



LTCC SURFACE MOUNT

Bandpass Filter & Balun

BBFCG2-672+

50Ω 6375 to 7175 MHz 1:2 Ratio

THE BIG DEAL

- Compact Design includes Balun and Filter in One Package
- Low Passband Insertion Loss, Typ. 1.9 dB
- Outstanding CMRR, Typ. 29 dB
- Small 0805 Surface Mount Footprint

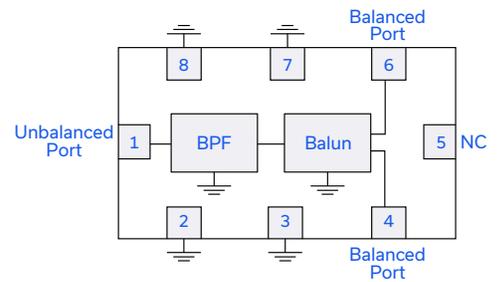


Generic photo used for illustration purposes only

APPLICATIONS

- 5G Sub-6 GHz, MIMO Wireless Infrastructure Systems
- Satellite Communications

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' BBFCG2-672+ is a tiny ceramic RF balun filter with an impedance ratio of 1:2, covering a variety of wireless communications applications from 6375 to 7175 MHz. This model provides low insertion loss, low phase unbalance (relative to 180°), and low amplitude unbalance. Fabricated using LTCC technology, the unit comes housed in a tiny, rugged ceramic package (0.079" x 0.049" x 0.037") suitable for harsh operating environments.

KEY FEATURES

Features	Advantages
Compact Design	Integrates filter and balun in one small package.
Small, 0805 Surface Mount Footprint	Saves space in dense circuit board layouts and minimizes the effects of parasitics.
LTCC Construction	Provides repeatable performance in a rugged, ceramic package, well suited for tough environments with high humidity and temperature extremes.



ELECTRICAL SPECIFICATIONS^{1,2} AT +25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units	
Impedance Ratio				1:2		—	
Passband	Center Frequency ³	—	—	6700	—	MHz	
	Average Insertion Loss ⁴	F3-F4	6375 - 7175	—	1.9	3	dB
	Return Loss - Unbalanced Port	F3-F4	6375 - 7175	10	13	—	dB
	Return Loss - Balanced Port ⁴	F3-F4	6375 - 7175	10	11.8	—	dB
Stopband, Lower Rejection ⁴	DC-F1	10 - 2400	24	39	—	dB	
	F1-F2	2400 - 5400	23	33	—	dB	
Stopband, Upper Rejection ⁴	F5-F6	8900 - 17800	25	35	—	dB	
	F6-F7	17800 - 26000	20	27	—	dB	
Amplitude Unbalance (±)	F3-F4	6375 - 7175	-1.1	±0.72	+1.1	dB	
Phase Unbalance (Relative to 180°)	F3-F4	6375 - 7175	-10	±6	+10	Deg.	
CMRR	F3-F4	6375 - 7175	20	28		dB	

1. Tested on Evaluation Board P/N TB-BBFCG2-672+ with connectors and feedline loss compensated.

2. This component should not be used as a DC Block. In applications where DC voltage and/or current is present at either the input or output ports, external DC blocking capacitors are required.

3. Typical variation ±3%.

4. Measured in mixed mode.

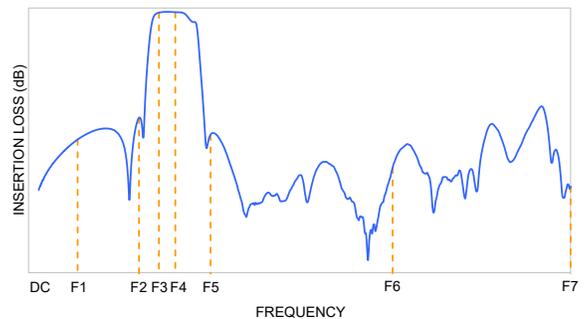
ABSOLUTE MAXIMUM RATINGS⁶

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power ⁷	2 W

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

7. Power rating applies only to signals within the passband at +25°C. Power rating above +25°C operating temperature decreases linearly to 0.5 W at +125°C.

TYPICAL FREQUENCY RESPONSE AT +25°C



DC RESISTANCE PORT-PORT

Function	Pad Number
Unbalanced Port to Ground	DC Short
Unbalanced Port to Balanced Port	DC Open
Balanced Port to Ground	DC Open
Balanced Port to Balanced Port	DC Short



LTCC SURFACE MOUNT

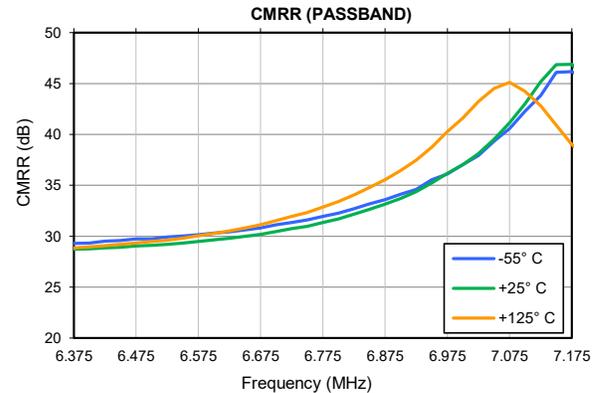
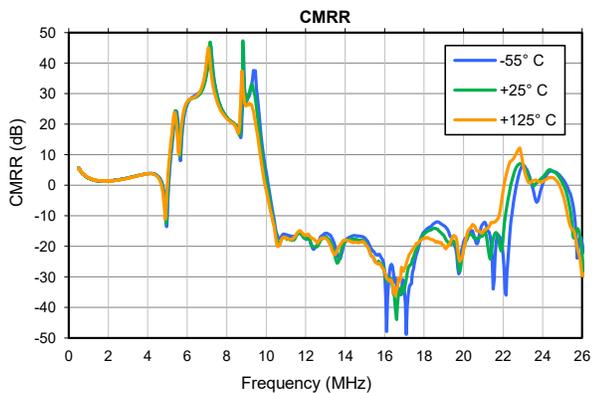
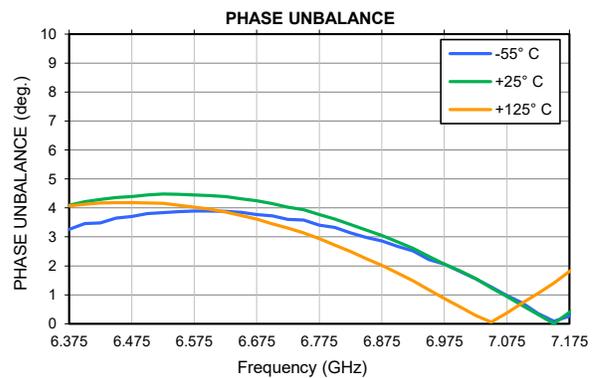
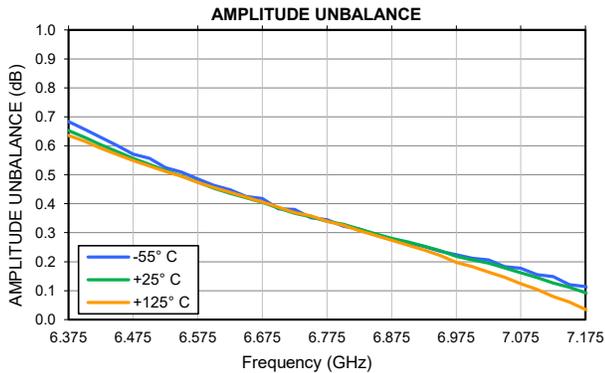
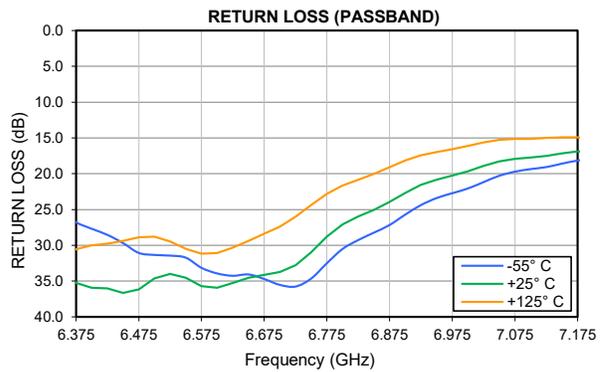
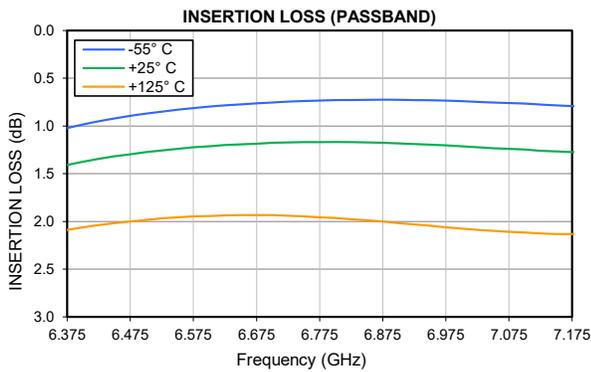
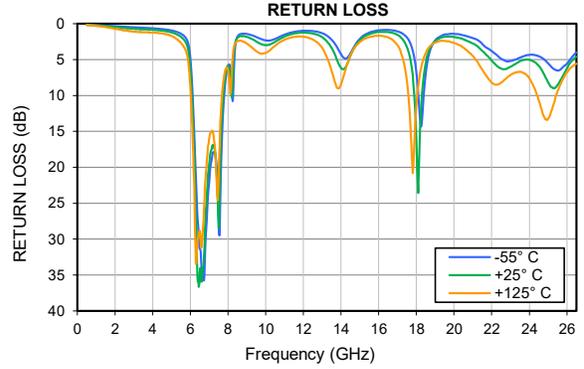
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Mini-Circuits

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TYPICAL PERFORMANCE GRAPHS





FUNCTIONAL DIAGRAM

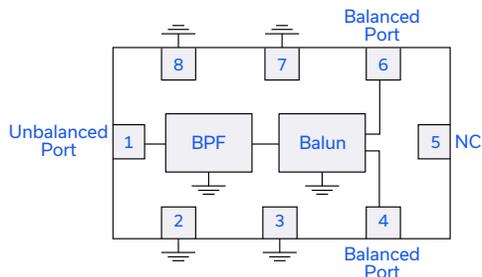
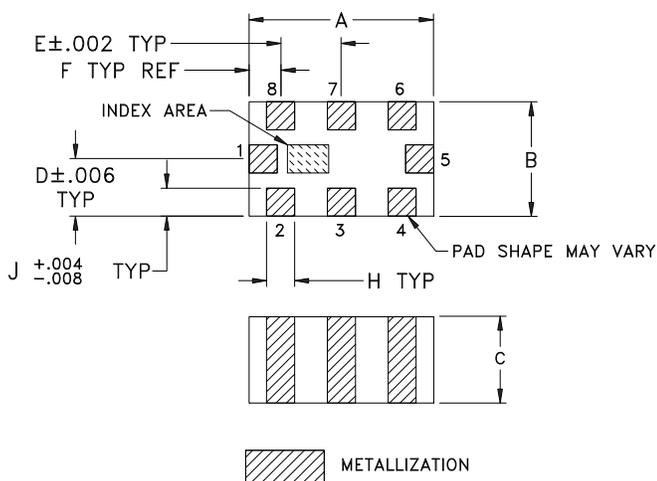


Figure 1. BBFCG2-672+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
Unbalanced Port	1	Unbalanced Input Port
Balanced Ports	4, 6	Balanced Output Ports
Ground	2, 3, 7, 8	Connects to Ground on PCB. (See drawing PL-724)
NC	5	No connection, not used internally. See drawing PL-724 for connection to PCB.

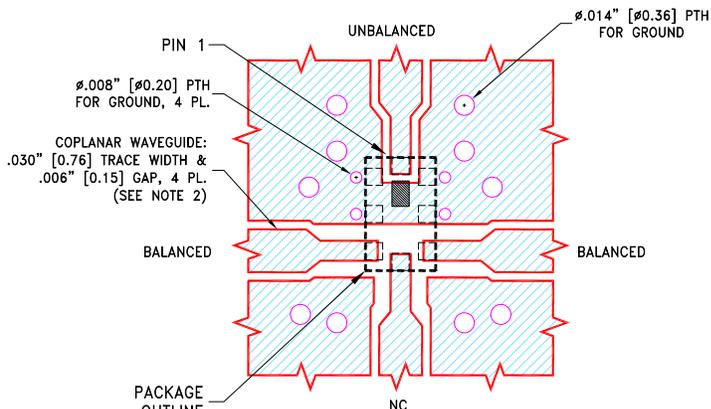
CASE STYLE DRAWING



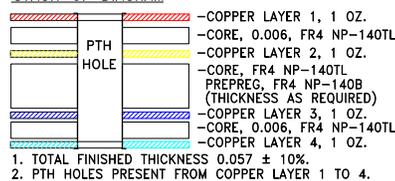
OUTLINE DIMENSIONS (Inch/mm)

A	B	C	D	E	F	G	H	J	wt
.079	.049	.037	.025	.026	.014	.110	.012	.010	grams
2.00	1.25	0.95	0.63	0.65	0.35	2.80	0.30	0.25	.008

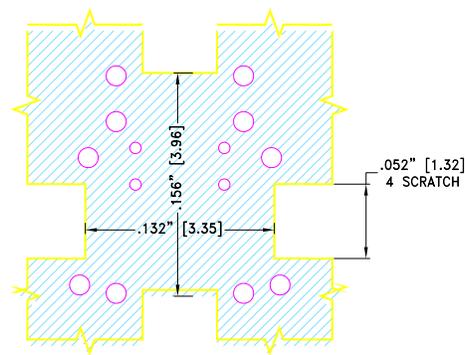
SUGGESTED PCB LAYOUT (PL-724)



STACK-UP DIAGRAM



- TOTAL FINISHED THICKNESS 0.057 ± 10%.
- PTH HOLES PRESENT FROM COPPER LAYER 1 TO 4.



TOP VIEW TO LAYER 2

NOTES:

- PCB IS MULTILAYER PCB, SEE STA K-UP DIAGRAM.
- TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR FR4 NP-140TL WITH DIELECTRIC THICKNESS .006" ± .0005"; COPPER: 1 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
- COPPER LAYERS 3,4 OF THE PCB IS CONTINUOUS GROUND PLANES.

Denotes copper land pattern free of solder mask.

Figure 2. Suggested PCB Layout PL-724

PRODUCT MARKING*: NO MARKING

*Marking may contain other features or characters for internal lot control.



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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD. [CLICK HERE](#)

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file) with connectors and feedline loss compensated.
Case Style	GE0805C-15 Lead Finish: Tin over Nickel Plating
RoHS Status	Compliant
Tape and Reel	F114
Suggested Layout for PCB Design	PL-724
Evaluation Board	TB-BBFCG2-672+ Gerber File
Environmental Rating	ENV06T10

- 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

