

Ceramic Balun RF Transformer

NCS1-13+

50Ω 720 to 1000 MHz



Maximum Ratings

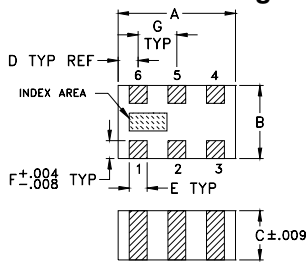
| | |
|-----------------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Input RF Power*** | 3W |
| *** Derate linearly to 2W at 85°C | |

Pad Connections

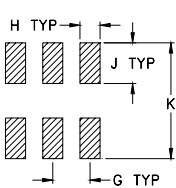
| | |
|-------------------------------|---|
| PRIMARY DOT (Unbalanced Port) | 1 |
| PRIMARY (GND) | 2 |
| SECONDARY DOT (Balanced) | 4 |
| SECONDARY (Balanced) | 3 |
| NO CONNECTION | 6 |
| NOT USED (GND Externally) | 5 |

Pads 2,3,4 are DC-connected internally

Outline Drawing



PCB Land Pattern

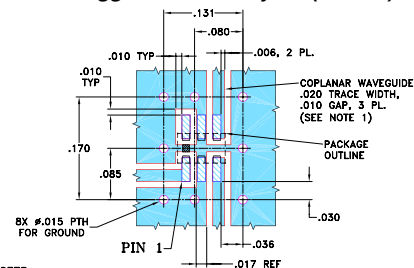


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch/mm)

| | | | | | |
|------|------|------|------|-------|------|
| A | B | C | D | E | F |
| .079 | .049 | .033 | .014 | .012 | .012 |
| 2.01 | 1.24 | 0.84 | 0.36 | 0.30 | 0.30 |
| G | H | J | K | wt | |
| .026 | .014 | .039 | .110 | grams | |
| 0.66 | 0.36 | 1.00 | 2.80 | .008 | |

Demo Board MCL P/N: TB-419+ Suggested PCB Layout (PL-264)



NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .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

Features

- wideband, 720 to 1000 MHz
- low phase unbalance, 2 deg. and amplitude unbalance, 0.4 dB typ.
- miniature size, 0.079"x0.049"x0.033"
- LTCC construction
- low cost
- aqueous washable

Applications

- cellular
- GSM
- WCDMA
- ISM
- radar

Electrical Specifications (T_{AMB}=25°C)

| Ω RATIO | FREQUENCY (MHz) | INSERTION* LOSS (dB) | PHASE UNBALANCE AT SECONDARY† (Deg.) Typ. | AMPLITUDE UNBALANCE (dB) Typ. |
|---------|-----------------|----------------------|---|-------------------------------|
| 1 | 720-1000 | 1.0 | 2 | 0.4 |

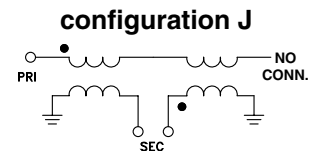
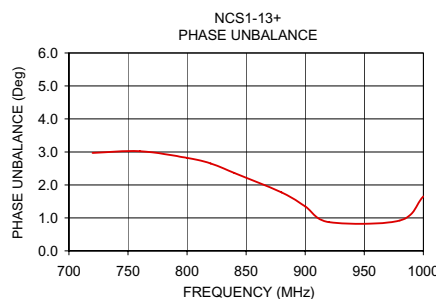
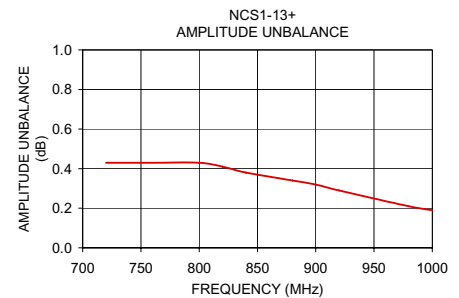
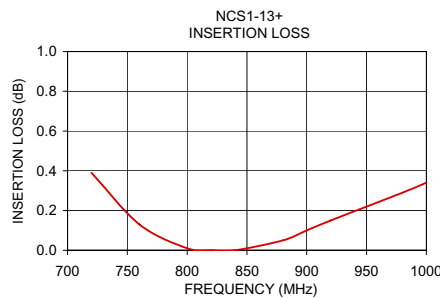
* Insertion Loss is referenced to mid-band loss, 1.0 dB. Reference Demo Board TB-419+

† Relative to 180°

Typical Performance Data at 25°C**

| FREQUENCY (MHz) | INSERTION LOSS (dB) | INPUT R. LOSS (dB) | AMPLITUDE UNBALANCE (dB) | PHASE UNBALANCE (Deg.) |
|-----------------|---------------------|--------------------|--------------------------|------------------------|
| 720.00 | 0.39 | 11.09 | 0.43 | 2.97 |
| 760.00 | 0.13 | 14.78 | 0.43 | 3.02 |
| 800.00 | 0.01 | 18.67 | 0.43 | 2.82 |
| 820.00 | 0.00 | 19.45 | 0.41 | 2.65 |
| 840.00 | 0.00 | 18.78 | 0.38 | 2.36 |
| 880.00 | 0.05 | 15.95 | 0.34 | 1.77 |
| 900.00 | 0.10 | 14.68 | 0.32 | 1.35 |
| 920.00 | 0.15 | 13.62 | 0.29 | 0.87 |
| 980.00 | 0.29 | 11.49 | 0.21 | 0.92 |
| 1000.00 | 0.34 | 11.03 | 0.19 | 1.65 |

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



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RF/IF MICROWAVE COMPONENTS

REV. A
M111644
NCS1-13+
ED 12817/34B18
RS/CP
070524