



LTCC SURFACE MOUNT

Bandpass Filter & Balun

BBFCG2-252+

50Ω 2300 to 2690 MHz 1:2 Ratio

THE BIG DEAL

- Tiny Size, 0805
- Compact Design includes Balun and Filter in One Package
- Low Cost
- Temperature Stable
- Hermetically Sealed

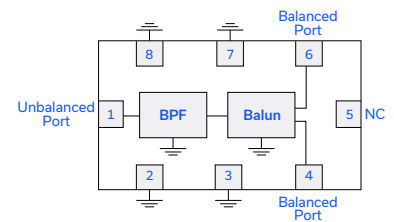


Generic photo used for illustration purposes only

APPLICATIONS

- Telecommunications
- 5G Sub-6GHz
- ISM band

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' BBFCG2-252+ is a tiny ceramic RF balun filter with an impedance ratio of 1:2, covering a variety of wireless communications applications from 2300 to 2690 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 tiny package.
Tiny Size, 0805	Accommodates tight space requirements for dense PCB layouts.
LTCC Construction	The use of LTCC technology allows for repeatable performance in a rugged ceramic package, well suited for tough environments such as high humidity and temperature extremes. See Mini-Circuits Environmental Rating ENV06T10 for more information.



ELECTRICAL SPECIFICATIONS^{1,2,3} AT +25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units	
Impedance Ratio				1:2		—	
Center Frequency ⁴	—	—	—	2495	—	MHz	
Passband	Insertion Loss	F2-F3	2300 - 2690	—	2.0	2.7	dB
	Return Loss - Unbalanced Port	F2-F3	2300 - 2690	9.5	14.5	—	dB
	Return Loss - Balanced Port ⁵	F2-F3	2300 - 2690	9.5	14.5	—	dB
Stopband, Lower Rejection	DC-F1	10 - 1500	—	25.0	—	dB	
Stopband, Upper Rejection	F4-F5	3300-5640	25	29.3	—	dB	
		5640-6550	20	40.4	—	dB	
		6550-9500	10	33.4	—	dB	
Amplitude Unbalance (±)	F2-F3	2300 - 2690	-1.5	±0.6	+1.5	dB	
Phase Unbalance (relative to 180°)	F2-F3	2300 - 2690	-13	±8	+13	Deg.	
CMRR	F1-F2	2300 - 2690	—	20	—	dB	

1. Tested on Evaluation Board P/N TB-BBFCG2-252+.

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. Measured in mixed mode (Sds21).

4. Typical variation ±3%.

5. Measured in mixed mode (Sdd22).

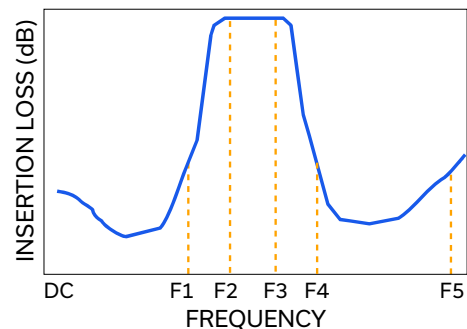
ABSOLUTE MAXIMUM RATINGS⁵

Parameter	Ratings
Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
RF Input Power ⁶	2 W

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

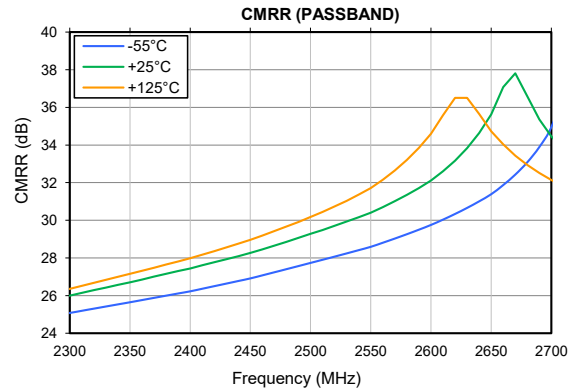
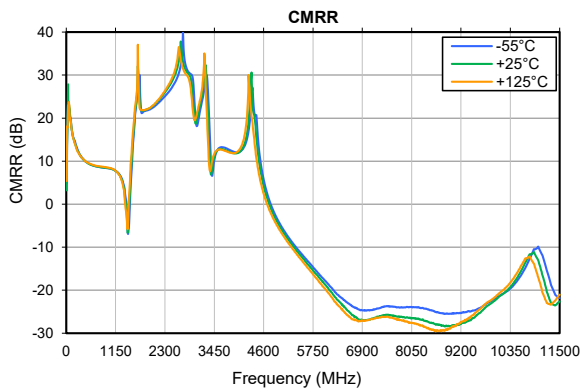
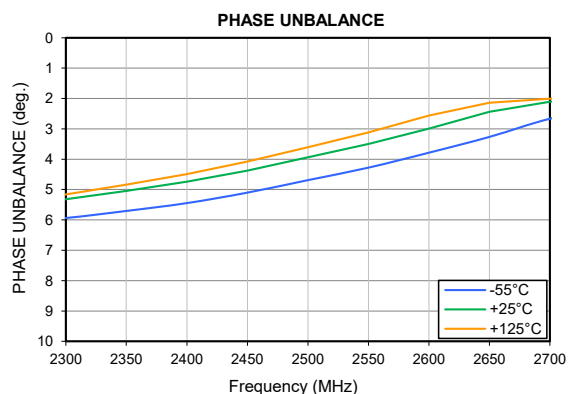
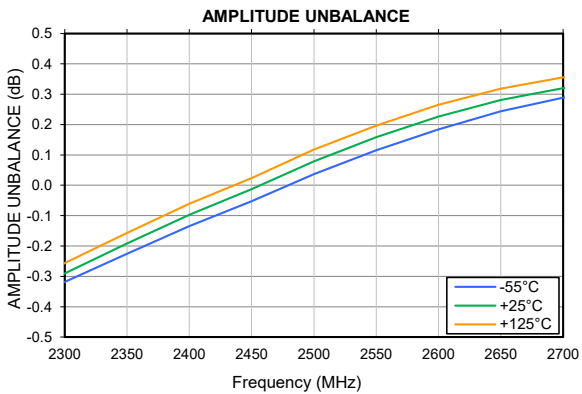
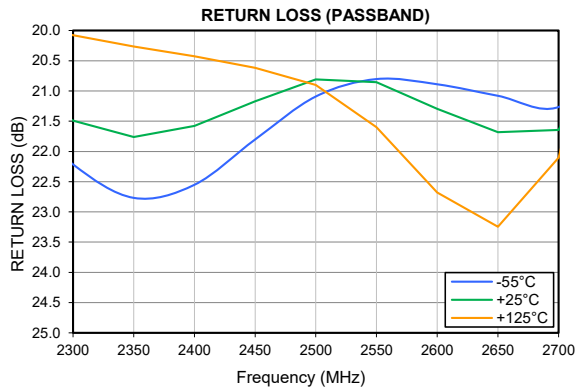
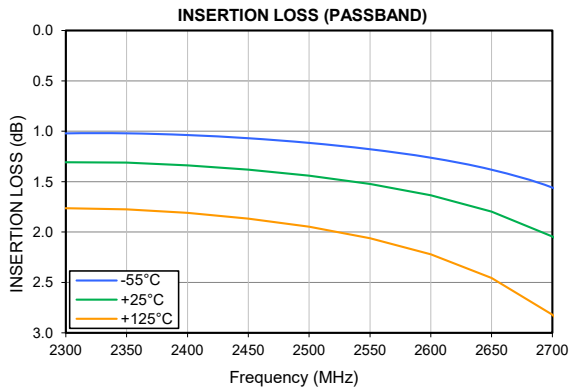
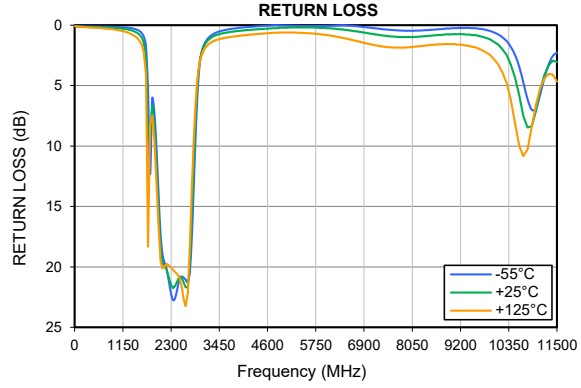
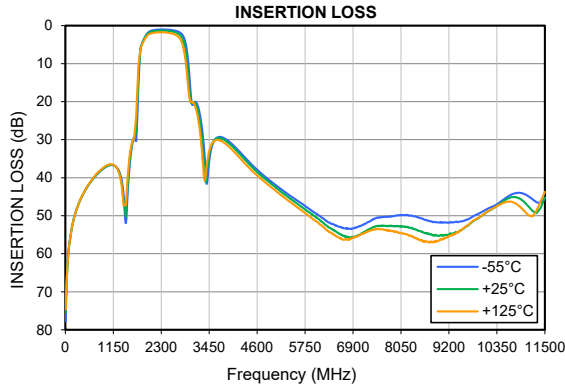
7. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 0.5 W at +125°C.

TYPICAL FREQUENCY RESPONSE AT 25°C





TYPICAL PERFORMANCE GRAPHS





FUNCTIONAL DIAGRAM

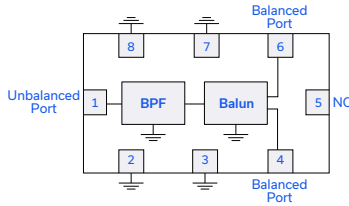


Figure 1. BBFCG2-252+ Functional Diagram

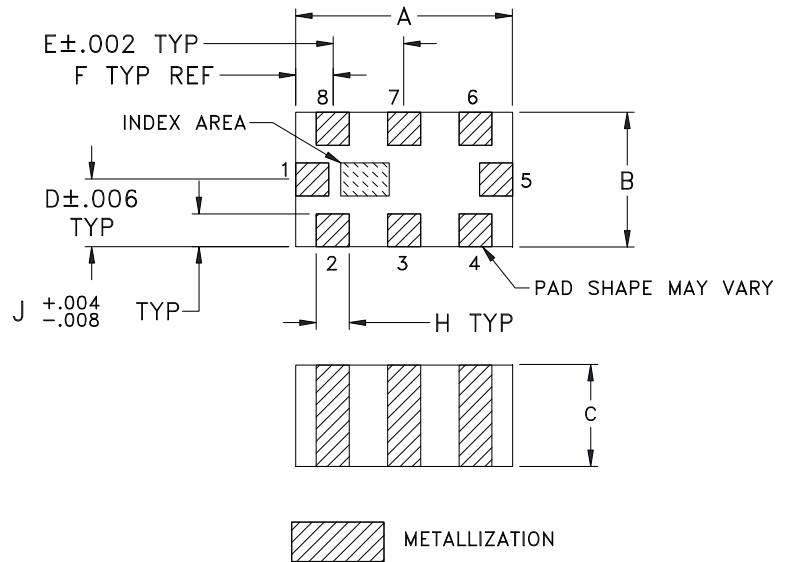
PAD DESCRIPTION

Function	Pad Number	Description
Unbalanced Port	1	Unbalanced Input Port
Balanced Port	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

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

CASE STYLE DRAWING



OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F	G	H	J	wt
.079	.049	.037	.025	.026	.014	.110	.012	.012	grams
2.01	1.24	0.94	0.64	0.66	0.36	2.79	0.30	0.30	.008

PRODUCT MARKING*: No Marking

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

SUGGESTED PCB LAYOUT (PL-724)

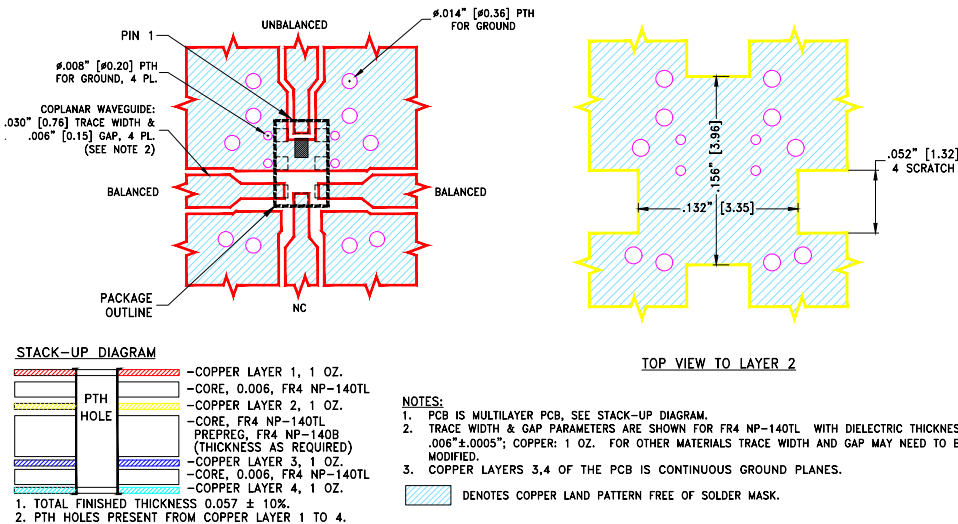


Figure 2. Suggested PCB Layout PL-724



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50Ω 2300 to 2690 MHz 1:2 Ratio

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.

[CLICK HERE](#)

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S3P Files) Data Set (.zip file) De-embedded to device pads
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-BBFCG2-252+
	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-Circuits' 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

