

# Ceramic Balun RF Transformer

50Ω 600 to 1100 MHz

TCN3-11+



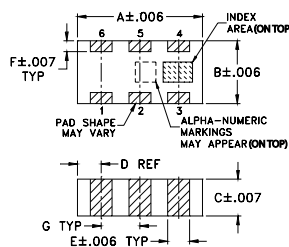
## Maximum Ratings

|                                                                                                        |                |
|--------------------------------------------------------------------------------------------------------|----------------|
| Operating Temperature                                                                                  | -55°C to 100°C |
| Storage Temperature                                                                                    | -55°C to 100°C |
| Input RF Power**                                                                                       | 5W             |
| ** Derate linearly to 2.5W at 100°C<br>Permanent damage may occur if any of these limits are exceeded. |                |

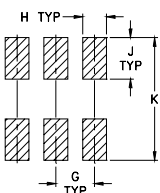
## Pin Connections

|               |     |
|---------------|-----|
| PRIMARY DOT   | 4   |
| PRIMARY(GND)  | 2,5 |
| SECONDARY DOT | 1   |
| SECONDARY     | 6   |
| NOT USED      | 3   |

## Outline Drawing



PCB Land Pattern

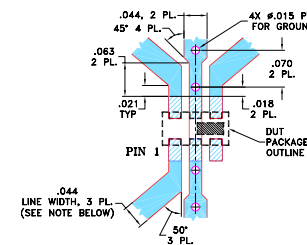


Suggested Layout,  
Tolerance to be within ±.002

## Outline Dimensions (Inch)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .126 | .063 | .035 | .024 | .022  | .011 |
| 3.20 | 1.60 | 0.89 | 0.61 | 0.56  | 0.28 |
| G    | H    | J    | K    | wt    |      |
| .039 | .024 | .042 | .123 | grams |      |
| 0.99 | 0.61 | 1.07 | 3.12 | .020  |      |

## Demo Board MCL P/N: TB-287 Suggested PCB Layout (PL-163)



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## 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](http://www.minicircuits.com/MCLStore/terms.jsp)

## Features

- wideband, 600 to 1100 MHz
- miniature size, 0.12"x.06"x.037"
- LTCC construction
- low cost
- aqueous washable

## Applications

- WAN
- TACS
- AMPS
- NAMPS
- PDC

## Electrical Specifications (T<sub>AMB</sub> = 25°C)

| Ω<br>RATIO<br>(Secondary/Primary) | FREQUENCY<br>(MHz) | INSERTION*<br>LOSS<br>(dB) | PHASE<br>UNBALANCE †<br>(Deg.)<br>Typ. | AMPLITUDE<br>UNBALANCE<br>(dB)<br>Typ. |
|-----------------------------------|--------------------|----------------------------|----------------------------------------|----------------------------------------|
| 3                                 | 600-1100           | 0.7                        | 6.0                                    | 1.0                                    |
|                                   | 800-960            | 0.5                        | 2.0                                    | 0.8                                    |

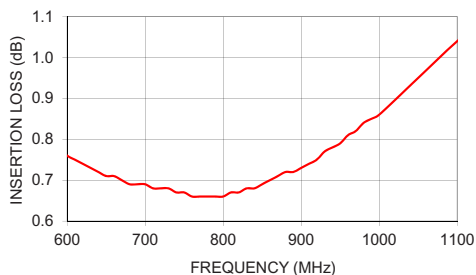
\* Insertion Loss is referenced to mid-band loss, 0.7 dB

† Relative to 180°

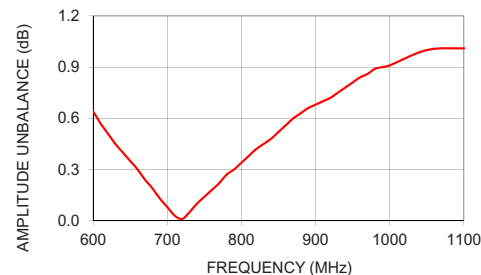
## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | INPUT<br>R. LOSS<br>(dB) | AMPLITUDE<br>UNBALANCE<br>(dB) | PHASE<br>UNBALANCE<br>(Deg.) |
|--------------------|---------------------------|--------------------------|--------------------------------|------------------------------|
| 600.00             | 0.76                      | 12.66                    | 0.64                           | 2.49                         |
| 650.00             | 0.71                      | 14.01                    | 0.35                           | 0.81                         |
| 700.00             | 0.69                      | 15.80                    | 0.08                           | 0.16                         |
| 750.00             | 0.67                      | 17.61                    | 0.14                           | 0.70                         |
| 800.00             | 0.66                      | 19.41                    | 0.34                           | 0.57                         |
| 850.00             | 0.69                      | 20.29                    | 0.52                           | 0.06                         |
| 900.00             | 0.73                      | 19.39                    | 0.68                           | 0.78                         |
| 950.00             | 0.79                      | 17.84                    | 0.81                           | 2.19                         |
| 1000.00            | 0.86                      | 15.98                    | 0.91                           | 3.68                         |
| 1100.00            | 1.04                      | 13.16                    | 1.01                           | 7.26                         |

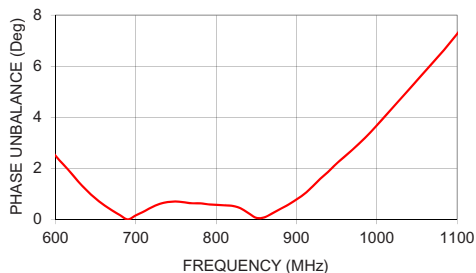
TCN3-11+  
INSERTION LOSS



TCN3-11+  
AMPLITUDE UNBALANCE



TCN3-11+  
PHASE UNBALANCE



configuration G

