

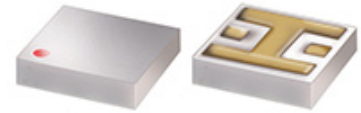
Ceramic

# Bandpass Filter

**BFTC-615+**

50Ω

450 to 780 MHz



CASE STYLE: FR933-1

## The Big Deal

- LTCC construction
- Temperature stable from -40°C to +85°C
- Small size (0.150 x 0.150 x 0.059")

## Product Overview

The BFTC-615+ LTCC bandpass filter covers the 450 to 780 MHz passband with 25 dB upper/lower stopband rejection. This model handles up to 3W RF input power and provides a wide operating temperature range from -40 to +85°C. Utilizing LTCC multi-layer construction, the filter achieves excellent repeatability of performance and comes in a tiny ceramic package saving space in dense PCB layouts.

## Key Features

| Feature                                        | Advantages                                                                                                   |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| LTCC Construction                              | Provides a rugged package well suited for tough environments such as high humidity and temperature extremes. |
| Tiny size (0.150 x 0.150 x 0.059")             | Saves space in dense circuit boards and minimizes the effects of parasitics.                                 |
| Wide operating temperature range, -40 to +85°C | Enables reliable performance in extreme environments                                                         |

### Notes

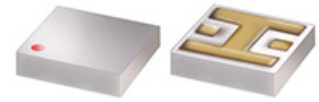
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# Bandpass Filter

50Ω 450 to 780 MHz

## BFTC-615+



CASE STYLE: FR933-1

### Features

- Good VSWR 1.5 typ. @ passband
- Small size
- Hermetically sealed
- Temperature stable
- LTCC construction

### Applications

- Test and measurement
- 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 | —               | —        | 615  | —    | MHz  |
|                  | Insertion Loss   | F1-F2           | —        | 4.8  | 6.0  | dB   |
|                  | VSWR             | F1-F2           | —        | 1.5  | —    | :1   |
| Stop Band, Lower | Insertion Loss   | F3-F4           | 1-320    | 25   | 35   | dB   |
|                  | VSWR             | F3-F4           | 1-320    | —    | 16   | :1   |
| Stop Band, Upper | Insertion Loss   | F5-F6           | 970-2400 | 25   | 30   | dB   |
|                  | VSWR             | F5-F6           | 970-2400 | —    | 10   | :1   |

1. Measured on Mini-Circuits Characterization Test Board TB-233

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.

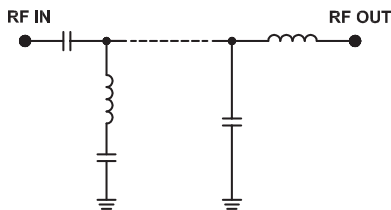
### Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power Input*       | 3W max @ +25°C |

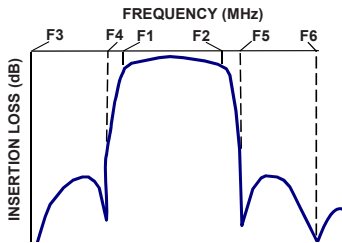
\*Passband rating, derate linearly to 1.5W at 85°C ambient

Permanent damage may occur if any of these limits are exceeded.

### Functional Schematic



### Typical Frequency Response

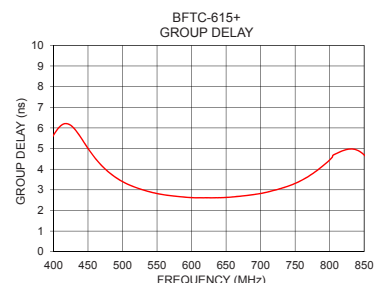
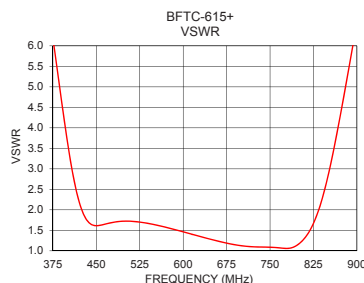
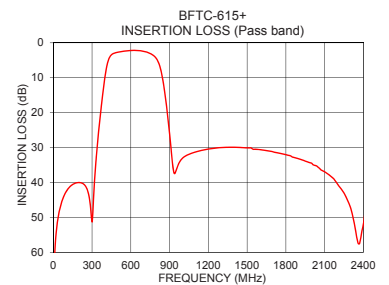
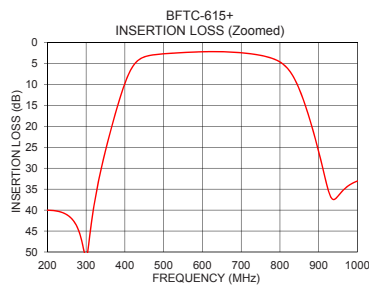


### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 1               | 80.53               | 5212.99   | 450             | 5.01               |
| 10              | 61.26               | 6241.66   | 460             | 4.55               |
| 100             | 42.60               | 105.12    | 470             | 4.17               |
| 290             | 47.86               | 13.75     | 480             | 3.85               |
| 320             | 39.10               | 11.04     | 490             | 3.60               |
| 340             | 29.67               | 9.37      | 500             | 3.40               |
| 360             | 22.17               | 7.62      | 510             | 3.23               |
| 370             | 18.74               | 6.67      | 550             | 2.82               |
| 450             | 3.43                | 1.61      | 570             | 2.72               |
| 615             | 2.18                | 1.40      | 580             | 2.68               |
| 780             | 3.78                | 1.06      | 600             | 2.62               |
| 800             | 4.64                | 1.17      | 615             | 2.61               |
| 850             | 11.14               | 2.82      | 620             | 2.62               |
| 880             | 19.29               | 4.97      | 650             | 2.63               |
| 920             | 33.64               | 8.18      | 680             | 2.73               |
| 970             | 34.66               | 12.30     | 700             | 2.82               |
| 1000            | 33.06               | 14.85     | 720             | 2.98               |
| 1500            | 30.11               | 55.18     | 740             | 3.18               |
| 2000            | 34.51               | 78.83     | 760             | 3.47               |
| 2400            | 51.98               | 88.43     | 780             | 3.89               |

### +RoHS Compliant

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



### Notes

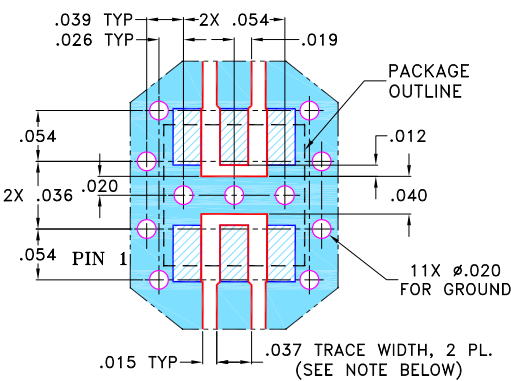
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Pad Connections

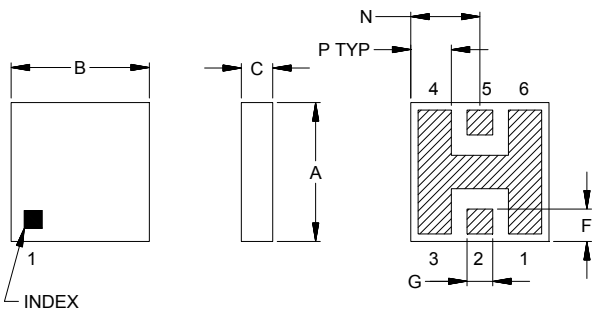
|        |         |
|--------|---------|
| RF IN  | 2       |
| RF OUT | 5       |
| GROUND | 1,3,4,6 |

Demo Board MCL P/N: TB-233  
Suggested PCB Layout (PL-112)

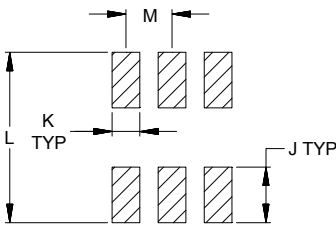


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
-  DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
-  DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Drawing



PCB Land Pattern



Suggeested Layout,  
Tolerance to be within±.002

Outline Dimensions ( inch mm )

| A    | B    | C    | D    | E    | F    | G    | H     |
|------|------|------|------|------|------|------|-------|
| .150 | .150 | .059 | --   | --   | .035 | .028 | --    |
| 3.81 | 3.81 | 1.50 | --   | --   | .89  | .71  | --    |
| J    | K    | L    | M    | N    | P    |      | Wt.   |
| .060 | .030 | .184 | .050 | .075 | .044 |      | grams |
| 1.52 | .76  | 4.67 | 1.27 | 1.91 | 1.12 |      | 0.15  |

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