LTCC SURFACE MOUNT

# Low Pass Filter

# LFHK-700+

50Ω DC to 700 MHz

## THE BIG DEAL

- Low Insertion Loss, 1.4 dB Typ.
- Passband Return Loss, 15 dB Typ.
- Stopband Rejection, 80 dB Typ.
- 1008 Surface Mount Footprint
- Power Handling: 9 W
- Shielded Construction: Prevents De-Tuning & EMI
- Protected by US Patents 11,638,370 and 11,744,057

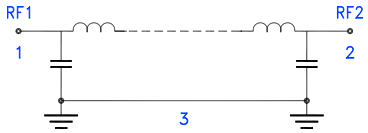


*Generic photo used for illustration purposes only*

## APPLICATIONS

- Test and Measurement Equipment
- Broadband Access Infrastructure
- Harmonic Rejection
- SDR and Wideband Radio Receivers

## FUNCTIONAL DIAGRAM




## PRODUCT OVERVIEW

The LFHK-700+ is a passive RF component designed for signal conditioning in low-frequency circuits. It utilizes ceramic-based construction to achieve stable electrical behavior across a broad operating range. The device supports bidirectional signal flow and is optimized for integration into compact layouts, making it suitable for dense PCB designs. It's surface-mount format aligns with standard automated assembly processes, and the internal structure is engineered to minimize parasitic effects that could impact performance at microwave frequencies. The component is built to maintain consistent characteristics under varying environmental conditions, contributing to overall system reliability.

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

| Parameter | | F# | Frequency (MHz) | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Passband | Insertion Loss | DC-F1 | DC - 700 | — | 1.4 | 2 | dB |
| | Freq. Cut-Off[4] | Fc | 880 | — | 3 | — | |
| | Return Loss | DC-F1 | DC - 700 | 8 | 15 | — | |
| Stopband | Rejection | F2-F3 | 1150 - 1900 | 20 | 33 | — | dB |
| | | F3-F4 | 1900 - 4500 | 67 | 80 | — | |
| | | F4-F5 | 4500 - 15000 | — | 59 | — | |
| | | F5-F6 | 15000 - 18500 | — | 46 | — | |
| | | F6-F7 | 18500 - 50000 | — | 22 | — | |

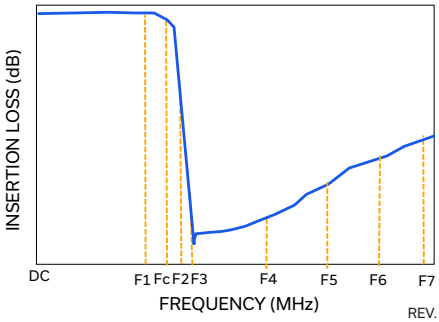
1. Tested in Evaluation Board P/N TB-LFHK-700+.
2. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
3. This component should not be used as a DC-block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.
4. Typical variation ± 5%.

## ABSOLUTE MAXIMUM RATINGS[5]

| | |
|---|---|
| **Operating Temperature** | -55°C to +125°C |
| **Storage Temperature** | -55°C to +125°C |
| **Input Power[6]** | 9 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 1.1 W at +125°C.

## TYPICAL FREQUENCY RESPONSE




REV. OR
ECO-030930
LFHK-700+
EDU5237
MCINU
260924

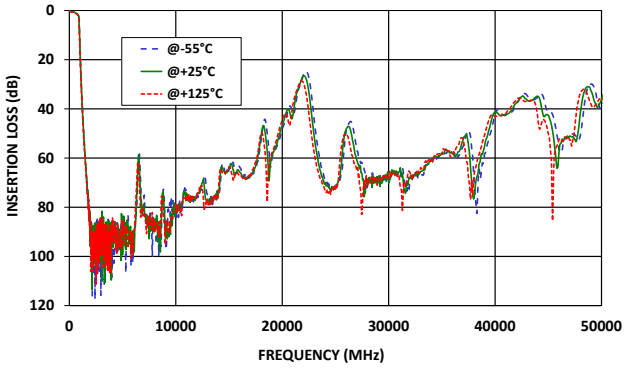
# Low Pass Filter

# LFHK-700+

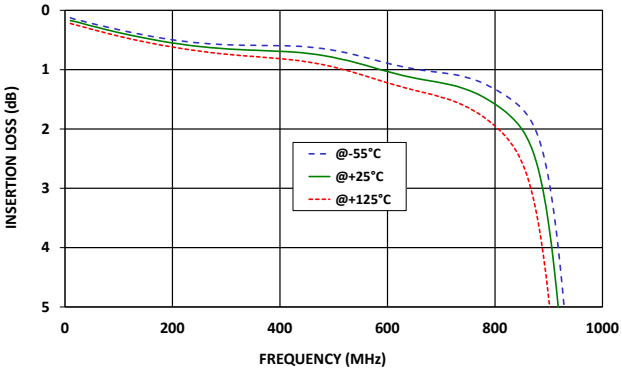
50Ω DC to 700 MHz

## TYPICAL PERFORMANCE GRAPHS

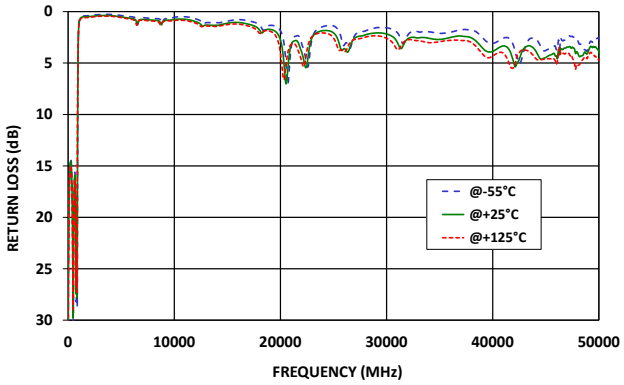
LFHK-700+
INSERTION LOSS



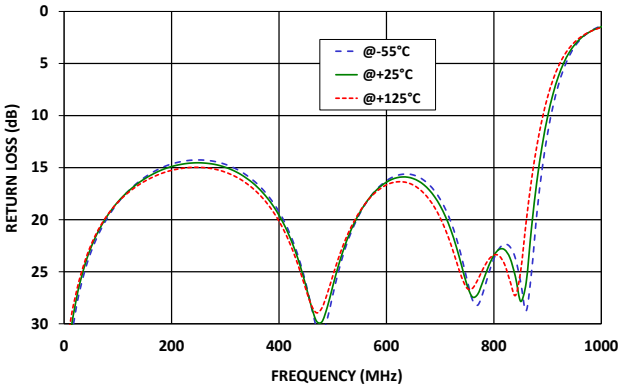

LFHK-700+
INSERTION LOSS (Zoomed)



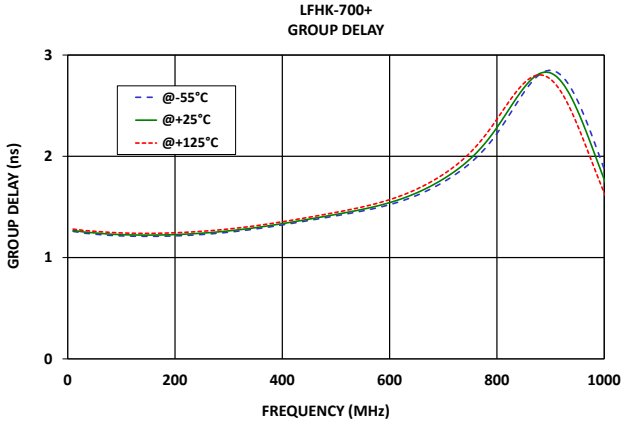

LFHK-700+
RETURN LOSS




LFHK-700+
RETURN LOSS (Zoomed)




LFHK-700+
GROUP DELAY



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## FUNCTIONAL DIAGRAM

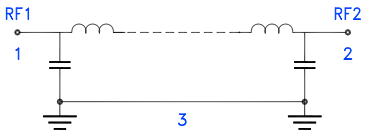
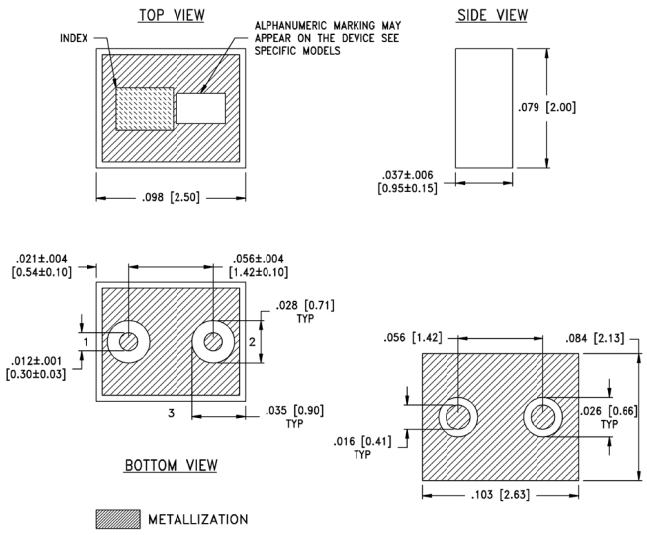



Figure 1. LFHK-700+ Functional Diagram

## 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-798) |

## CASE STYLE DRAWING




Weight: .019grms.
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3Pl. ± .005

## PRODUCT MARKING*: X7

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

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## SUGGESTED PCB LAYOUT

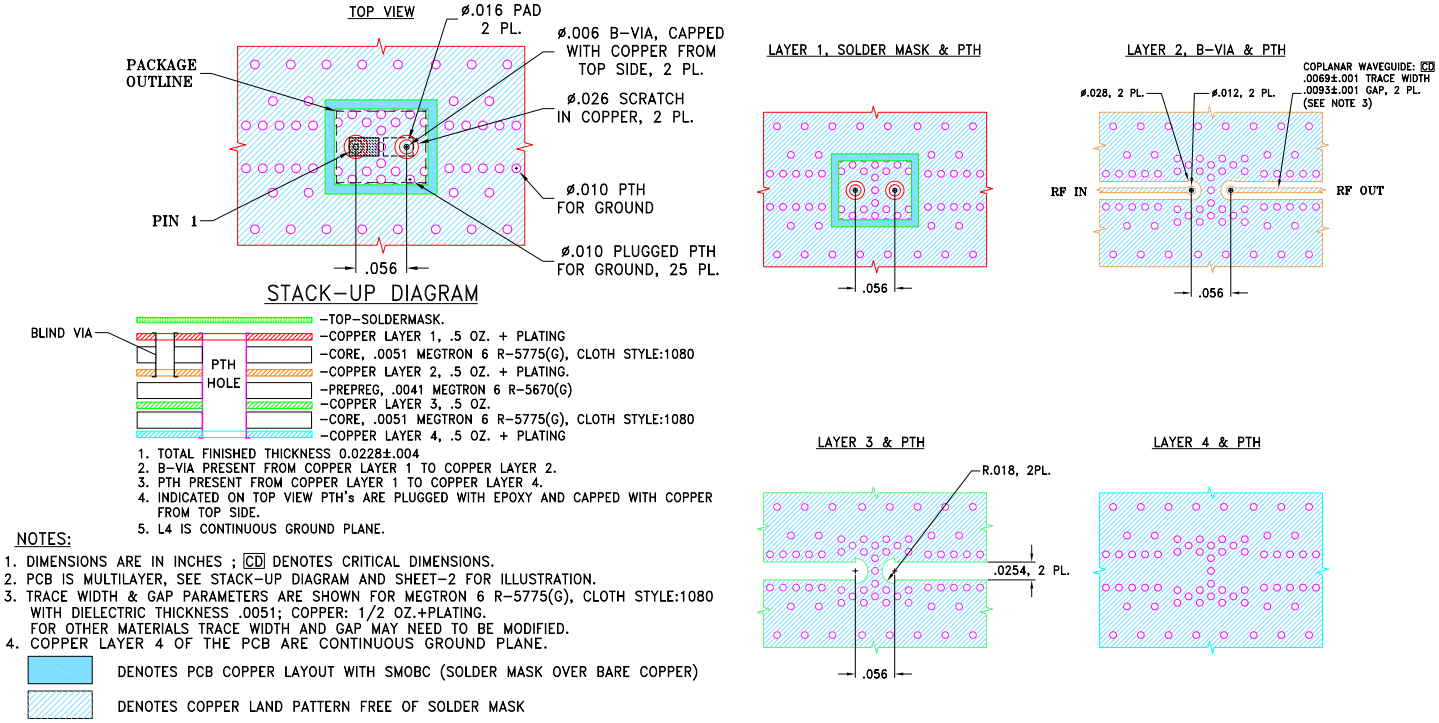



Figure 2. Suggested PCB Layout

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## ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

| | |
|---|---|
| **Performance Data & Graphs** | Data<br>Graphs<br>S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads |
| **Case Style** | NL1008C-12 Lead Finish: Gold over Electroless Nickel |
| **RoHS/REACH Status** | Compliant |
| **Tape and Reel** | F75 |
| **Suggested Layout for PCB Design** | PL-798 |
| **Evaluation Board** | TB-LFHK-700+<br>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.

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