

50Ω 240 to 770 MHz 1:2 Ratio

## The Big Deal

- Tiny size, 0805
- Low insertion loss, 0.2 dB
- Very good amplitude unbalance, 0.5 dB
- Low cost



CASE STYLE: GE0805C-9

## Product Overview

Mini-Circuits NCS2-771+ is a miniature ceramic RF balun transformer with an impedance ratio of 2:1, covering a variety of 50Ω applications from 240 to 770 MHz. This model provides low insertion loss, low amplitude unbalance, and RF input power handling up to 2W. 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, 0.8 dB	Enables excellent signal power transmission from input to output.
Low amplitude unbalance, 0.8 dB	Low unbalance can improve a system's electromagnetic compatibility by rejecting unwanted common-mode noise.
2W power handling	Supports a wide range of power requirements
DC Isolation	Provides 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.

### 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](http://www.minicircuits.com/MCLStore/terms.jsp)

# RF Transformer

## NCS2-771+

50Ω 240 to 770 MHz

1:2 Ratio



CASE STYLE: GE0805C-9

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Input RF Power*	2W

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

### Features

- miniature size, 0.079"x0.049"x0.037"
- LTCC construction
- low cost
- aqueous washable

### Applications

- satellite
- VHF/UHF
- instrumentation

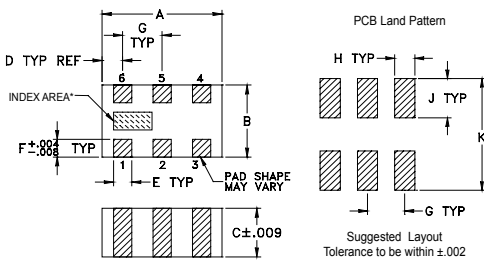
**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost  
Reel Size: 7" Devices/Reel: 20, 50, 100, 200, 500, 1000, 2000

### Pad Connections

PRIMARY DOT (Unbalanced Port)	2
PRIMARY (GND)	1,3
SECONDARY DOT (Balanced)	4
SECONDARY (Balanced)	6
NO CONNECTION	5

### Outline Drawing

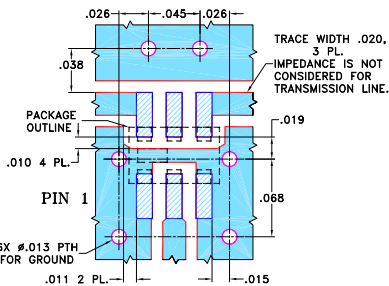


\*Shape of index marking may vary

### Outline Dimensions (inch/mm)

A	B	C	D	E	F
.079	.049	.037	.014	.012	.012
2.0	1.24	0.94	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-626+ Suggested PCB Layout (PL-348)



#### NOTES:

1. TRACE WIDTH IS SHOWN FOR REFERENCE ONLY.
  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

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### Electrical Specifications at 25°C

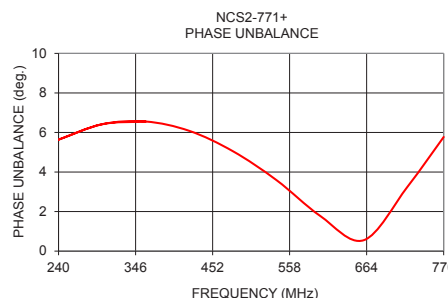
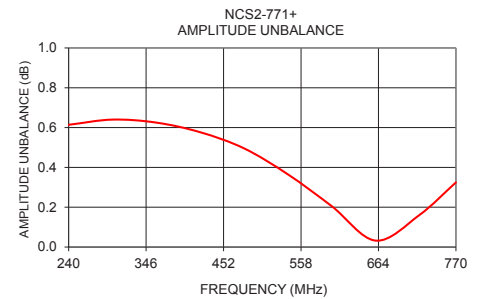
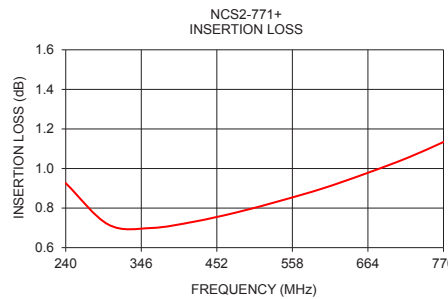
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		:1
Frequency Range		240	—	770	MHz
Insertion Loss <sup>1</sup>	240 - 770	—	0.2	0.8	dB
Amplitude Unbalance	240 - 770	—	0.5	1.0	dB
Phase Unbalance <sup>2</sup>	240 - 770	—	5	11	Degree

1. Insertion Loss is referenced to mid-band loss, 0.7 dB. Reference Demo Board TB-626+
2. Relative to 180°

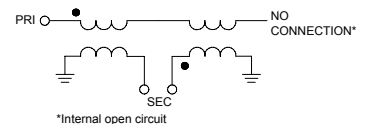
### Typical Performance Data at 25°C\*

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
240	0.93	13.53	0.61	5.64
300	0.72	20.55	0.64	6.42
360	0.70	19.91	0.62	6.55
420	0.73	17.10	0.58	6.08
480	0.78	15.26	0.50	5.05
540	0.84	14.00	0.37	3.59
600	0.90	12.94	0.21	1.78
660	0.97	12.01	0.03	0.55
720	1.05	11.16	0.16	3.25
770	1.13	10.50	0.32	5.77

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



### configuration J



\*Internal open circuit