

# Ceramic Balun RF Transformer

50Ω 1200 to 2200 MHz

TCN4-22+  
TCN4-22



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

**+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, 3000 |

## Maximum Ratings

Operating Temperature -55°C to 100°C

Storage Temperature -55°C to 100°C

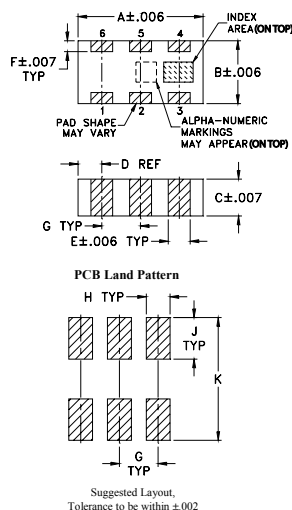
Input RF Power\*\* 5W

\*\*From 85°C derate linearly to 2.5W at 100°C  
Permanent damage may occur if any of these limits are exceeded.

## Pin Connections

|               |     |
|---------------|-----|
| PRIMARY DOT   | 2   |
| PRIMARY(GND)  | 1,3 |
| SECONDARY DOT | 4   |
| SECONDARY     | 6   |
| GROUND        | 5   |

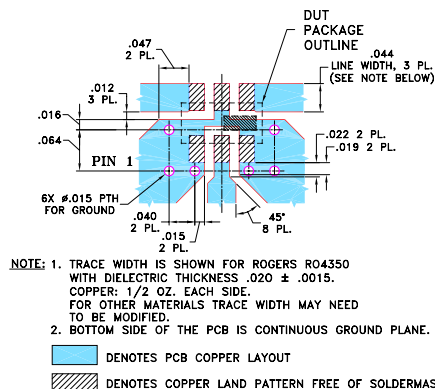
## Outline Drawing



## Outline Dimensions (mm)

| 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-298**  
**Suggested PCB Layout (PL-162)**



## 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.
- 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, 1200 to 2200 MHz
- low phase unbalance
- miniature size, 0.12"x.06"x.037"
- LTCC construction
- low cost
- aqueous washable

## Applications

- GSM
- CDMA
- GPS
- DECT
- PCN
- PCS
- ISM

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

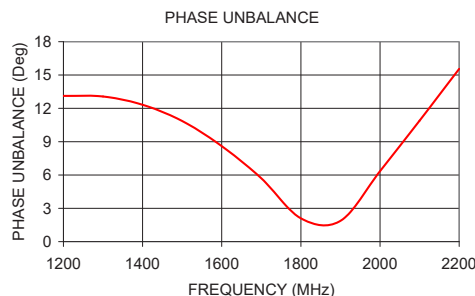
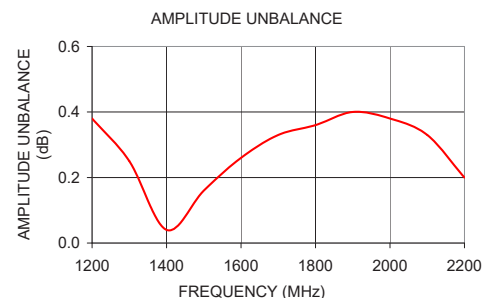
| Ω<br>RATIO<br>(Secondary/Primary) | FREQUENCY<br>(MHz) | INSERTION*<br>LOSS<br>(dB) | PHASE<br>UNBALANCE †<br>(Deg.)<br>Typ. | AMPLITUDE<br>UNBALANCE<br>(dB)<br>Typ. |
|-----------------------------------|--------------------|----------------------------|----------------------------------------|----------------------------------------|
| 4                                 | 1200-2200          | 1.0                        | 10                                     | 0.6                                    |

\* Insertion Loss is referenced to mid-band loss, 0.9 dB

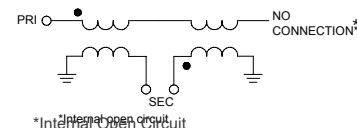
† Relative to 180°

## 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.) |
|--------------------|---------------------------|--------------------------|--------------------------------|------------------------------|
| 1200.00            | 0.55                      | 12.54                    | 0.38                           | 13.12                        |
| 1300.00            | 0.64                      | 13.68                    | 0.25                           | 13.07                        |
| 1400.00            | 0.73                      | 14.80                    | 0.04                           | 12.32                        |
| 1500.00            | 0.81                      | 15.52                    | 0.16                           | 10.86                        |
| 1600.00            | 0.90                      | 15.33                    | 0.26                           | 8.60                         |
| 1700.00            | 1.00                      | 14.39                    | 0.33                           | 5.70                         |
| 1800.00            | 1.10                      | 13.02                    | 0.36                           | 2.10                         |
| 1900.00            | 1.23                      | 11.67                    | 0.40                           | 1.87                         |
| 2000.00            | 1.35                      | 10.47                    | 0.38                           | 6.35                         |
| 2100.00            | 1.47                      | 9.46                     | 0.33                           | 10.89                        |
| 2200.00            | 1.55                      | 8.60                     | 0.20                           | 15.55                        |



## configuration J



**Mini-Circuits®**

[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV. D  
M151107  
TCN4-22  
ED-11659/1  
AD/RS/CP/AM  
151008

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[TCN4-22+](#)