

# Ceramic RF Transformer

50Ω 650 to 1250 MHz

**New!** **TCN4-13+**  
**TCN4-13**



## 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 2.5 W at 100°C

## Pin Connections

PRIMARY DOT 4

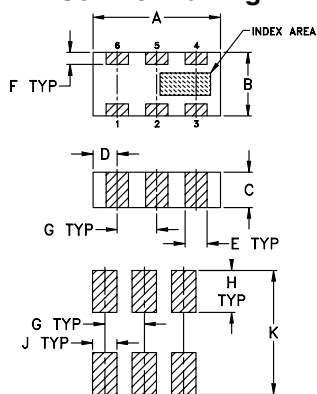
PRIMARY(GND) 2,5

SECONDARY DOT 1

SECONDARY 6

NOT USED 3

## Outline Drawing



SUGGESTED LAYOUT FOR PCB PATTERN  
PATTERN TO BE WITHIN ±.002

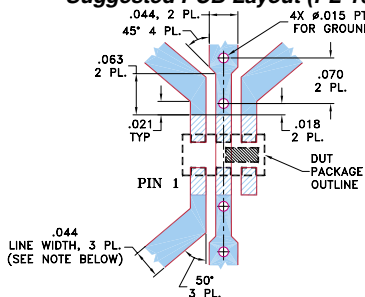
TOLERANCE UNLESS OTHERWISE STATED

2 PLACE DECIMALS: ±.01  
3 PLACE DECIMALS: ±.005

## Outline Dimensions (inch)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .126 | .063 | .037 | .024 | .022  | .012 |
| 3.20 | 1.60 | 0.94 | 0.61 | 0.56  | 0.30 |
| G    | H    | J    | K    | wt    |      |
| .039 | .042 | .024 | .123 | grams |      |
| 0.99 | 1.07 | 0.61 | 3.12 | .020  |      |

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



NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350  
WITH DIELECTRIC THICKNESS .020 ± .0015.  
COPPER: 1/2 OZ. EACH SIDE.  
FOR OTHER MATERIALS TRACE WIDTH MAY NEED  
TO BE MODIFIED.  
BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

■ DENOTES PCB COPPER LAYOUT  
■ DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

## Features

- wideband, 650 to 1250 MHz
- miniature size .12"x.06"x.035
- LTCC construction
- low cost

## Applications

- WAN
- TACS
- AMPS
- NAMPS

CASE STYLE: FV1206-1

PRICE: \$ 1.99 ea. QTY (10-49)

\$ 1.69 ea. QTY (100)

**+ RoHS compliant in accordance  
with EU Directive (2002/95/EC)**

See our web site for RoHS Compliance methodologies  
and qualifications.

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

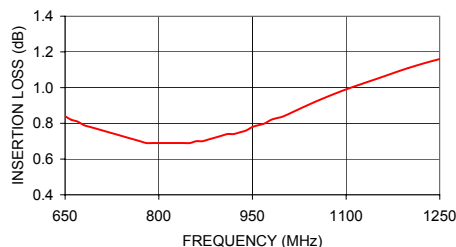
| Ω<br>RATIO | FREQUENCY<br>(MHz) | INSERTION*<br>LOSS<br>(dB) | PHASE<br>UNBALANCE<br>(Deg.)<br>Typ. | AMPLITUDE<br>UNBALANCE<br>(dB)<br>Typ. |
|------------|--------------------|----------------------------|--------------------------------------|----------------------------------------|
| 4          | 650-1250           | 1.0                        | 8                                    | 0.7                                    |
|            | 800-900            | 0.5                        | 3                                    | 0.4                                    |

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

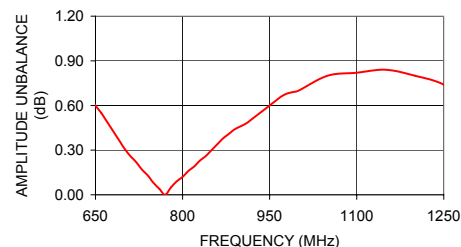
## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | INPUT<br>R. LOSS<br>(dB) | AMPLITUDE<br>UNBALANCE<br>(dB) | PHASE<br>UNBALANCE<br>(deg.) |
|--------------------|------------------------|--------------------------|--------------------------------|------------------------------|
| 650.00             | .84                    | 12.07                    | 0.60                           | 1.78                         |
| 700.00             | .77                    | 13.98                    | 0.31                           | 0.02                         |
| 750.00             | .72                    | 16.08                    | 0.08                           | 1.29                         |
| 800.00             | .69                    | 18.57                    | 0.12                           | 1.76                         |
| 850.00             | .69                    | 20.39                    | 0.30                           | 1.91                         |
| 900.00             | .73                    | 20.02                    | 0.46                           | 1.56                         |
| 950.00             | .78                    | 18.26                    | 0.60                           | 0.61                         |
| 1000.00            | .84                    | 16.14                    | 0.70                           | 0.40                         |
| 1200.00            | .11                    | 11.43                    | 0.80                           | 6.71                         |
| 1250.00            | 1.16                   | 10.83                    | 0.74                           | 8.33                         |

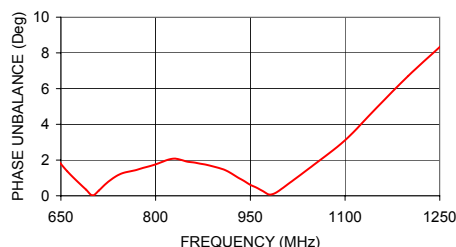
TCN4-13  
INSERTION LOSS



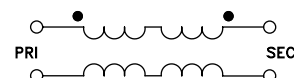
TCN4-13  
AMPLITUDE UNBALANCE



TCN4-13  
PHASE UNBALANCE



configuration G



**Mini-Circuits®**

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>



REV. A  
M101913  
TCN4-13  
ED-11687/5  
DJ/RS/CP  
051115