Ceramic

Bandpass Filter

BFCQ-2802+

50Ω 27.5 to 29.5 GHz

The Big Deal

- Innovative and industry leading
- 5G n257 bandpass filter
- Low Insertion Loss – Mid band 2.0dB typical
- Surface mountable pick and place standard case style
- Small size 2.5mm x 2.0mm
- High quality distributed filter topology
- Wide rejection band

CASE STYLE: NL1008C-6

Product Overview

The BFCQ-2802+ LTCC Bandpass Filter covers the 5G n257 band. This corresponds to a passband of 27.5 to 29.5 GHz, with as low as 2dB passband loss, and up to 40dB stopband rejection. This model handles up to 1W RF input power and provides a wide operating temperature range from -55 to +125°C. Utilizing a proprietary LTCC material system and a distributed filter topology, this filter is able to achieve repeatable performance on a lot-to-lot basis, up to mmWave frequencies.

Key Features

Feature	Advantages
5G n257 band compatible	Designed for 5G Telecommunications, n257 band, 27.5 – 29.5 GHz
Proprietary mmWave compatible LTCC material system	Low loss and repeatable performance on a lot-to-lot basis up to mmWave frequencies.
Cost effective	LTCC is scalable technology that allows for cost reduction at volume.
Small size (2.5mm x 2.0mm)	Allows for high layout density of circuit boards, while minimizing effects of parasitics.
Surface Mountable	Suitable for very high volume automated assembly process.

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Generic photo used for illustration purposes only

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+RoHS Compliant

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

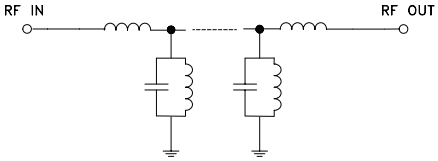
Features

- Standard miniature 1008 package case style
- 5G n257 band compatible
- Shielded construction preventing filter from de-tuning
- Reduced footprint area by employing LGA (land grid array)
- Suited for very high-volume production
- Surface mountable

Applications

- 5G Telecommunications

Functional Schematic



Electrical Specifications[1] at 25°C

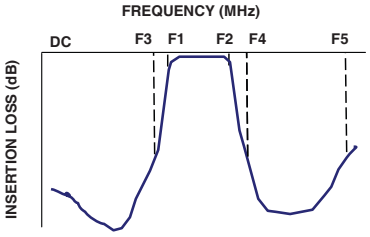
Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—		—	28.4	—	GHz
	Insertion Loss	F1-F2	27.5 - 29.2	—	2	—	dB
			29.2 - 29.5	—	2.4	3.4	
	Return Loss (In)	F1-F2	27.5 - 29.5	—	13	—	dB
	Return Loss (Out)		27.5 - 29.5	—	13	—	dB
Stop Band, Lower	Insertion Loss	DC-F3	0.1 - 20	30	45	—	dB
			20 - 24.2	20	36	—	
Stop Band, Upper	Insertion Loss	F4-F5	32.5 - 38	20	34	—	dB
			38 - 48	30	40	—	
			48 - 53	20	34	—	

1. Measured on Mini-Circuits Test Board TB-BFCQ-2802C+ with feedline losses removed by normalization of S12 and S21 traces to measurement of TB thru-line.

Maximum Ratings	
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input	1W

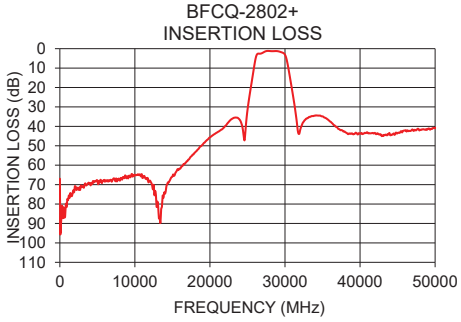
Permanent damage may occur if any of these limits exceeded.

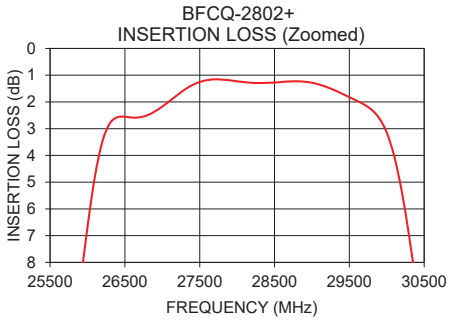
Typical Frequency Response

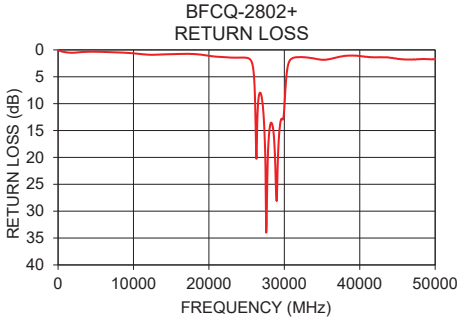


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	66.98	0.06
3000	70.76	0.42
6000	68.51	0.38
9000	65.69	0.54
15000	65.83	0.80
21000	43.02	1.26
24400	42.08	1.44
27500	1.25	21.77
28400	1.29	13.91
29500	1.82	13.29
35000	34.85	1.83
39000	43.79	1.04
41000	43.18	1.29
44000	44.49	1.44
50000	40.96	1.73







Notes

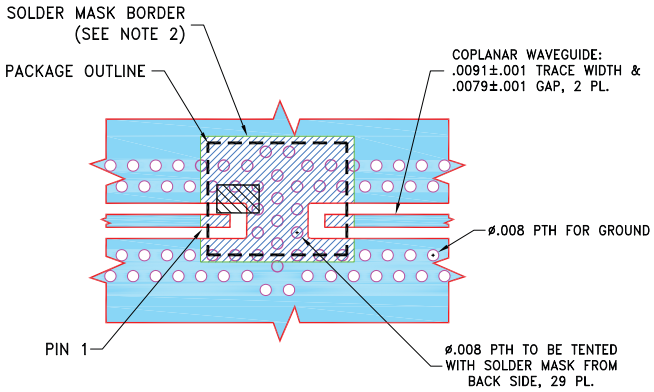
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

Pad Connections

INPUT	1
OUTPUT	2
GROUND	3

Product Marking: NT

Evaluation Board MCL P/N: TB-BFCQ-2802C+
Suggested PCB Layout (PL-707)

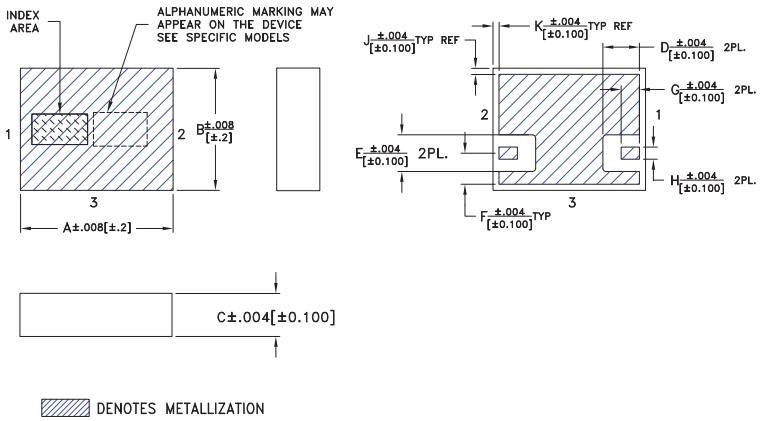


NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR MEGTRON-7 R5785(N); DIELECTRIC THICKNESS: .0049±.001; CLOTH STYLE: 2116; COPPER: HVLP/HVLP. FOR OTHER MATERIALS LINE WIDTH & GAP MAY NEED TO BE MODIFIED.
2. SOLDER MASK OPENING FOR COMPONENT SOLDERING HAS BEEN INCREASED AGAINST PCB LAND PATTERN RECOMMENDATIONS PER NL1008C-6 AND CAN BE DEVIATED FROM THIS DRAWING TO COMPLY WITH CUSTOMERS' DESIGN RULES.
3. 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	H	J	K	wt
.098	.079	.028	.024	.024	.020	.012	.008	.004	.004	grams
2.49	2.01	0.71	0.6	0.6	0.51	0.3	0.2	0.1	0.1	.019