BALANCED TO UNBALANCED top hat®

RF Transformer

TC1-1T-152X+

50 Ω 5 to 1500 MHz Ratio 1:1

THE BIG DEAL

- Super wideband, 5 to 1500 MHz
- Low insertion loss, 1.5 dB typ., 5 to 1500 MHz
- Amplitude unbalance, ±0.2 dB typ.
- Good input return loss, 14 dB typ., 5 to 1500 MHz
- Low phase unbalance, ±1.5° typ.
- Common mode rejection, 30 dB typ. 1000 MHz



Generic photo used for illustration purposes only

CASE STYLE: AT1521

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

APPLICATIONS

- VHF/UHF transmitters
- Cellular
- GPS
- Communication

PRODUCT OVERVIEW

Mini-Circuits' TC1-1T-152X+ is a surface-mount transmission line transformer (with bias center tap) covering a very wide frequency range from 5 to 1500 MHz. The transformer provides low insertion loss with excellent phase and amplitude performance. Featuring core and wire construction on a 5-lead unit measures 0.15 x 0.15 x 0.16 inch.

KEY FEATURES

Feature	Advantages
Wideband, 5 to 1500 MHz	Super wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 1.5 dB typ.	This unit provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Good Phase and Amplitude Unbalance	Provides good CMRR.
DC current 200 mA	Supply DC current from center tap.

REV. B
ECO-021678
TC1-1T-152X+
MCL NY
240503

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio			1		
Frequency Range		5	—	1500	MHz
Insertion Loss*	5-870	—	1.0	1.6	dB
	870-1000	—	1.2	1.7	
	1000-1500	—	1.8	2.5	
Amplitude Unbalance	5-870	—	0.1	0.7	dB
	870-1000	—	0.3	0.9	
	1000-1500	—	0.5	1.8	
Phase Unbalance	5-870	—	1.0	6	Degree
	870-1000	—	2.0	8	
	1000-1500	—	3.0	10	
Common mode rejection	5-1000	22	33	—	dB
	1000-1500	20	28	—	
Input Return Loss	5-870	—	15	—	dB
	870-1000	—	12	—	

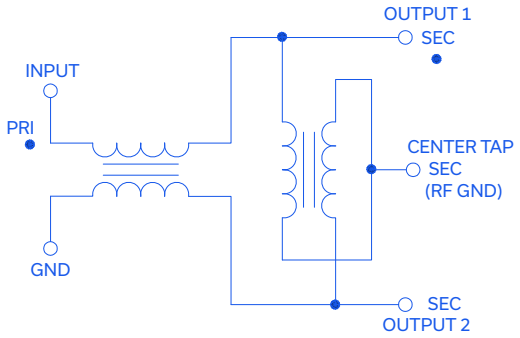
* Insertion Loss is referenced to mid-band loss, 0.7 dB typ.

MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.5W
DC Current	200mA

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

CONFIGURATION M1



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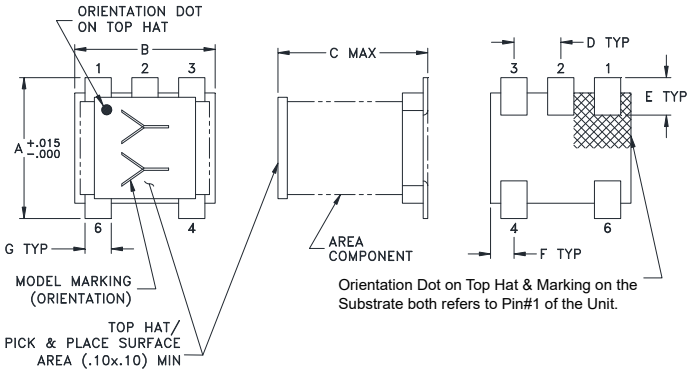
50 Ω 5 to 1500 MHz Ratio 1:1

PIN CONNECTIONS

PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2

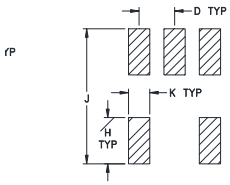
PRODUCT MARKING: WH

OUTLINE DRAWING



Top-hat total thickness: .013 inches MAX.

PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G	H	J	K
.150	.150	.160	.050	.040	.025	.028	.065	.190	.030
3.81	3.81	4.06	1.27	1.02	0.64	0.71	1.65	4.83	0.76

Weight: 0.15 grams

TAPE & REEL INFORMATION: F17

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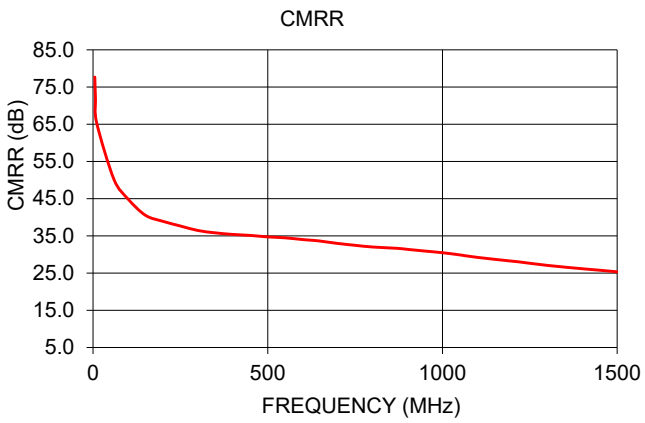
TC1-1T-152X+

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TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)	CMRR (dB)
5	0.79	21.59	0.00	0.00	77.68
10	0.71	24.37	0.00	0.06	65.55
100	0.73	24.80	0.02	0.64	44.93
200	0.77	21.92	0.05	1.25	38.91
400	0.87	17.73	0.11	1.80	35.39
600	0.98	15.25	0.04	2.27	34.01
800	1.14	13.56	0.05	2.86	32.01
1000	1.32	12.43	0.24	3.05	30.47
1200	1.54	11.48	0.47	3.23	28.19
1400	1.79	10.65	0.70	3.24	26.17
1500	1.92	10.27	0.81	3.16	25.34





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