

# Ceramic Balun RF Transformer

50Ω 3500 to 11000 MHz

NCR2-113-2+



CASE STYLE: NF1846-1

## Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Input RF Power	3W

Permanent damage may occur if any of these limits are exceeded.

## Pad Connections

PRIMARY DOT (Unbalanced Port)	2
SECONDARY DOT (Balanced)	6
SECONDARY (Balanced)	4
GND Externally	1,3,5

## Features

- wideband, 3500 to 11000 MHz
- miniature size, 0.079"x0.098"x0.035"
- LTCC construction
- low cost
- aqueous washable

## Applications

- Point to Point
- ISM
- Radio navigation
- SATCOM

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

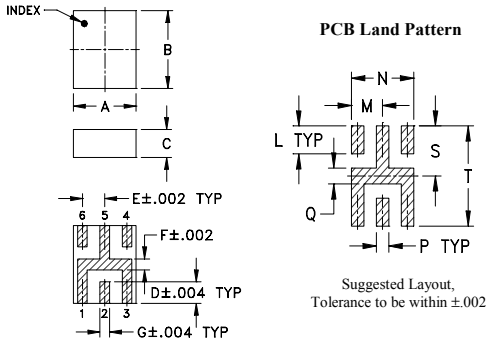
## Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		3500	—	11000	MHz
Insertion Loss*	3500 - 11000	—	0.5	2.7	dB
Amplitude Unbalance	3500 - 11000	—	1.0	3.5	dB
Phase Unbalance†	3500 - 11000	—	9	19	Degree

\* Insertion Loss is referenced to mid-band loss, 0.60 dB. Reference Demo Board TB-745+.

† Relative to 180°

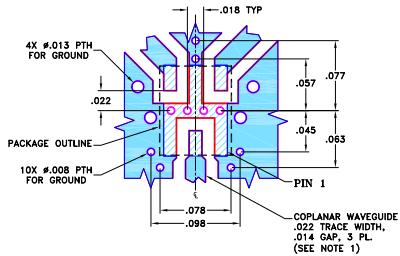
## Outline Drawing



## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	L
.079	.098	.035	.027	.028	.014	.014	.028
2.01	2.49	0.89	0.69	0.71	0.36	0.36	0.71
M	N	P	Q	R	S	T	wt
.035	.07	.014	.016	--	.050	.100	grams
0.89	1.78	0.36	0.41	--	1.27	0.03	0.020

## Demo Board MCL P/N: TB-745+ Suggested PCB Layout (PL-425)



### NOTES:

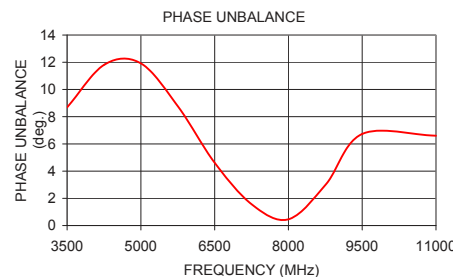
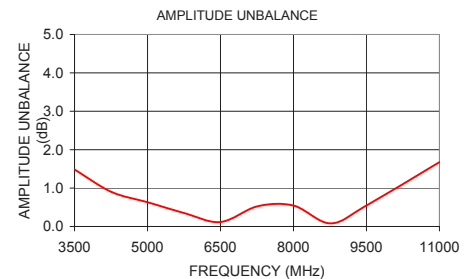
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010"±.001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
  2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

## Typical Performance Data at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
3500.0	0.40	9.66	1.48	8.68
4260.0	0.03	13.51	0.90	11.83
5000.0	0.06	12.80	0.63	11.92
5760.0	0.13	12.06	0.35	8.73
6500.0	0.21	11.60	0.12	4.61
7260.0	0.30	11.13	0.53	1.54
8000.0	0.39	10.68	0.55	0.46
8760.0	0.43	10.82	0.08	3.02
9500.0	0.41	11.69	0.55	6.73
11000.0	0.70	12.34	1.68	6.60



## configuration J

