

# LTCC Bandpass Filter

## BFCN-8650+

50Ω      8550 to 8750 MHz



CASE STYLE: FV1206-4

### The Big Deal

- Small size 3.2mm x 1.6mm
- Pass band (8550-8750 MHz)
- Low Insertion Loss (2.0 dB typical)
- Sharp rejection peaks close to stop band

### Product Overview

The BFCN-8650+ LTCC Band Pass Filter is constructed with 5 layers in order to achieve a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. Covering 8650 MHz  $\pm$ 100 MHz, these units offer low insertion loss and good rejection at the band reject edges.

### Key Features

| Feature                            | Advantages                                                                                                                  |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Small Size (3.20mm x1.6 mm)        | Allows for high layout density of circuit boards, while minimizing affects of parasitics.                                   |
| Rejection peaks close to pass band | Provides good rejection of signals close to the pass band, for improved system performance.                                 |
| Wrap around termination            | Provides excellent solderability and easy visual inspection capability.                                                     |
| LTCC construction                  | Provides a rugged package that is well suited for tough environments including high humidity and high temperature extremes. |

#### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Bandpass Filter

**50Ω 8550 to 8750 MHz**

## Maximum Ratings

|                       |                 |
|-----------------------|-----------------|
| Operating Temperature | -55°C to 100°C  |
| Storage Temperature   | -55°C to 100°C  |
| RF Power Input*       | 2W max. at 25°C |

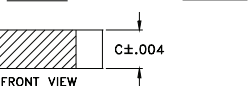
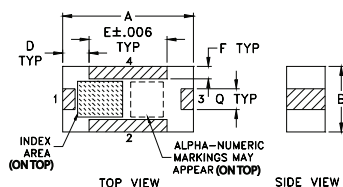
\*Passband rating, derate linearly to 0.5W at 100°C ambient  
Permanent damage may occur if any of these limits are exceeded.

## Pin Connections

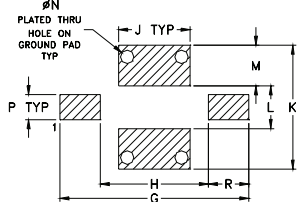
|        |     |
|--------|-----|
| RF IN  | 1   |
| RF OUT | 3   |
| GROUND | 2,4 |

**Product Marking: 50**

## Outline Drawing



## PCB Land Pattern



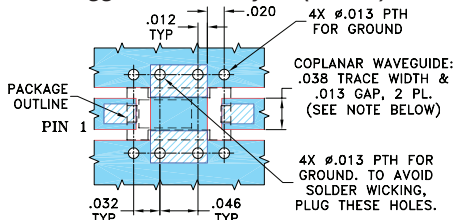
Suggested Layout,  
Tolerance to be within ±0.002

## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E    | F    | G    | H     | J    |
|------|------|------|------|------|------|------|-------|------|
| .126 | .063 | .037 | .026 | .075 | .102 | .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    | S     | T    |
| .119 | .041 | .039 | .013 | .024 | .020 | .039 |       |      |
| 3.02 | 1.04 | 0.99 | 0.33 | 0.61 | 0.51 | 0.99 |       |      |
|      |      |      |      |      |      |      | wt    |      |
|      |      |      |      |      |      |      | grams |      |
|      |      |      |      |      |      |      | .020  |      |

## Demo Board MCL P/N: TB-518+

## Suggested PCB Layout (PL-305)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH 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

## Features

- Small size
- Temperature stable
- Hermetically sealed
- LTCC construction

## Applications

- Harmonic Rejection
- Transmitters / Receivers

**BFCN-8650+**


CASE STYLE: FV1206-4  
PRICE: \$3.95 ea. QTY (20)

## +RoHS Compliant

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



Available Tape and Reel  
at no extra cost

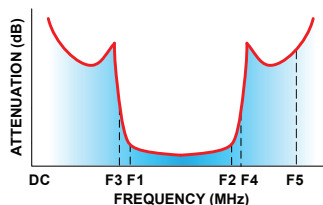
| Reel Size | Devices/Reel                      |
|-----------|-----------------------------------|
| 7"        | 20, 50, 100, 200, 500, 1000, 3000 |

## Electrical Specifications<sup>1</sup> at 25°C

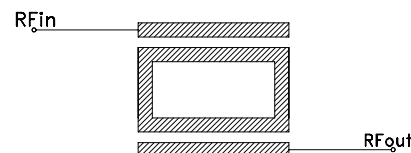
| Parameter        | F#               | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|------|------|------|------|
| Pass Band        | Center Frequency | —               | —    | 8650 | —    | MHz  |
|                  | Insertion Loss   | F1-F2           | —    | 2.0  | 3.5  | dB   |
|                  | VSWR             | F1-F2           | —    | 1.5  | —    | :1   |
| Stop Band, Lower | Insertion Loss   | DC-F3           | —    | 18   | —    | dB   |
|                  | VSWR             | DC-F3           | —    | 30   | —    | :1   |
| Stop Band, Upper | Insertion Loss   | F4-F5           | —    | 18   | —    | dB   |
|                  | VSWR             | F4-F5           | —    | 30   | —    | :1   |

1. Measured on Mini-Circuits Characterization Test Board TB-518+.

## Typical Frequency Response

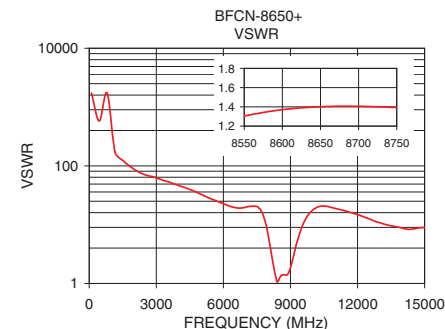
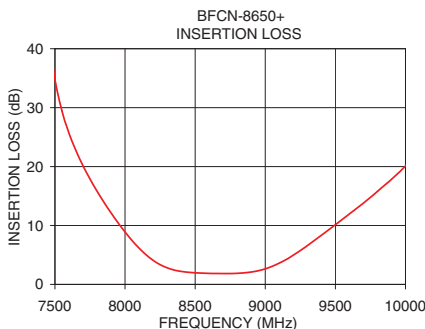
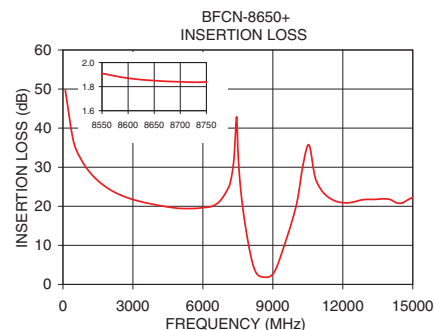


## Functional Schematic



## Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 100.00          | 49.75               | 1737.18   |
| 800.00          | 31.75               | 1737.18   |
| 1500.00         | 26.54               | 124.09    |
| 2200.00         | 23.65               | 78.97     |
| 3600.00         | 20.83               | 52.65     |
| 4300.00         | 20.02               | 42.38     |
| 6050.00         | 19.68               | 22.29     |
| 6750.00         | 21.46               | 19.11     |
| 7500.00         | 34.78               | 20.22     |
| 7700.00         | 20.14               | 16.89     |
| 8550.00         | 1.91                | 1.30      |
| 10050.00        | 21.51               | 18.30     |
| 13550.00        | 21.83               | 9.48      |
| 14050.00        | 21.68               | 8.64      |
| 15050.00        | 22.42               | 8.95      |



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