

# Low Pass Filter

LFCN-113+

50Ω DC to 11000 MHz



CASE STYLE: FV1206-4

## The Big Deal

- Small size 3.2mm x 1.6mm
- Pass band (DC-11000 MHz)
- Low Insertion Loss (2.0 dB typical)
- Sharp rejection peaks close to stop band

## Product Overview

The LFCN-113+ Low Pass Filter gives microwave communication system designers the ability to reject unwanted harmonics using defined RF parameters. The multilayer construction gives high repeatability of performance. Small wrap-around terminations minimize variations in performance due to parasitics. Covering DC-11000 MHz, these units offer low insertion loss and good rejection.

## Key Features

Feature	Advantages
Small Size (3.20mm x1.6 mm)	Allows for high layout density of circuit boards, while minimizing affects of parasitics.
Rejection peaks at harmonic frequencies	Provides good rejection of signals at harmonic frequencies, for improved system performance.
Wrap around termination	Provides excellent solderability and easy visual inspection capability.
LTCC construction	Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Ceramic Low Pass Filter

50Ω DC<sup>(1)</sup> to 11000 MHz

LFCN-113+



CASE STYLE: FV1206-4

## Maximum Ratings

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

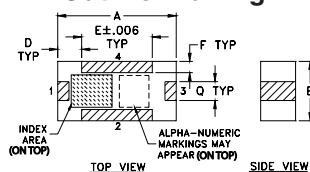
\* Passband rating, derate linearly to 3W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

## Pin Connections

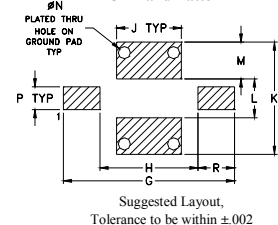
RF IN	1
RF OUT	3
GROUND	2,4

## Product Marking: AN

### Outline Drawing



### PCB Land Pattern

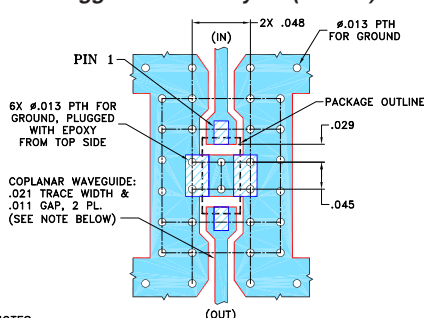


### Outline Dimensions (inch)

A	B	C	D	E	F	G	H	J
.126	.063	.037	.026	.075	.012	.182	.104	.069
3.20	1.60	0.94	0.66	1.91	0.30	4.62	2.64	1.75
K	L	M	N	P	Q	R	wt	
.119	.041	.039	.013	.024	.020	.039	grams	
3.02	1.04	0.99	0.33	0.61	0.51	0.99	.020	

### Demo Board MCL P/N: TB-637+

### Suggested PCB Layout (PL-530)



- NOTES:
1. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH 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, 8W
- small size, 0.12" x .06"
- 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

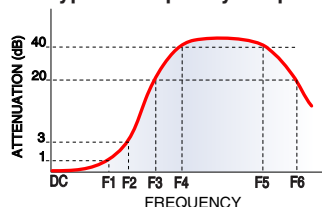
## Electrical Specifications<sup>(1,2)</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band (See Typical Performance Data)	Insertion Loss	DC-F1	DC - 10800	—	—	2.5 dB
	Freq. Cut-Off	F2	12250	—	3.0	dB
	VSWR	DC-F1	DC - 10800	—	1.6	:1
Stop Band	Rejection Loss	F3	14000	20	—	dB
		F4-F5	14500 - 20000	—	40	dB
	VSWR	F3-F6	14500 - 20000	—	17	:1

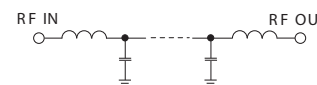
(1) In Application where DC voltage is present at either input or output ports, coupling capacitors are required.

(2) Measured on Mini-Circuits Characterization Test Board TB-637+.

### Typical Frequency Response

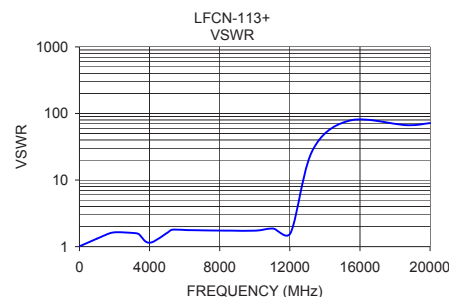
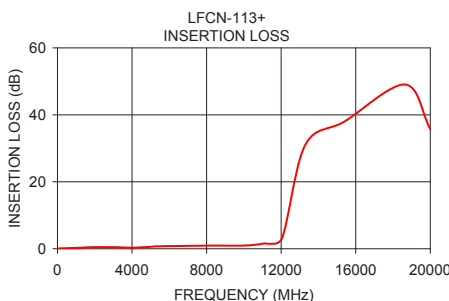


### Electrical Schematic



## Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10.00	0.11	1.01
1000.00	0.27	1.32
1210.00	0.32	1.39
1410.00	0.37	1.47
2010.00	0.50	1.64
3200.00	0.47	1.59
3800.00	0.35	1.18
4200.00	0.35	1.18
5000.00	0.60	1.61
6260.00	0.80	1.77
8450.00	0.97	1.74
10050.00	0.97	1.74
11060.00	1.57	1.87
13290.00	30.98	27.77
15410.00	38.04	78.16
18650.00	49.07	66.83
20000.00	35.74	71.79



## 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-Circuits' 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](http://www.minicircuits.com/MCLStore/terms.jsp)

