



CERAMIC

High Pass Filter

HFCW-8400+

50Ω 9200 to 18000 MHz

THE BIG DEAL

- Low loss, 0.9 dB typ.
- Return loss, 11 dB typ.
- Stop Band Rejection, 36 dB typ.
- Small size 0603 (0.063" x 0.032" x 0.024")



Generic photo used for illustration purposes only

CASE STYLE: JC0603C

+RoHS Compliant

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

APPLICATIONS

- Test and measurements
- Military applications
- Telecommunications and broadband wireless systems

PRODUCT OVERVIEW

HFCW-8400+ is a high pass filter with passband from 9200 MHz to 18000 MHz supporting a variety of applications. This model provides good insertion loss over a wide band due to strategically constructed layout. Housed in a tiny 0603 ceramic form factor with wraparound terminations, the filter is ideal for dense PCB layouts.

KEY FEATURES

| Feature | Advantages |
|---|---|
| Wide passband | This filter has a very wide passband from 9.2 GHz to 18 GHz. |
| LTCC Construction | Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes. |
| Small size, 0603 (0.063" X 0.032" X 0.024") | Saves space in dense circuit board layouts and minimizes the effects of parasitics. |
| Wrap-around terminations | Provides excellent solderability and easy visual inspection. |

REV. OR
ECO-015161
HFCW-8400+
EDU4353
URJ
220924





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ELECTRICAL SPECIFICATIONS^{1,2} AT 25°C

| Parameter | | F# | Frequency (MHz) | Min. | Typ. | Max. | Units |
|-----------|----------------|-------|-----------------|------|------|------|-------|
| Stopband | Rejection Loss | DC-F1 | DC - 5200 | 29 | 36 | — | dB |
| | | F1-F2 | 5200 - 6500 | 23 | 37 | — | dB |
| | Freq. Cut-Off | F3* | 8400 | — | 3 | — | dB |
| Passband | Insertion Loss | F4-F5 | 9200 - 11500 | — | 1.8 | — | dB |
| | | F5-F6 | 11500 - 17000 | — | 0.9 | 1.6 | dB |
| | | F6-F7 | 17000 - 18000 | — | 1.8 | — | dB |
| | Return Loss | F4-F5 | 9200 - 11500 | — | 11 | — | dB |
| | | F5-F6 | 11500 - 17000 | — | 11 | — | dB |
| | | F6-F7 | 17000 - 18000 | — | 8 | — | dB |

1 This component should not be employed as a DC-block. DC de-coupling capacitors are required in Applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for further support.

2 Measured on Mini-Circuits Characterization Test Board TB-HFCW-8400+

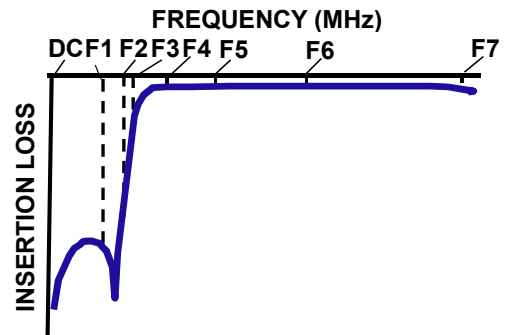
* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

MAXIMUM RATINGS

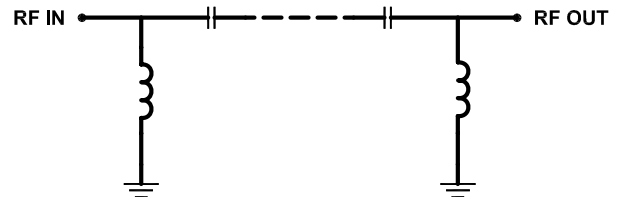
| Parameter | Ratings |
|-----------------------|----------------|
| Operating temperature | -55°C to 125°C |
| Storage temperature | -55°C to 125°C |
| RF Power Input* | 2.5W @25°C |

*Passband rating, derate linearly to 0.6W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL SCHEMATIC





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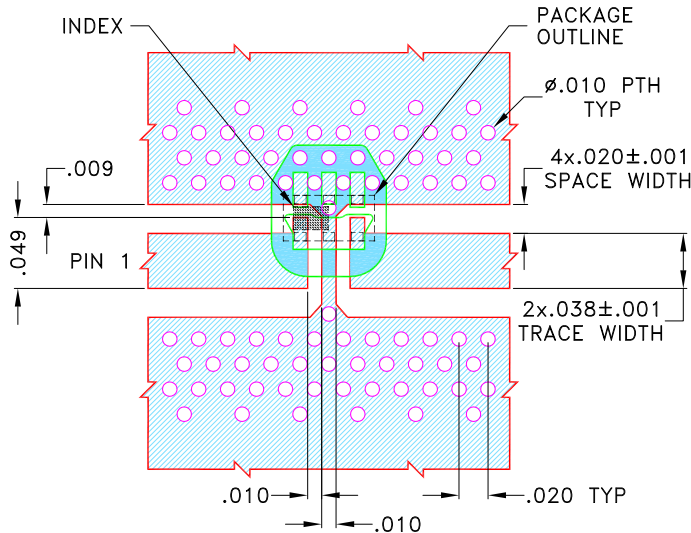
HFCW-8400+

PAD CONNECTIONS



| | |
|--------|---------|
| INPUT | 1 |
| OUTPUT | 3 |
| GROUND | 2,4,5,6 |

PRODUCT MARKING: VB

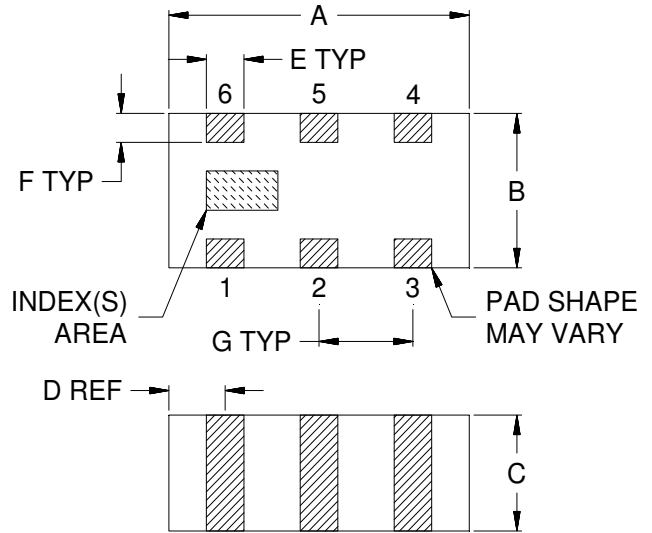
DEMO BOARD MCL P/N: TB-HFCW-8400+
SUGGESTED PCB LAYOUT (PL-704)



NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS (R03003) WITH DIELECTRIC THICKNESS $.020 \pm .001$ COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
-  DENOTES PCB COPPER PATTERN WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES PCB COPPER PATTERN FREE OF SOLDERMASK

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches/mm)

| A | B | C | D | E | F | G | Wt. |
|------|------|------|------|------|------|------|-------|
| .063 | .032 | .024 | .012 | .008 | .006 | .020 | grams |
| 1.60 | 0.80 | 0.60 | 0.30 | 0.20 | 0.15 | 0.50 | .005 |

Note: Please refer to case style drawing for details



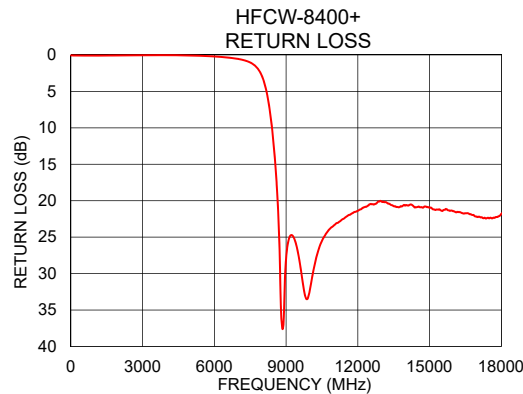
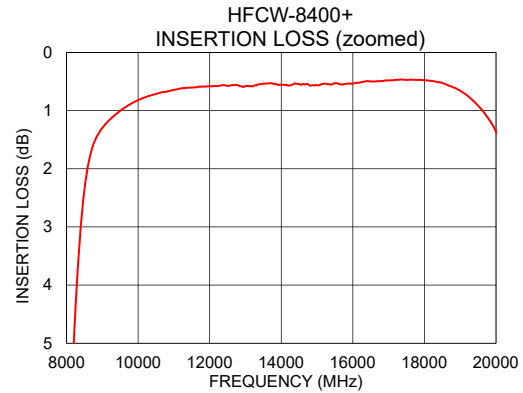
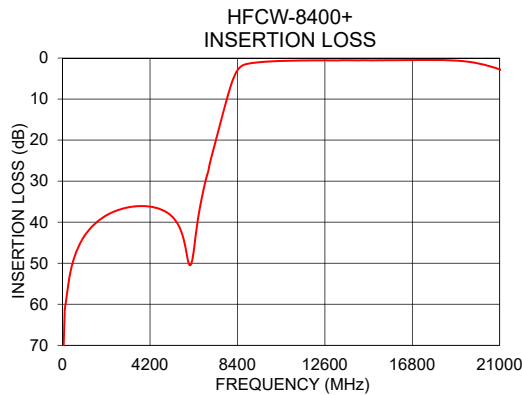
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TYPICAL PERFORMANCE DATA AT 25°C

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) |
|-----------------|---------------------|------------------|
| 10 | 76.70 | 0.06 |
| 100 | 61.42 | 0.07 |
| 3000 | 36.55 | 0.04 |
| 5200 | 38.35 | 0.09 |
| 6500 | 39.32 | 0.33 |
| 6800 | 31.38 | 0.45 |
| 7300 | 21.22 | 0.78 |
| 7900 | 9.82 | 2.29 |
| 8400 | 2.97 | 9.72 |
| 9200 | 1.16 | 24.73 |
| 10000 | 0.82 | 32.13 |
| 11500 | 0.60 | 22.24 |
| 15000 | 0.56 | 20.93 |
| 17000 | 0.48 | 22.24 |
| 18000 | 0.48 | 21.80 |



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



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[B39242B4360P810](#) [B39781B8005P810](#)