



SURFACE MOUNT

RF Transformer

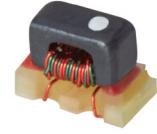
TTC1-682W+

Mini-Circuits

50Ω 800 to 6800 MHz 1:1 Ratio

THE BIG DEAL

- Wideband, 800 to 6800 MHz
- Small size, 1.4 x 2.5mm
- Good amplitude unbalance, ± 0.8 dB typ.
- Low phase unbalance, 6° typ.
- Excellent common mode rejection, 21 dB typ.



Generic photo used for illustration purposes only

CASE STYLE: GU2939

+RoHS Compliant

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

APPLICATIONS

- Sub- 6GHz 5G Infrastructure
- Broadband Telecom & SATCOM
- Test & Measurement Equipment
- WiFi 6
- Communications, Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

Mini-Circuits' TTC1-682W+ is a tiny surface-mount transmission line core and wire transformer covering a very wide frequency range from 800 to 6800 MHz. The transformer provides low insertion loss. It achieves low phase and amplitude unbalance and excellent common mode rejection performance. Featuring core and wire construction on 5 terminal carrier, the unit measures 0.10 x 0.06 x 0.07", accommodating dense circuit board layouts.

KEY FEATURES

Feature	Advantages
Wideband, 800 to 6800 MHz	Very wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 2.5 dB typ.	TTC1-682W+ provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Excellent common mode rejection, 21 dB typ.	Provides good IP2, IP3.
Small footprint (0.10 x 0.06 x 0.07")	Accommodates tight space requirements for dense PCB layouts.





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ELECTRICAL SPECIFICATIONS AT 25°C

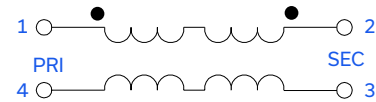
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio		1			
Frequency Range		800		6800	MHz
Average Insertion Loss (above 0.60 dB midband loss)	800-4500	–	1.2	1.9	dB
	4500-6800	–	2.8	3.9	
Phase Unbalance (±)	800-6800	–	6	12	Degree
Amplitude Unbalance	1000-4500	–	0.8	1.5	dB
	800-6800	–	1.2	1.9	
Common Mode Rejection	800-6800	17	21	–	dB

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.5W

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

FUNCTIONAL DIAGRAM CONFIGURATION G





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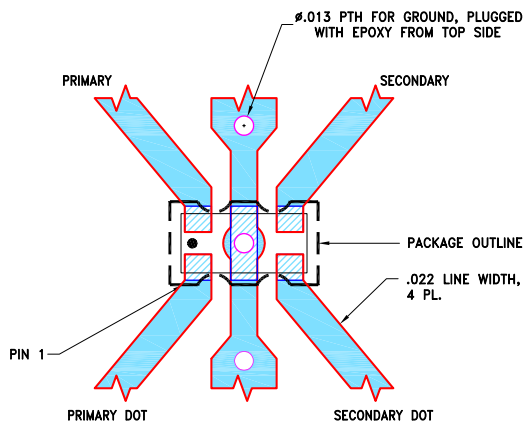
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PIN CONNECTIONS

PRIMARY DOT	1
PRIMARY	4
SECONDARY DOT	2
SECONDARY	3
NOT USED	5

PRODUCT MARKING: N/A

EVALUATION BOARD MCL P/N: TB-TTC1-682W+
SUGGESTED PCB LAYOUT (PL-657)

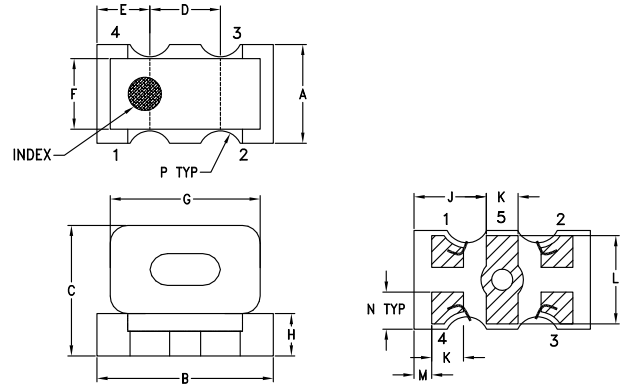


NOTES:

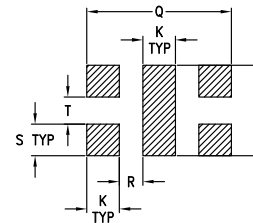
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010"±.001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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 ±.002

OUTLINE DIMENSIONS (Inches/mm)

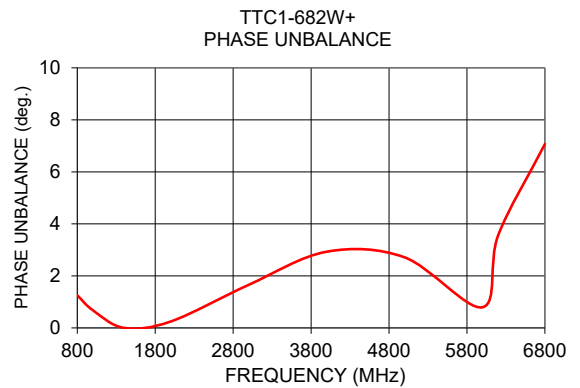
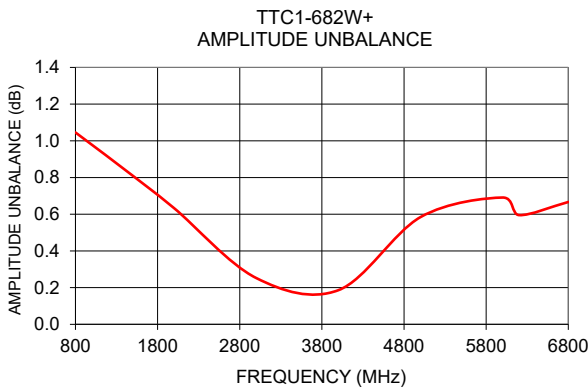
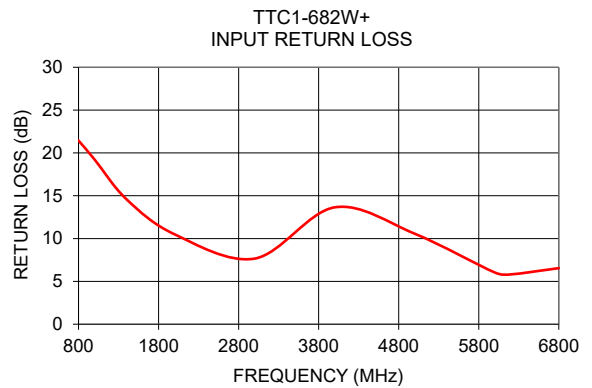
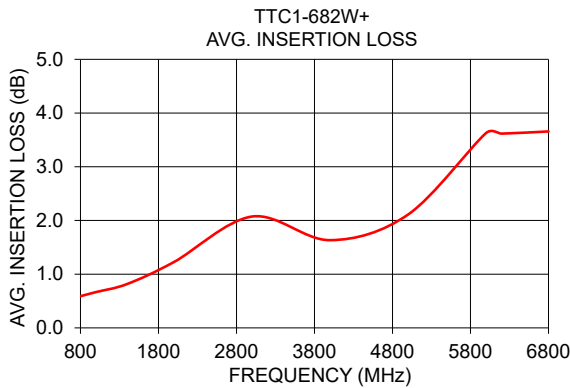
A	B	C	D	E	F	G	H	J	K
.056	.100	.074	.040	.030	.040	.085	.024	.041	.018
1.42	2.54	1.88	1.02	0.76	1.02	2.16	0.61	1.04	0.46
L	M	N	P	Q	R	S	T		wt
.050	.010	.021	.013	.080	0.013	.018	0.014		grams
1.27	0.25	0.53	0.33	2.03	0.33	0.46	0.36		0.04

TAPE & REEL INFORMATION: F74



TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)
800	0.59	21.44	1.05	1.26
1000	0.67	19.23	0.98	0.68
1400	0.82	14.58	0.84	0.00
2000	1.23	10.50	0.63	0.25
3000	2.07	7.66	0.25	1.66
4000	1.63	13.65	0.19	2.93
5000	2.11	10.57	0.58	2.71
6000	3.63	6.04	0.69	0.79
6200	3.62	5.82	0.60	3.56
6800	3.66	6.54	0.67	7.07



- 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/terms/viewterm.html