



LTCC SURFACE MOUNT

# Low Pass Filter

LFCG-225+

Mini-Circuits

50Ω

DC to 225 MHz

## THE BIG DEAL

- Insertion Loss, Typ. 0.8 dB
- Stopband Rejection, Typ. 51 dB
- Passband Return Loss, Typ. 21 dB
- 0805 Surface Mount Footprint
- Power Handling: 3.5 W

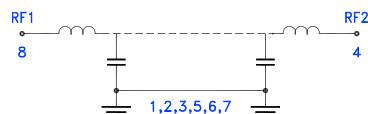


Generic photo used for illustration purposes only

## APPLICATIONS

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

## FUNCTIONAL DIAGRAM



## PRODUCT OVERVIEW

Mini-Circuits' LFCG-225+ is a miniature low temperature co-fired ceramic (LTCC) low pass filter with a DC to 225 MHz passband that supports a variety of applications. This model provides 0.8 dB typical insertion loss over a wide band, due to its rugged monolithic construction. Housed in a small 0805 ceramic form factor, this filter 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	Provides very good stopband rejection up to 8.5 GHz, suitable for wide band applications.
LTCC Construction	The use of LTCC technology allows for repeatable performance in a rugged ceramic package, well suited for tough environments such as high humidity and temperature extremes. See Mini-Circuits Environmental Rating ENV06T11 for more information.
Small Size, 0805	Saves space in dense circuit board layouts and minimizes the effects of parasitics.
Rugged Power Handling, 3.5 W	Handles up to 3.5 Watts in a small 0805 package.



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

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	DC-F1	DC - 225	—	0.8	1.6
	Freq. Cut-Off <sup>4</sup>	F <sub>c</sub>	360	—	3	—
	Return Loss	DC-F1	DC - 225	10	21	—
Stopband	Rejection	F2-F3	580 - 1000	20	28	—
		F3-F4	1000 - 2500	35	43	—
		F4-F5	2500 - 4500	38	51	—
		F5-F6	4500 - 6500	20	36	—
		F6-F7	6500 - 8500	—	17	—

1. Tested on Evaluation Board P/N TB-LFCG-225+ with port extension on option in network analyzer.

2. This filter is bi-directional, RF1 and RF2 ports may be interchanged.

3. This component should not be used as a DC-block. 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%.

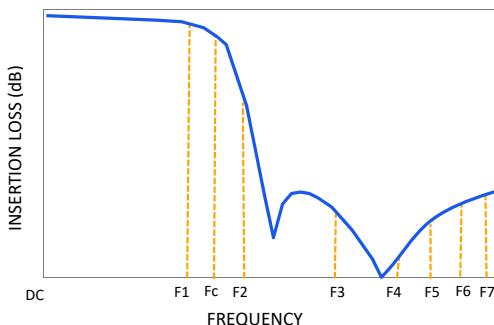
ABSOLUTE MAXIMUM RATINGS<sup>5</sup>

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power <sup>6</sup>	3.5 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 0.8 W at +125°C.

## TYPICAL FREQUENCY RESPONSE AT +25°C





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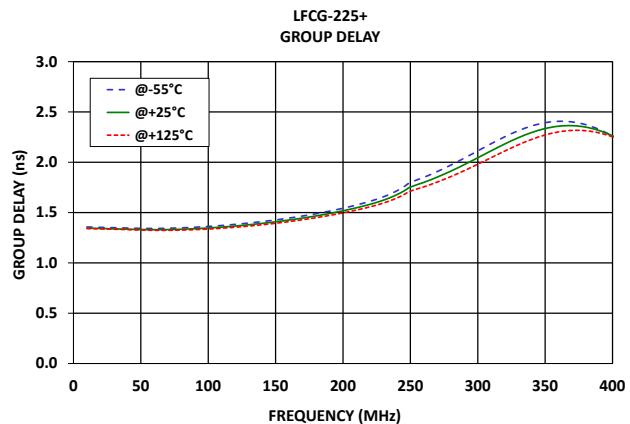
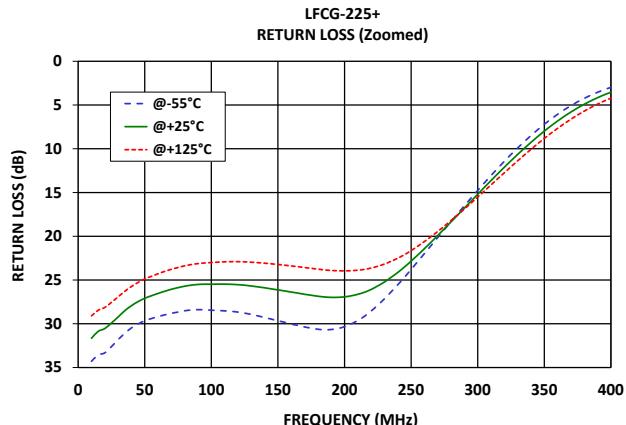
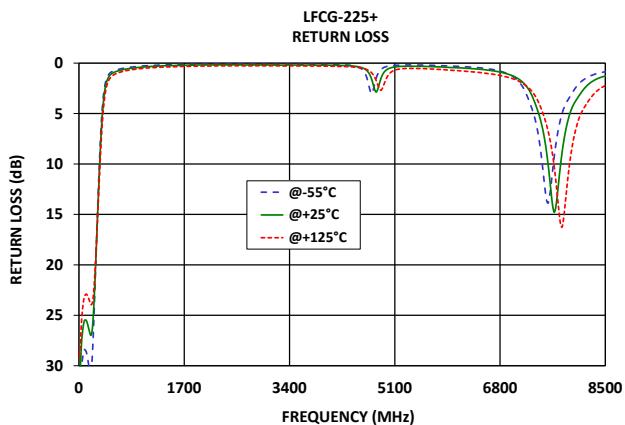
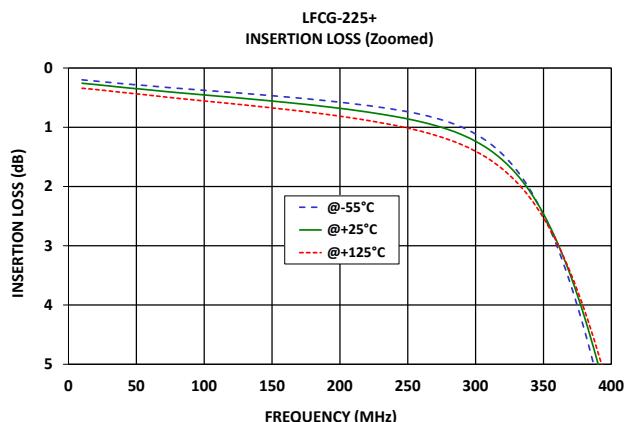
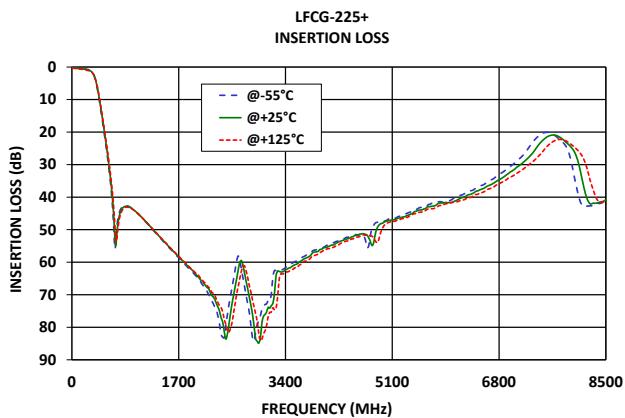
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## TYPICAL PERFORMANCE GRAPHS





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## FUNCTIONAL DIAGRAM

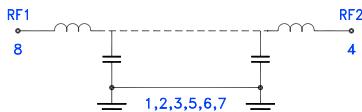
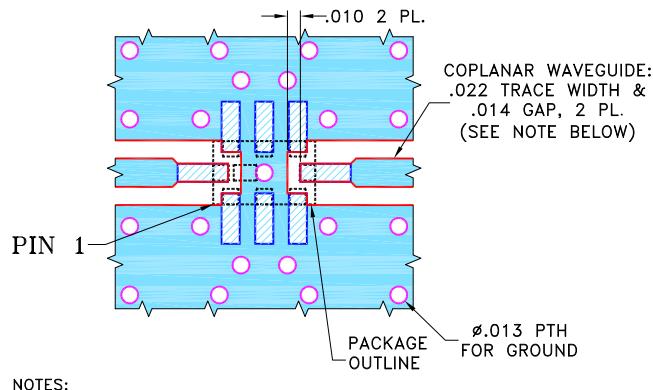


Figure 1. LFCG-225+ Functional Diagram

## PAD DESCRIPTION

Function	Pad Number	Description
RF1 <sup>2</sup>	8	Connects to RF Input Port
RF2 <sup>2</sup>	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:

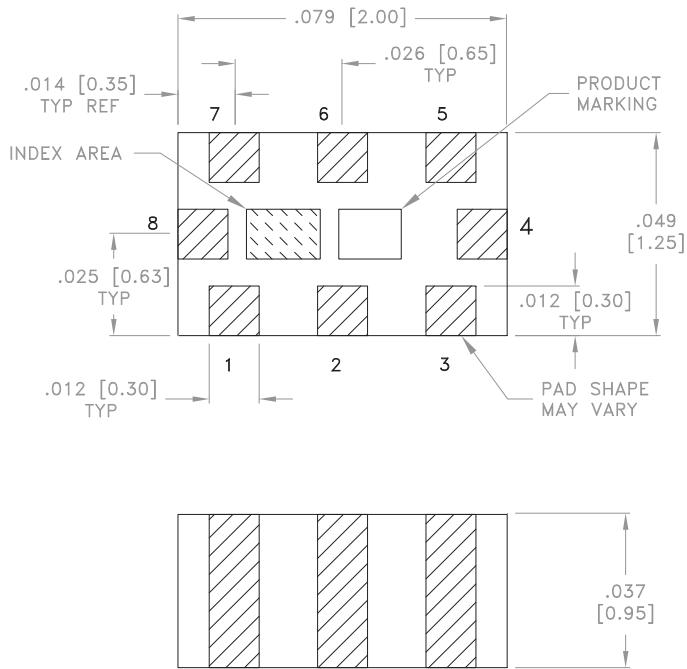
1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

[Light Blue Box] DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

[Hatched Box] DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

Figure 2. Suggested PCB Layout PL-429

## CASE STYLE DRAWING



METALLIZATION

Weight: .008 grams.

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

## PRODUCT MARKING\*: E2

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



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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD.

[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: Tin over Nickel Plating
RoHS Status	Compliant
Tape and Reel	TR-F114
Suggested Layout for PCB Design	PL-429
Evaluation Board	TB-LFCG-225+ 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)