



**THE DATASHEET OF  
BFCN-1945+**



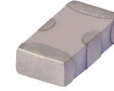
# LTCC Bandpass Filter

**BFCN-1945+**

50Ω      1850 to 2040 MHz

## The Big Deal

- Small size 3.2mm x 1.6mm
- Pass band (1850-2040 MHz)
- Low Insertion Loss (2.0 dB typical)
- Sharp rejection peaks close to stop band



CASE STYLE: FV1206

## Product Overview

The BFCN-1945+ LTCC Band Pass Filter is constructed with 12 layers in order to achieve a miniature size and high repeatability of performance. Wrap-around terminations minimize variations in performance due to parasitics. Covering 1945 MHz  $\pm$ 95 MHz, these units offer low insertion loss and good rejection.

## 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 at harmonic frequencies | Provides good rejection of signals at harmonic frequencies, 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 1850 to 2040 MHz

## BFCN-1945+



Generic photo used for illustration purposes only

CASE STYLE: FV1206

**+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 |

### Maximum Ratings

|                       |                   |
|-----------------------|-------------------|
| Operating Temperature | -55°C to 100°C    |
| Storage Temperature   | -55°C to 100°C    |
| RF Power Input*       | 1.5W max. at 25°C |

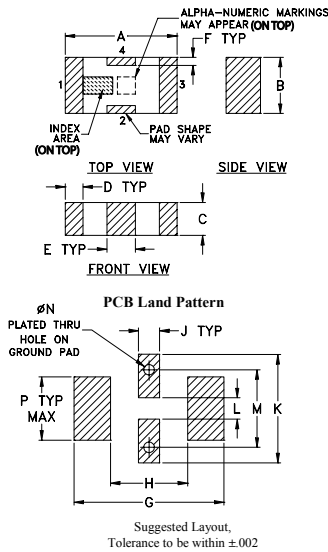
\*Passband rating, derate linearly to 0.25W at 100°C ambient  
Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

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

Product Marking: 32

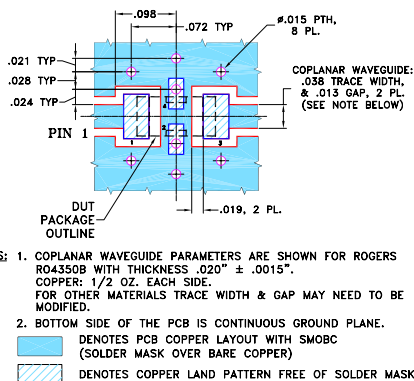
### Outline Drawing



### Outline Dimensions (inch/mm)

|      |      |      |      |      |      |      |       |
|------|------|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F    | G    |       |
| .126 | .063 | .037 | .020 | .032 | .009 | .169 |       |
| 3.20 | 1.60 | 0.94 | 0.51 | 0.81 | 0.23 | 4.29 |       |
| H    | J    | K    | L    | M    | N    | P    | wt    |
| .087 | .024 | .122 | .024 | .087 | .012 | .071 | grams |
| 2.21 | 0.61 | 3.10 | 0.61 | 2.21 | 0.30 | 1.80 | .020  |

### Demo Board MCL P/N: TB-270 Suggested PCB Layout (PL-137)



- NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH THICKNESS .020" ± .0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP 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

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### Features

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

### Applications

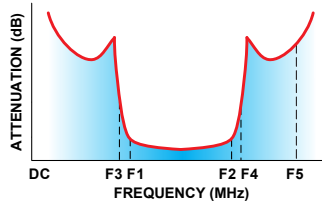
- Harmonic Rejection
- Transmitters / Receivers

### Electrical Specifications<sup>1,2</sup> at 25°C

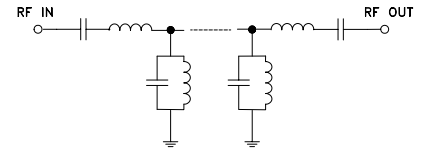
| Parameter        | F#               | Frequency (MHz) | Min.      | Typ. | Max. | Unit |
|------------------|------------------|-----------------|-----------|------|------|------|
| Pass Band        | Center Frequency | —               | —         | 1945 | —    | MHz  |
|                  | Insertion Loss   | F1-F2           | 1850-2040 | —    | 3.0  | dB   |
|                  | VSWR             | F1-F2           | 1850-2040 | —    | 2.5  | :1   |
| Stop Band, Lower | Insertion Loss   | DC-F3           | DC-1500   | —    | 20   | dB   |
|                  | VSWR             | DC-F3           | DC-1500   | —    | 25   | :1   |
| Stop Band, Upper | Insertion Loss   | F4-F5           | 3600-5700 | —    | 25   | dB   |
|                  | VSWR             | F4-F5           | 3600-5700 | —    | 20   | :1   |

1. Measured on Mini-Circuits Characterization Test Board TB-270.  
2. This filter is not intended for use as a DC Blocking circuit element. In Application where DC voltage is present at either input or output ports, blocking capacitors are required at the corresponding RF port.

### Typical Frequency Response

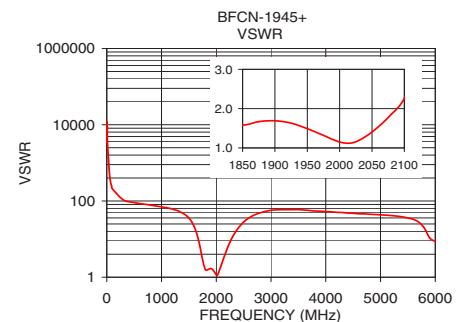
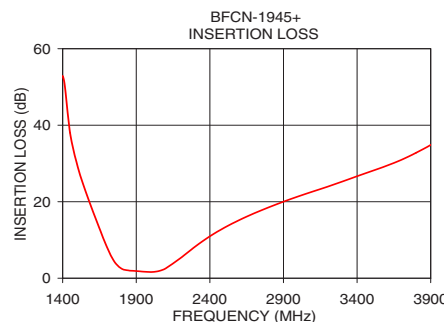
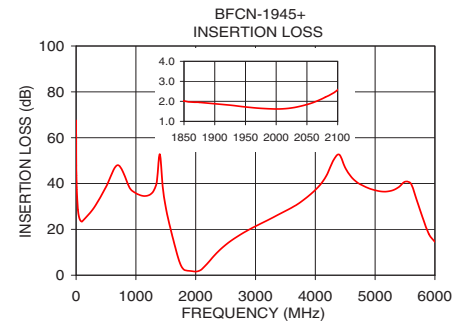


### Functional Schematic



### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 0.30            | 67.55               | 3349.77   |
| 300.00          | 29.47               | 107.34    |
| 1000.00         | 35.80               | 69.99     |
| 1400.00         | 52.82               | 46.90     |
| 1550.00         | 23.37               | 28.71     |
| 1800.00         | 2.50                | 1.58      |
| 1850.00         | 2.02                | 1.58      |
| 1900.00         | 1.88                | 1.69      |
| 2040.00         | 1.76                | 1.29      |
| 2200.00         | 5.25                | 5.68      |
| 2500.00         | 13.24               | 27.99     |
| 2900.00         | 20.02               | 53.43     |
| 4500.00         | 46.92               | 47.55     |
| 4900.00         | 37.86               | 44.11     |
| 5700.00         | 32.47               | 27.83     |



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