



**THE DATASHEET OF  
TC4-6T-75X+**





# RF Transformer

## TC4-6T-75X+

75Ω 0.6 to 600 MHz

### THE BIG DEAL

- DC isolated
- Low unbalance, 0.6 dB, 3°
- Power handling up to 0.25W
- Small size, 0.15 x 0.15 x 0.16"



*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

- Impedance matching
- Unbalance to balance transformation
- Cable/CATV and broadband fiber networks

### PRODUCT OVERVIEW

TC4-6T-75X+ is a 75Ω surface-mount DC isolated transformer with a secondary center tap that covers the 0.6 to 600 MHz band. This model provides a 4:1 secondary/primary impedance ratio, 1.0 dB insertion loss (typ.), 0.25W RF input power handling, 0.6 dB amplitude unbalance and 3° phase unbalance. Featuring core and wire construction mounted 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
DC Isolation	Provides DC isolation between circuits and efficient AC transmission, eliminating the need for external DC biasing components.
Secondary center tap	Allows DC feed up to 30 mA and DC bias without adding bias tees into the signal chain.
Low unbalance <ul style="list-style-type: none"> <li>• 0.6 dB amplitude unbalance</li> <li>• 3° phase unbalance</li> </ul>	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.

REV. A  
ECO-014884  
TC4-6T-75X+  
MCL NY  
240325



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### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			4		
Frequency Range		0.6	—	600	MHz
Insertion Loss*	0.6-600	—	—	1.8	dB
	1- 300	—	—	1.0	
Amplitude Unbalance	0.6-600	—	0.6	1.2	dB
	1- 300	—	0.1	0.5	
Phase Unbalance	0.6-600	—	3	8	Degree
	1- 300	—	0.2	2	
Return Loss	0.6-600	8	13	—	dB
	1- 300	12	20	—	

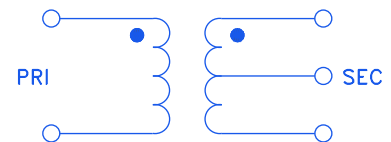
\*Insertion Loss is referenced to mid-band loss, 0.7 dB typ.

### MAXIMUM RATINGS

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

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

### CONFIG. A



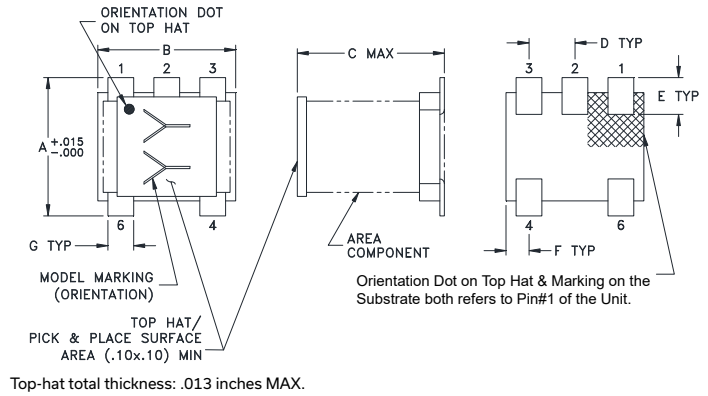


### PIN CONNECTIONS

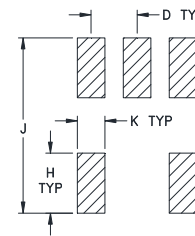
PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2

**PRODUCT MARKING: JC**

### OUTLINE DRAWING



### 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



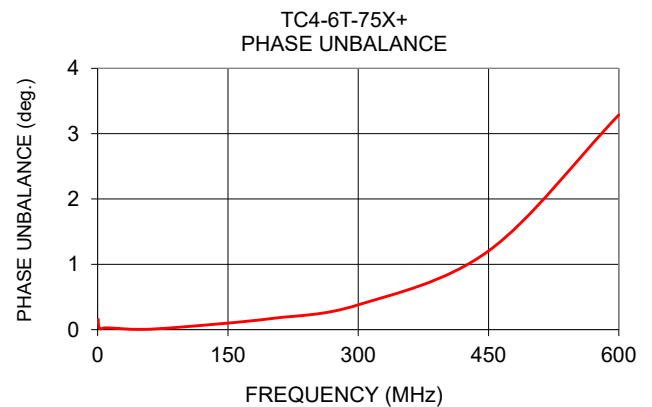
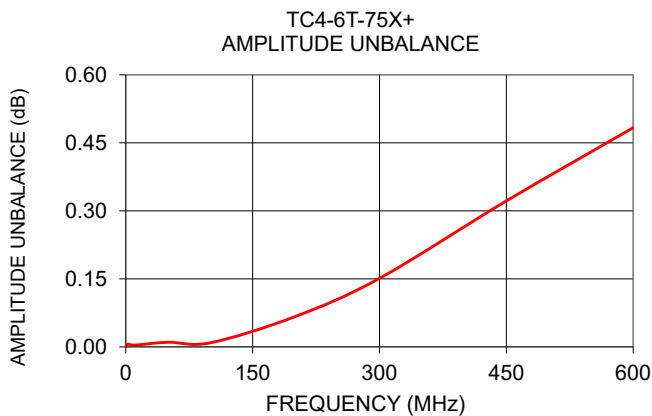
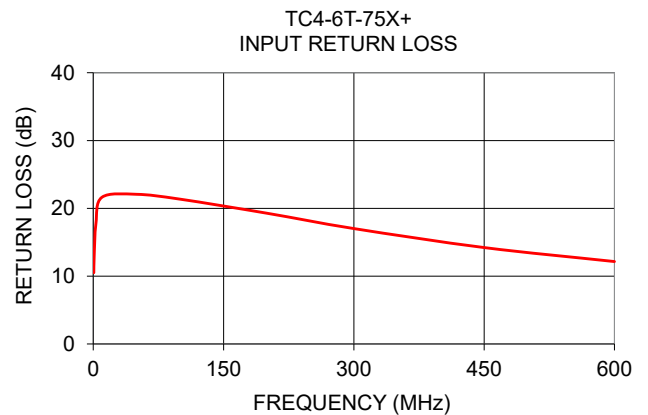
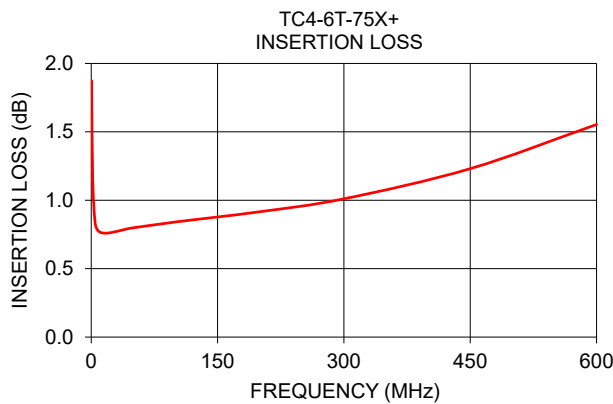
top hat  
SURFACE MOUNT  
**RF Transformer**

**TC4-6T-75X+**

75Ω 0.6 to 600 MHz

**TYPICAL PERFORMANCE DATA**

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
0.60	1.87	10.51	0.00	0.16
1.00	1.49	12.84	0.00	0.07
3.00	0.97	17.73	0.01	0.01
10.00	0.77	21.64	0.00	0.03
50.00	0.80	22.07	0.01	0.00
100.00	0.84	21.36	0.01	0.04
200.00	0.92	19.28	0.07	0.17
300.00	1.01	17.02	0.15	0.38
450.00	1.23	14.22	0.32	1.21
600.00	1.55	12.16	0.48	3.29



**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)



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