LTCC SURFACE MOUNT

Low Pass Filter

LFCV-2102+

50Ω DC to 21 GHz

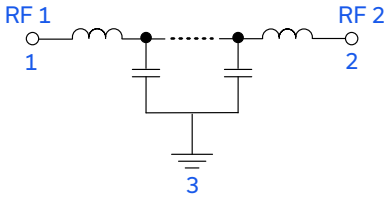
THE BIG DEAL

- Stop Band Rejection, 42dB Typ.
- Low Insertion Loss, 1.6dB Typ.
- Pass Band Return Loss, 16dB Typ.
- Rugged, Ceramic Construction
- Small Size, 1210 Surface Mount Footprint



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Radar, EW, and ECM Defense Systems
- Test & Measurement Equipment

PRODUCT OVERVIEW

LFCV-2102+ is a miniature low temperature co-fired ceramic (LTCC) low pass filter with a DC to 21GHz passband that supports a variety of applications. This model provides 1.6dB typical insertion loss over a wide band, due to its rugged monolithic construction. Housed in a small 1210 ceramic form factor, the 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

Feature	Advantages
Ultra-wide Stopband	Provides excellent stopband rejection to 48GHz and beyond, 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 ENV06T10 for more information.
Excellent Performance for Size	Offers best in class performance relative to larger-size alternative technologies. This mmWave multi-layer surface mount LTCC filter in a 1210 package allows for space to be saved in dense circuit board layouts, while also minimizing the effects of parasitics.

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ELECTRICAL SPECIFICATIONS[1,2,3] AT 25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	DC-F1	DC - 21	-	1.6	2.3	dB
	Freq. Cut-Off[4]	Fc	23	-	3	-	
	Return Loss	DC-F1	DC – 21	-	16	-	
Stop Band	Rejection	F2-F3	30.2 – 40.8	32	42	-	dB
		F3-F4	40.8 – 48	25	30	-	

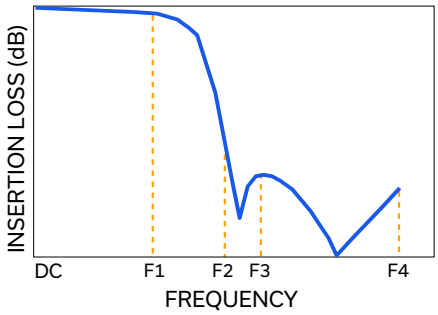
1. Measured on Mini-Circuits Test Board TB-LFCV-2102C+ with the connector and feedline effects de-embedded using the 2XThru IEEE P370 method.
2. Bi-directional RF1 and RF2 ports can be interchanged.
3. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
4. Typical variation ±2.5%

ABSOLUTE MAXIMUM RATINGS[5]

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
RF Power Input[6]	1W max

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 0.5W at +125°C.

TYPICAL FREQUENCY RESPONSE AT 25°C



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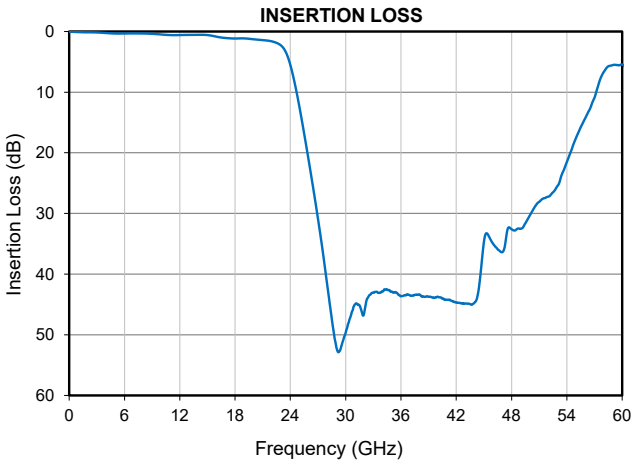
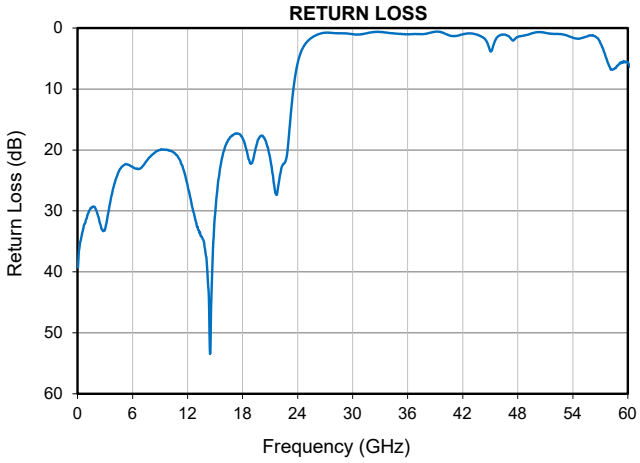
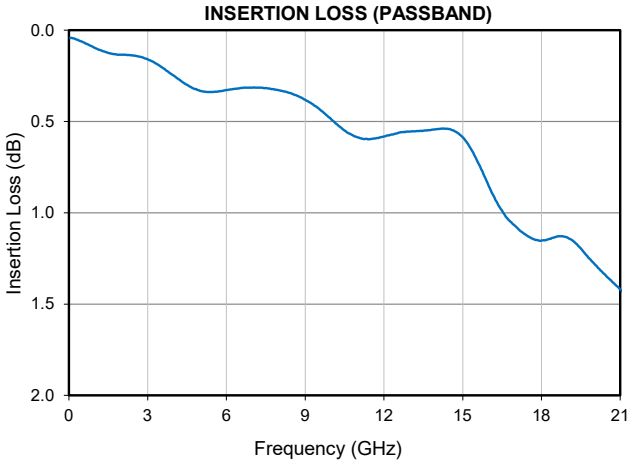
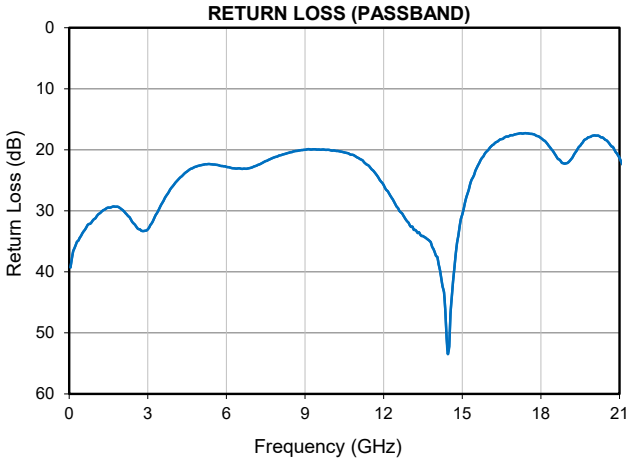
TYPICAL PERFORMANCE GRAPHS AT 25°C









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FUNCTIONAL DIAGRAM

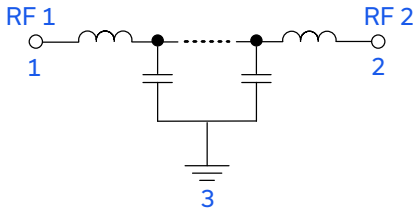
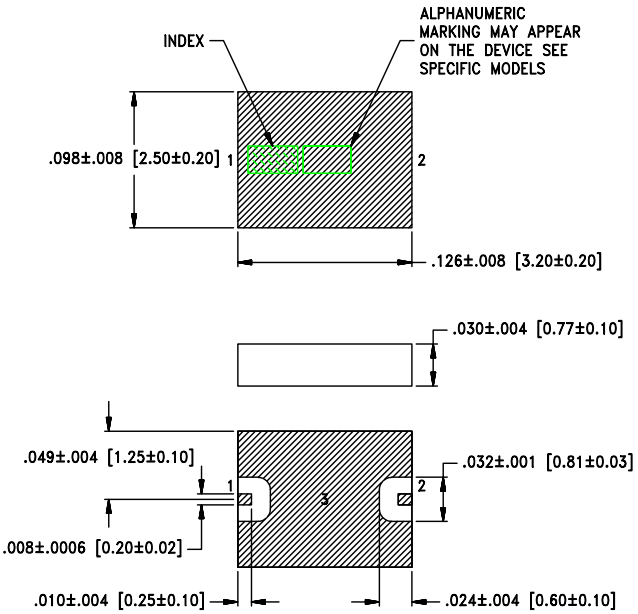


Figure 1. LFCV-2102+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1[2]	1	Connects to RF Input Port
RF2[2]	2	Connects to RF Output Port
GROUND	3	Connects to Ground on PCB, (See drawing PL-743)

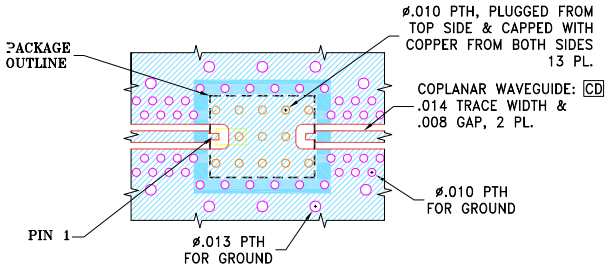
OUTLINE DRAWING



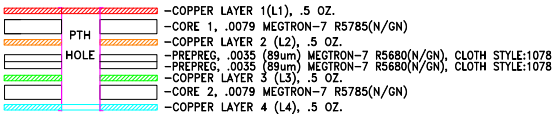
Weight: .024 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl.±.010; 3 Pl. ±.005

SUGGESTED PCB LAYOUT (PL-743)



STACK-UP DIAGRAM



1. TOTAL FINISHED THICKNESS 0.026 ± 10%.
2. PTH PRESENT FROM COPPER LAYER 1 TO COPPER LAYER 4.
3. INDICATED ON TOP VIEW PTH's ARE PLUGGED WITH EPOXY AND CAPPED WITH COPPER FROM TOP SIDE.
4. L2, L3 AND L4 ARE CONTINUOUS GROUND PLANES.

NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR MEGTRON-7 R-5785(N/GN), WITH DIELECTRIC THICKNESS .0079; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.

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-743

PRODUCT MARKING*: WL

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

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	JV1210C-13 Lead Finish: Gold Plate over Nickel Plate
RoHS Status	Compliant
Tape and Reel	TR-F74
Suggested Layout for PCB Design	PL-743
Evaluation Board	TB-LFCV-2102C+ Gerber File
Environmental Ratings	ENV06T10

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/terms/viewterm.html