

# Ceramic Bandpass Filter

## BFCW-252+

50Ω 2400 to 2500 MHz

### The Big Deal

- Very good rejection, 30 dB typical
- Rugged, ceramic construction
- Tiny size, 0.063" x 0.032" x 0.024" (0603)



CASE STYLE: JC0603C-1

### Product Overview

Mini-Circuits' BFCW-252+ is a LTCC band pass filter with a passband from 2400 to 2500 MHz, supporting a variety of applications. This model provides 3.0 dB typical passband insertion loss and provides a very good stopband rejection due to strategically constructed layout with minimal interaction between components. It provides a wide operating temperature range from -55 to +125°C. Housed in a tiny 0603 ceramic form factor with wrap-around terminations, the filter is ideal for dense PCB layouts and with minimal performance variation due to parasitics.

### Key Features

Feature	Advantages
Ultra-wide stopband	The LTCC band pass filter provides a very good stopband rejection suitable for high end applications.
LTCC Construction	Provides repeatable performance in a rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes.
Tiny size (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

#### 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)



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50Ω 2400 to 2500 MHz

## BFCW-252+



Generic photo used for illustration purposes only

CASE STYLE: JC0603C-1

### Features

- High Rejection
- Miniature size 0603
- Low cost
- Aqueous washable

### Applications

- ISM Band
- WLAN
- Bluetooth
- Zigbee

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

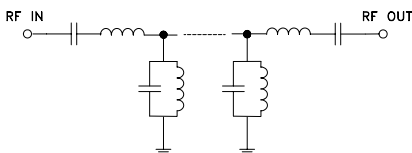
### Electrical Specifications<sup>1,2</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	—	—	2450	—	dB	
	Insertion Loss	F1-F2	2400 - 2500	—	3.0	4.0	dB
	Return Loss	F1-F2	2400 - 2500	—	11	—	dB
Stop Band, Lower	Insertion Loss	DC-F3	10 - 1860	20	25	—	dB
Stop Band, Upper	Insertion Loss	F4-F5	3200 - 8000	20	30	—	dB

1. Tested on Evaluation Board TB-BFCW-252+

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 ports.

### Functional Schematic



### Maximum Ratings

Operating Temperature	-55°C to 125°C
Storage Temperature <sup>3</sup>	-55°C to 125°C
RF Power Input <sup>4</sup>	0.5W at 25°C

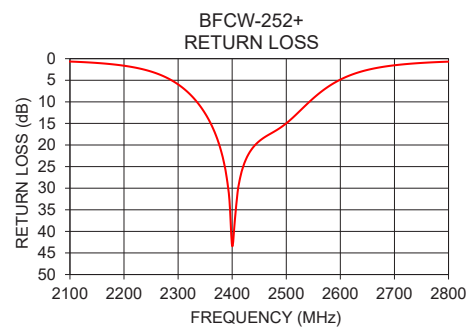
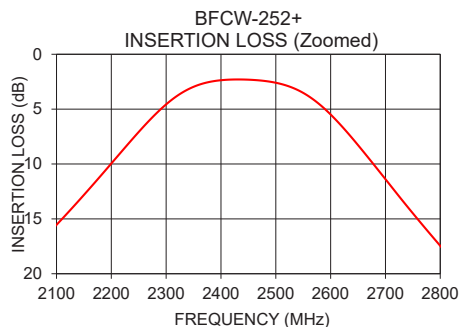
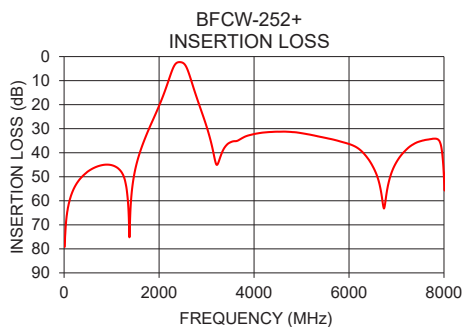
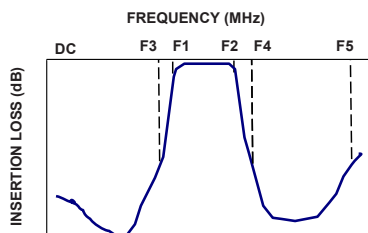
3. Refer to product storage temperature after installation  
Suggestion for T&R unused product storage condition:  
+5 ~ +35 °C, Humidity 45-75%RH, 12 month Max.

4. Derate linearly to 0.1W at 125°C.  
Permanent damage may occur if any of these limits exceeded.

### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	79.20	0.05
100	61.12	0.05
500	47.82	0.07
1000	45.17	0.09
1500	46.81	0.13
1860	26.82	0.22
2000	20.51	0.37
2400	2.37	43.37
2450	2.32	19.11
2500	2.60	14.98
3000	29.06	0.27
3200	44.65	0.15
4000	32.25	0.04
4500	31.25	0.07
5000	31.87	0.14
5500	33.81	0.21
6000	36.37	0.30
6500	45.69	0.34
7000	43.88	0.34
8000	50.56	0.35

### Typical Frequency Response



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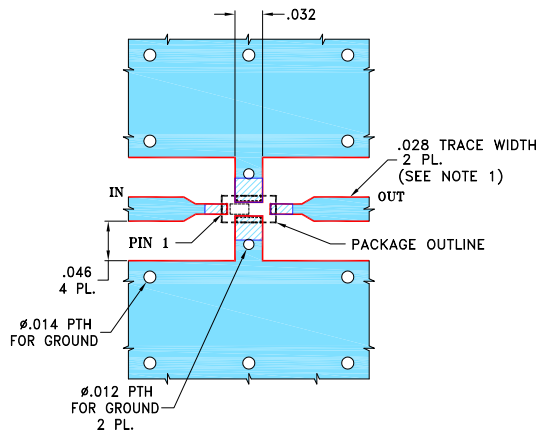


## Pad Connections

INPUT	1
OUTPUT	3
GROUND	2,4

## Product Marking: N/A

**Evaluation Board MCL P/N: TB-BFCW-252+**  
**Suggested PCB Layout (PL-563)**

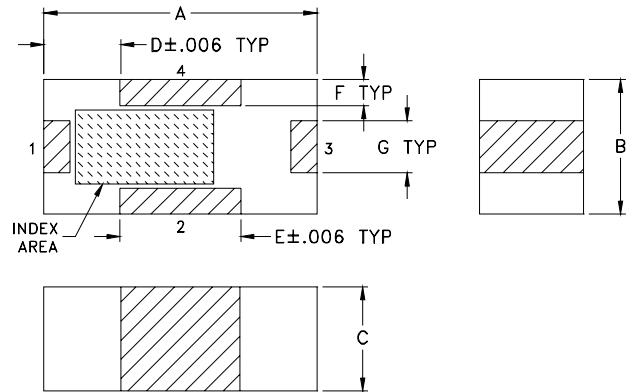


### NOTES:

- TRACE WIDTH IS SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
- 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



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	wt
.063	.031	.024	.018	.028	.006	.012	grams
1.60	0.79	0.61	0.46	0.71	0.15	0.30	0.005

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