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# High Pass Filter

## HFCQ-3652+

Mini-Circuits

50Ω 36.5 to 50 GHz

### THE BIG DEAL

- Standard small 1008 (2.5mm x 2.0mm) case style
- Low Insertion Loss – Passband 2.0 dB typical
- Shielded construction preventing filter from de-tuning
- Reduced footprint area by employing LGA (land grid array)
- Surface mountable pick and place standard case style
- Patent pending



Generic photo used for illustration purposes only

CASE STYLE: NL1008C-6

#### +RoHS Compliant

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

### APPLICATIONS

- Test and Measurement

### PRODUCT OVERVIEW

The HFCQ-3652+ LTCC High Pass Filter achieves a miniature size and high repeatability of performance by utilizing a proprietary LTCC material system and distributed filter topology. The typical passband loss at 36.5 – 50.0 GHz is as low as 2.0 dB, with typical stopband rejections at 26 dB up to 27.0 GHz. 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.

### KEY FEATURES

Feature	Advantages
Cost effective	LTCC is scalable technology that is cost effective due to ease of production in high quantities.
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.

REV. OR  
NPO-002619  
HFCQ-3652+  
CGD/CP/AM  
032125





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### ELECTRICAL SPECIFICATIONS<sup>1</sup> AT 25°C

Parameter	F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Stop Band	DC-F1	0.1 - 18	30	40	—	dB
	F1-F2	18 - 27	20	26	—	dB
Pass Band	F3-F4	36.5 - 50	—	2.0	3.0	dB
	F3-F4	36.5 - 50	—	10	—	dB

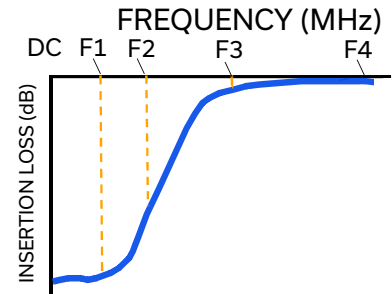
1. Measured on Mini-Circuits Test Board TB-HFCQ-3652C+ with connectors and feedlines de-embedded.

### MAXIMUM RATINGS

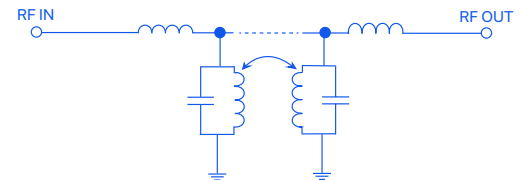
Parameter	Ratings
Operating temperature	-55°C to +125°C
Storage temperature	-55°C to +125°C
RF Power Input	1W

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

### TYPICAL FREQUENCY RESPONSE



### FUNCTIONAL SCHEMATIC





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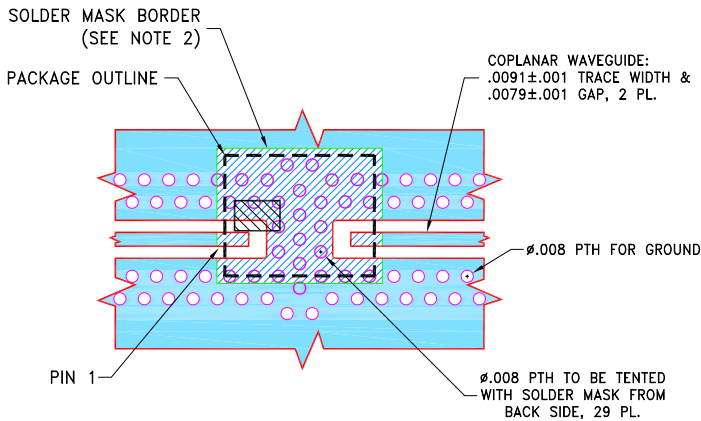
## HFCQ-3652+

### PAD CONNECTIONS

INPUT	1
OUTPUT	2
GROUND	3

PRODUCT MARKING: UR

### DEMO BOARD MCL P/N: TB-HFCQ-3652C+ SUGGESTED PCB LAYOUT (PL-707)

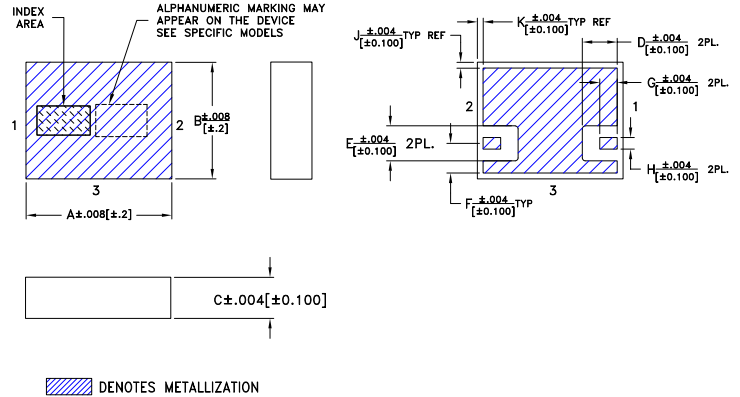


**NOTES:**

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 (Inches / 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



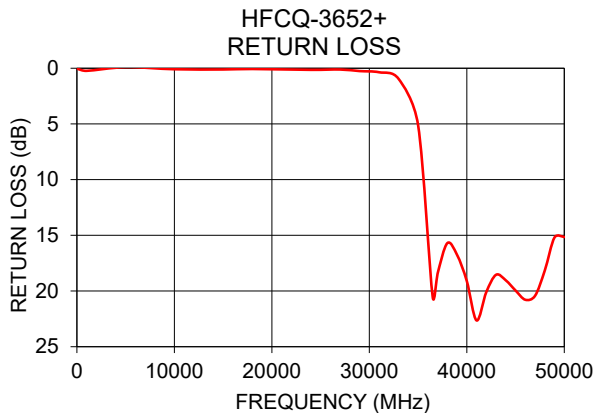
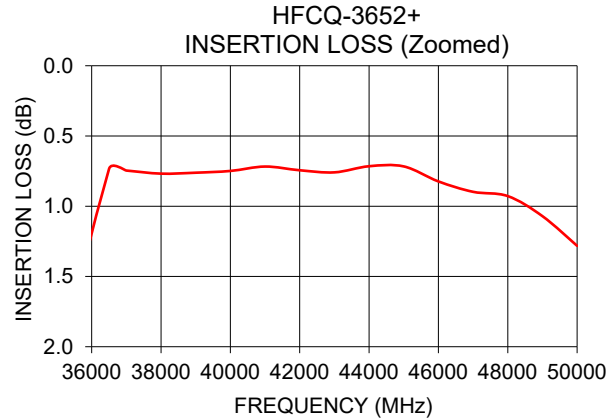
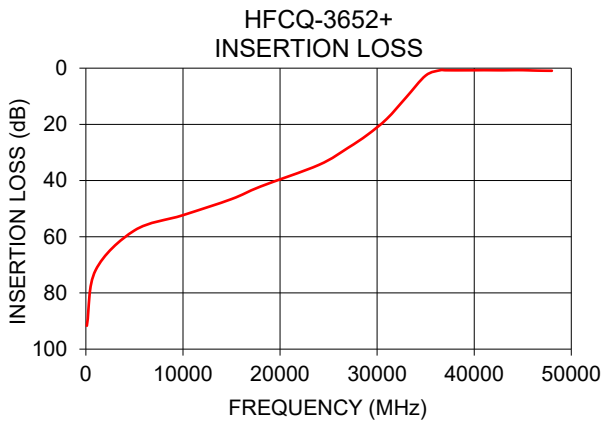
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### TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
100	91.68	0.06
1000	71.93	0.23
5000	57.77	-0.09
10000	52.33	0.09
15000	46.60	0.11
18000	42.11	0.07
24000	34.43	0.14
27000	28.36	0.11
29000	23.73	0.25
36500	0.74	20.53
40000	0.75	19.11
45000	0.72	19.95
50000	1.28	15.16



#### 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

