

Surface Mount 
RF Transformer

TC4-13TX+

50Ω 100 to 1000 MHz



CASE STYLE: AT1521

The Big Deal

- Wideband, 100 to 1000 MHz
- DC isolated
- Low insertion loss, 0.6 dB
- Low amplitude unbalance, 0.5 dB in 1 dB bandwidth

Product Overview

TC4-13TX+ is a surface-mount, DC-isolated transformer with a center-tap on its secondary winding, covering the 100 to 1000 MHz band. This model provides a 4:1 secondary/primary impedance ratio, 0.6 dB insertion loss, 0.5 dB amplitude unbalance (in 1 dB bandwidth) and 9° phase unbalance. It features core and wire construction mounted on a 5-lead plastic base with tin over nickel termination finish. It measures 0.15 x 0.15 x 0.16", easily accommodating dense circuit board layouts, and features Mini-Circuits' Top Hat® feature for faster, more accurate pick-and-place assembly.

Key Features

Feature	Advantages
Wide bandwidth, 100 to 1000 MHz	Enables excellent signal power transmission from input to output.
DC Isolation	Provides DC isolation between circuits and efficient AC transmission, eliminating the need for external DC biasing components.
Low insertion loss, 0.6 dB	Enables excellent signal power transmission from input to output.
Excellent amplitude unbalance, 0.5 dB in 1 dB bandwidth	Low unbalance can improve a system's electromagnetic compatibility by rejecting unwanted common-mode noise.
Small footprint (0.15 x 0.15 x 0.16")	Accommodates tight space requirements for dense PCB layouts.
Top Hat® feature	Improves speed and accuracy of pick and place assembly and provides clear device marking for visual inspection.

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TC4-13TX+

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Features

- wideband, 100 to 1000 MHz
- DC isolated up to 1000 MHz
- good return loss
- excellent amplitude unbalance, 0.5 dB typ. in 1 dB bandwidth
- plastic base with leads
- aqueous washable

Applications

- impedance matching
- balanced to unbalanced transformation
- push-pull amplifiers



Generic photo used for illustration purposes only

CASE STYLE: AT1521

+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	Devices/Reel
7"	20, 50, 100, 200, 500
13"	1000, 2000

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			4		
Frequency Range		100	—	1000	MHz
Insertion Loss*	200-800	—	0.2	0.8	dB
	100-1000	—	0.6	1.4	
Amplitude Unbalance	200-800	—	0.5	1.4	dB
	100-1000	—	1	—	
Phase Unbalance	200-800	—	5	11	Degree
	100-1000	—	9.0	—	

* Insertion Loss is referenced to mid-band loss, 0.8 dB.

Maximum Ratings

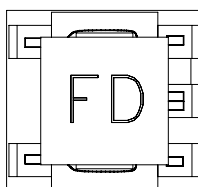
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

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

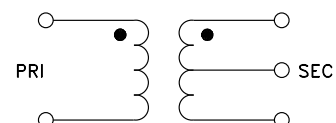
Pin Connections

Function	Pin Number
PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2

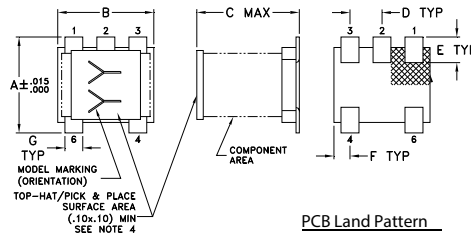
Product Marking



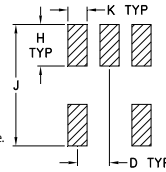
Config. A



Outline Drawing



PCB Land Pattern



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

Note:

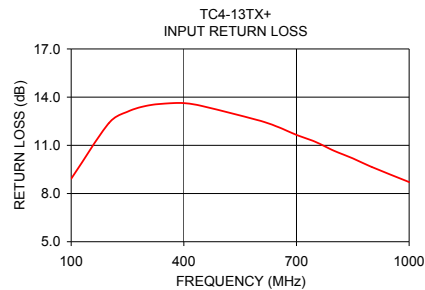
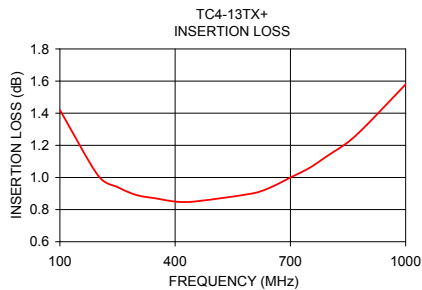
1. Case Material Plastic
2. Termination Finish: Tin plate over Nickel plate.
3. Lead #1 identifier shall be located in the cross-hatched area shown, on bottom view. Identifier may be either a molded or marked feature.
4. Top-Hat total thickness: .013 inches max.

Outline Dimensions (inch/mm)

A	B	C	D	E	F
.150	.150	.160	.050	.040	.025
3.81	3.81	4.06	1.27	1.02	0.64
G	H	J	K	wt	
.028	.065	.190	.030	grams	
0.71	1.65	4.83	0.76	0.15	

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
100.00	1.42	8.92	0.04	0.09
200.00	1.01	12.37	0.10	0.22
300.00	0.89	13.46	0.18	0.35
400.00	0.85	13.63	0.28	0.73
600.00	0.90	12.55	0.59	2.26
700.00	1.00	11.65	0.76	3.68
800.00	1.14	10.66	0.93	5.77
900.00	1.33	9.66	1.11	8.78
1000.00	1.58	8.71	1.29	13.02



Additional 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