

75 $\Omega$  5 to 120 MHz

## The Big Deal

- Supports DOCSIS® 3.1 upstream bandwidth
- Low insertion loss, 0.2 dB
- Good return loss, 28 dB
- Low amplitude / phase unbalance, 0.2 dB / 2°
- Small size, 0.15 x 0.15 x 0.16"



CASE STYLE: AT1521

## **Product Overview**

TC1-1T-75X+ is a  $75\Omega$  surface-mount, DC-isolated transformer with a secondary center tap, covering the 5 to 120 MHz band, supporting upstream bandwidth requirements for DOCSIS 3.1 systems and equipment. This model provides a 1:1 secondary/primary impedance ratio and is capable of handling up to 0.25W RF input power. It provides 0.2 dB insertion loss, 28 dB return loss, 0.2 dB amplitude unbalance and 2° 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" to accommodate dense circuit board layouts. It also incorporates Mini-Circuits' Top Hat® feature for faster, more accurate pick-and-place assembly.

# **Key Features**

Feature	Advantages
Supports DOCSIS 3.1 upstream bandwidth requirements	This model is optimized for use over the upstream bandwidth for CATV and broadband fiber networks including DOCSIS 3.1 systems.
Low insertion loss, 0.2 dB	Provides excellent transmission of signal power from input to output.
Good return loss, 28 dB	Provides excellent matching for 75 $\Omega$ systems.
Low unbalance: - 0.2dB amplitude unbalance - 2° phase unbalance	Low unbalance improves a system's electromagnetic compatibility by rejecting unwanted common-mode noise.
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.
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.



5 to 120 MHz

TC1-1T-75X+

 $75\Omega$ 

#### **Features**

- DOCSIS 3.1 suitable
- · plastic base with leads
- aqueous washable

#### **Applications**

- impedance matching
- unbalance to balance transformation
- cable/CATV and broadband fiber networks



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



### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Тур.	Max.	Unit	
Impedance Ratio		1			Ohm	
Frequency Range		5	_	120	MHz	
Insertion Loss*	5 - 75	_	0.1	0.4	dB	
Insertion Loss	75 - 120	_	0.3	0.6		
Amulitude Unhelenee	5 - 75	_	0.1	0.2	dB	
Amplitude Unbalance	75 - 120	_	0.2	0.3	ub	
Phase Unbalance	5 - 75	_	1	4	D	
Filase Officialice	75 - 120	_	3	6	Degree	
	5 - 20	25	30	_		
Return Loss	20-75	23	28	_	dB	
	75-120	20	25	_		

<sup>\*</sup>Insertion Loss is referenced to mid-band loss, 0.25 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.

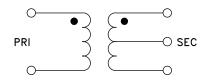
#### **Pin Connections**

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

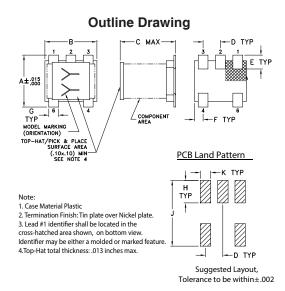
#### **Product Marking**



#### Config. A



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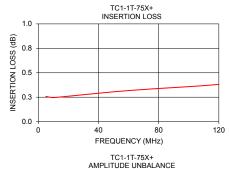


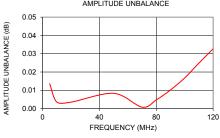
## Outline Dimensions (inch)

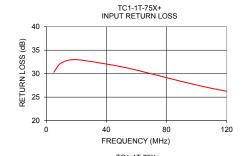
	Α	В	С	D	Е	F
.1	150	.150	.160	.050	.040	.025
3	.81	3.81	4.06	1.27	1.02	0.64
	G	Н	J	K		wt
.(	28	.065	.190	.030		grams
0	.71	1.65	4.83	0.76		0.15

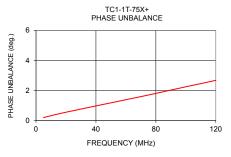
## **Typical Performance Data**

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
5.00	0.26	30.33	0.01	0.20
10.00	0.25	32.29	0.00	0.32
20.00	0.26	32.98	0.00	0.55
50.00	0.31	31.47	0.01	1.18
70.00	0.33	29.95	0.00	1.59
80.00	0.34	29.15	0.00	1.81
90.00	0.35	28.34	0.01	2.03
100.00	0.36	27.58	0.02	2.25
110.00	0.37	26.88	0.02	2.46
120.00	0.38	26.26	0.03	2.68









# **Mouser Electronics**

**Authorized Distributor** 

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