

Ceramic

# Low Pass Filter

LFCW-6500+

50Ω

DC to 6.5 GHz



Generic photo used for illustration purposes only

CASE STYLE: JC0603C-1

## The Big Deal

- Very good rejection, 40 dB typical
- Rugged, ceramic construction
- Tiny size, 0.063" x 0.032" x 0.024" (0603)
- Good power handling, 2W

## Product Overview

Mini-Circuits' LFCW-6500+ is an LTCC low pass filter with a passband from DC to 6.5 GHz, supporting a variety of applications. This model provides 1.6 dB typical passband insertion loss and provides a very good stopband rejection due to strategically constructed layout with minimal interaction between components. It handles up to 2W RF input power and provides a wide operating temperature range from -55 to +125°C. Housed in a tiny 0603 ceramic form factor with wraparound terminations, the filter is ideal for dense PCB layouts and with minimal performance variation due to parasitics.

## Key Features

Feature	Advantages
Ultra-wide stopband	The LTCC lowpass filter provides a very good stopband rejection until 26.5 GHz suitable for high end applications.
LTCC Construction	Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes.
Tiny size ( 0.063" x 0.032" x 0.024")	Saves space in dense circuit board layouts and minimizes the effects of parasitics.
Good power handling, 2W	Supports a wide range of system power requirements.
Wrap-around terminations	Provides excellent solderability and easy visual inspection.

### 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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# Low Pass Filter

50Ω

DC to 6.5 GHz

LFCW-6500+



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CASE STYLE: JC0603C-1

## Features

- Low loss, 1.6 dB typical
- Good rejection 40 dB typical
- Extremely small size 0603 (0.063" X 0.032" X 0.024")
- Temperature stable
- LTCC construction

## Applications

- Military radios
- Point-Point communication
- 5G Sub 6 GHz
- WiFi
- ISM band

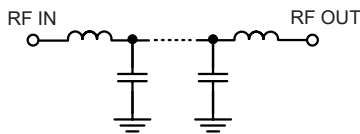
## Electrical Specifications<sup>1,2</sup> at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 6500	—	1.6	2.5	dB
	Freq. Cut-Off	F2	7500	—	3.0	—	dB
	Return Loss	DC-F1	DC - 6500	—	10.0	—	dB
Stop Band	Rejection Loss	F3-F4	9000 - 9500	20	43	—	dB
		F4-F5	9500 - 15000	30	40	—	dB
		F5-F6	15000 - 18500	25	37	—	dB
		F6-F7	18500 - 26500	—	23	—	dB

1 DC de-coupling capacitors are required in Applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for alternatives if DC pass from IN-OUT is required.

2 Measured on Mini-Circuits Characterization Test Board TB-LFCW-6500+

## Functional Schematic



## Maximum Ratings

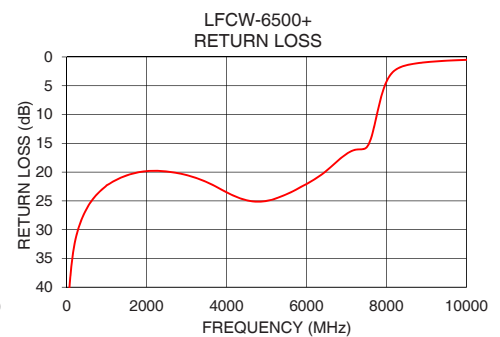
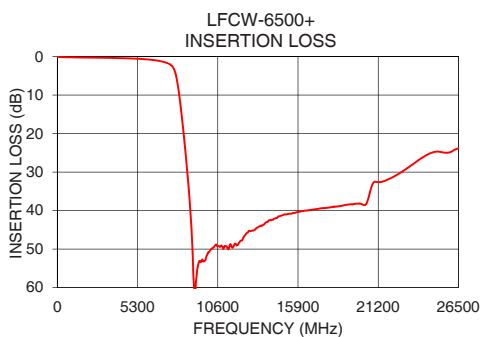
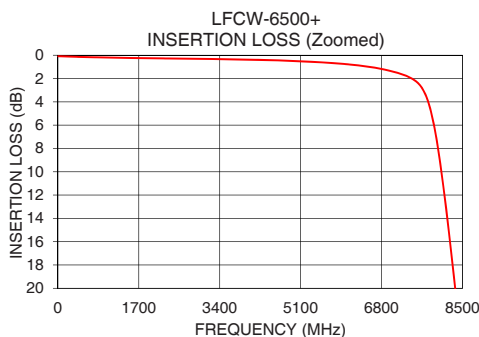
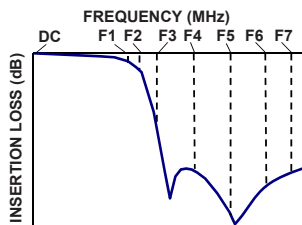
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	2W @25°C

\*Passband rating, derate linearly to 0.8W at 125°C ambient  
Permanent damage may occur if any of these limits are exceeded.

## Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.09	42.89
100	0.09	37.66
500	0.15	26.38
1000	0.20	22.30
2000	0.26	19.84
3000	0.31	20.52
6000	0.74	22.08
6500	0.97	19.76
7500	2.17	15.72
7700	3.19	11.83
8200	14.69	2.36
8340	19.80	1.79
8600	30.42	1.28
9000	57.67	0.90
9500	53.32	0.65
10000	50.81	0.49
15000	40.98	0.53
18500	38.91	0.21
20000	38.21	0.17
26500	23.87	5.08

## Typical Frequency Response



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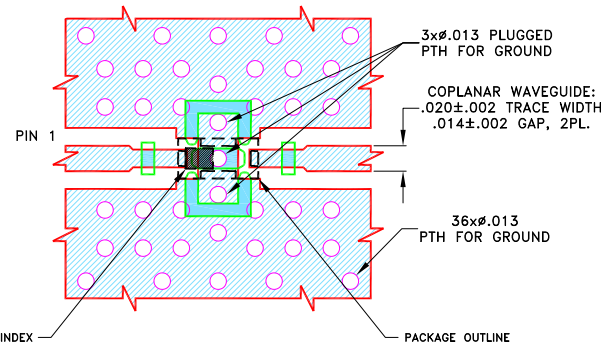


Pad Connections

INPUT	1
OUTPUT	3
GROUND	2, 4

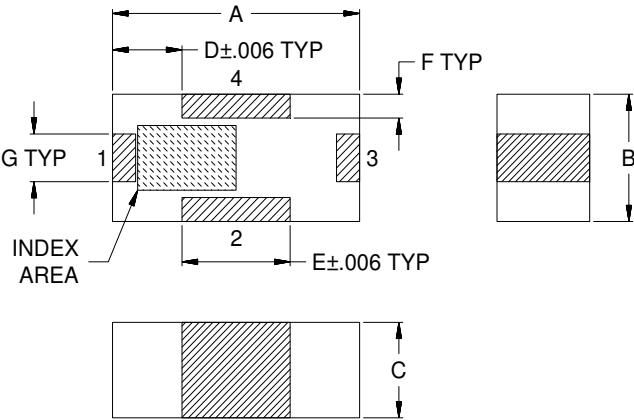
Product Marking: T

Demo Board MCL P/N: TB-LFCW-6500+  
Suggested PCB Layout (PL-650)



- NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (R04835 Lo Pro) WITH DIELECTRIC THICKNESS .0107±.0010. 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 SOLDERMASK

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	G	Wt.
.063	.032	.024	.018	.028	.006	.012	grams
1.60	0.80	0.60	0.45	0.70	0.15	0.30	.005

Note: Please refer to case style drawing for details

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