

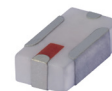


## FEATURES

- Excellent Power Handling, 8 W
- Small Size
- 7 Sections
- Temperature Stable
- Hermetically Sealed
- LTCC Construction
- Protected by U.S. Patent 6,943,646

## APPLICATIONS

- Electronic Warfare (EW)
- Harmonic Rejection
- Transmitters/Receivers
- Lab Use



Generic photo used for illustration purposes only

CASE STYLE: FV1206-4

### +RoHS Compliant

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

## PRODUCT OVERVIEW

Mini-Circuits' LFCN-9170+ is an LTCC low pass filter with a passband from DC to 9170 MHz, supporting a variety of applications. This model provides 1.0 dB typical passband insertion loss and 30 dB typical stopband rejection. It handles up to 8 W RF input power and provides a wide operating temperature range from -55 to +100°C. Housed in a tiny 1206 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  |
|---|---|
| LTCC Construction                               | Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes. |
| Tiny Size (0.12x0.06x0.04")                     | Saves space in dense circuit board layouts and minimizes the effects of parasitics.   |
| High Power Handling, 8 W                        | Supports a wide range of system power requirements.   |
| Wrap-Around Terminations                        | Provides excellent solderability and easy visual inspection.  |
| Wide Operating Temperature Range, -55 to +100°C | Enables reliable performance in extreme environments.   |



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## Low Pass Filter

LFCN-9170+

50Ω

DC<sup>1</sup> to 9170 MHzELECTRICAL SPECIFICATIONS<sup>1,2</sup> AT +25°C

| Parameter | F#             | Frequency (MHz) | Min.        | Typ. | Max. | Units |
|-----------|----------------|-----------------|-------------|------|------|-------|
| Passband  | Insertion Loss | DC-F1           | DC-9170     | 1.0  | 3.0  | dB    |
|           | Freq. Cut-Off  | F2              | 9800        | 3.0  |      | dB    |
|           | VSWR           | DC-F1           | DC-9170     | 1.6  |      | :1    |
| Stopband  | Rejection Loss | F3-F4           | 11360-19000 | 20   | 30   | dB    |
|           |                | F4-F5           | 11630-18770 | 28   | 38   | dB    |
|           | VSWR           | F3-F5           | 11360-19000 | 30   |      | :1    |

1. In Application where DC voltage is present at either input or output ports, de-coupling capacitors are required.

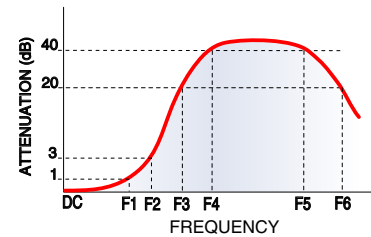
2. Measured on Mini-Circuits Characterization Test Board TB-810-9170+.

## ABSOLUTE MAXIMUM RATINGS

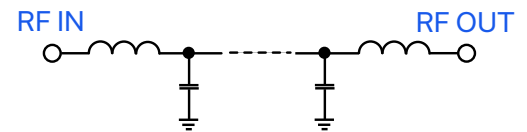
| Parameter                   | Ratings           |
|-----------------------------|-------------------|
| Operating Temperature       | -55°C to +100°C   |
| Storage Temperature         | -55°C to +100°C   |
| RF Power Input <sup>3</sup> | 8 W max. at +25°C |

3. Passband rating, derate linearly to 3 W at +100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

## TYPICAL FREQUENCY RESPONSE



## FUNCTIONAL SCHEMATIC





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## Low Pass Filter

LFCN-9170+

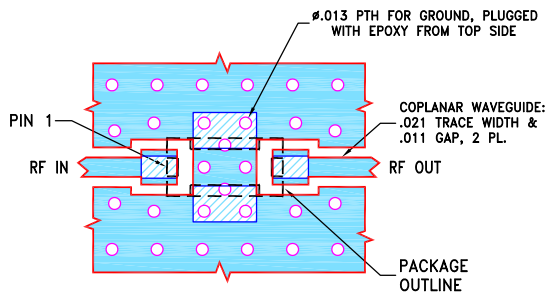
50Ω DC<sup>1</sup> to 9170 MHz

## PIN CONNECTIONS

|        |     |
|--------|-----|
| RF IN  | 1   |
| RF OUT | 3   |
| GROUND | 2,4 |

PRODUCT MARKING: BY

DEMO BOARD MCL P/N: TB-810-9170+  
SUGGESTED PCB LAYOUT (PL-546)

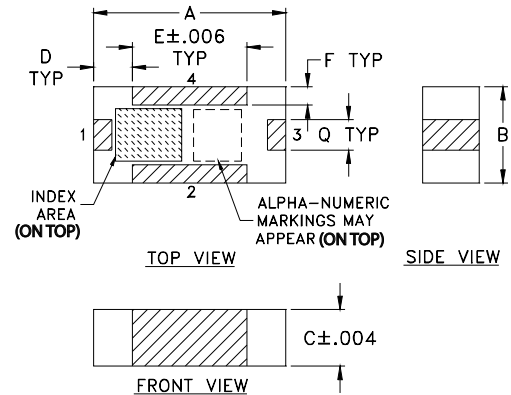


## NOTES:

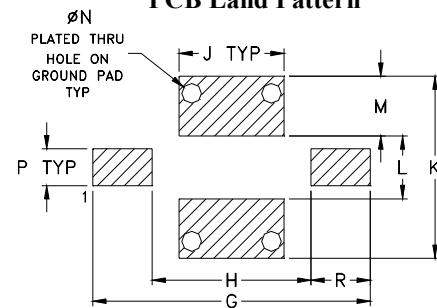
1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010±.001. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

## OUTLINE DRAWING



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.002

## OUTLINE DIMENSIONS (Inches/mm)

| A    | B    | C    | D    | E    | F    | G    | H     | J    |
|------|------|------|------|------|------|------|-------|------|
| .126 | .063 | .037 | .026 | .075 | .012 | .182 | .104  | .069 |
| 3.20 | 1.60 | 0.94 | 0.66 | 1.91 | 0.30 | 4.62 | 2.64  | 1.75 |
| K    | L    | M    | N    | P    | Q    | R    | wt    |      |
| .119 | .041 | .039 | .013 | .024 | .020 | .039 | grams |      |
| 3.02 | 1.04 | 0.99 | 0.33 | 0.61 | 0.51 | 0.99 | .020  |      |

TAPE &amp; REEL INFORMATION: F75



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## Low Pass Filter

LFCN-9170+

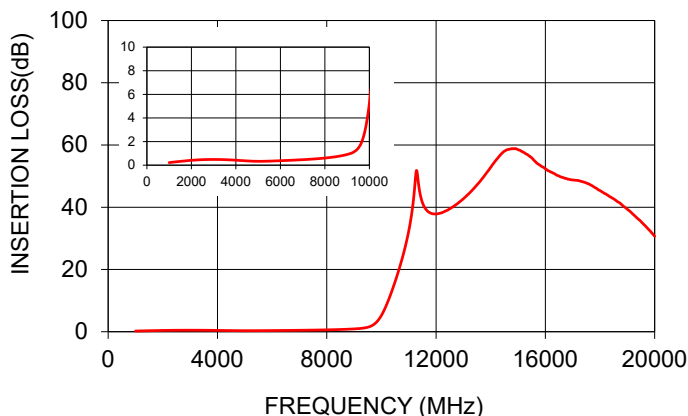
50Ω

DC<sup>1</sup> to 9170 MHz

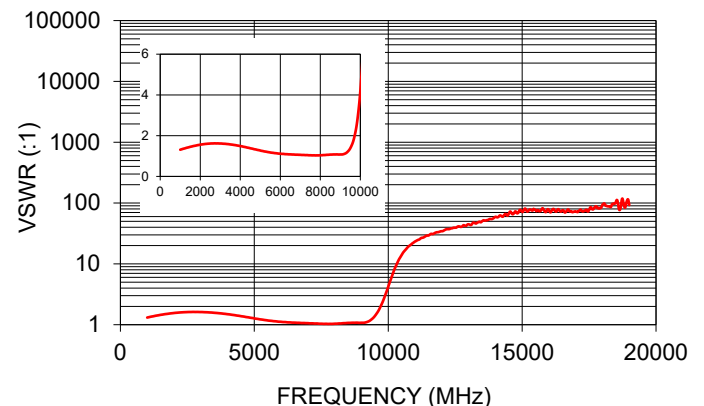
## TYPICAL PERFORMANCE DATA AT +25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 1000            | 0.22                | 1.31      |
| 2000            | 0.41                | 1.56      |
| 4000            | 0.42                | 1.49      |
| 6000            | 0.38                | 1.12      |
| 9160            | 1.00                | 1.09      |
| 9800            | 2.90                | 2.42      |
| 10000           | 5.24                | 4.20      |
| 11360           | 47.39               | 27.89     |
| 11620           | 39.43               | 31.15     |
| 12000           | 37.84               | 34.46     |
| 14000           | 52.82               | 59.27     |
| 16000           | 52.35               | 76.32     |
| 18000           | 45.35               | 93.87     |
| 18760           | 41.10               | 113.28    |
| 19000           | 39.35               | 92.67     |

INSERTION LOSS



VSWR



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

