

Ceramic High Pass Filter

50Ω 9700 to 15000 MHz

HFCN-103+

The Big Deal:

- Small size 3.2mm x 1.6 mm
- High Power handling (7W)
- High rejection (30 dB typ)
- Ceramic construction



CASE STYLE: FV1206-4

Product Overview:

New High Pass Filter HFCN-103+ is an LTCC based 7 section design, that extends the upper frequency cutoff range of the existing HFCN series to 10 GHz. Systems that previously relied on large distributed filter elements to support these lower frequencies can save space and system complexity by integrating the HFCN-103+ into new designs. These filters are offered in a EIA 1206 package size and have a typical stop band rejection of 30 dB.

Key Features

| Feature | Advantages |
|-----------------------------|--|
| Small Size (3.2mm x 1.6 mm) | Available in the size of typical resistors or capacitors (EIA 1706), the ultra small HFCN series integrates up to 7 high pass sections in a simple SMT chip form factor. |
| High Power Handling | The HFCN series can withstand up to 7W CW signal without damage making this filter ideal for use in medium power to transmit paths. |
| Temperature Stability | Over a 155°C operating temperature range (-55°C to +100°C), the HFCN series ceramic filters typically exhibit low pass band insertion loss variation. |
| High Rejection | Achieving 30dB rejection from DC-5700 MHz; the HFCN-103+ provides a versatile high pass configuration for many up converter applications. |

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/MCLStore/terms.jsp



Ceramic High Pass Filter

HFCN-103+

50Ω 9700 to 15000 MHz



CASE STYLE: FV1206-4

Maximum Ratings

| | |
|-----------------------|-----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input* | 7W max. at 25°C |

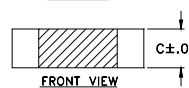
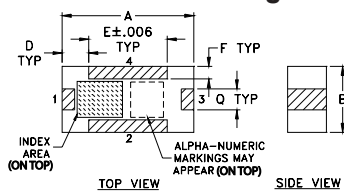
* Passband rating, derate linearly to 3W at 100°C ambient. Permanent damage may occur if any of these limits are exceeded.

Pin Connections

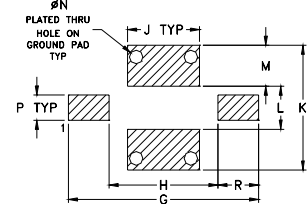
| | |
|--------|-----|
| RF IN | 1 |
| RF OUT | 3 |
| GROUND | 2,4 |

Product Marking: AR

Outline Drawing



PCB Land Pattern

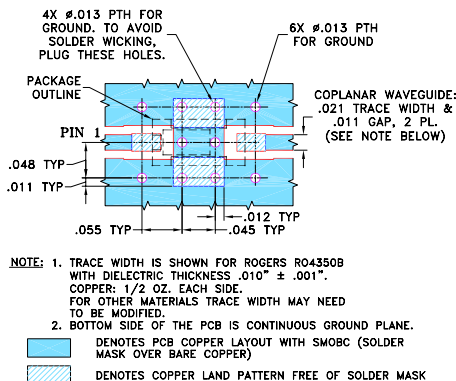


Suggested Layout, Tolerance to be within ±0.02

Outline Dimensions (inch)

| 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 | |

Demo Board MCL P/N: TB-618 Suggested PCB Layout (PL-363)



Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

Features

- low cost
- small size, ".12" x "0.06"
- 7 sections
- temperature stable
- excellent power handling, 7W
- hermetically sealed

Applications

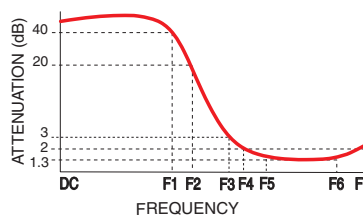
- sub-harmonic rejection
- transmitters/receivers
- lab use

Electrical Specifications^(1,2) at 25°C

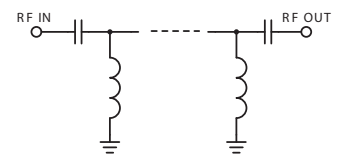
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|-----------|----------------|-----------------|---------------|------|------|------|
| Stop Band | Rejection Loss | DC-F1 | DC - 5700 | 30 | — | dB |
| | | F1-F2 | DC - 6500 | 20 | — | dB |
| | Freq. Cut-Off | F3 | 8400 | — | 3.0 | dB |
| | VSWR | DC-F2 | DC - 6500 | — | 20 | :1 |
| Pass Band | Insertion Loss | F4-F7 | 9700 - 15000 | — | 2.0 | dB |
| | VSWR | F5-F6 | 10000 - 11000 | — | 1.8 | dB |
| | | F4-F7 | 9700 - 15000 | — | 2.0 | :1 |

- (1) In Application where DC voltage is present at either input or output ports, dc de-coupling capacitors are required.
(2) Measured on Mini-Circuits Characterization Test Board TB-618.

Typical Frequency Response



Electrical Schematic



Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 10.00 | 71.76 | 322.99 |
| 100.00 | 52.00 | 394.14 |
| 1000.00 | 34.16 | 174.73 |
| 2160.00 | 33.48 | 106.97 |
| 4080.00 | 39.88 | 89.02 |
| 5030.00 | 44.64 | 64.14 |
| 10050.00 | 1.22 | 1.60 |
| 12170.00 | 1.14 | 1.70 |
| 14070.00 | 1.01 | 1.15 |
| 15200.00 | 1.18 | 1.65 |

