



LTCC SURFACE MOUNT

# Low Pass Filter

## LFHK-3800+

50Ω

DC to 3800 MHz

### THE BIG DEAL

- Low Insertion Loss, 1 dB Typ.
- Passband Return Loss, 13 dB Typ.
- Stopband Rejection, 74 dB Typ.
- 1008 Surface Mount Footprint
- Power Handling: 9.5 W

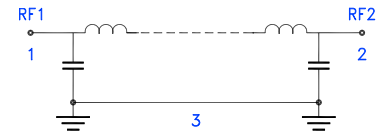


Generic photo used for illustration purposes only

### APPLICATIONS

- Test and Measurement Equipment
- VHF/UHF Transmitters / Receivers
- Lab use
- Harmonic Rejection

### FUNCTIONAL DIAGRAM



### PRODUCT OVERVIEW

Mini-Circuits' LFHK-3800+ is a miniature low temperature co-fired ceramic (LTCC) low pass filter with a DC to 3800 MHz passband supporting a variety of applications. This model provides 1 dB typical insertion loss over a wide band due to its rugged monolithic construction. Housed in a small 1008 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

| Features                         | Advantages  |
|----------------------------------|---|
| Ultra-Wide Stopband              | The LTCC lowpass filter provides a very good stopband rejection up to 46 GHz, 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, 1008                 | Saves space in dense circuit board layouts and minimizes the effects of parasitics.   |
| Rugged Power Handling, 9.5 Watts | Handles up to 9.5 Watts in a small 1008 package.  |





LTCC SURFACE MOUNT

# Low Pass Filter

## LFHK-3800+

50Ω

DC to 3800 MHz

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

| Parameter | F#                         | Frequency (MHz) | Min. | Typ. | Max. | Units |
|-----------|----------------------------|-----------------|------|------|------|-------|
| Pass Band | Insertion Loss             | DC - F1         | —    | 1    | 1.6  | dB    |
|           | Freq. Cut-Off <sup>4</sup> | Fc              | —    | 3    | —    | dB    |
|           | Return Loss                | DC - F1         | —    | 13   | —    | dB    |
| Stop Band | Rejection                  | F2-F3           | 20   | 32   | —    | dB    |
|           |                            | F3-F4           | 62   | 74   | —    |       |
|           |                            | F4-F5           | 50   | 70   | —    |       |
|           |                            | F5-F6           | 25   | 37   | —    |       |
|           |                            | F6-F7           | 20   | 46   | —    |       |

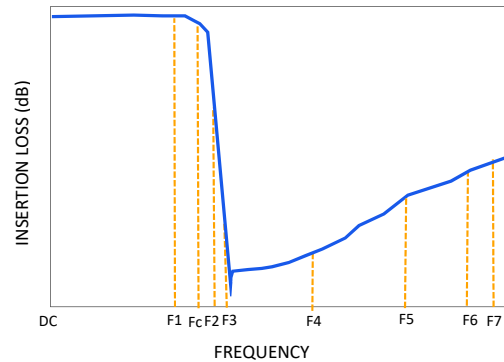
1. Tested on Evaluation Board P/N TB-LFHK-3800+ with connectors and feedline de-embedded with thru-line compensation.
2. This filter is bi-directional, RF1 and RF2 ports may be interchanged.
3. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
4. Typical variation ±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> | 9.5 W @25°C     |

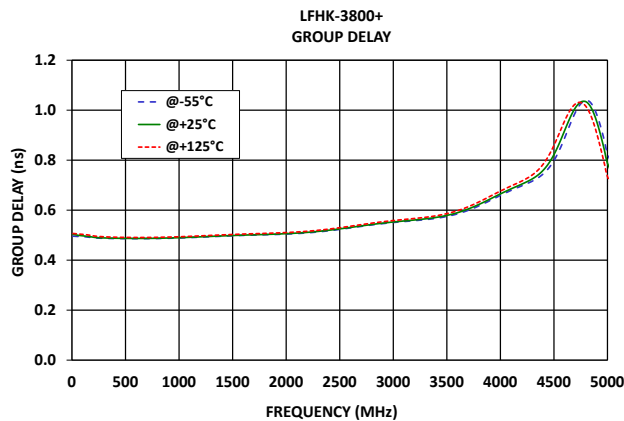
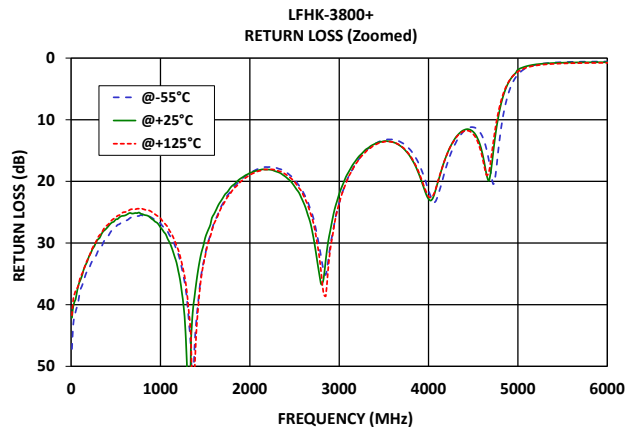
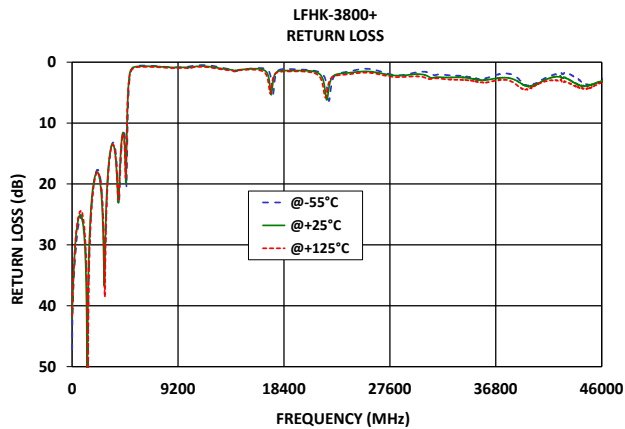
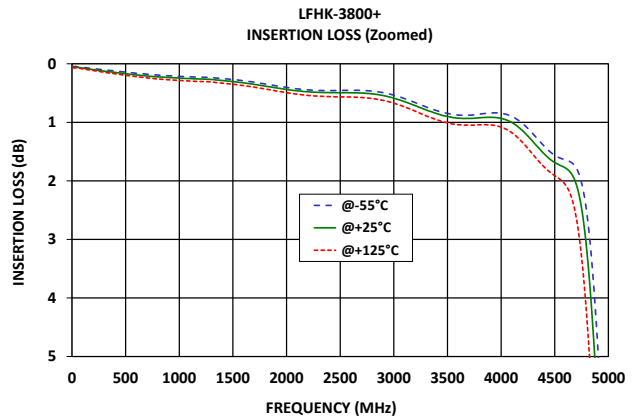
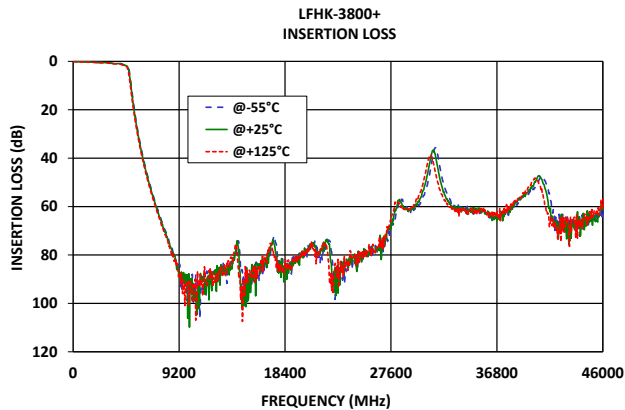
5. Permanent damage may occur if any of these limits are exceeded.
6. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1.6 W at +125°C.

### TYPICAL FREQUENCY RESPONSE AT +25°C





### TYPICAL PERFORMANCE GRAPHS





### FUNCTIONAL DIAGRAM

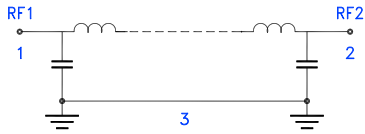
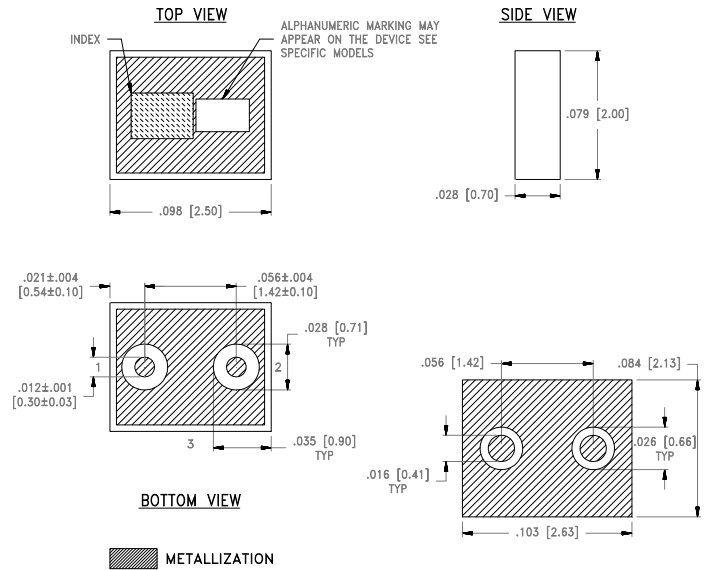


Figure 1. LFHK-3800+ Functional Diagram

### PAD DESCRIPTION

| Function         | Pad Number | Description  |
|------------------|------------|--|
| RF1 <sup>2</sup> | 1          | Connects to RF Input Port  |
| RF2 <sup>2</sup> | 2          | Connects to RF Output Port   |
| GROUND           | 3          | Connects to Ground on PCB, (See drawing PL-798)                              |
| NC               | -          | No connection, not used internally. See drawing PL-798 for connection to PCB |

### CASE STYLE DRAWING



Weight: .019 grams.

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

### PRODUCT MARKING\*: E7

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



### SUGGESTED PCB LAYOUT (PL-798)

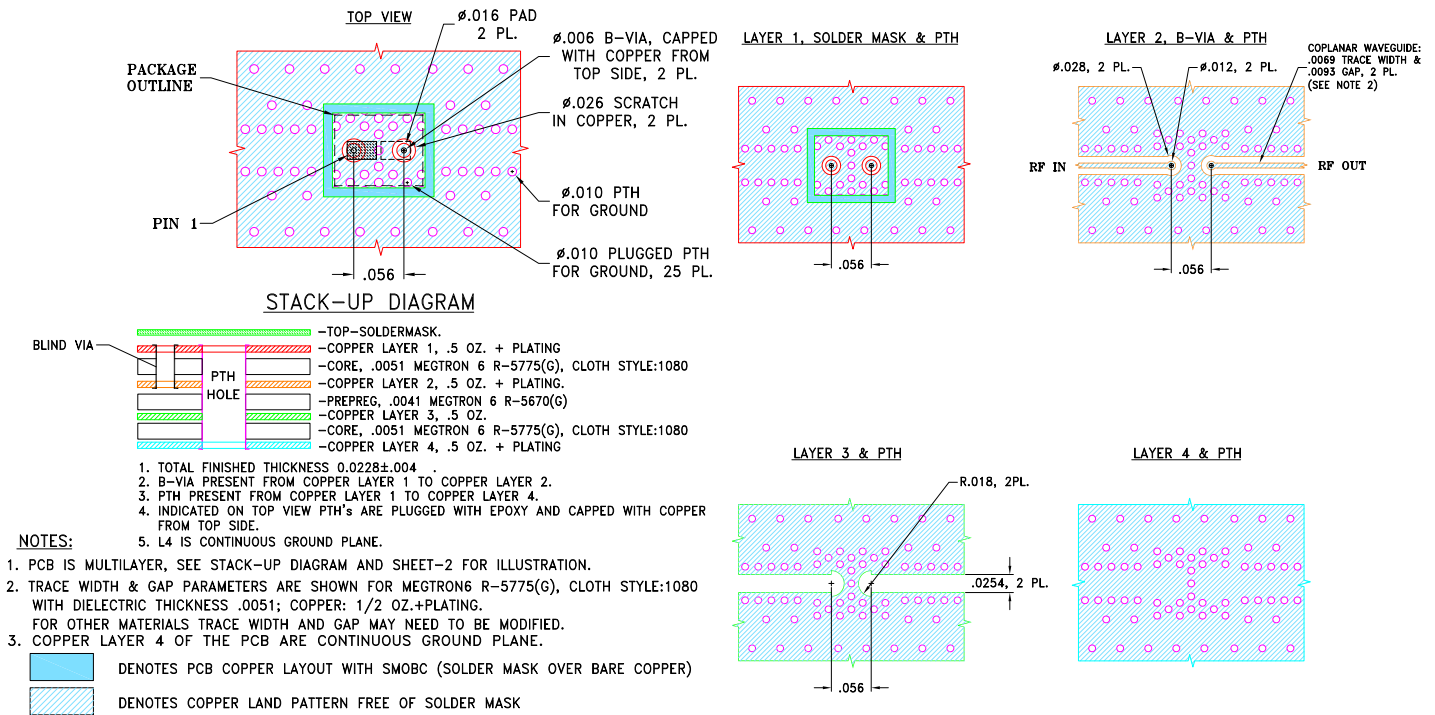


Figure 2. Suggested PCB Layout PL-798

**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)



LTCC SURFACE MOUNT

# Low Pass Filter

## LFHK-3800+

Mini-Circuits

50Ω

DC to 3800 MHz

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD.

[CLICK HERE](#)

|                                 |   |
|---------------------------------|---|
| Performance Data and Graphs     | Data<br>Graphs<br>S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads |
| Case Style                      | NL1008C-9    Lead Finish: Gold over Electroless Nickel                                    |
| RoHS Status                     | Compliant   |
| Tape and Reel                   | TR-F75  |
| Suggested Layout for PCB Design | PL-798  |
| Evaluation Board                | TB-LFHK-3800+   |
|                                 | Gerber File   |
| Environmental Rating            | 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-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)

