



LTCC SURFACE MOUNT

# Low Pass Filter

## LFCG-360+

50Ω DC to 360 MHz

### THE BIG DEAL

- Insertion Loss, 0.9 dB Typ.
- Stop Band Rejection, 46 dB Typ.
- Pass Band Return Loss, 19 dB Typ.
- 0805 Surface Mount Footprint
- Power Handling: 3 Watts



Generic photo used for illustration purposes only

### APPLICATIONS

- Harmonic Rejection
- VHF/UHF Transmitters / Receivers
- Test and Measurement
- Telecommunications & Broadband Wireless Applications
- Satcom Modems

### FUNCTIONAL DIAGRAM



### PRODUCT OVERVIEW

Mini-Circuits' LFCG-360+ is a miniature low temperature co-fired ceramic (LTCC) low pass filter with a DC to 360 MHz passband supporting a variety of applications. This model provides 0.9 dB typical insertion loss over a wide band due to its rugged monolithic construction. Housed in an 0805 ceramic form factor which is ideal for dense signal chain PCB layouts where it complements MMIC size and performance. The LTCC fabrication process assures minimal RF performance variation while delivering a product that is well suited for environmental extremes of high humidity and temperature.

### KEY FEATURES

| Features                       | Advantages  |
|--------------------------------|---|
| Ultra-wide stopband            | The LTCC lowpass filter provides a very good stopband rejection until 8500 MHz suitable for wide band applications.                             |
| LTCC Construction              | Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes. |
| Small size, 0805               | Saves space in dense circuit board layouts and minimizes the effects of parasitics.   |
| Rugged Power handling, 3 Watts | Handles up to 3 Watts in a small 0805 package.  |





### ELECTRICAL SPECIFICATIONS<sup>1,2,3</sup> AT +25°C

| Parameter |                            | F#    | Frequency (MHz) | Min. | Typ. | Max. | Units |
|-----------|----------------------------|-------|-----------------|------|------|------|-------|
| Pass Band | Insertion Loss             | DC-F1 | DC - 360        | —    | 0.9  | 1.6  | dB    |
|           | Freq. Cut-Off <sup>4</sup> | F2    | 500             | —    | 3.0  | —    | dB    |
|           | Return Loss                | DC-F1 | DC - 360        | —    | 19   | —    | dB    |
| Stop Band | Rejection                  | F3-F4 | 630 - 830       | 20   | 37   | —    | dB    |
|           |                            | F4-F5 | 830 - 1500      | 37   | 46   | —    |       |
|           |                            | F5-F6 | 1500 - 3000     | 35   | 43   | —    |       |
|           |                            | F6-F7 | 3000 - 8500     | —    | 20   | —    |       |

1. Tested in Evaluation Board P/NTB-LFCG-360+

2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

3. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

4. Typical variation ± 5%.

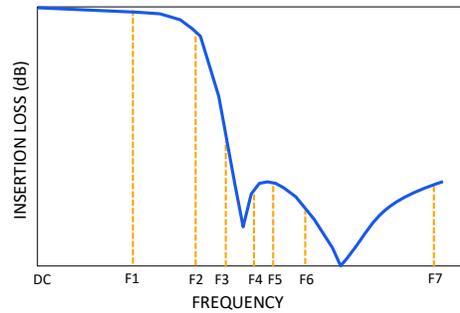
### ABSOLUTE MAXIMUM RATINGS<sup>5</sup>

| Parameter                | Ratings           |
|--------------------------|-------------------|
| Operating Temperature    | -55 °C to +125 °C |
| Storage Temperature      | -55 °C to +125 °C |
| Input Power <sup>6</sup> | 3 W @25°C         |

5. Permanent damage may occur if any of these limits are exceeded.

6. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.7 W at +125°C.

### TYPICAL FREQUENCY RESPONSE





LTCC SURFACE MOUNT

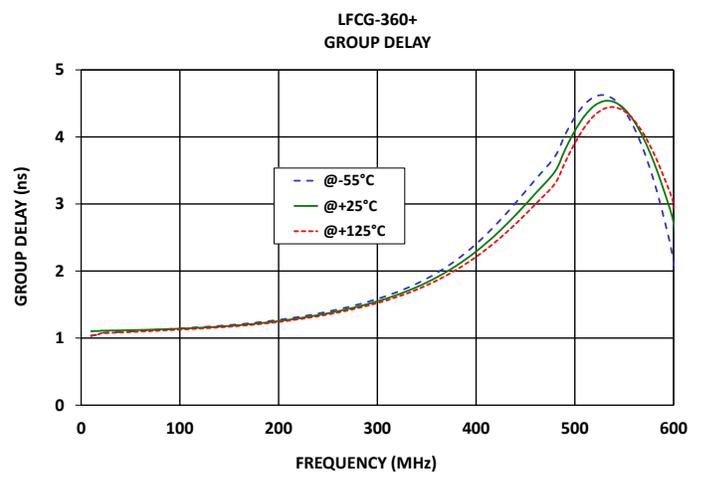
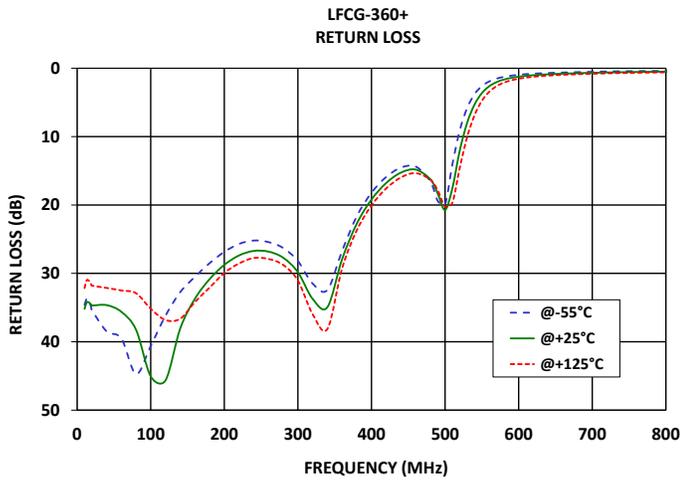
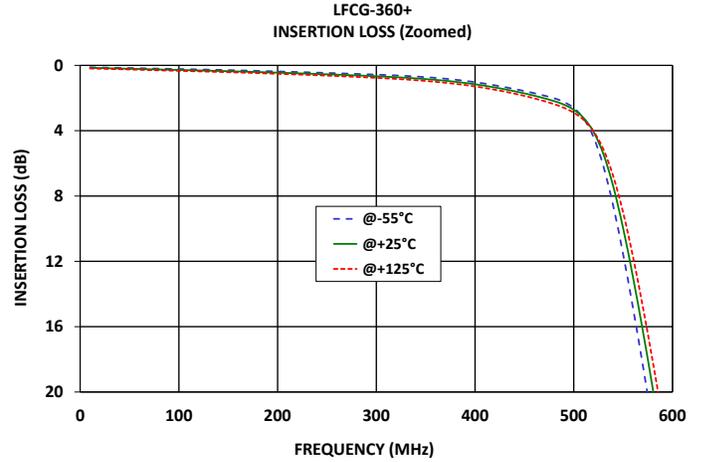
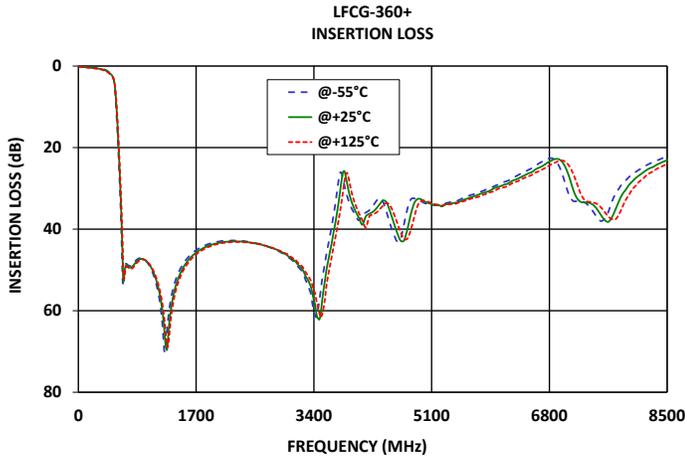
# Low Pass Filter

## LFCG-360+

Mini-Circuits

50Ω DC to 360 MHz

### TYPICAL PERFORMANCE GRAPHS





### FUNCTIONAL DIAGRAM

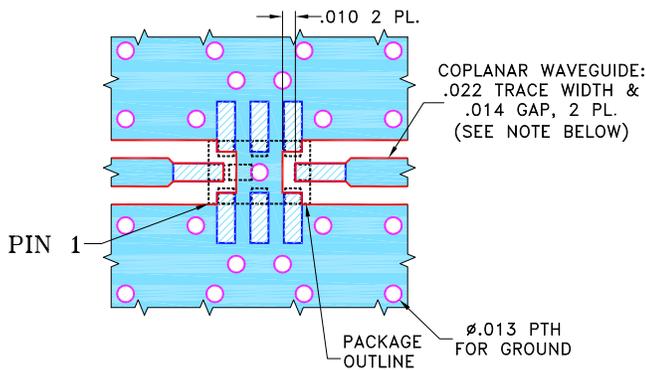


Figure 1. LFCG-360+ Functional Diagram

### PAD DESCRIPTION

| Function                 | Pad Number  | Description  |
|--------------------------|-------------|--|
| RF <sub>1</sub> (Note 2) | 8           | Connects to RF Input Port  |
| RF <sub>2</sub> (Note 2) | 4           | Connects to RF Output Port   |
| GROUND                   | 1,2,3,5,6,7 | Connects to Ground on PCB, (See drawing PL-429)                              |
| NC                       | —           | No connection, not used internally. See drawing PL-429 for connection to PCB |

### SUGGESTED PCB LAYOUT (PL-429)



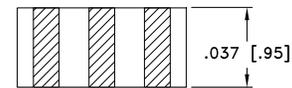
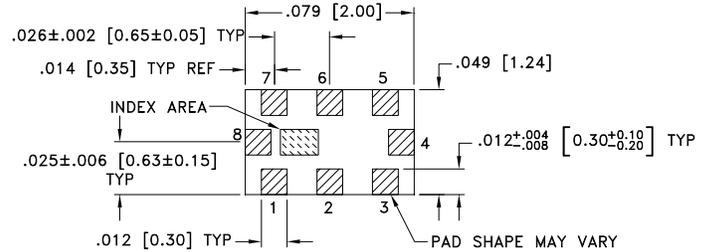
**NOTES:**

1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .010" ± .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.

Figure 2. Suggested PCB Layout PL-429

### CASE STYLE DRAWING



Weight: .008 grams

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .005

### PRODUCT MARKING\*: WF

\*Marking may contain other features or characters for internal lot control.



LTCC SURFACE MOUNT

# Low Pass Filter

## LFCG-360+

50Ω DC to 360 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.

[CLICK HERE](#)

|                                 |   |
|---------------------------------|---|
| Performance Data and Graphs     | Data  |
|                                 | Graphs  |
|                                 | S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads |
| Case Style                      | GE0805C-2 Lead Finish: Nickel-Tin                                       |
| RoHS Status                     | Compliant   |
| Tape and Reel                   | TR-F114   |
| Suggested Layout for PCB Design | 98-PL-429   |
| Evaluation Board                | TB-LFCG-360+  |
|                                 | Gerber File   |
| Environmental Rating            | ENV06T11  |

### 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

