Ceramic Balun

RF Transformer

BLGE4-252R+

50Ω 2400 to 2500 MHz 1:4 Ratio

The Big Deal

- Band optimized for Bluetooth, Zigbee and low band Wi-Fi
- Tiny size, 0805
- Low insertion loss, 0.5 dB
- Low unbalance, 0.4 dB, 4°
- Low cost



CASE STYLE: GE0805C-9

Product Overview

Mini-Circuits BLGE4-252R+ is a miniature ceramic RF balun transformer with an impedance ratio (secondary/primary) of 1:4. This model covers the 2400 to 2500 MHz frequency band and has been performance optimized for use in Bluetooth, Zigbee and low band Wi-Fi applications. This model provides low insertion loss, low amplitude unbalance, and RF input power handling up to 2W. Fabricated using LTCC technology, it comes housed in a tiny package (0.08 x 0.05 x 0.04”) and is suitable for high-volume production.

Key Features

Feature	Advantages
Low insertion loss, 0.5 dB	Enables excellent signal power transmission from input to output.
Low unbalance, 0.5 dB, 2°	Low unbalance can improve a system’s electromagnetic compatibility by rejecting unwanted common-mode noise.
2W power handling	Supports a wide range of power requirements
DC Isolation	Provides DC isolation between circuits and efficient AC transmission, eliminating the need for external DC biasing components.
Tiny size, 0805	Accommodates tight space requirements for dense PCB layouts.

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

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500,1000, 4000

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature*	-55°C to 100°C
Input RF Power	2W

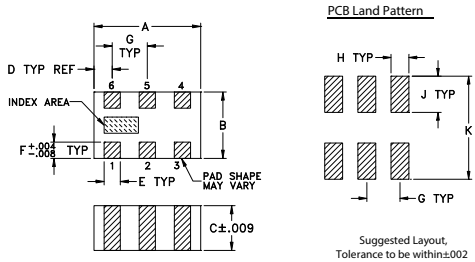
*Refer to product storage temperature after installation.
Suggestion for T&R unused product storage condition: +5~+35°C, Humidity 45~75%RH, 12 Month max.
Permanent damage may occur if any of these limits are exceeded.

Pad Connections

PRIMARY DOT (Unbalanced Port)	1
PRIMARY (GND) or DC Feed	2
SECONDARY DOT (Balanced)	3
SECONDARY (Balanced)	4
NO CONNECTION	6
NOT USED (GND Externally)	5

Pads 2,3,4 are DC-connected internally

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
.079	.049	.037	.014	.012	.012
2.0	1.24	0.94	0.36	0.30	0.30

G	H	J	K		wt
.026	.014	.039	.110		grams
0.66	0.36	1.00	2.80		.008

Features

- low phase unbalance, 4 deg. and amplitude unbalance, 0.4 dB typ.
- miniature size 0805 (2.0x1.2 mm)
- LTCC construction
- low cost
- aqueous washable

Applications

- ISM Band
- WLAN/Wi-Fi
- Bluetooth
- Zigbee

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio			4		
Frequency Range		2400	—	2500	MHz
Insertion Loss*	2400 - 2500	—	0.5	1.2	dB
Amplitude Unbalance	2400 - 2500	—	0.4	1.6	dB
Phase Unbalance†	2400 - 2500	—	4	10	Degree
Unbalance Return Loss	2400 - 2500	11	25	—	dB

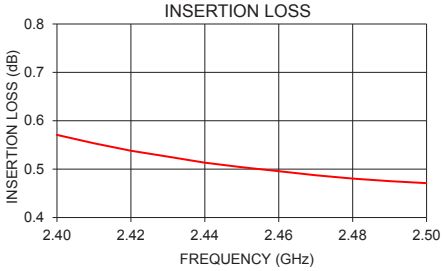
* Tested on Evaluation Board TB-BLGE4-252R+

Typical Performance Data at 25°C**

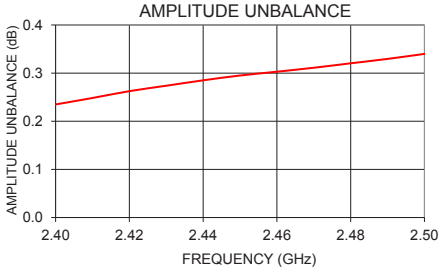
FREQUENCY (GHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
2.40	0.57	17.95	0.23	2.32
2.41	0.55	18.85	0.25	2.38
2.42	0.54	19.85	0.26	2.42
2.43	0.53	20.98	0.27	2.45
2.44	0.51	22.23	0.29	2.52
2.45	0.50	23.68	0.30	2.60
2.46	0.50	25.38	0.30	2.71
2.47	0.49	27.45	0.31	2.83
2.48	0.48	30.13	0.32	2.94
2.49	0.48	33.83	0.33	3.02
2.50	0.47	39.18	0.34	3.08

** Measured with Agilent E5071B network analyzer using impedance conversion and port extension.

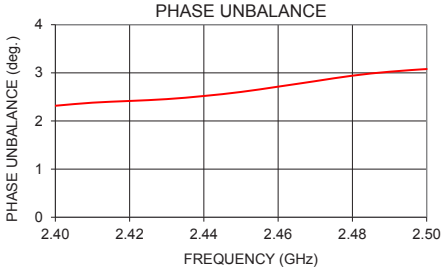
BLGE4-252R+
INSERTION LOSS



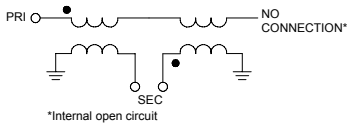
BLGE4-252R+
AMPLITUDE UNBALANCE



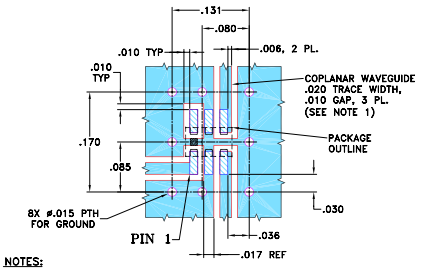
BLGE4-252R+
PHASE UNBALANCE



Configuration J



Evaluation Board MCL P/N: TB-BLGE4-252R+
Suggested PCB Layout (PL-264)



NOTES:
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. 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

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