

LTCC Balun RF Transformer

50Ω 4900 to 5950 MHz 1:1 Ratio

BLJC1-542R+



Generic photo used for illustration purposes only
CASE STYLE: JC0603C

+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* | -40°C to 85°C |
| Input RF Power** | 0.5W at 25°C |

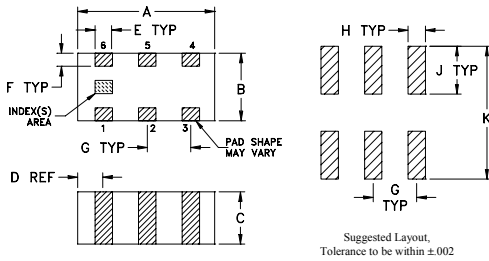
*Refer to product storage temperature after installation.
Suggestion for T&R unused product storage condition: +5–+35°C, Humidity 45–75%RH, 12 Month max.
Permanent damage may occur if any of these limits are exceeded.
**Derate linearly to 0.25W at 85°C

Pad Connections

| | |
|---------------------------------|---|
| PRIMARY DOT (Unbalanced Port) | 1 |
| GND or DC FEED | 2 |
| SECONDARY DOT (Balanced) (OUT1) | 3 |
| SECONDARY (Balanced) (OUT2) | 4 |
| NO CONNECTION | 6 |
| NOT USED (GND Externally) | 5 |

Outline Drawing

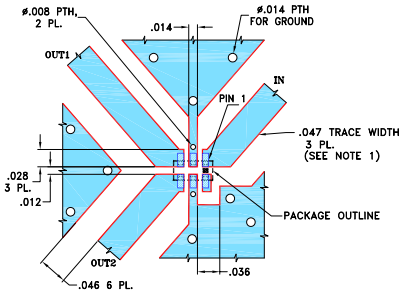
PCB Land Pattern



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H | J | K | wt |
|------|------|------|------|------|------|------|------|------|------|-------|
| .063 | .031 | .024 | .012 | .008 | .006 | .020 | .010 | .022 | .053 | grams |
| 1.60 | 0.79 | 0.61 | 0.30 | 0.20 | 0.15 | 0.51 | 0.25 | 0.56 | 1.35 | 0.005 |

Evaluation Board MCL P/N: TB-1051+ Suggested PCB Layout (PL-548)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4233 WITH DIELECTRIC THICKNESS .0208-.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.

Features

- low phase unbalance, 2.4 deg. and amplitude unbalance, 0.6 dB typ.
- miniature size 0603
- 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 | | | 1 | | |
| Frequency Range | | 4900 | — | 5950 | MHz |
| Insertion Loss* | 4900 - 5950 | — | 0.7 | 1.5 | dB |
| Amplitude Unbalance | 4900 - 5950 | — | 0.6 | 1.7 | dB |
| Phase Unbalance† | 4900 - 5950 | — | 2.4 | 14 | Degree |
| Unbalance Return Loss | 4900 - 5950 | 7 | 16 | — | dB |

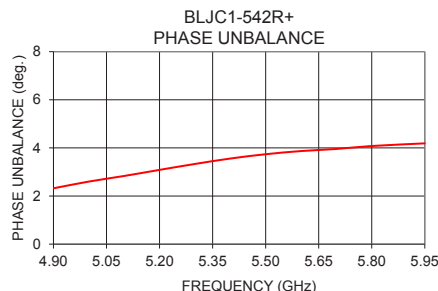
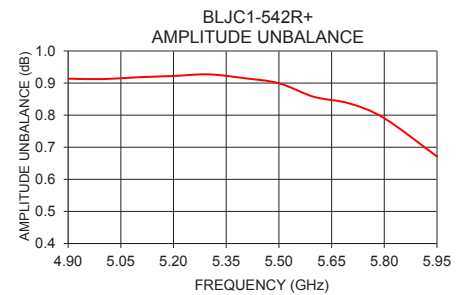
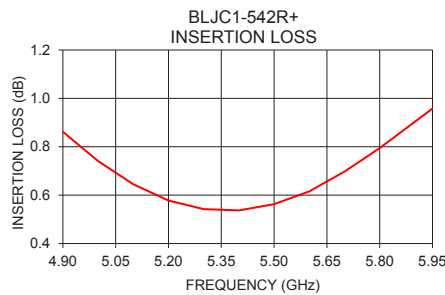
* Tested on Evaluation Board TB-1051+

† Relative to 180°

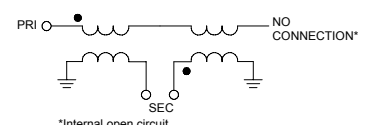
Typical Performance Data at 25°C**

| FREQUENCY (GHz) | INSERTION LOSS (dB) | INPUT R. LOSS (dB) | AMPLITUDE UNBALANCE (dB) | PHASE UNBALANCE (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 4.90 | 0.86 | 12.50 | 0.91 | 2.32 |
| 5.00 | 0.74 | 14.78 | 0.91 | 2.60 |
| 5.10 | 0.65 | 17.88 | 0.92 | 2.83 |
| 5.20 | 0.58 | 22.77 | 0.92 | 3.09 |
| 5.30 | 0.54 | 28.63 | 0.93 | 3.33 |
| 5.40 | 0.54 | 23.13 | 0.92 | 3.56 |
| 5.50 | 0.56 | 18.19 | 0.90 | 3.74 |
| 5.60 | 0.62 | 14.83 | 0.86 | 3.87 |
| 5.70 | 0.70 | 12.57 | 0.84 | 3.96 |
| 5.95 | 0.96 | 9.10 | 0.67 | 4.19 |

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



Configuration J



Notes

- 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.
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