

# Ceramic Balun RF Transformer

50Ω 2100 to 2700 MHz 1:2 Ratio

## TCW2-272+



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 |

### Features

- wideband, 2100 to 2700 MHz
- low phase unbalance, 5 deg. and amplitude unbalance, 0.6 dB typ.
- miniature size 0603 (1.6x0.8mm)
- LTCC construction
- low cost
- aqueous washable

### Applications

- WLAN
- WiMAX/WiBRO
- ISM
- RADAR

### Electrical Specifications at 25°C

| Parameter                           | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|-------------------------------------|-----------------|------|------|------|--------|
| Impedance Ratio (Secondary/Primary) |                 |      | 2    |      |        |
| Frequency Range                     |                 | 2100 | —    | 2700 | MHz    |
| Insertion Loss <sup>1</sup>         | 2400 - 2500     | —    | 1.1  | 1.4  | dB     |
|                                     | 2100 - 2700     | —    | 1.3  | —    |        |
| Amplitude Unbalance                 | 2400 - 2500     | —    | 0.6  | 1.4  | dB     |
|                                     | 2100 - 2700     | —    | 0.8  | —    |        |
| Phase Unbalance <sup>2</sup>        | 2400 - 2500     | —    | 4    | 10   | Degree |
|                                     | 2100 - 2700     | —    | 8    | —    |        |

1. Reference Demo Board TB-793+

2. Relative to 180°

### Maximum Ratings

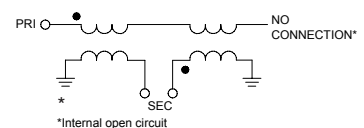
| Parameter             | Ratings        |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| RF Power <sup>3</sup> | 2W             |

3. Passband rating, derate linearly to 1W at 100°C ambient  
Permanent damage may occur if any of these limits are exceeded.

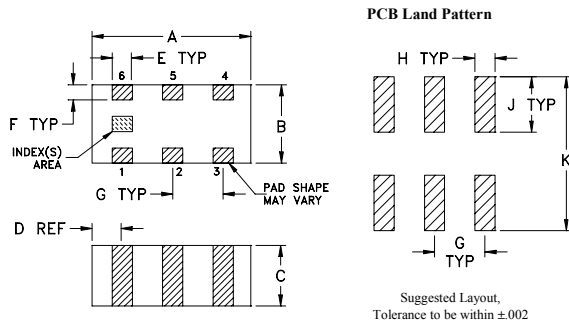
### Pad Connections

| Function                      | Pin Number |
|-------------------------------|------------|
| PRIMARY DOT (Unbalanced Port) | 1          |
| PRIMARY (GND)                 | 3          |
| SECONDARY DOT (Balanced)      | 4          |
| SECONDARY (Balanced)          | 6          |
| NO CONNECTION                 | 2,5        |

### Configuration J



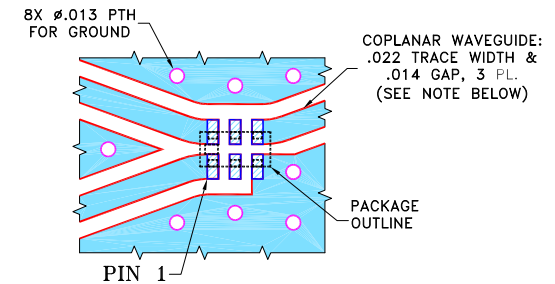
## Outline Drawing



## Outline Dimensions (inch/mm)

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

## Demo Board MCL P/N: TB-793+ Suggested PCB Layout (PL-430)



### NOTES:

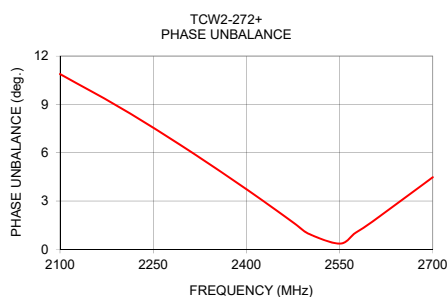
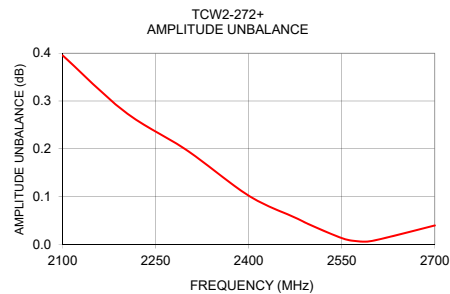
1. COPLANAR WAVEGUIDE IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $.010" \pm .001"$ . COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

## Typical Performance Data<sup>4</sup>

| Frequency (MHz) | Insertion Loss (dB) | Input R. Loss (dB) | Amplitude Unbalance (dB) | Phase Unbalance (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 2100            | 1.21                | 12.69              | 0.40                     | 10.88                  |
| 2200            | 1.15                | 13.35              | 0.28                     | 8.73                   |
| 2300            | 1.13                | 13.65              | 0.20                     | 6.32                   |
| 2400            | 1.14                | 13.52              | 0.10                     | 3.73                   |
| 2475            | 1.16                | 13.17              | 0.06                     | 1.68                   |
| 2500            | 1.17                | 13.01              | 0.04                     | 0.97                   |
| 2550            | 1.20                | 12.68              | 0.01                     | 0.35                   |
| 2575            | 1.22                | 12.51              | 0.01                     | 1.01                   |
| 2600            | 1.24                | 12.32              | 0.01                     | 1.64                   |
| 2700            | 1.34                | 11.34              | 0.04                     | 4.47                   |

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



### Additional 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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