Ceramic Balun

RF Transformer

NCS1-332+

50Ω 700 to 3300 MHz 1:1 Ratio

CASE STYLE: GE0805C-9

The Big Deal

- Tiny size, 0805
- Low insertion loss, 1.0 dB
- Very good amplitude unbalance, 0.5 dB
- Low cost

Product Overview

Mini-Circuits NCS1-332+ is a miniature ceramic RF balun transformer with an impedance ratio of 1:1, covering a variety of 50Ω applications from 700 to 3300 MHz. This model provides low insertion loss, low amplitude unbalance, and RF input power handling up to 3W. Fabricated using LTCC technology, it comes housed in a tiny package (0.08 x 0.05 x 0.04") and is suitable for high-volume production.

Key Features

Feature	Advantages
Low insertion loss, 1.0 dB	Enables excellent signal power transmission from input to output.
Low amplitude unbalance, 0.5 dB	Low unbalance can improve a system's electromagnetic compatibility by rejecting unwanted common-mode noise.
3W power handling	Supports a wide range of power requirements
DC Isolation	Allows DC isolation between circuits and efficient AC transmission, eliminating the need for external DC biasing components.
Tiny size, 0805	Accommodates tight space requirements for dense PCB layouts.

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Features

- wideband, 700 to 3300 MHz
- miniature size 0805 (2.0x1.2 mm)
- LTCC construction
- low cost
- excellent return loss over WiFi frequencies

Applications

- LTE
- WLAN
- ISM
- WiFi

Generic photo used for illustration purposes only

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+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, 4000

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio			1		
Frequency Range		700		3300	MHz
Insertion Loss[1] (average)	700-3300 1500-2700	— —	0.9 0.7	1.8 —	dB
Amplitude Unbalance	700-3300 1500-2700	— —	0.5 0.2	1.5 —	dB
Phase Unbalance[2]	700-3300 1500-2700	— —	8 7	15 —	Degree
Input Return Loss	700-3300 1500-2700	— —	13 18	— —	dB

1. Reference Demo Board TB-910+ with auto port extension and impedance conversion at secondary and secondary dot.
2. Relative to 180°

Maximum Ratings

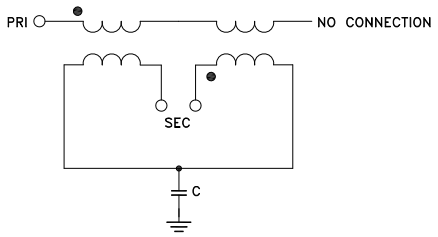
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power*	3W at 25°C

*Passband rating , derate linearly to 1W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

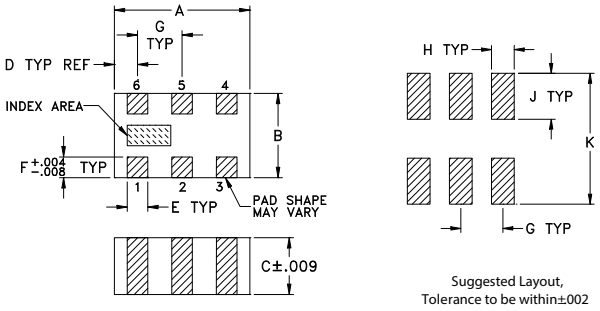
Pad Connections

Function	Pad Number
PRIMARY DOT (Unbalanced Port)	1
GND or DC feed +RF GND	2
SECONDARY DOT (Balanced)	3
SECONDARY (Balanced)	4
NO CONNECTION	6
GND	5

Configuration R



Outline Drawing

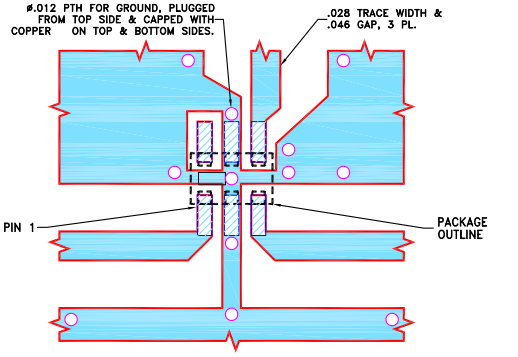


Outline Dimensions (inch / mm)

A	B	C	D	E	F
.079	.049	.033	.014	.012	.012
2.0	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

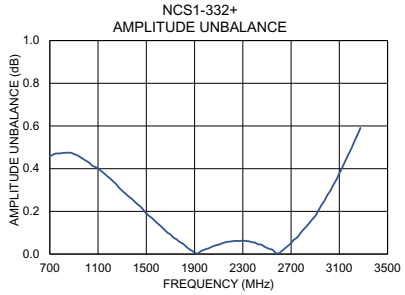
Demo Board MCL P/N: TB-910+
Suggested PCB Layout (PL-583)

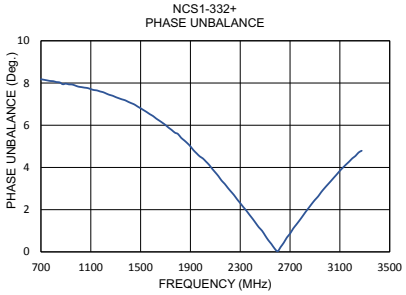


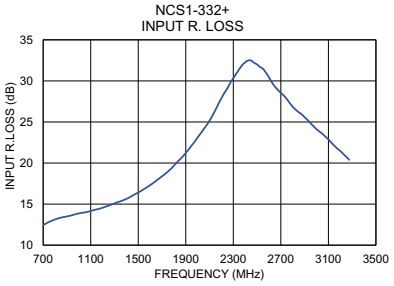
Typical Performance Data at 25°C[3]

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
700	0.84	12.45	0.46	8.18
800	0.78	13.13	0.47	8.09
1000	0.71	13.87	0.44	7.83
1500	0.62	16.41	0.19	6.80
2000	0.59	23.12	0.02	4.43
2200	0.60	27.91	0.06	3.04
2400	0.63	32.26	0.05	1.56
2600	0.66	30.44	0.00	0.03
3000	0.76	24.12	0.28	3.18
3300	0.90	20.03	0.63	4.92

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







Additional 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