



Mini-Circuits

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# Bandpass Filter & Balun **BBFCG2-3275+**

50Ω 2875 to 3675 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' BBFCG2-3275+ is a tiny ceramic RF balun filter with an impedance ratio of 1:2, covering a variety of wireless communications applications from 2875 to 3675 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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# Bandpass Filter & Balun **BBFCG2-3275+**

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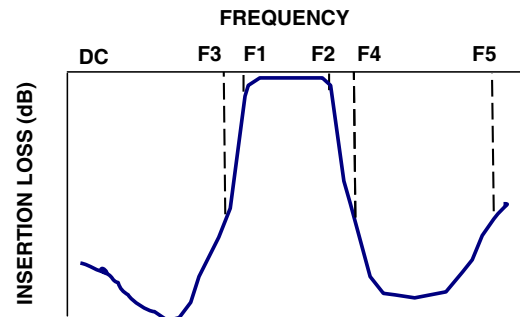
## ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter             | F#                       | Frequency (MHz) | Min. | Typ. | Max. | Units  |
|-----------------------|--------------------------|-----------------|------|------|------|--------|
| Impedance Ratio       | —                        | —               | 2    |      |      |        |
| Insertion Loss        | F1-F2                    | 2875 - 3675     | —    | —    | 3    | dB     |
| Return Loss           | Unbalanced Port<br>F1-F2 | 2875 - 3675     | 8.5  | —    | —    | dB     |
|                       | Balanced Port<br>F1-F2   | 2875 - 3675     | 8.5  | —    | —    |        |
| Stopband Rejection    | DC-F3                    | DC - 1600       | 10   | —    | —    | dB     |
|                       |                          | 4285 - 6200     | 15   | —    | —    |        |
|                       |                          | 6200 - 9300     | 10   | —    | —    |        |
|                       | F4-F5                    | 9300 - 10500    | 5    | —    | —    |        |
| Amplitude Unbalance ± | F1-F2                    | 2875 - 3675     | -1.5 | —    | 1.5  | dB     |
| Phase Unbalance       | F1-F2                    | 2875 - 3675     | -13  | —    | 13   | Degree |

## 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   |

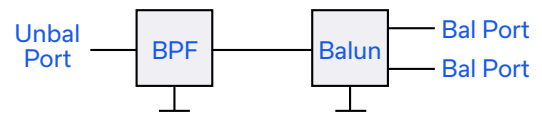
## TYPICAL FREQUENCY RESPONSE



## 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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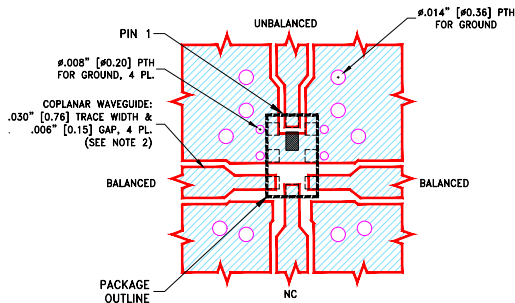
# Bandpass Filter & Balun **BBFCG2-3275+**

## PAD CONNECTIONS

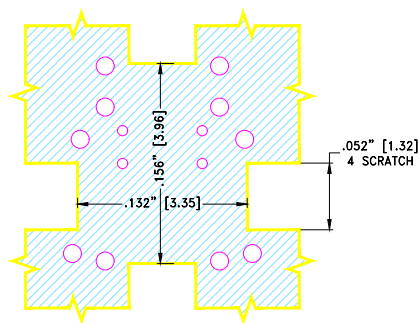
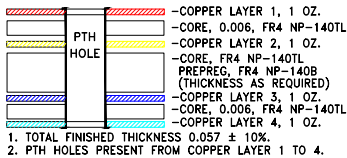
|                    |         |
|--------------------|---------|
| UNBALANCED PORT    | 1       |
| BALANCED PORT      | 4,6     |
| GROUND             | 2,3,7,8 |
| NOT CONNECT OR GND | 5       |

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-BBFCG2-3275+  
SUGGESTED PCB LAYOUT (PL-724)



### STACK-UP DIAGRAM



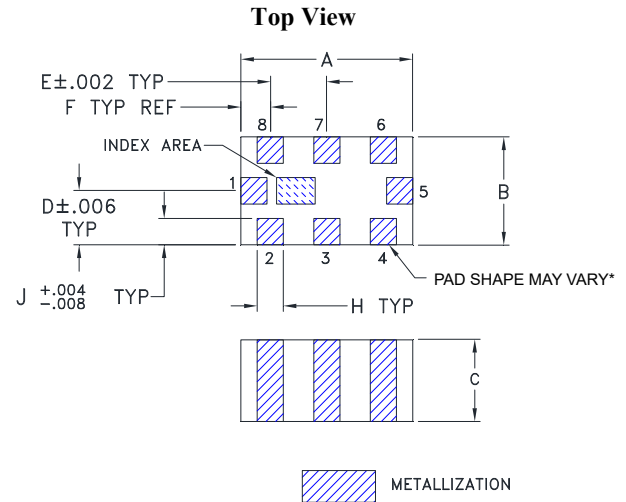
TOP VIEW TO LAYER 2

### 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  |

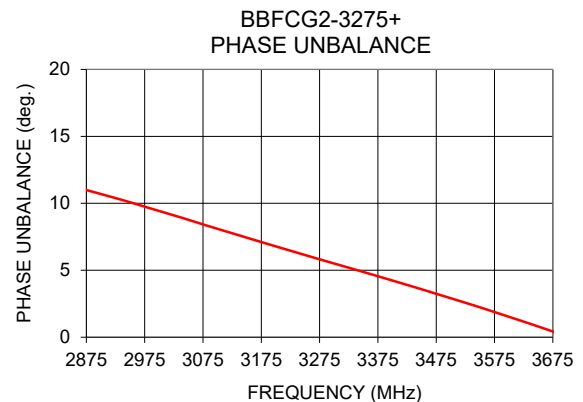
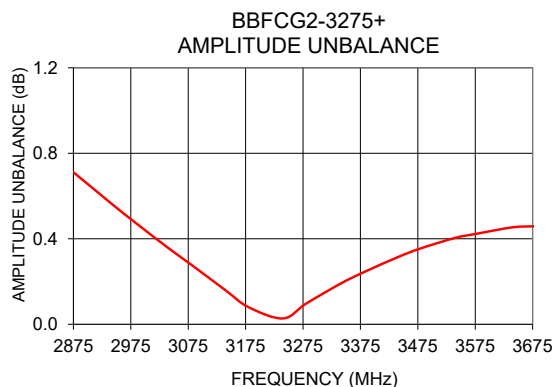
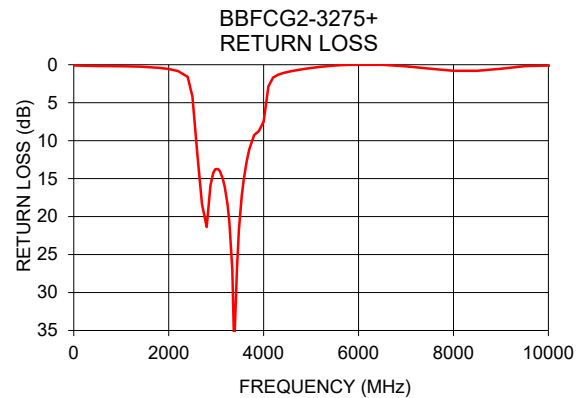
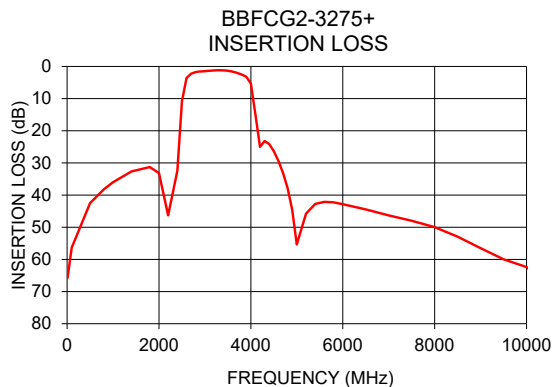


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## TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) | Amplitude Unbalance (dB) | Phase Unbalance (Deg.) |
|-----------------|---------------------|------------------|--------------------------|------------------------|
| 10              | 65.73               | 0.10             | 2.69                     | 33.47                  |
| 100             | 56.34               | 0.12             | 0.65                     | 0.57                   |
| 1000            | 36.02               | 0.19             | 1.21                     | 0.74                   |
| 1400            | 32.67               | 0.25             | 3.76                     | 4.00                   |
| 2880            | 1.58                | 15.87            | 0.70                     | 10.93                  |
| 3680            | 1.93                | 11.64            | 0.46                     | 0.35                   |
| 4300            | 23.22               | 1.33             | 1.60                     | 12.57                  |
| 5000            | 55.34               | 0.43             | 4.23                     | 172.84                 |
| 6000            | 42.85               | 0.02             | 6.18                     | 100.91                 |
| 9000            | 56.50               | 0.53             | 1.18                     | 177.51                 |
| 10500           | 68.37               | 0.26             | 0.14                     | 178.10                 |
| 11000           | 64.19               | 0.23             | 0.10                     | 177.12                 |



- 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.
  - 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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