SURFACE MOUNT

RF Transformer

NCS1.5-402+

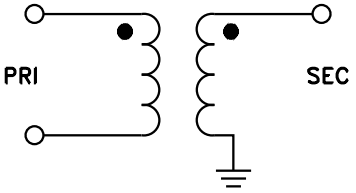
50Ω 1.3 to 4.0 GHz 1:1.5 Ratio

FEATURES

- Broadband Frequency Operation from 1300 to 4000 MHz
- 1:1.5 Impedance Transformation Ratio
- Low Insertion Loss, 0.55 dB Typ.
- Excellent Return Loss, 13.5 dB Typ.

Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- 5G, Sub-6 GHz Infrastructure
- Wi-Fi and ISM Band Devices
- Test and Measurement Equipment

PRODUCT OVERVIEW

Mini-Circuits' Model NCS1.5-402+ is a compact, high-performance solution designed for broadband operation from 1.3 to 4.0 GHz. Built using low temperature co-fired ceramic technology, this component provides electrical stability, repeatability and high-frequency operation in a miniature 0805 surface-mount package. This transformer is optimized for impedance transformation, delivering a 1:1.5 ratio to support efficient matching in RF signal chains. With low insertion loss and good return loss across the operating band, it enables improved signal integrity and system efficiency in demanding RF and microwave applications.

ELECTRICAL SPECIFICATIONS[1] AT +25 °C, Z_0 = 50Ω

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio (Secondary/Primary)			1.5		
Frequency Range		1300		4000	MHz
Insertion Loss	1300–3300	–	0.55	1.5	dB
	3300–4000	–	0.9	1.5	
Return Loss	1300–3300	12	13.5	–	dB
	3300–4000	10.5	12.5	–	

1. Tested in Evaluation Board P/N TB-NCS1.5-402C+.

ABSOLUTE MAXIMUM RATINGS[2]

Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
Input Power[3]	2.5 W

2. Permanent damage may occur if any of these limits are exceeded.
3. At +25 °C, derate linearly to 0.8 W at +125 °C.

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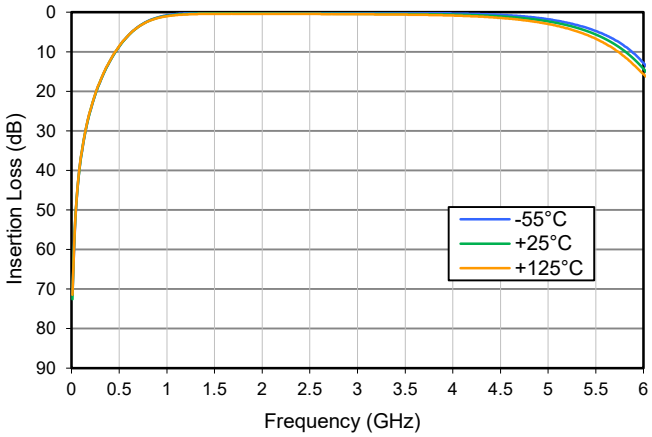
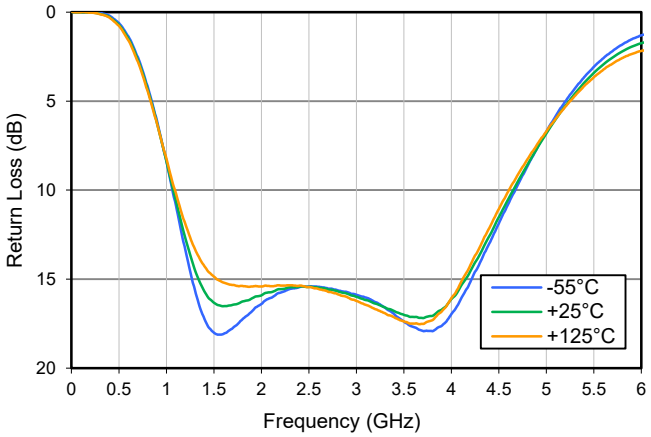
TYPICAL PERFORMANCE GRAPHS

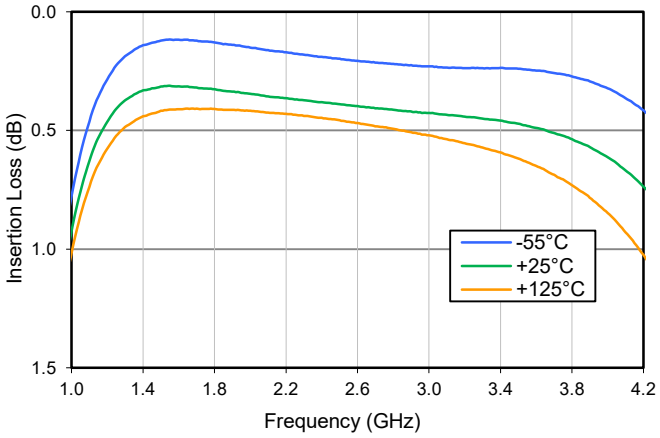
INSERTION LOSS



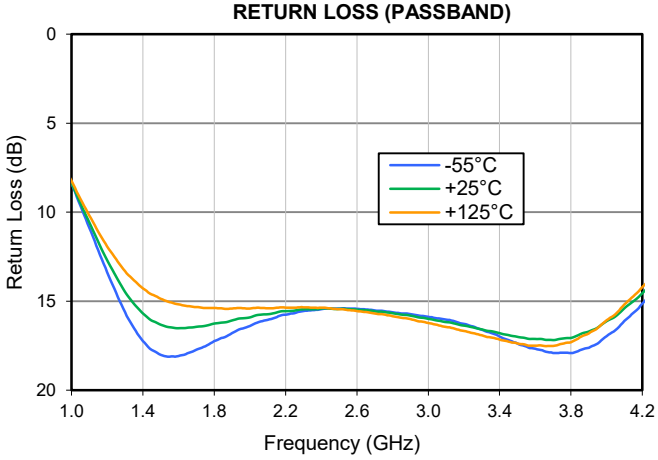
RETURN LOSS



INSERTION LOSS (PASSBAND)



RETURN LOSS (PASSBAND)



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FUNCTIONAL DIAGRAM

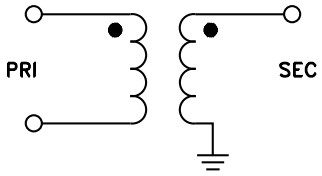
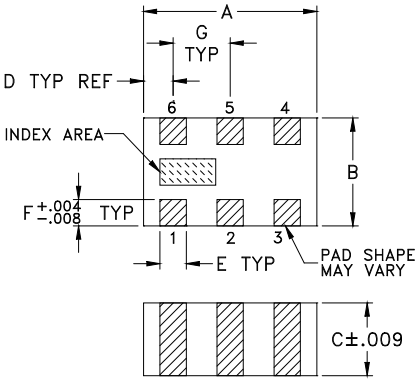
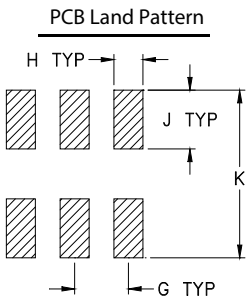


Figure 1. NCS1.5-402+ Functional Diagram

CASE STYLE DRAWING





Suggested Layout,
Tolerance to be within±.002

PAD DESCRIPTION

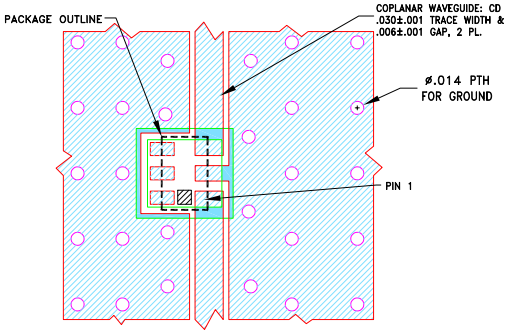
Function	Pad Number	Description
Input	1	Connects to 50Ω primary
GND	2	Connects to GND
Output	3	Connects to 75Ω secondary
No Connect	4, 5, 6	No connection, not used internally. See drawing PL-874 for connection to PCB

OUTLINE DIMENSIONS (Inches / 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

SUGGESTED PCB LAYOUT (PL-874)



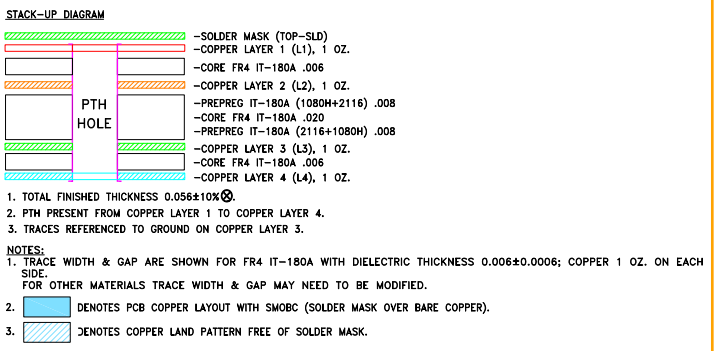


Figure 2. Suggested PCB Layout

PRODUCT MARKING*: N/A

*Marking may contain other features or characters for internal lot control.

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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD. CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (SxP Files) Data Set (.zip file) De-embedded to device pads
Case Style	GE0805C-9 Lead Finish: Tin over Nickel Plating
RoHS Status	Compliant
Tape and Reel	F114
Suggested Layout for PCB Design	PL-874
Evaluation Board	TB-NCS1.5-402C+ Gerber File
Environmental Rating	ENV166

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-Circuits' 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/terms/viewterm.html