

Ceramic

Low Pass Filter

LFCW-6300+

50Ω DC to 6.3 GHz



The Big Deal

- Very good rejection, 45 dB typical
- Rugged, ceramic construction
- Tiny size, 0.063" x 0.032" x 0.024" (0603)
- Good power handling, 4 W

Generic photo used for illustration purposes only

CASE STYLE: JC0603C-1

Product Overview

Mini-Circuits' LFCW-6300+ is an LTCC low pass filter with a passband from DC to 6.3 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 4 W RF input power and provides a wide operating temperature range from -55 to +100°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, 4 W | 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.
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



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Low Pass Filter

50Ω

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LFCW-6300+



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Features

- Low loss, 1.6 dB typical
- Good rejection 45 dB typical
- Extremely small size 0603 (0.063" X 0.032" X 0.024")
- Temperature stable
- LTCC construction

Applications

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

+RoHS Compliant

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

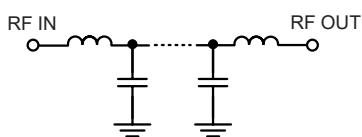
Electrical Specifications^{1,2} at 25°C

| | Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|-----------|----------------|-------|-----------------|------|------|------|------|
| Pass Band | Insertion Loss | DC-F1 | DC - 6300 | — | 1.6 | 2.1 | dB |
| | Freq. Cut-Off | F2 | 7200 | — | 3.0 | — | dB |
| | Return Loss | DC-F1 | DC - 6300 | — | 13 | — | dB |
| Stop Band | Rejection Loss | F3-F4 | 8600 - 9300 | 20 | 42 | — | dB |
| | | F4-F5 | 9300 - 14300 | 30 | 44 | — | dB |
| | | F5-F6 | 14300 - 18300 | 25 | 34 | — | dB |
| | | F6-F7 | 18300 - 26500 | — | 25 | — | 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-1114+

Functional Schematic



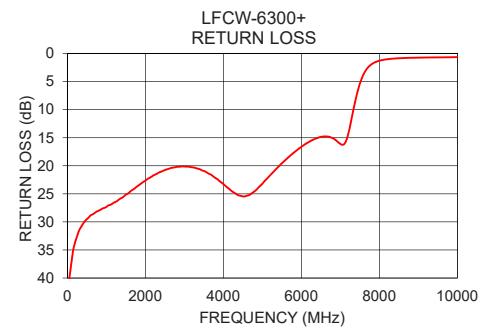
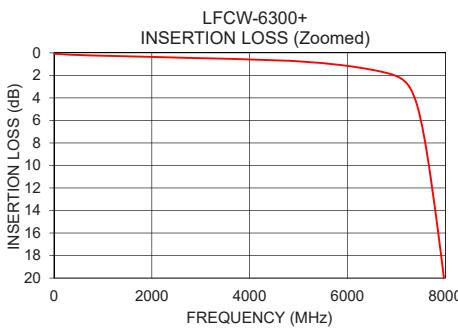
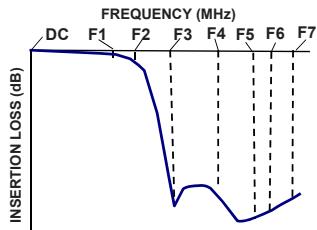
| Maximum Ratings | |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input* | 4 W @25°C |

*Passband rating, derate linearly to 2 W at 100°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 | 41.02 |
| 100 | 0.10 | 37.66 |
| 500 | 0.19 | 29.52 |
| 1000 | 0.25 | 27.35 |
| 2000 | 0.36 | 22.66 |
| 3000 | 0.47 | 20.13 |
| 6000 | 1.16 | 16.63 |
| 6300 | 1.35 | 15.36 |
| 7200 | 2.65 | 14.42 |
| 7300 | 3.27 | 11.20 |
| 7700 | 11.05 | 2.55 |
| 8000 | 21.00 | 1.28 |
| 8250 | 30.36 | 0.98 |
| 8600 | 47.29 | 0.81 |
| 9300 | 54.97 | 0.70 |
| 10000 | 54.92 | 0.64 |
| 14300 | 39.93 | 0.43 |
| 18300 | 34.34 | 0.43 |
| 20000 | 33.52 | 0.33 |
| 26500 | 26.87 | 0.85 |

Typical Frequency Response



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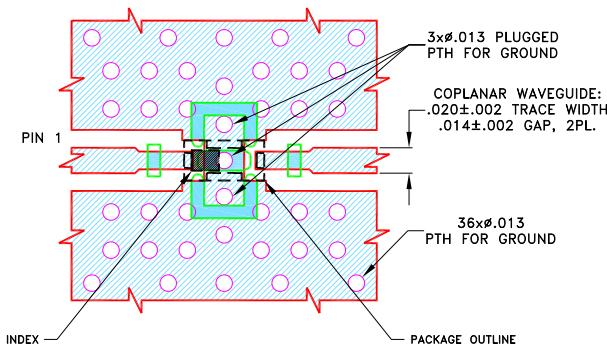
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Pad Connections

| | |
|--------|------|
| INPUT | 1 |
| OUTPUT | 3 |
| GROUND | 2, 4 |

Product Marking: L

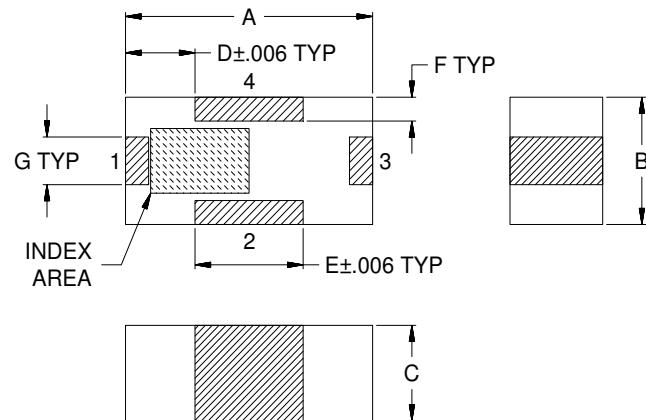
Demo Board MCL P/N: TB-1114+
Suggested PCB Layout (PL-650)



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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