

FEATURES

- Wideband, 625 to 2815 MHz
- Miniature size 0805, 0.079"x0.049"x0.033"
- LTCC construction
- Industry leading combination of size/performance
- Low cost
- Aqueous washable



Generic photo used for illustration purposes only

CASE STYLE: GE0805C-9

APPLICATIONS

- GPS
- WCDMA
- PCS
- Cellular

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits new RF Transformer, NCS2-282+ converts single ended, unbalanced RF signals, that propagate through systems, to balanced signals that are required for many semiconductor devices. The NCS series offers a low cost small size alternative for matching, A/D converters, System on Chips, and up/down converters. The outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs.

KEY FEATURES

Feature	Advantages
Wideband, 625 to 2815 MHz	Supporting wideband, 625 to 2815 MHz make this RF Transformer applicable for use in higher level integrated components such as A/D converters and system on a chip.
Small Size	Offered in the EIA-0805 package size, the NCS2-282+ offers an industry leading combination of size and performance. The small footprint (2.0 mm x 1.25 mm) allows for reduced parasitics in systems with improved performance and simplified layout.



RF Transformer

NCS2-282+

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio (Secondary/Primary)		2			
Frequency Range		625		2815	MHz
Insertion Loss ¹	625 - 2815	—	1	2	dB
Amplitude Unbalance	625 - 2815	—	0.8	1.8	dB
Phase Unbalance ²	625 - 2815	—	6	15	Degree
Return Loss	625 - 2815	—	11	—	dB

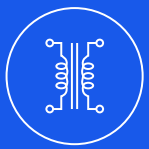
2. Relative to 180°

Parameter	Ratings
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power ³	3W at 25°C

3. Passband rating , derate linearly to 1W at 125°C ambient.
Permanent damage may occur if any of these limits are exceeded.

The diagram shows a transformer with a primary winding (PRI) and a secondary winding (SEC). The primary winding is connected to a terminal labeled 'PRI' on the left and 'NO CONNECTION' on the right. The secondary winding is connected to a terminal labeled 'SEC' in the middle. The bottom of the secondary winding is connected to a capacitor labeled 'C', which is then connected to ground.





Mini-Circuits®

CERAMIC BALUN

RF Transformer

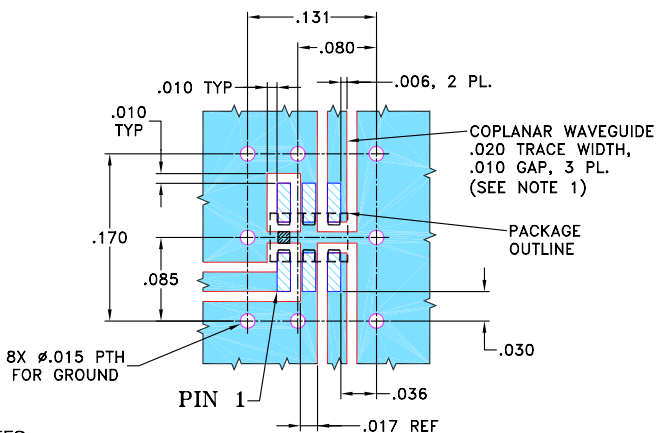
NCS2-282+

PAD CONNECTIONS

Unbalanced Port (IN)	1
GND OR DC feed + RF GND	2
Balanced port (Out 1)	3
Balanced port (Out 2)	4
GND	5
NO CONNECTION	6

PRODUCT MARKING: N/A

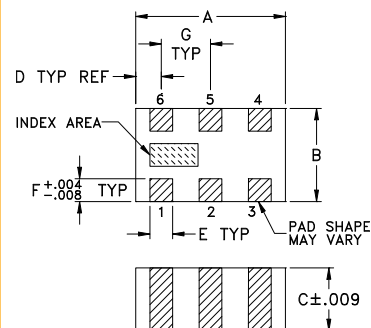
DEMO BOARD MCL P/N: TB-NCS2-282+ SUGGESTED PCB LAYOUT (PL-264)



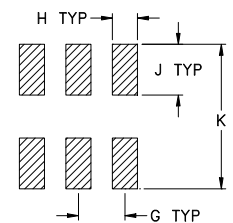
NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.010" \pm .001"$. 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

OUTLINE DRAWING



PCB Land Pattern



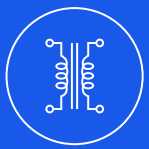
Suggested Layout,
Tolerance to be within $\pm .002$

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	

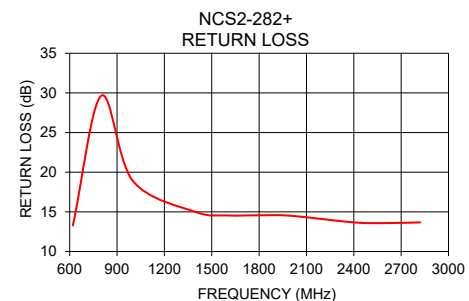
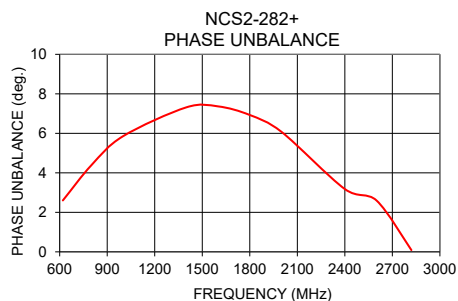
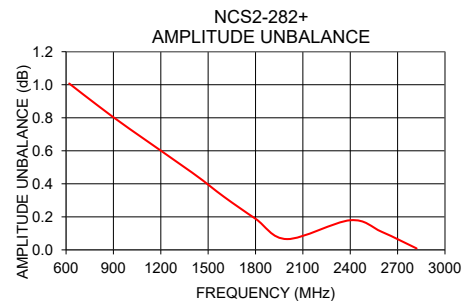
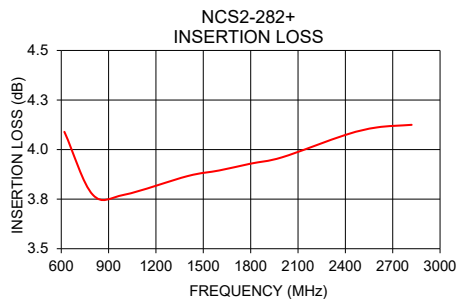
TAPE & REEL INFORMATION: F74



TYPICAL PERFORMANCE DATA³

Frequency (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)
620	4.09	13.29	1.01	2.60
625	3.93	13.53	0.77	3.95
800	3.77	29.64	0.87	4.39
1000	3.77	18.90	0.73	5.85
1400	3.87	14.97	0.47	7.32
1600	3.89	14.55	0.32	7.36
1800	3.93	14.57	0.19	6.93
2000	3.96	14.51	0.07	6.08
2400	4.07	13.67	0.18	3.18
2600	4.11	13.59	0.11	2.60
2815	4.05	15.13	0.47	0.35
2820	4.12	13.67	0.01	0.09

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



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.
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