



Mini-Circuits

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Bandpass Filter & Balun **BBFCG1-252+**

50Ω 2400 to 2500 MHz

THE BIG DEAL

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



Generic photo used for illustration purposes only

CASE STYLE: GE0805C-2

APPLICATIONS

- ISM Band
- Bluetooth
- Zigbee
- WiFi / WLAN

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits' BBFCG1-252+ is a tiny ceramic RF balun filter with an impedance ratio of 1:1, covering a variety of wireless communications applications from 2400 to 2500 MHz. This model provides low insertion loss, low phase unbalance (relative to 180°), low amplitude unbalance, and RF input power handling up to 1W. It provides DC isolation from input to output allowing it to be used for DC biasing of external circuits at the output. 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
1W power handling	Supports a wide range of power requirements
DC Isolated from input to output	Can be used to DC bias external circuits at the output.
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			1			
Pass Band	Insertion Loss ¹	F1-F2	2400 - 2500	—	3.5	dB
	Return Loss	F1-F2	2400 - 2500	7.5	15	
Stop Band, Lower	Rejection	DC-F3	DC - 1800	29	35	dB
Stop Band, Upper	Rejection	F4-F5	3500 - 6600	24	—	dB
		F5-F6	6600 - 8000	20	—	
Amplitude Unbalance		F1-F2	2400 - 2500	—	1.8	dB
Phase Unbalance		F1-F2	2400 - 2500	—	12	Degree

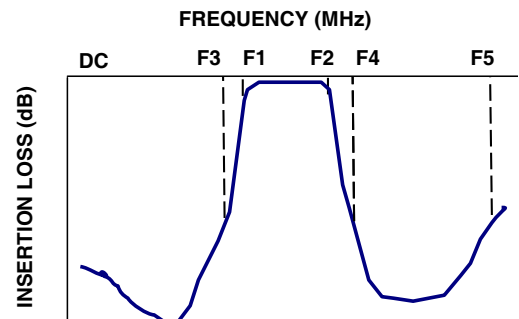
1. Tested on Evaluation Board TB-BBFCG1-252+

MAXIMUM RATINGS

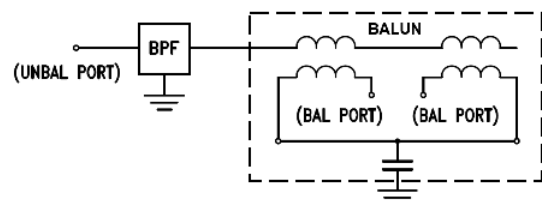
Parameter	Ratings
Operating Temperature	-55°C to 125°C
Storage Temperature ²	-55°C to 125°C
RF Power Input ³	1W at 25°C

2. Refer to product storage temperature after installation
Suggestion for T&R unused product storage condition:
+5 ~ +35 °C, Humidity 45~75%RH, 12 month Max
3. Derate linearly to 0.25W at 125°C.
Permanent damage may occur if any of these limits exceeded.

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL SCHEMATIC





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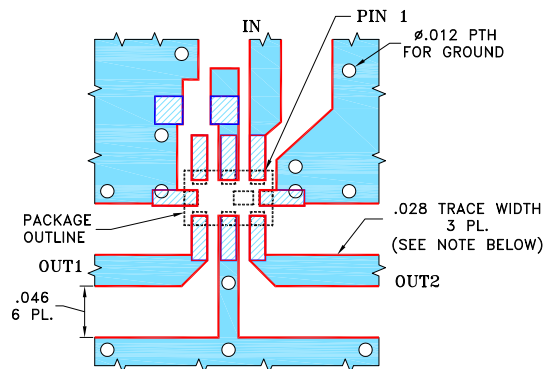
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PAD CONNECTIONS

UNBALANCED PORT	1
BALANCED PORT	5,7
GROUND	4,6,8
NC	3
NC or DC Feed	2

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-BBFCG1-252+
SUGGESTED PCB LAYOUT (PL-551)



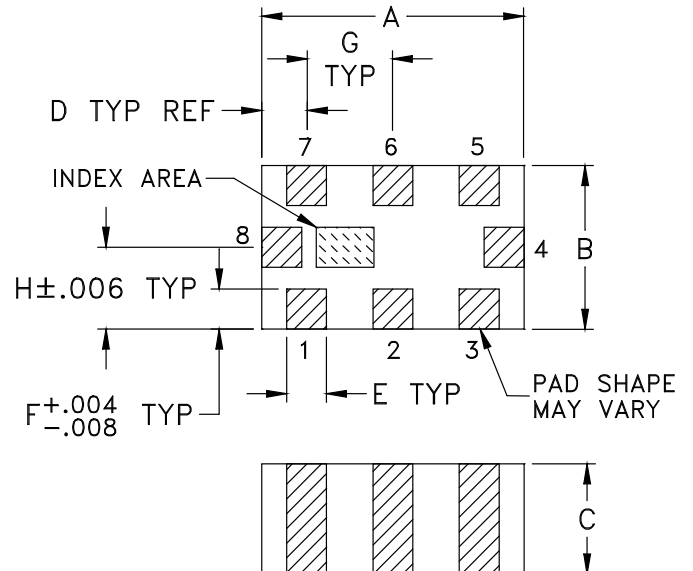
NOTES:

- TRACE WIDTH IS SHOWN FOR FR4, GRADE IT-180TC (ITEQ CORP.) WITH DIELECTRIC THICKNESS .016±.0015. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
- 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
.079	.049	.037	.014	.012
2.01	1.24	0.94	0.36	0.30
F	G	H	wt	
.012	.026	.025	grams	
0.30	0.66	0.64	.008	

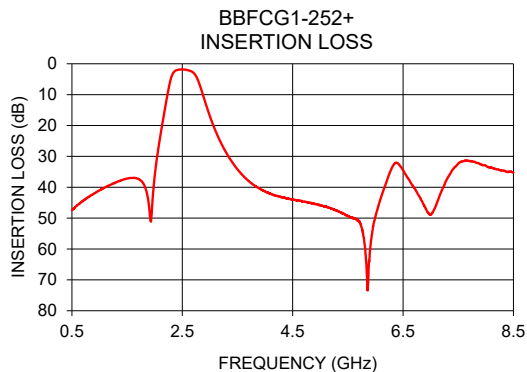
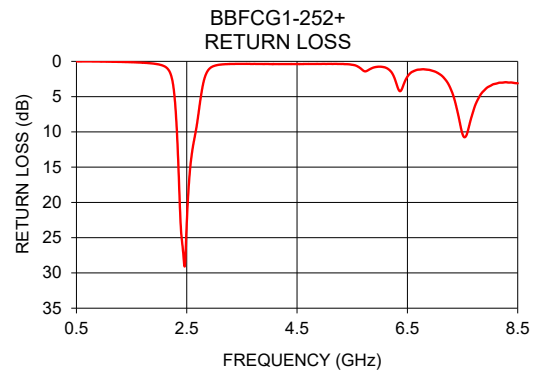
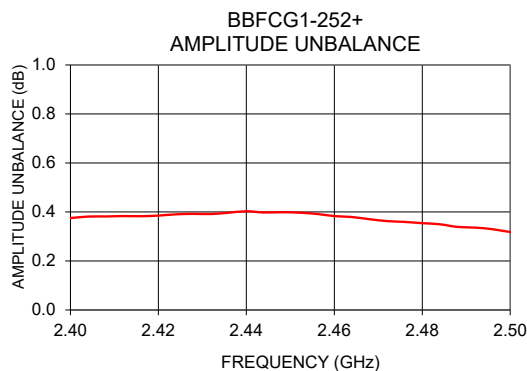
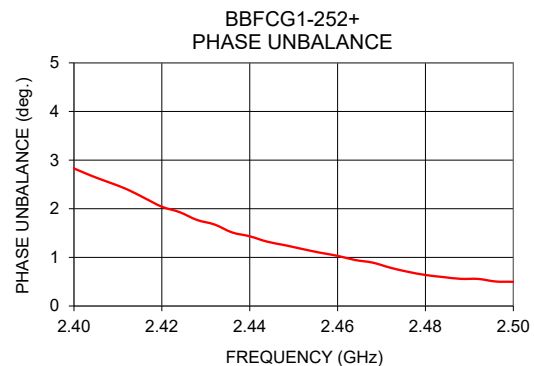


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TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (Deg.)
0.50	47.45	0.01	5.69	156.12
0.70	44.41	0.01	5.95	161.63
1.00	41.01	0.04	6.31	165.18
1.50	37.18	0.13	6.50	167.44
2.00	36.33	0.45	3.63	156.15
2.40	2.05	24.38	0.38	2.83
2.45	1.87	28.71	0.40	1.17
2.50	1.83	22.94	0.32	0.50
3.50	34.20	0.35	3.82	175.71
4.80	45.05	0.37	1.36	179.32
4.90	45.38	0.37	1.36	179.13
5.00	45.90	0.36	1.35	178.90
5.90	60.87	0.85	0.25	177.26
7.20	41.18	2.70	0.24	174.36
7.50	32.30	10.33	0.14	174.80
8.50	35.24	3.11	0.42	175.67



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

