



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 web site for RoHS Compliance 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

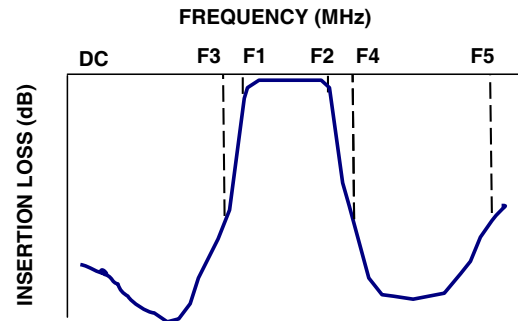
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Units |
|-----------------------|-----------------|-----------------|------|------|------|--------|
| Impedance Ratio | — | — | 2 | | | |
| Insertion Loss* | F1-F2 | 3150 - 4150 | — | 3.2 | 4 | dB |
| Return Loss | Unbalanced Port | F1-F2 | 8.5 | 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 |

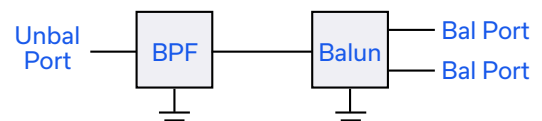
TYPICAL FREQUENCY RESPONSE



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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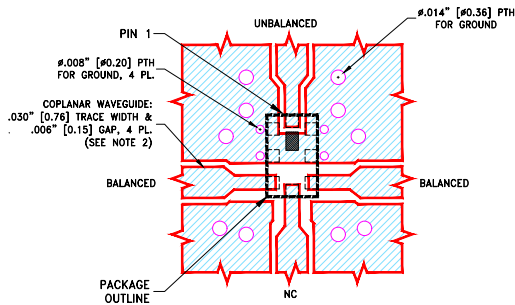
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PAD CONNECTIONS

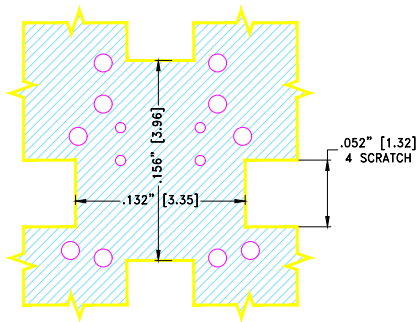
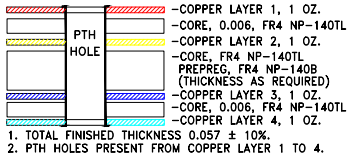
| | |
|--------------------|---------|
| UNBALANCED PORT | 1 |
| BALANCED PORT | 4,6 |
| GROUND | 2,3,7,8 |
| NOT CONNECT OR GND | 5 |

PRODUCT MARKING: N/A

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



STACK-UP DIAGRAM

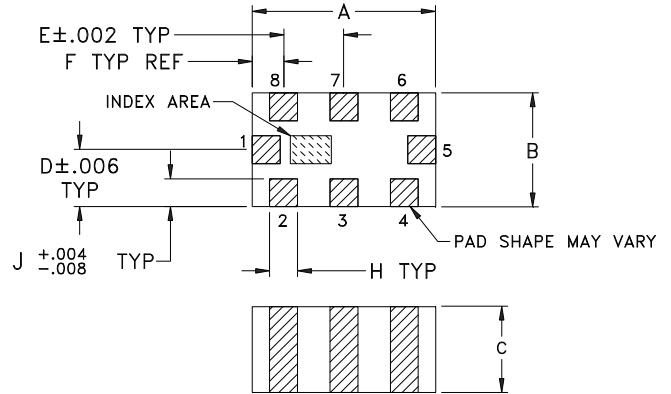


NOTES:

- 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



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 |



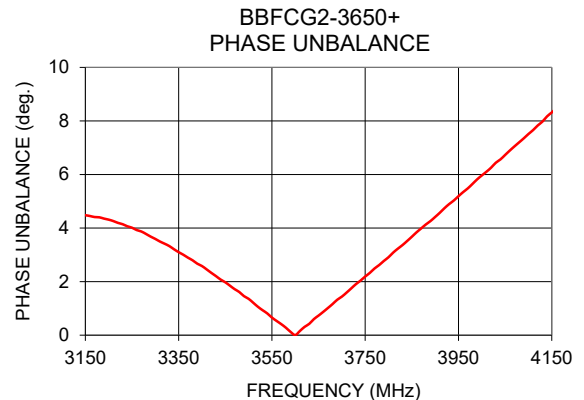
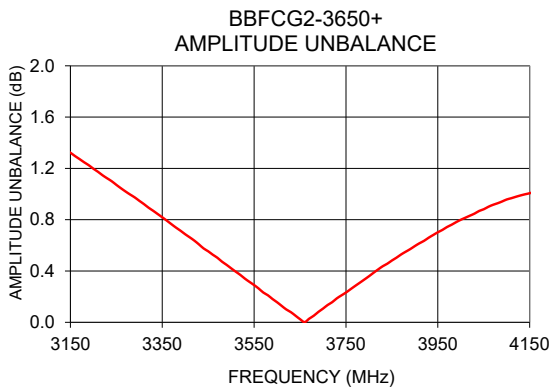
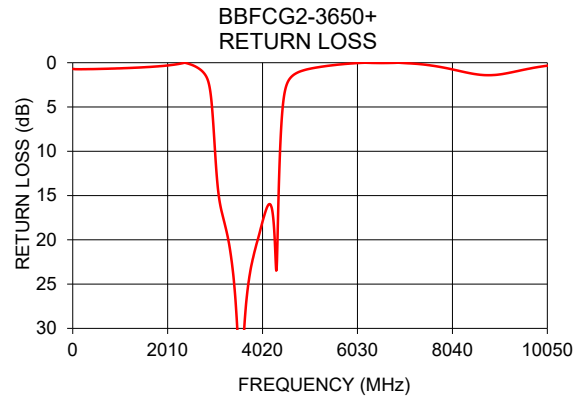
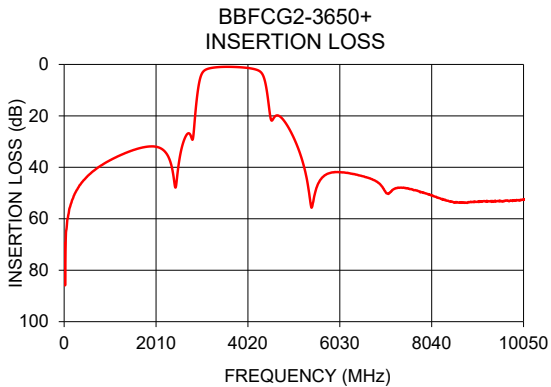
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TYPICAL PERFORMANCE DATA

| 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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