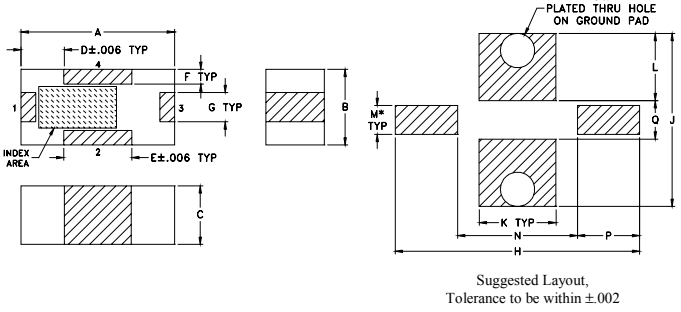
Full Band Performance / Pass Band Performance

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	77.28	508.40	4500	1.74	1.61
100	57.45	289.52	4600	1.51	1.45
500	44.18	127.06	4700	1.35	1.35
1000	38.54	85.51	4800	1.26	1.29
2500	39.92	55.73	4900	1.19	1.27
3300	21.56	31.19	5000	1.16	1.28
4200	3.47	2.94	5100	1.14	1.29
4700	1.35	1.35	5200	1.12	1.30
5000	1.16	1.28	5400	1.12	1.32
6000	1.34	1.13	5500	1.13	1.31
6800	3.36	2.06	5600	1.15	1.30
8000	28.56	17.19	5700	1.18	1.26
9800	33.73	23.08	5800	1.21	1.22
11000	36.32	20.32	5900	1.26	1.14
12000	37.56	25.90	6000	1.34	1.13

Pad Connections

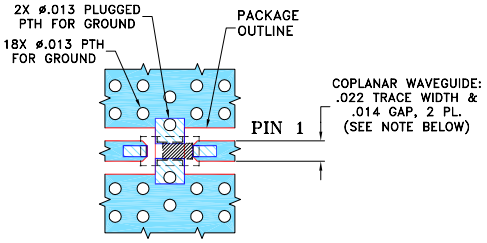
Input	1
Output	3
Ground	2,4

Outline Drawing



Suggested Layout,
Tolerance to be within ±.002

Demo Board MCL P/N: TB-720+
Suggested PCB Layout (PL-412)



NOTES:

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.

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.063	.031	.024	.018	.028	.006	.012	.100	.071
1.60	0.79	0.61	0.46	0.71	0.15	0.30	2.54	1.80

K	L	M	N	P	Q	R	wt
.032	.028	.012	.049	.026	.016	.014	grams
0.81	0.71	0.30	1.24	0.66	0.41	0.36	0.005

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

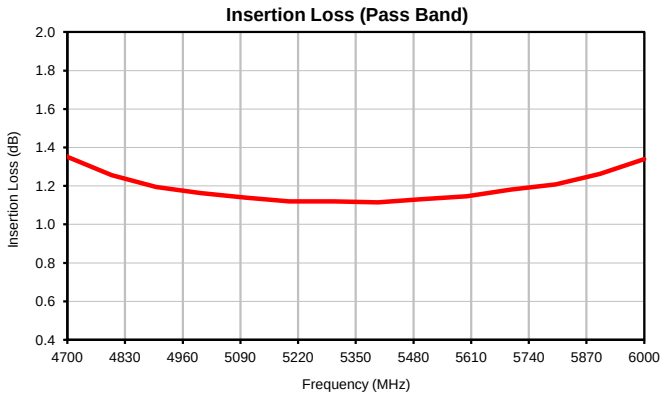
Ceramic Bandpass Filter BFCW-542+

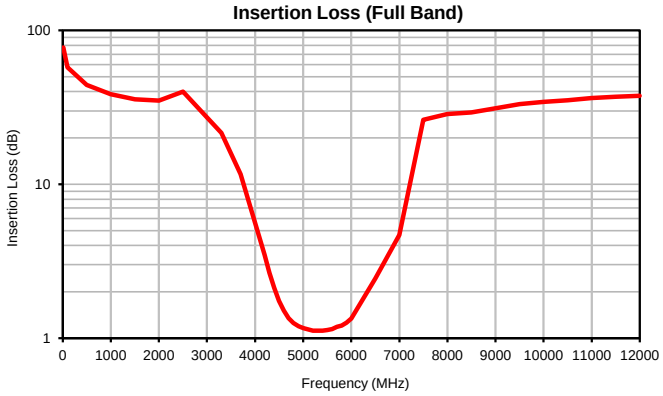
Typical Performance Data

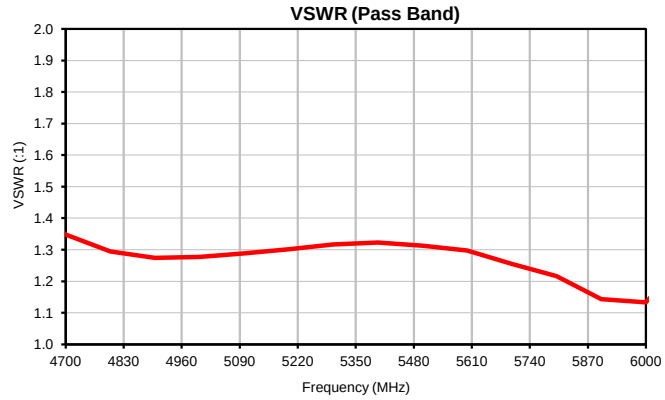
FREQUENCY (MHz)	INSERTION LOSS (dB)	VSWR (:1)
10.0	77.28	508.40
100.0	57.45	289.52
500.0	44.18	127.06
1000.0	38.54	85.51
1500.0	35.72	69.90
2000.0	34.97	61.55
2500.0	39.92	55.73
3300.0	21.56	31.19
3700.0	11.62	14.08
4200.0	3.47	2.94
4300.0	2.66	2.29
4400.0	2.12	1.87
4500.0	1.74	1.61
4600.0	1.51	1.45
4700.0	1.35	1.35
4800.0	1.26	1.29
4900.0	1.19	1.27
5000.0	1.16	1.28
5100.0	1.14	1.29
5200.0	1.12	1.30
5300.0	1.12	1.32
5400.0	1.12	1.32
5500.0	1.13	1.31
5600.0	1.15	1.30
5700.0	1.18	1.26
5800.0	1.21	1.22
5900.0	1.26	1.14
6000.0	1.34	1.13
6500.0	2.44	1.89
7000.0	4.68	1.69
7500.0	26.25	10.20
8000.0	28.56	17.19
8500.0	29.27	21.47
9000.0	31.16	23.71
9500.0	33.11	22.45
10000.0	34.30	22.41
10500.0	35.18	21.11
11000.0	36.32	20.32
11500.0	36.98	22.65
12000.0	37.56	25.90

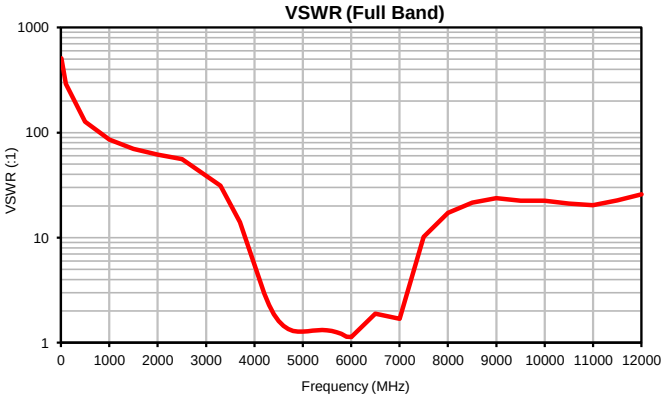
Ceramic Bandpass Filter BFCW-542+

Typical Performance Curves





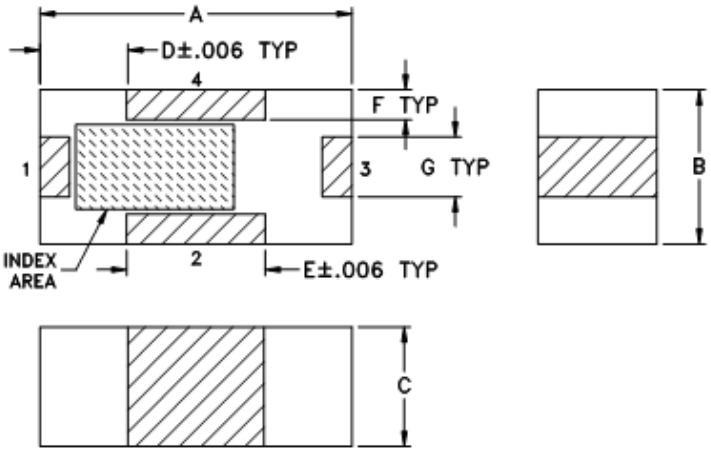




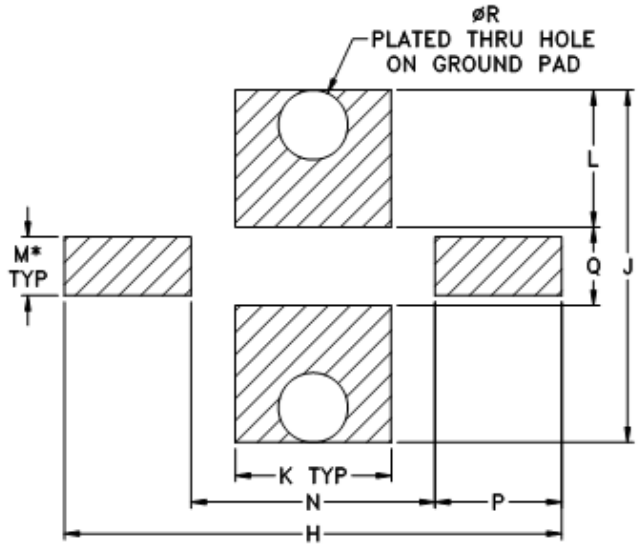
Case Style JC

Outline Dimensions

JC0603C-1



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
JC0603C-1	.063 (1.60)	.031 (0.80)	.024 (0.60)	.018 (0.45)	.028 (0.70)	.006 (0.15)	.012 (0.30)	.100 (2.54)	.071 (1.80)	.032 (0.80)	.028 (0.70)

CASE #	M*	N	P	Q	R	WT. GRAMS
JC0603C-1	.012 (0.30)	.049 (1.24)	.026 (0.65)	.016 (0.40)	.014 (0.35)	.005

Dimensions are in inches (mm). Tolerances: 3 Pl. ± .004

Notes:

1. Open style, ceramic base.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
3. * - Line width should be designed to match 50 OHMS characteristic impedance, depending on PCB material & thickness.

Tape & Reel Packaging TR-F114

DEVICE ORIENTATION IN T&R

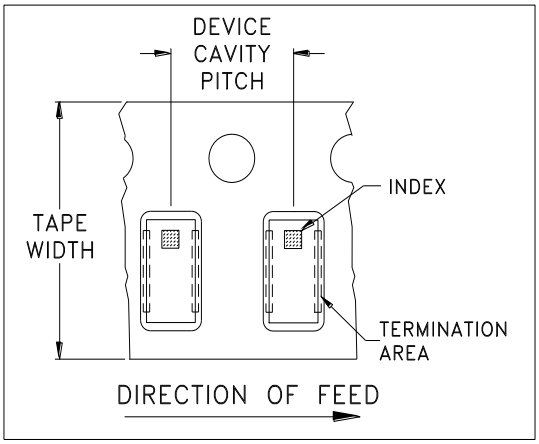


ILLUSTRATION 1

Applicable Case Styles	
GE0805C	JC0603C
GE0805C-1	JC0603C-4
GE0805C-1AP	JC0603C-6
GE0805C-7	
GE0805C-9	
GE0805C-10	
GE0805C-11	
GE0805C-12	

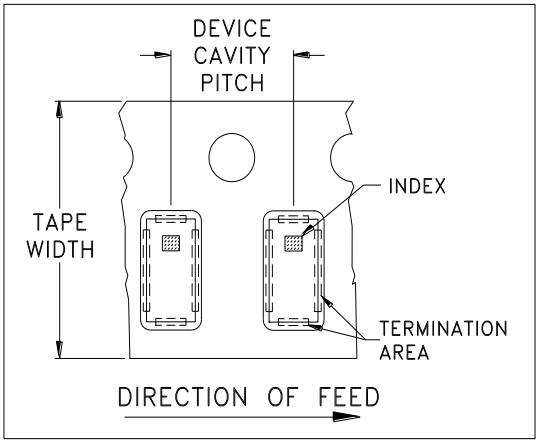


ILLUSTRATION 2

Applicable Case Styles	
GE0805C-2	JC0603C-1
GE0805C-3	JC0603C-2
GE0805C-4	JC0603C-3
GE0805C-5	JC0603C-5
GE0805C-6	JC0603C-7
GE0805C-8	
GE0805C-15	

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	4000

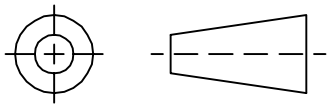
Note: Please Consult individual model data sheet to determine device per reel availability.

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

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

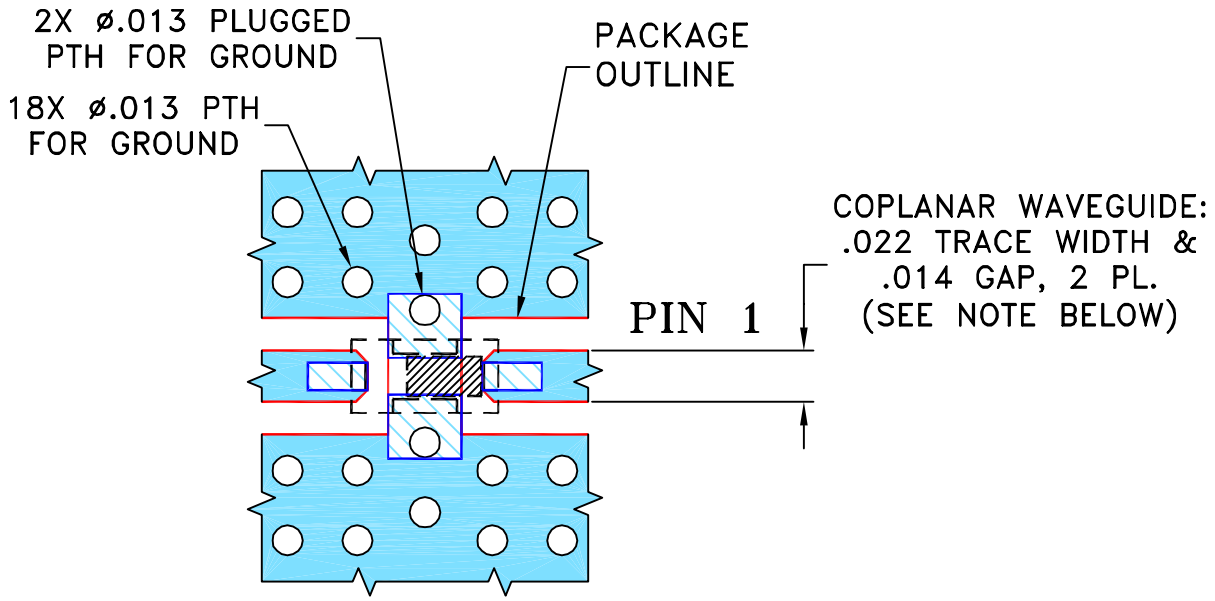
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M144975	NEW RELEASE	02/04/14	AV	RS

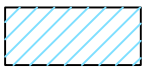
SUGGESTED MOUNTING CONFIGURATION FOR JC0603C-1 CASE STYLE, "04FL01" PIN CODE



NOTES:

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	01/24/14
TOLERANCES ON:	CHECKED	IL	02/03/14
2 PL DECIMALS ±	APPROVED	RS	02/04/14
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

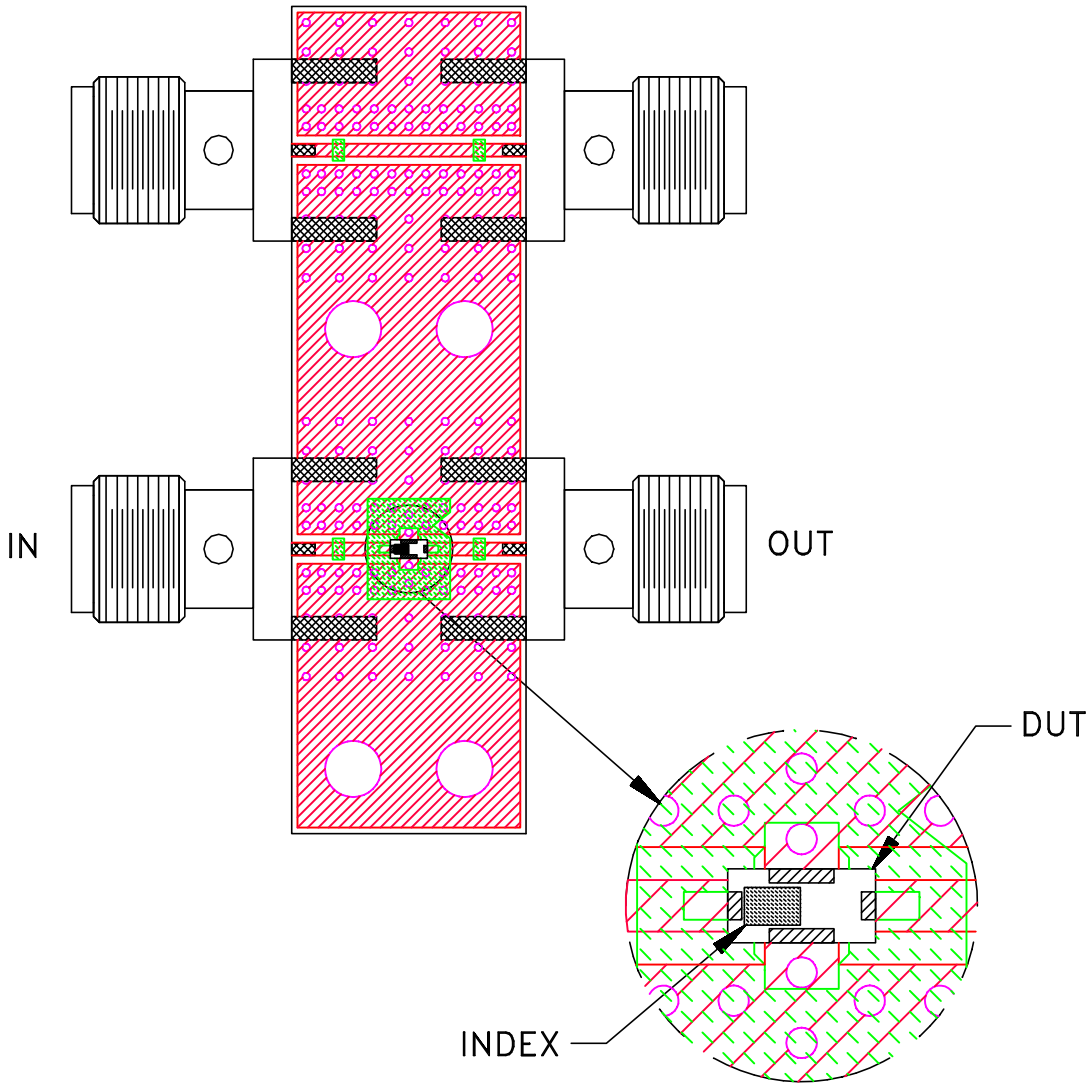
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 04FL01, JC0603C-1, TB-720+

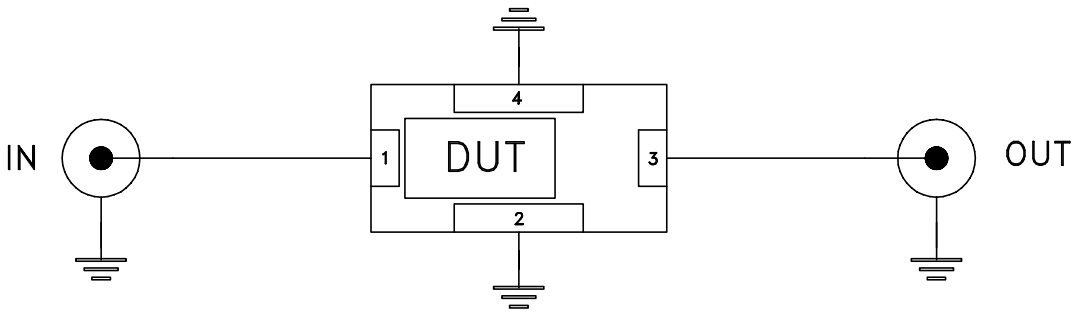
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-412	OR

FILE:	SCALE:	SHEET:
98PL412	12:1	1 OF 1

Evaluation Board and Circuit



TB-720+



Schematic Diagram

Notes:

1. 50 Ohm 2.92 mm End Launch Female connectors.
2. PCB Material: RO4350 or equivalent,
   Dielectric Constant=3.5, Thickness=.010 inch.

Mini-Circuits®

Mini-Circuits

Environmental Specifications ENV06

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