



CERAMIC

Bandpass Filter & Balun **BBFCG2-3650+**

50Ω 3150 to 4150 MHz

THE BIG DEAL

- Tiny size, (0805)
- Compact design includes Balun & Filter in one package
- Low cost
- Temperature stable
- Hermetically sealed



Generic photo used for illustration purposes only

CASE STYLE: GE0805C-15

+RoHS Compliant

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

APPLICATIONS

- Telecommunications
- 5G sub 6GHz

PRODUCT OVERVIEW

Mini-Circuits' BBFCG2-3650+ is a tiny ceramic RF balun filter with an impedance ratio of 1:2, covering a variety of wireless communications applications from 3150 to 4150 MHz. This model provides low insertion loss, low phase unbalance (relative to 180°), 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

Feature	Advantages
Compact Design	Integrates filter and balun in one tiny package
Tiny size, 0805	Accommodates tight space requirements for dense PCB layouts.
LTCC construction	LTCC process enables tiny size and low cost, suitable for high-volume production. Rugged ceramic package provides excellent reliability in harsh operating environments.



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ELECTRICAL SPECIFICATIONS AT 25°C

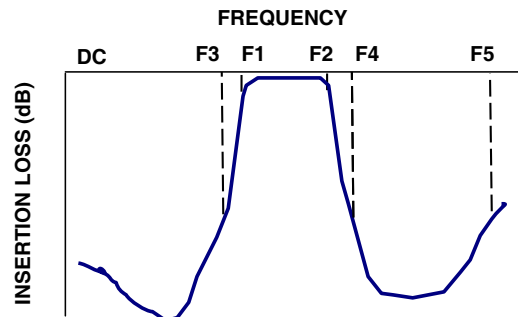
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio	—	—	2			
Insertion Loss*	F1-F2	3150 - 4150	—	3.2	4	dB
Return Loss	Unbalanced Port	F1-F2	8.5	11	—	dB
	Balanced Port*	F1-F2	8.5	11	—	
Stopband Rejection	DC-F3	DC - 2598	15	25	—	dB
		2598 - 2698	12	23	—	
	F4-F5	4847 - 5547	20	—	—	
		6099 - 10048	27	35	—	
Amplitude Unbalance ±	F1-F2	3150 - 4150	-1.5	—	1.5	dB
Phase Unbalance	F1-F2	3150 - 4150	-13	—	13	Degree
CMRR	F1-F2	3150 - 4150	—	20	—	dB

* Single ended - Differential (2-port) measurement.

MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input	0.5W at 25°C

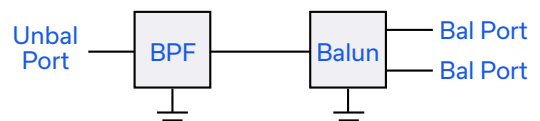
TYPICAL FREQUENCY RESPONSE



DC INTERFACE TABLE

Unbalance Port - GND	DC short
Unbalance Port - Balance Ports	DC open
Balance port - GND	DC open
Balance port-Balance Port	DC short

FUNCTIONAL SCHEMATIC





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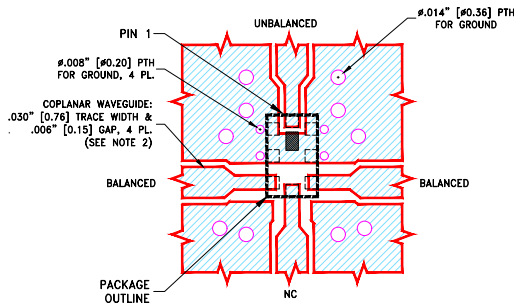
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PAD CONNECTIONS

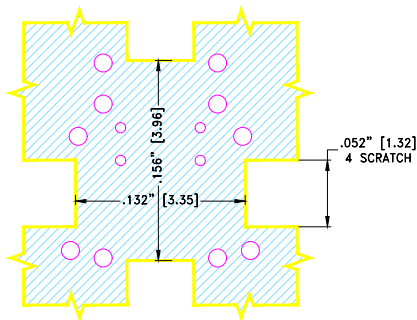
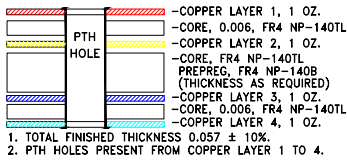
UNBALANCED PORT	1
BALANCED PORT	4,6
GROUND	2,3,7,8
NOT CONNECT OR GND	5

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-BBFCG2-3650+
SUGGESTED PCB LAYOUT (PL-724)



STACK-UP DIAGRAM



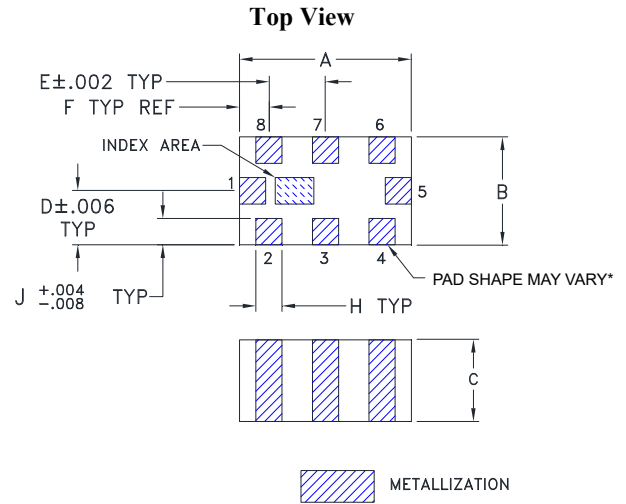
TOP VIEW TO LAYER 2

NOTES:

- PCB IS MULTILAYER PCB, SEE STACK-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.

OUTLINE DRAWING



*During the manufacturing process, the pad shape may not be rectangular and may take on a more semi-circle shape. However, the pad dimensions reflect this, with the pad shape being within the specified lengths. The metallization compensates accordingly and so performance will not be affected. In addition, solderability will not be influenced by the pad shape.

OUTLINE DIMENSIONS (Inches 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



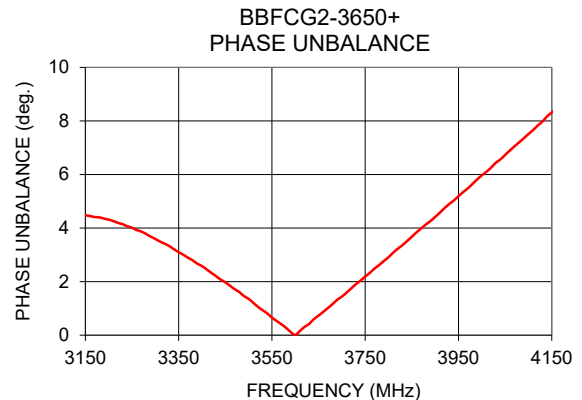
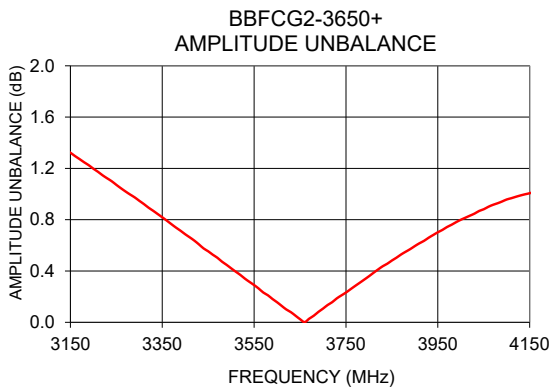
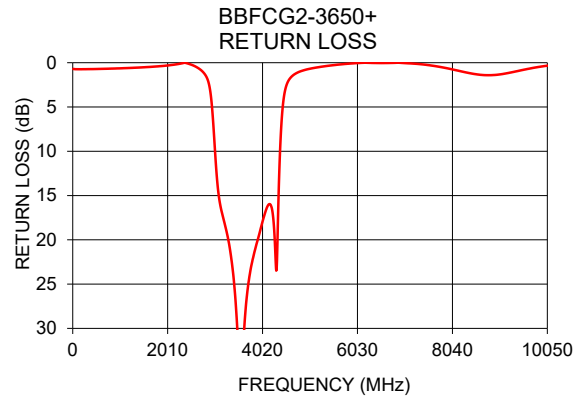
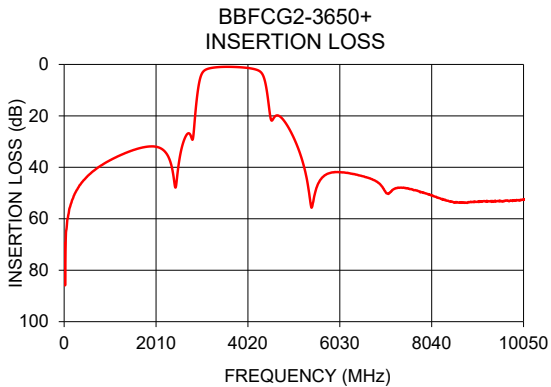
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TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (Deg.)
10	69.43	0.71	4.09	169.46
1000	37.28	0.64	6.21	24.04
2598	30.78	0.43	2.65	2.98
2698	26.96	0.76	2.32	16.12
3150	1.66	16.73	1.32	4.48
4150	1.78	16.01	1.01	8.32
4847	22.80	0.93	2.78	20.91
5547	46.74	0.26	3.13	67.08
6099	41.95	0.02	3.16	15.29
7000	48.75	0.04	1.48	173.95
8000	50.68	0.71	3.63	179.67
10048	52.70	0.34	0.99	176.46



- 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.
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