



# SURFACE MOUNT <sup>top hat</sup> RF Transformer

## TC4-122-75X+

75Ω 40 to 1250 MHz

### THE BIG DEAL

- Wideband, 40 to 1250 MHz
- High impedance ratio, 4:1
- Balanced to balanced configuration with secondary center tap
- Plastic base with leads
- Aqueous washable



*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

- PCS
- Cellular
- CATV
- DOCSIS 3.1

### PRODUCT OVERVIEW

TC4-122-75X+ is a 75Ω surface-mount balanced to balanced transformer covering the 40 to 1250 MHz band, supporting bandwidth requirements for DOCSIS® 3.1 compliant systems and equipment. The transformer provides a 4:1 secondary/primary impedance ratio with 1.4 dB insertion loss, 1.1 dB amplitude unbalance, and 7° phase unbalance. Featuring core and wire construction on a 5-lead plastic base with tin over nickel termination finish, the unit measures 0.15 x 0.15 x 0.16", accommodating dense circuit board layouts. It also incorporates Mini-Circuits' Top Hat™ feature for faster, more accurate pick-and-place assembly.

### KEY FEATURES

Features	Advantages
Wide bandwidth, 40 to 1250 MHz	Wide frequency range covers bandwidth requirements for DOCSIS® 3.1 systems and equipment.
Low insertion loss, 1.4 dB	Provides excellent signal power transmission from input to output.
Secondary center tap	Allows DC feed up to 30mA and DC bias without adding bias tees into the signal chain.
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.



### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			4		
Frequency Range		40	—	1250	MHz
Insertion Loss*	40 - 1250	—	1.4	2.5	dB
	100 - 1000	—	0.5	1.5	
Amplitude Unbalance	40 - 1250	—	1.1	1.8	dB
	100 - 1000	—	0.4	0.9	
Phase Unbalance	40 - 1250	—	7	15	Degree
	100 - 1000	—	5	10	

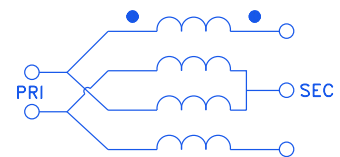
\* Insertion Loss is referenced to mid-band loss, 1.5 dB typ.

### 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.

### CONFIG. H





# RF Transformer

## TC4-122-75X+

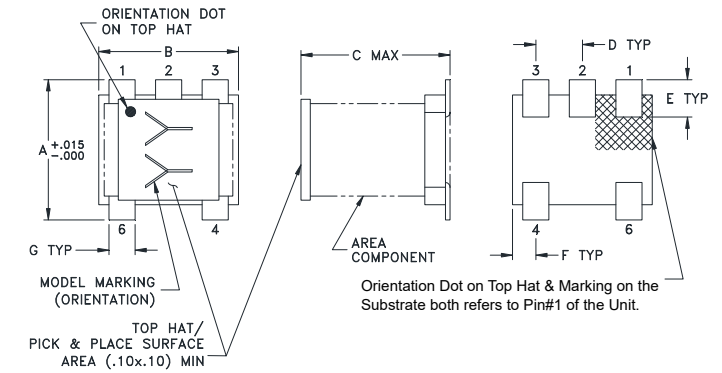
75Ω 40 to 1250 MHz

### PIN CONNECTIONS

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

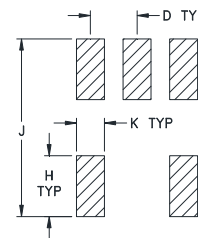
PRODUCT MARKING: AT

### OUTLINE DRAWING



Top-hat total thickness: .013 inches MAX.

### PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm 0.002$

### 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

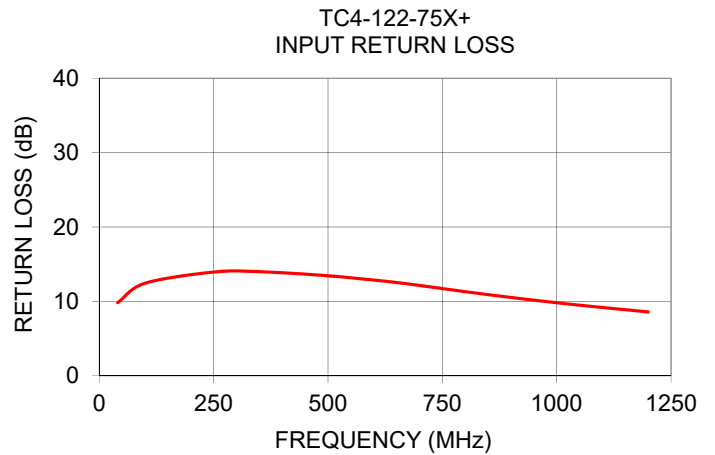
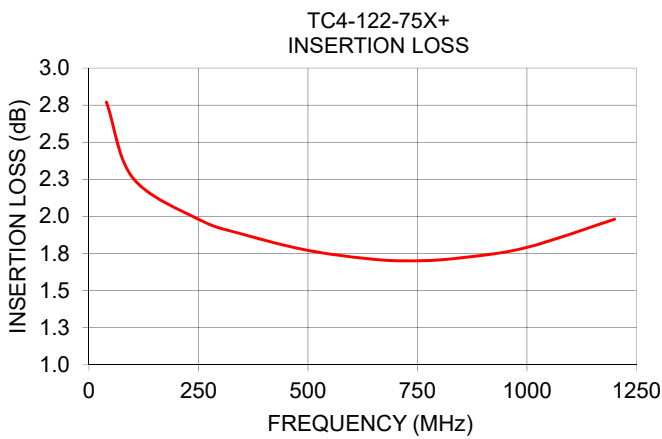
Weight: 0.15 grams

### TAPE & REEL INFORMATION: F17



### TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
40	2.77	9.83	0.05	0.23
100	2.26	12.44	0.05	0.55
250	1.98	13.94	0.04	1.20
350	1.88	13.99	0.04	1.58
500	1.77	13.44	0.06	1.96
650	1.71	12.54	0.01	2.33
750	1.70	11.72	0.05	2.50
850	1.72	10.91	0.06	2.57
1000	1.79	9.81	0.15	2.76
1200	1.98	8.58	0.26	2.88



**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](http://www.minicircuits.com/terms/viewterm.html)