Surface Mount top hat®

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”

CASE STYLE: AT1521

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

Feature	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 • 0.6 dB amplitude unbalance • 3° phase unbalance	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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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

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		0.6	—	600	MHz
Insertion Loss*	0.6-600 1- 300	— —	— —	1.8 1.0	dB
Amplitude Unbalance	0.6-600 1- 300	— —	0.6 0.1	1.2 0.5	dB
Phase Unbalance	0.6-600 1- 300	— —	3 0.2	8 2	Degree
Return Loss	0.6-600 1- 300	8 12	13 20	— —	dB

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

Maximum Ratings

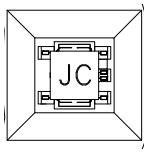
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

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

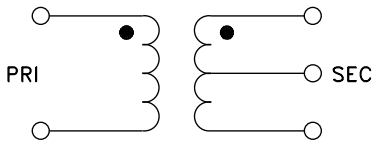
Pin Connections

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

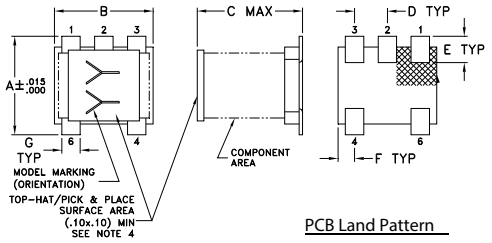
Product Marking



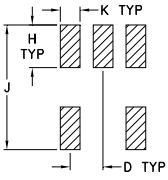
Config. A



Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within±.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.)
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