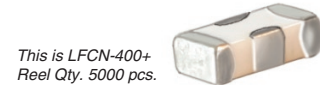


Ceramic Low Pass Filter

50Ω DC to 400 MHz

LFCN-400TR5K+



This is LFCN-400+
Reel Qty. 5000 pcs.

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	8.5W max. at 25°C

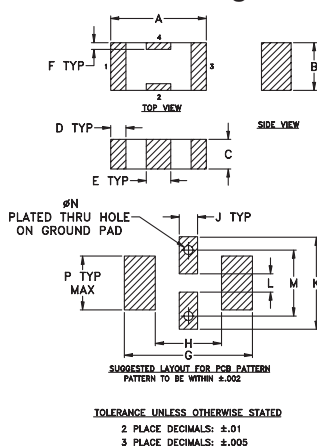
* Passband rating, derate linearly to 3.5W at 100°C ambient.

Pin Connections

RF IN	1**
RF OUT	3**
GROUND	2,4

** RF IN & RF OUT can be interchanged

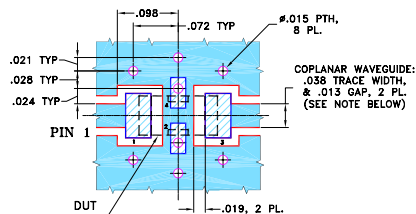
Outline Drawing



Outline Dimensions (inch)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	wt
.126	.063	.037	.020	.032	.009	.169	.087	.024	.122	.024	.087	.012	.071	grams
3.20	1.60	0.94	0.51	0.81	0.23	4.29	2.21	0.61	3.10	0.61	2.21	0.30	1.80	.020

Demo Board MCL P/N: TB-270 Suggested PCB Layout (PL-137)



NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH THICKNESS .020" ± .0015".
COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH & 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

Features

- excellent power handling, 8.5W
- small size
- 7 sections
- temperature stable
- protected by U.S. Patent 6,943,646

Applications

- harmonic rejection
- VHF/UHF transmitters/receivers
- RF suppression for DC lines on PCB
- anti-aliasing for A/D converter

CASE STYLE: FV1206
Price: Contact Sales Dept.

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

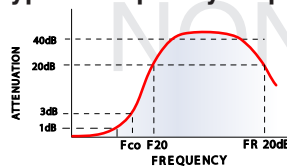
The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Electrical Specifications¹ (T_{AMB}=25°C)

PASSBAND (MHz) (loss < 1 dB)	fco, MHz Nom. (loss 3 dB)	STOP BAND (MHz) (loss, dB)			VSWR (:1)		NO. OF SECTIONS
		F 20 Max.	40 Typ.	FR 20 Typ.	Stopband Typ.	Passband Typ.	
DC-400	560	660	680-3000	5500	20	1.2	7

1. For applications requiring DC voltage to be applied to the Input or output, use LFCN-400D+ (DC Resistance to ground is 100 Mohms min.)

typical frequency response

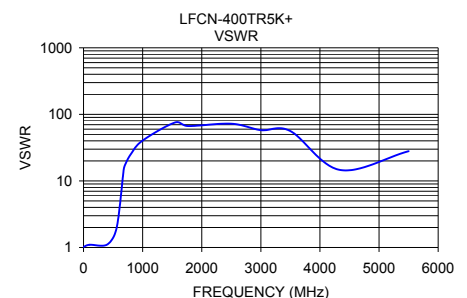
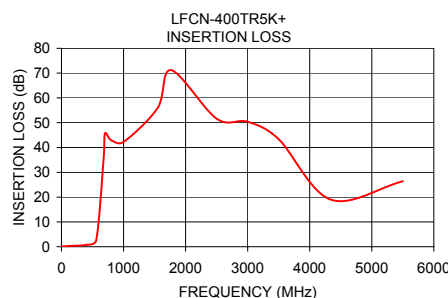


electrical schematic



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1.00	0.06	1.02
100.00	0.25	1.10
400.00	0.76	1.11
560.00	2.71	1.97
680.00	35.71	14.74
700.00	45.62	17.22
800.00	42.97	25.19
1000.00	42.26	40.41
1550.00	55.94	75.53
1770.00	71.17	66.82
2500.00	51.63	72.39
3000.00	50.38	57.91
3500.00	43.35	56.04
4340.00	18.96	14.62
5500.00	26.38	28.03



Mini-Circuits®
ISO 9001 ISO 14001 AS 9100 CERTIFIED

minicircuits.com

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

IF/RF MICROWAVE COMPONENTS

REV. OR
M121048
LFCN-400TR5K
EDR-6588/3
RVN/AD/CP/AM
090129

Ceramic Low Pass Filter

LFCN-400TR5K+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURNLOSS (dB)		
	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C
1	0.03	0.06	0.09	42.0.7	40.09	39.54	41.12	40.09	38.43
50	0.15	0.18	0.21	30.23	28.36	27.22	29.64	28.06	26.89
100	0.22	0.25	0.28	26.76	26.50	26.24	25.57	25.38	25.07
400	0.63	0.76	0.88	26.79	25.72	25.08	24.46	23.45	22.71
450	0.81	0.99	1.15	22.85	21.78	20.61	21.95	20.90	19.86
560	2.24	2.71	3.16	9.98	9.71	9.22	12.77	13.36	13.84
565	2.40	2.89	3.38	9.49	9.21	8.75	12.66	13.42	14.03
590	3.71	4.57	5.42	6.83	6.47	6.01	11.97	12.76	13.17
615	7.15	8.72	10.25	3.70	3.45	3.24	7.74	7.58	7.26
635	12.68	14.72	16.71	2.05	2.08	2.06	4.41	4.51	4.47
645	16.32	18.50	20.64	1.63	1.73	1.77	3.48	3.65	3.67
655	20.33	22.72	24.98	1.35	1.48	1.56	2.86	3.08	3.18
660	22.51	25.00	27.35	1.25	1.38	1.48	2.62	2.85	2.94
670	27.36	30.03	32.55	1.12	1.26	1.35	2.27	2.51	2.66
680	32.85	35.71	38.23	1.04	1.18	1.27	2.00	2.26	2.39
700	45.31	45.62	45.32	0.87	1.01	1.12	1.63	1.90	2.04
750	49.40	50.72	51.62	0.69	0.81	0.90	1.22	1.42	1.58
800	43.70	42.97	42.23	0.58	0.69	0.78	1.01	1.20	1.34
880	38.80	38.97	39.05	0.45	0.57	0.65	0.78	0.96	1.06
1000	41.73	42.26	42.69	0.35	0.43	0.52	0.54	0.69	0.78
1100	48.36	49.34	50.10	0.29	0.39	0.46	0.46	0.60	0.67
1150	54.06	55.25	56.46	0.24	0.34	0.42	0.38	0.51	0.58
1210	66.14	67.51	67.11	0.21	0.32	0.39	0.38	0.49	0.57
1550	55.72	55.94	56.95	0.13	0.23	0.32	0.19	0.29	0.31
1770	70.58	71.17	72.04	0.15	0.26	0.34	0.24	0.33	0.37
2000	56.84	56.67	55.81	0.18	0.27	0.35	0.20	0.29	0.33
2500	50.60	51.63	51.81	0.15	0.24	0.29	0.16	0.26	0.28
3000	49.89	50.38	50.55	0.20	0.30	0.34	0.15	0.23	0.27
3500	43.34	43.35	43.45	0.18	0.31	0.39	0.13	0.24	0.29
4000	36.33	37.72	36.35	0.26	0.37	0.50	0.13	0.27	0.39
4340	19.14	18.96	20.49	1.14	1.19	1.00	1.04	1.17	0.93
5000	25.66	26.49	26.63	0.40	0.53	0.64	0.24	0.38	0.51
5500	27.40	26.38	26.03	0.42	0.62	0.80	0.21	0.42	0.55
6000	24.50	25.14	24.76	0.45	0.67	0.90	0.31	0.49	0.64
7000	20.92	20.96	21.33	0.90	1.26	1.55	0.42	0.55	0.61
8000	18.68	18.98	19.33	0.73	0.88	0.94	0.34	0.50	0.59
9000	17.55	17.31	17.29	0.88	1.12	1.37	0.33	0.58	0.73
10000	15.98	16.15	16.03	0.91	1.23	1.57	0.62	1.01	1.36
11000	18.07	19.61	21.53	2.16	2.95	3.45	2.84	3.66	4.35
13000	25.79	23.96	22.37	2.03	2.72	3.35	1.89	2.28	2.45
15000	8.66	8.76	8.53	4.82	5.27	5.88	4.64	4.81	5.08

REV. X1

LFCN-400TR5K+

090921

Page 1 of 1



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see

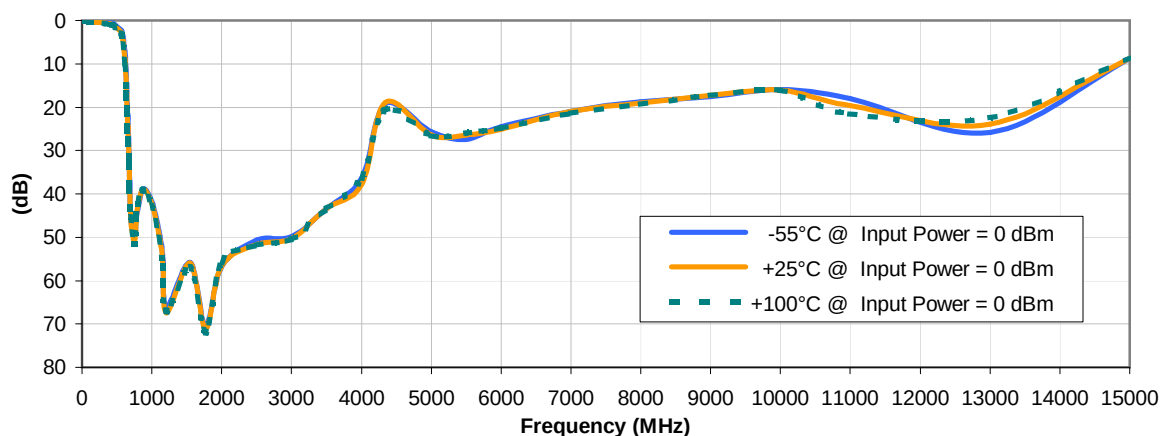


Ceramic Low Pass Filter

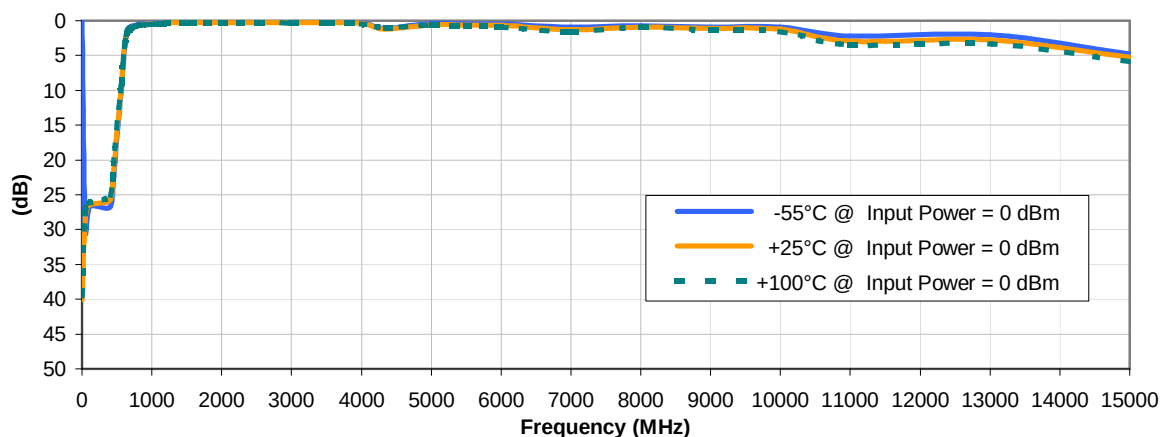
Typical Performance Curves

LFCN-400TR5K+

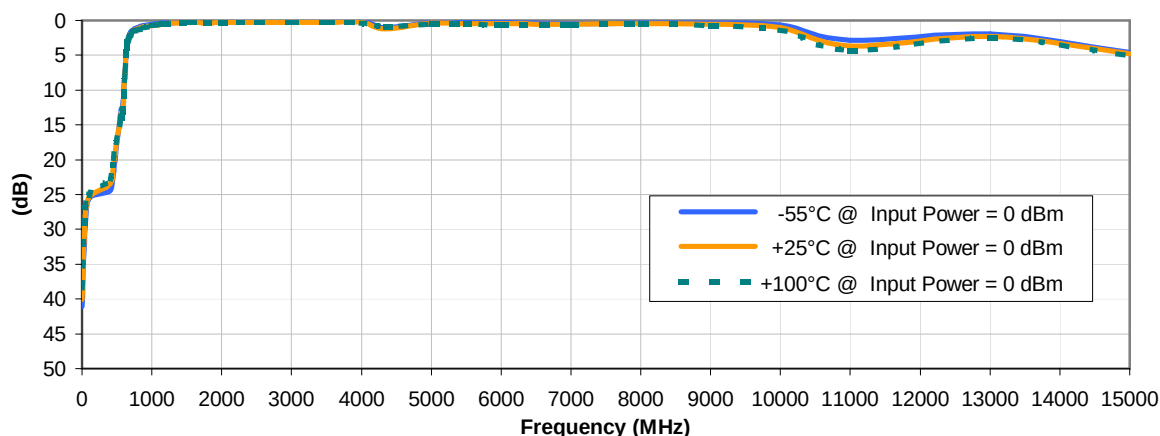
INSERTION LOSS vs. TEMPERATURE



INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



REV. X1
LFCN-400TR5K+
090921
Page 1 of 1

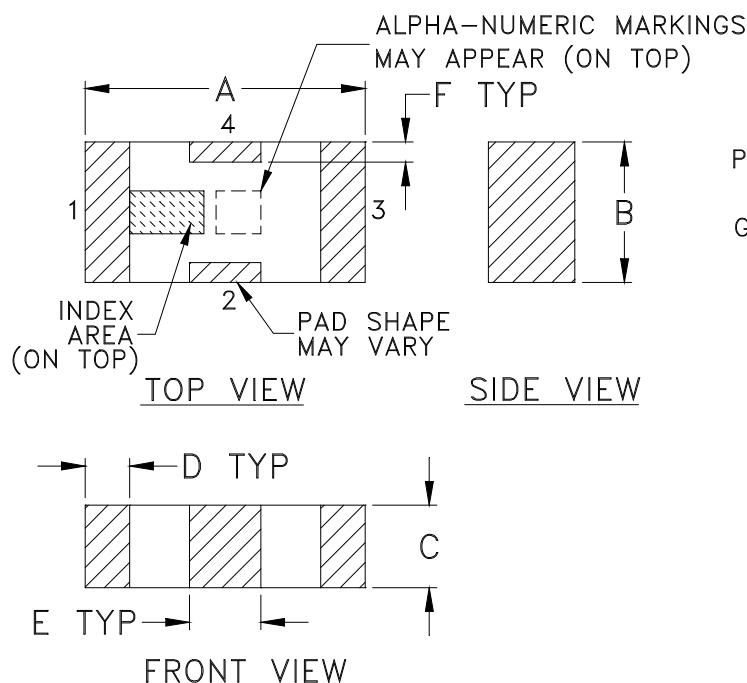


Mini-Circuits®
IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED • RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

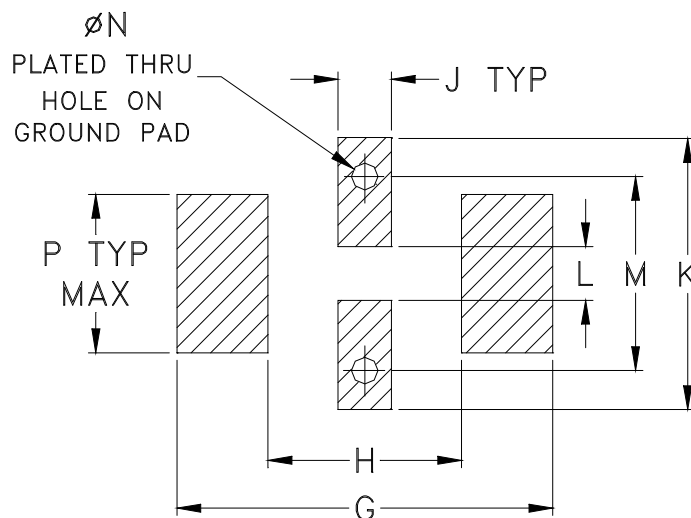
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



Outline Dimensions



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	WT. GRAM
FV1206	.126 (3.20)	.063 (1.60)	.037 (0.94)	.020 (0.51)	.032 (0.81)	.009 (0.23)	.169 (4.29)	.087 (2.21)	.024 (0.61)	.122 (3.10)	.024 (0.61)	.087 (2.21)	.012 (0.30)	.071 (1.80)	.020

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

Notes:

- Open style, ceramic base.
- 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.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F71

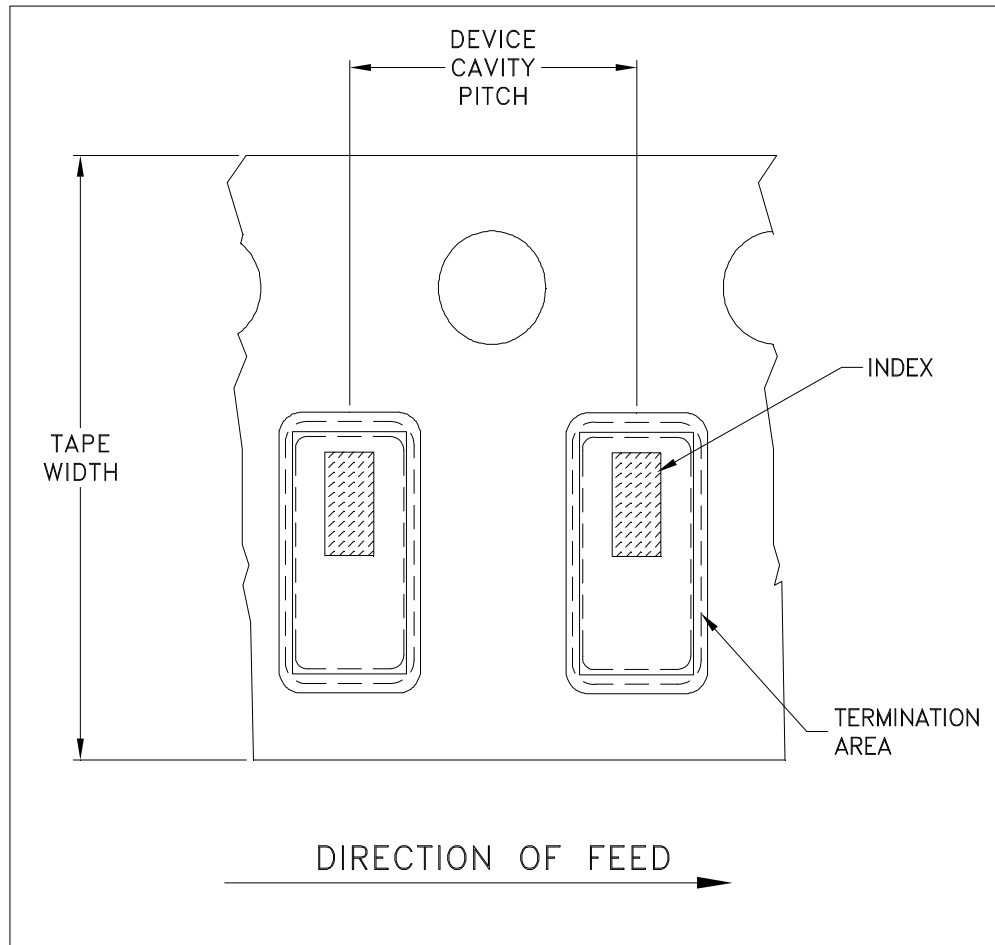


ILLUSTRATION 1

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	3000

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



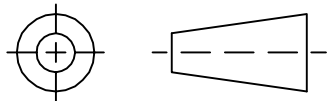
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

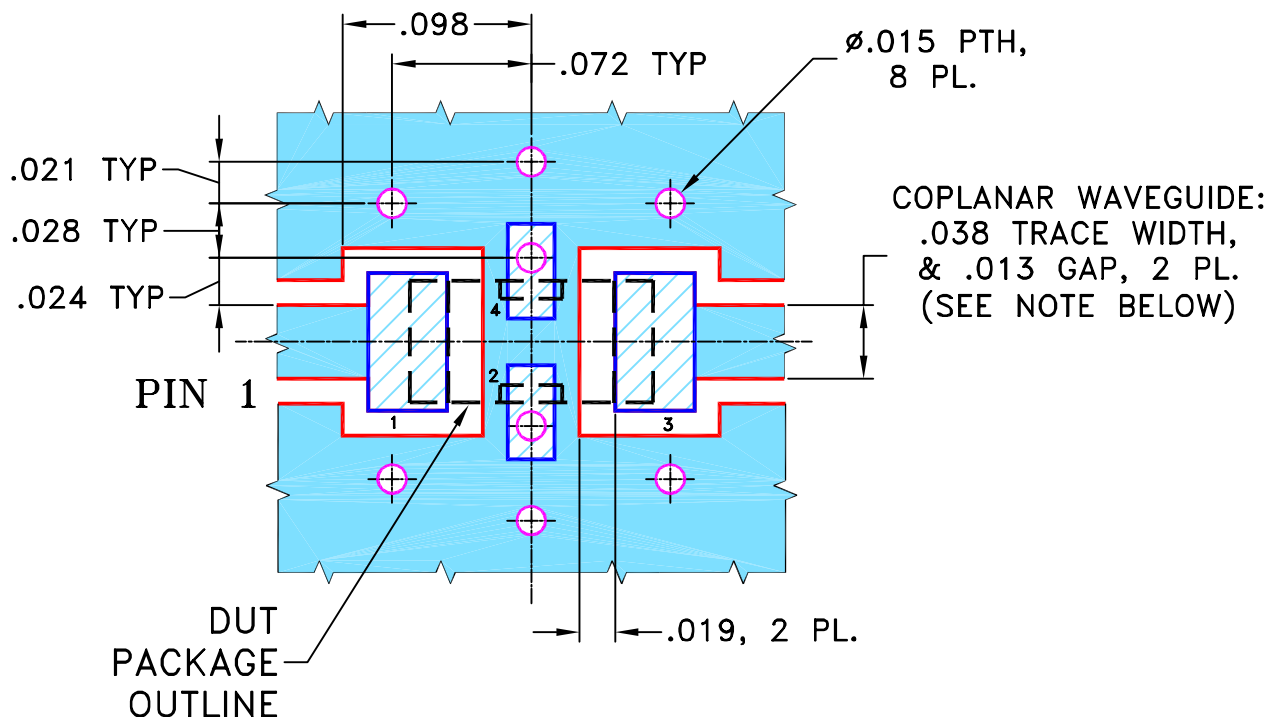
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M88634	NEW RELEASE	08/28/03	GF	ABD
A	M102713	ADDED "...WITH SMOBC"	01/17/06	MMG	IL

SUGGESTED MOUNTING CONFIGURATION
FOR FV1206 CASE STYLE, "nx" PIN CONNECTION

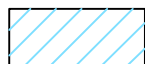


NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH THICKNESS .020" $\pm$.0015".
 COPPER: 1/2 OZ. EACH SIDE.
 FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.

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

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

GF

08/27/03

CHECKED

AV

08/28/03

APPROVED

ABD

08/28/03



Mini-Circuits®

13 Neptune Avenue
Brooklyn NY 11235

PL, nx, FV1206, LFCN/HFCN, TB-270

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-137

REV:

A

FILE:

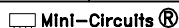
98PL137

SCALE:

10:1

SHEET:

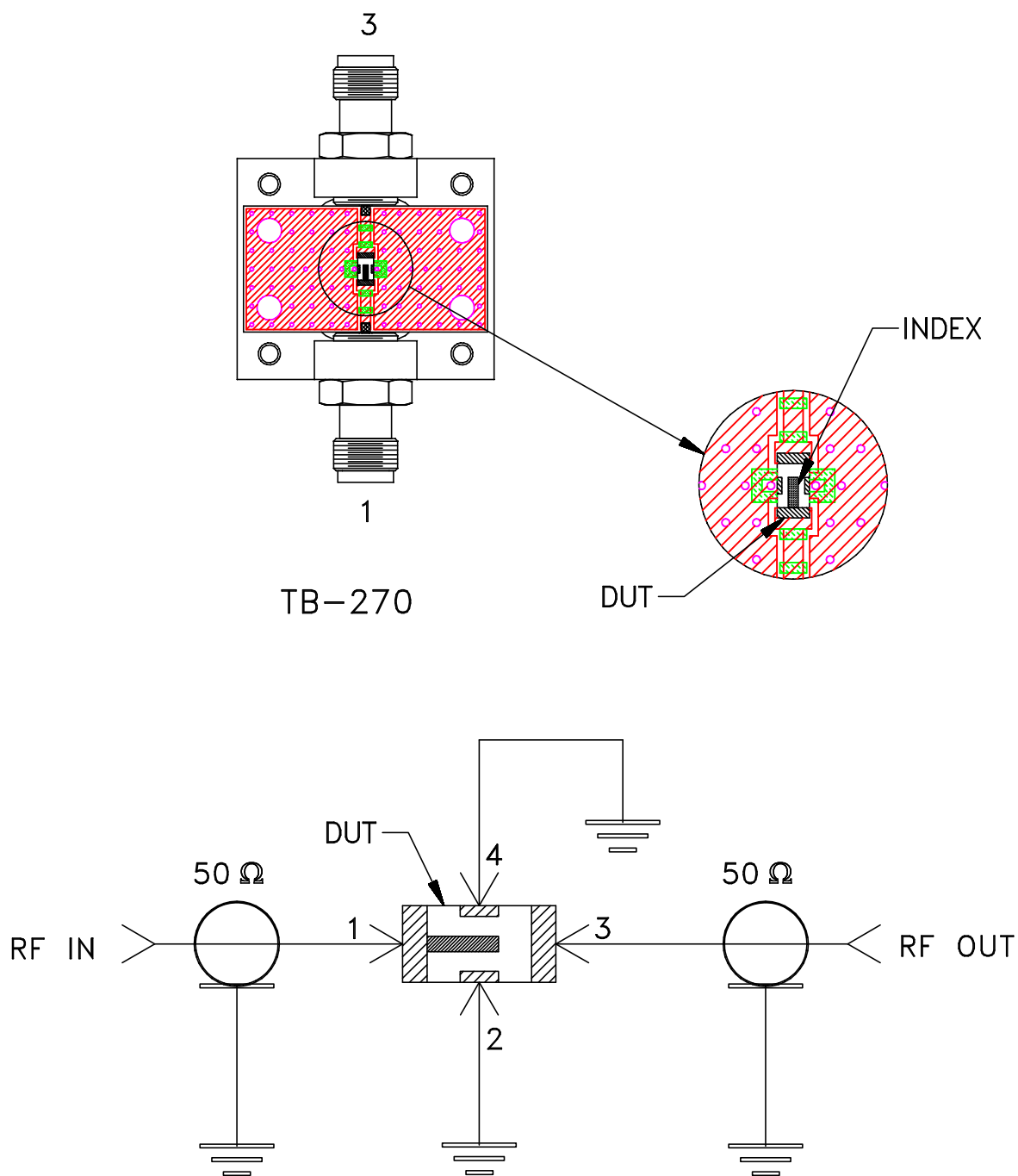
1 OF 1



THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

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

Evaluation Board and Circuit



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: ROGERS RO4350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

 **Mini-Circuits®**



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