

Ceramic

Low Pass Filter

50Ω

DC⁽¹⁾ to 180 MHz

LFCN-180



Generic photo used for illustration purposes only

CASE STYLE: FV1206

Maximum Ratings

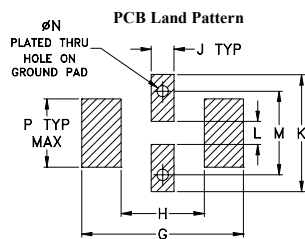
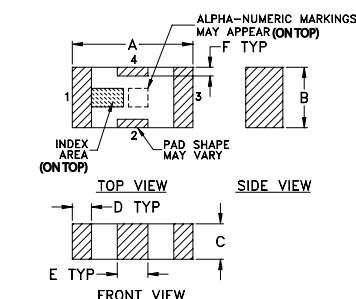
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	8W max. at 25°C

* Passband rating, derate linearly to 3W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

RF IN	1
RF OUT	3
GROUND	2,4

Outline Drawing

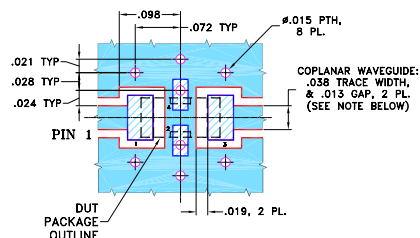


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

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

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.
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Features

- excellent power handling, 8W
- small size
- 7 sections
- temperature stable
- hermetically sealed
- LTCC construction
- protected by U.S. Patent 6,943,646

Applications

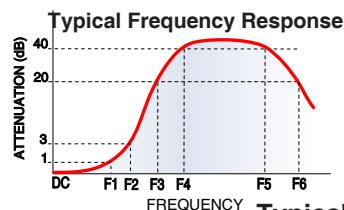
- harmonic rejection
- VHF/UHF transmitters/receivers
- lab use

Electrical Specifications^(1,2) at 25°C

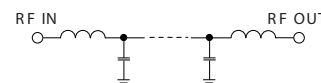
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	—	—	1.0	dB
	Freq. Cut-Off	F2	—	3.0	—	dB
	VSWR	DC-F1	—	1.2	—	:1
Stop Band	Rejection Loss	F3-F4	20	—	—	dB
		F4-F5	—	40	—	dB
		F5-F6	—	20	—	dB
	VSWR	F3-F6	—	17	—	:1

(1) In Application where DC voltage is present at either input or output ports, coupling capacitors are required.

(2) Measured on Mini-Circuits Characterization Test Board TB-270.

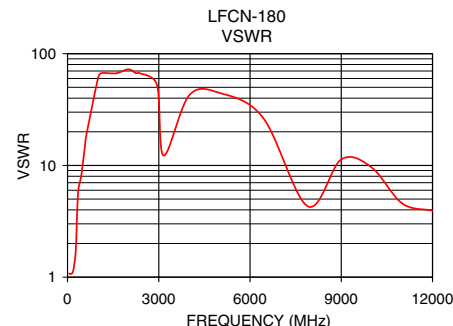
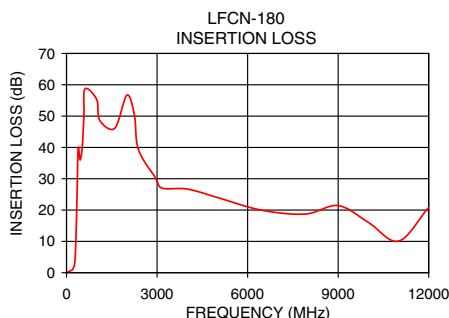


Electrical Schematic



Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
40	0.29	1.08
100	0.47	1.08
180	0.85	1.14
235	1.55	1.39
270	3.15	1.82
300	7.47	2.89
325	14.93	4.47
350	25.55	5.79
370	35.04	6.37
525	40.41	11.85
950	64.01	54.29
1700	47.93	69.49
2350	42.01	64.35
4500	25.94	28.49
6400	20.10	27.16
8500	33.14	8.12
12000	20.84	3.93



Ceramic Low Pass Filter

LFCN-180

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
40	0.25	0.30	0.33	31.50	30.27	28.62	32.24	30.86	29.29
50	0.24	0.29	0.33	30.49	29.51	28.04	31.30	30.39	28.90
60	0.27	0.32	0.36	29.73	28.94	27.63	30.76	30.11	28.76
80	0.33	0.38	0.42	28.64	27.92	26.89	30.38	29.73	28.72
100	0.39	0.45	0.49	27.94	27.14	26.32	30.83	29.84	28.99
120	0.45	0.52	0.57	27.38	26.54	25.90	32.17	30.50	29.70
140	0.53	0.60	0.66	26.47	25.89	25.57	32.31	30.87	30.45
150	0.57	0.65	0.71	25.78	25.47	25.40	30.96	30.29	30.41
160	0.61	0.70	0.77	24.97	24.95	25.19	29.08	29.10	29.80
170	0.66	0.76	0.83	24.05	24.27	24.81	27.08	27.45	28.51
180	0.72	0.82	0.90	23.02	23.34	24.10	25.15	25.58	26.66
200	0.87	0.98	1.07	20.53	20.75	21.42	21.70	21.88	22.53
235	1.35	1.50	1.62	14.48	14.49	14.55	16.23	16.28	16.30
250	1.78	1.94	2.07	11.51	11.64	11.66	13.81	14.15	14.20
270	2.86	2.98	3.12	7.67	8.01	8.11	10.41	11.25	11.65
290	5.14	5.11	5.20	4.44	4.87	5.07	7.16	8.17	8.93
310	9.44	9.16	9.13	2.40	2.74	2.94	4.76	5.52	6.18
325	14.17	13.67	13.55	1.63	1.89	2.05	3.68	4.21	4.68
340	19.98	19.26	19.05	1.27	1.48	1.61	3.04	3.44	3.77
350	24.27	23.44	23.18	1.15	1.34	1.46	2.78	3.14	3.42
370	32.88	32.13	31.92	1.01	1.18	1.30	2.46	2.82	3.07
500	38.14	37.94	37.86	0.74	0.87	0.98	1.51	1.75	1.97
525	40.68	40.29	40.09	0.70	0.81	0.93	1.30	1.51	1.70
560	46.53	45.47	45.14	0.66	0.77	0.88	1.07	1.24	1.38
580	51.82	50.21	49.42	0.61	0.73	0.82	0.95	1.10	1.23
610	59.30	59.40	58.11	0.58	0.69	0.80	0.80	0.94	1.05
660	49.61	50.27	50.56	0.51	0.62	0.70	0.63	0.74	0.83
900	61.37	58.26	56.67	0.30	0.37	0.44	0.32	0.38	0.41
950	63.11	66.70	66.78	0.29	0.36	0.42	0.31	0.35	0.39
1500	44.74	45.11	45.35	0.18	0.22	0.26	0.30	0.33	0.36
2350	40.05	42.54	43.81	0.47	0.43	0.41	0.25	0.29	0.35
3150	27.99	27.24	27.59	0.37	0.46	0.55	1.44	1.28	1.39
5000	24.17	24.39	24.35	0.80	1.00	1.24	0.33	0.45	0.62
6400	19.23	19.54	19.68	0.41	0.58	0.76	0.67	0.67	0.74
7000	18.24	18.24	18.34	0.44	0.68	0.93	1.30	1.23	1.26
8500	26.55	28.02	29.51	2.08	2.20	2.00	2.15	2.15	2.44
10000	21.03	18.94	16.59	2.07	2.52	2.60	1.51	1.78	2.03
11000	12.67	11.44	11.66	4.99	4.88	4.23	4.07	4.30	4.29
13000	22.41	19.94	18.28	3.24	3.91	5.05	3.66	4.33	4.93
15000	12.07	11.25	11.48	1.40	1.91	2.15	6.00	4.50	4.25
16000	20.47	29.23	31.69	2.66	2.79	3.29	10.83	13.31	14.90
18000	14.46	12.51	10.28	3.93	3.89	4.02	4.75	6.50	8.54

REV. X1

LFCN-180

071008

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

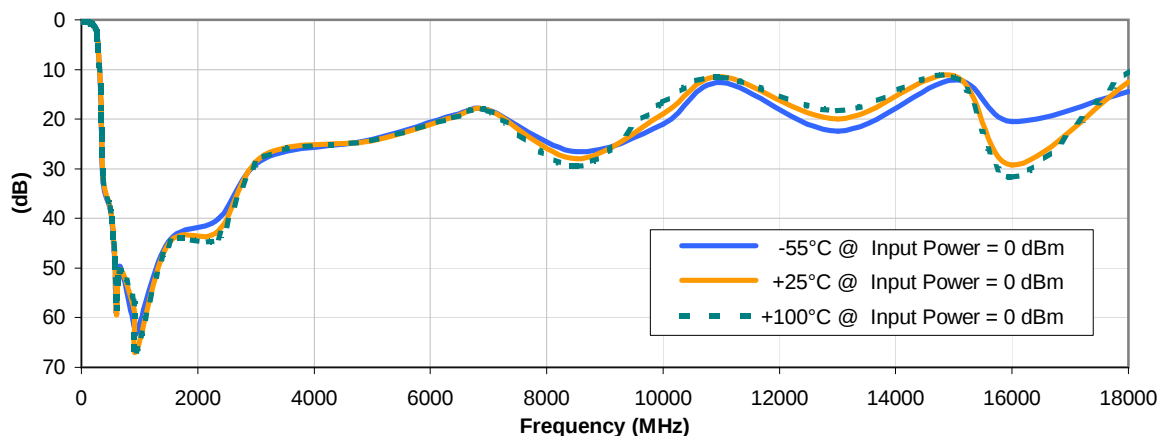


Ceramic Low Pass Filter

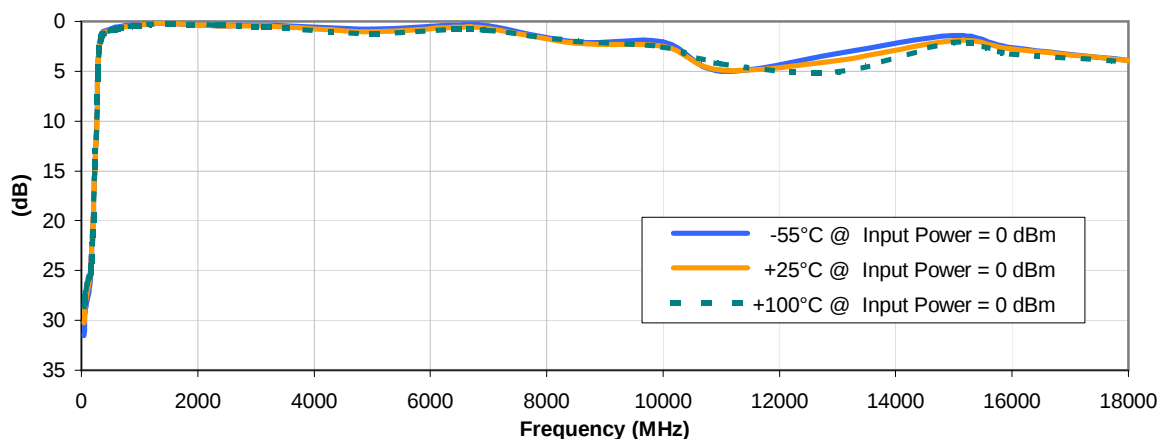
Typical Performance Curves

LFCN-180

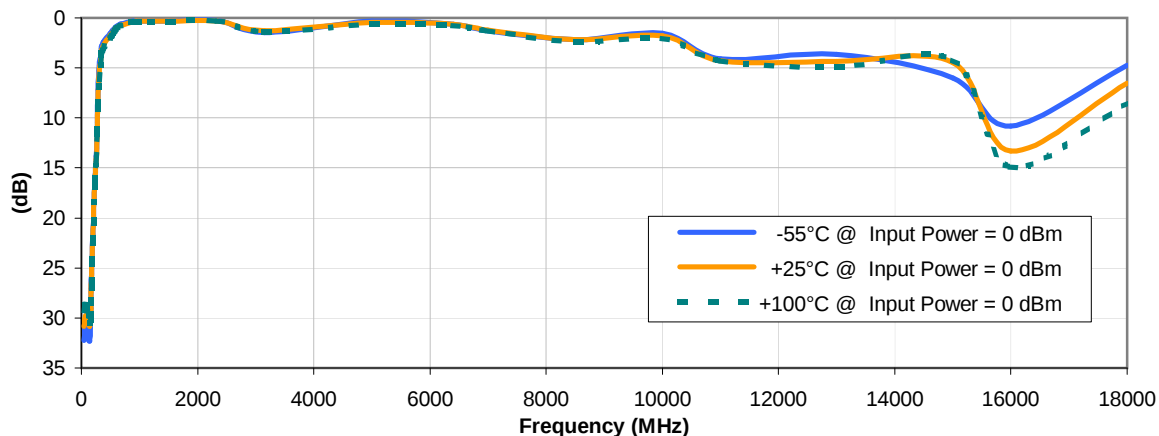
INSERTION LOSS vs. TEMPERATURE



INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



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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.



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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.

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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:

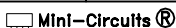
98PL137

SCALE:

10:1

SHEET:

1 OF 1



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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