

# 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)



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## BFCN-8650+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-4

**+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*	2W max. at 25°C

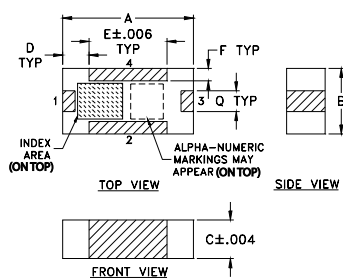
\*Passband rating, derate linearly to 0.5W at 100°C ambient  
Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

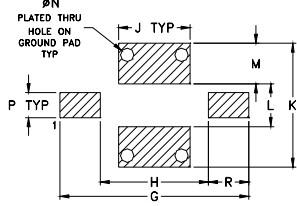
RF IN	1
RF OUT	3
GROUND	2,4

Product Marking: 50

### Outline Drawing



### PCB Land Pattern



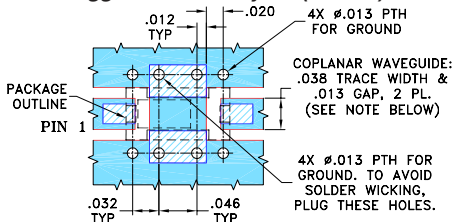
Suggested Layout,  
Tolerance to be within ±0.02

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
.126	.063	.037	.026	.075	.012	.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	wt	
.119	.041	.039	.013	.024	.020	.039	grams	
3.02	1.04	0.99	0.33	0.61	0.51	0.99	.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

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### Features

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

### Applications

- Harmonic Rejection
- Transmitters / Receivers

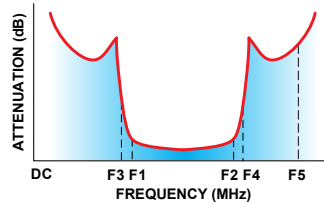
### Electrical Specifications<sup>1,2</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	8650	—	MHz
	Insertion Loss	F1-F2	8550-8750	—	2.0	dB
	VSWR	F1-F2	8550-8750	—	1.5	3.5
Stop Band, Lower	Insertion Loss	DC-F3	DC-7650	—	15	dB
	VSWR	DC-F3	DC-7650	—	30	:1
Stop Band, Upper	Insertion Loss	F4-F5	10000-15000	—	15	dB
	VSWR	F4-F5	10000-15000	—	30	:1

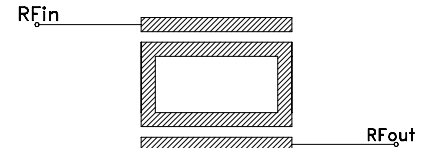
1. Measured on Mini-Circuits Characterization Test Board TB-518+.

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)
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

