

Ceramic Low Pass Filter

LFCG-320+

50Ω DC to 320 MHz



Generic photo used for illustration purposes only
CASE STYLE: GE0805C-2

The Big Deal

- Good rejection, 35 dB typical
- Rugged, ceramic construction
- Tiny size, 0.079" x 0.049" x 0.037" (0805)
- Excellent power handling, 3.5W

Product Overview

Mini-Circuits' LFCG-320+ is an LTCC low pass filter with a passband from DC to 320 MHz, supporting a variety of applications. This model provides 1 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 3.5W RF input power and provides a wide operating temperature range from -55°C to 125°C. Housed in a tiny 0805 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 |
|--|---|
| Good stopband rejection, 35 dB typical | The LTCC lowpass filter provides a good stopband rejection 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 (0.079" x 0.049" x 0.037") | Saves space in dense circuit board layouts and minimizes the effects of parasitics. |
| High power handling, 3.5W | 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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+RoHS Compliant

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

Features

- Low loss, 1dB typical
- High rejection 35 dB typical
- Excellent power handling, 3.5W
- Extremely small size 0805 (2.0mm x 1.25mm)
- Temperature stable
- LTCC construction

Applications

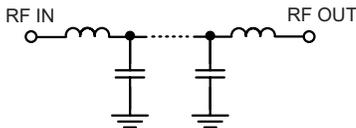
- Harmonic Rejection
- VHF/UHF transmitters / receivers
- RF suppression for DC lines on PCB
- Anti-aliasing for A/D converter

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

| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit | |
|-----------|----------------|-----------------|-------------|------|------|------|----|
| Pass Band | Insertion Loss | DC-F1 | DC - 320 | — | 1.0 | 1.7 | dB |
| | Freq. Cut-Off | F2 | 440 | — | 3.0 | — | dB |
| | Return Loss | DC-F1 | DC - 320 | — | 21 | — | dB |
| Stop Band | Rejection Loss | F3-F4 | 660 - 2000 | 25 | 33 | — | dB |
| | | F4-F5 | 2000 - 6000 | — | 20 | — | 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-799+

Functional Schematic



Maximum Ratings

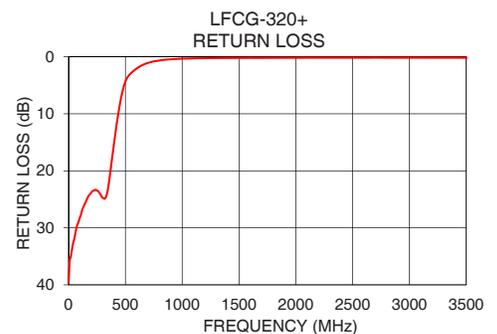
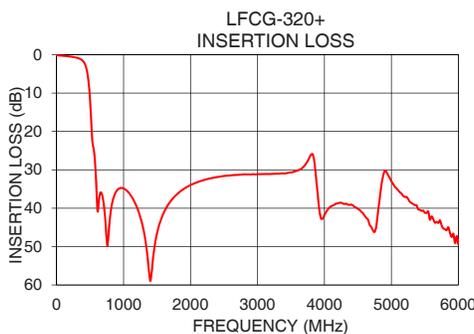
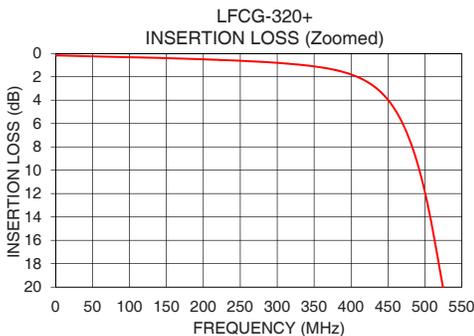
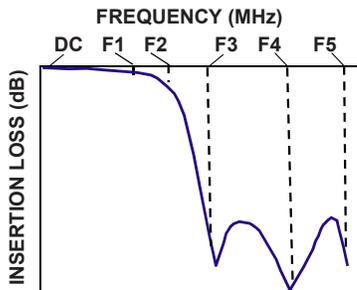
| | |
|-----------------------|-----------------|
| Operating Temperature | -55°C to 125°C |
| Storage Temperature | -55°C to 125°C |
| RF Power Input* | 3.5W max. @25°C |

*Passband rating, derate linearly to 0.6W 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) |
|-----------------|---------------------|------------------|
| 1 | 0.18 | 39.63 |
| 50 | 0.25 | 31.99 |
| 100 | 0.32 | 28.15 |
| 320 | 0.91 | 24.86 |
| 400 | 1.79 | 15.17 |
| 440 | 3.29 | 9.69 |
| 500 | 11.89 | 4.35 |
| 525 | 20.19 | 3.41 |
| 585 | 31.21 | 2.26 |
| 650 | 36.08 | 1.45 |
| 660 | 35.86 | 1.36 |
| 700 | 38.41 | 1.06 |
| 800 | 42.04 | 0.63 |
| 1000 | 34.86 | 0.33 |
| 1500 | 46.50 | 0.20 |
| 2000 | 33.96 | 0.17 |
| 3000 | 31.15 | 0.16 |
| 4000 | 41.74 | 0.19 |
| 5000 | 32.98 | 0.50 |
| 6000 | 49.40 | 0.33 |

Typical Frequency Response



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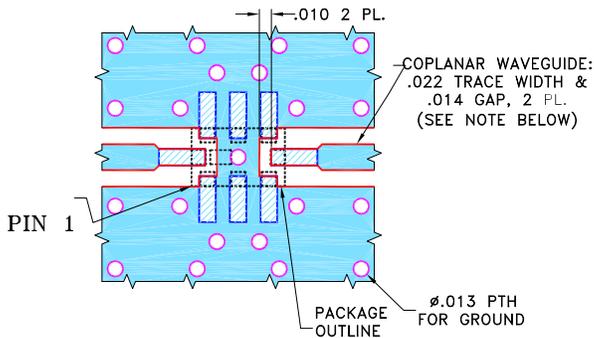
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Pad Connections

| | |
|--------|-------------|
| INPUT | 8 |
| OUTPUT | 4 |
| GROUND | 1,2,3,5,6,7 |

Product Marking: KN

Demo Board MCL P/N: TB-799+
Suggested PCB Layout (PL-429)

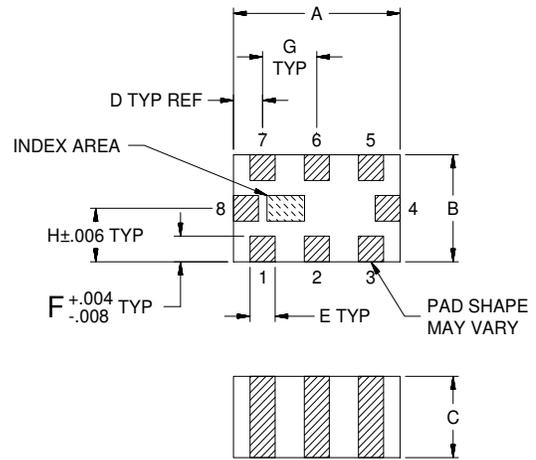


NOTES:

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.010" \pm .001"$. 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 SOLDER MASK.

Outline Drawing



Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | Wt. |
|------|------|------|------|------|------|------|-------|
| .079 | .049 | .037 | .014 | .012 | .012 | .026 | grams |
| 2.00 | 1.25 | 0.95 | 0.35 | 0.30 | 0.30 | 0.65 | .008 |

Note: Please refer to case style drawing for details

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