

# Surface Mount RF Transformer

## TCM2-142-75X+

75Ω 10 to 1400 MHz

### The Big Deal

- Wideband, 10 to 1400 MHz
- Low insertion loss, 1.3 dB.
- Good input return loss, 17 dB typ.
- Low amplitude unbalance, 0.5 dB



CASE STYLE: AT1740

### Product Overview

Mini-Circuits' TCM2-142-75X+ is a 75Ω surface-mount transmission line transformer covering a wide range of applications from 10 to 1400 MHz. The transformer provides input power handling up to 0.4W, low insertion loss, good input return loss and low amplitude unbalance. Featuring core and wire construction on a 5-pad ceramic base, the unit measures 0.15 x 0.15 x 0.15", accommodating dense circuit board layouts. It also incorporates Mini-Circuits' Top Hat® feature for faster, more accurate pick-and-place assembly and easy visual inspection.

### Key Features

Feature	Advantages
Wideband, 10 to 1400 MHz	Wide frequency range covers bandwidth requirements for many broadband applications.
Good power handling, 0.4W	Supports a wide range of system power requirements.
Low insertion loss, 1.3 dB	TCM2-142-75X+ provides excellent signal transmission from input to output.
Good input return loss, 17 dB typ.	Provides good matching with minimal signal reflection.
Low amplitude unbalance, 0.5 dB	Low amplitude unbalance can improve a system's electromagnetic compatibility by rejecting unwanted common-mode noise.
Small footprint (0.15 x 0.15")	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.

#### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Surface Mount RF Transformer

75Ω 10 to 1400 MHz

## Maximum Ratings

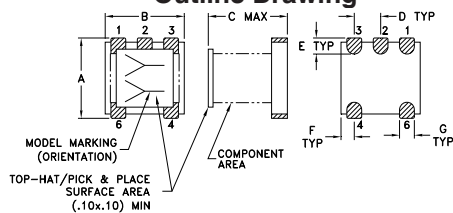
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.4W
DC Current	30mA

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

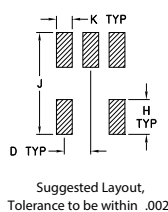
## Pad Connections

PRIMARY DOT	3
PRIMARY	1, 2
SECONDARY DOT	6
SECONDARY	4
GND	1, 2
NOT USED	5

## Outline Drawing



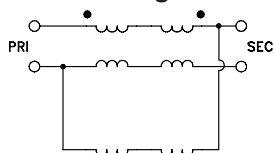
## PCB Land Pattern



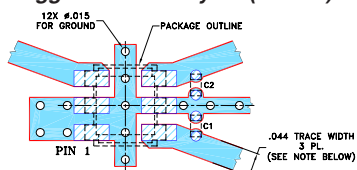
## Outline Dimensions (inch)

A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	0.76	0.64
G	H	J	K		
.028	.065	.190	.030		
0.71	1.65	4.83	0.76		
				wt	
				grams	
				0.10	

## Config. K



## Demo Board MCL P/N: TB-676+ Suggested PCB Layout (PL-380)



COMPONENT	SIZE
C1, C2	0402

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
3. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE.  
FOR COMPONENT VALUES REFER TO TB-676+.

■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

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## Features

- wide bandwidth 10 to 1400 MHz
- balanced transmission line
- excellent return loss
- aqueous washable

## Applications

- PCS
- wideband push-pull amplifiers
- cellular

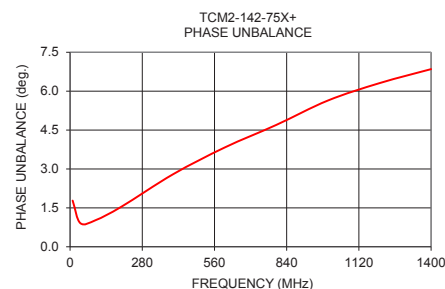
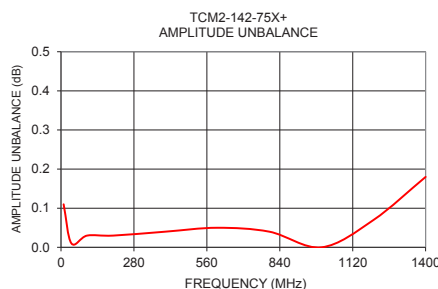
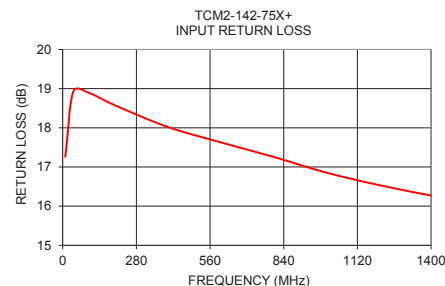
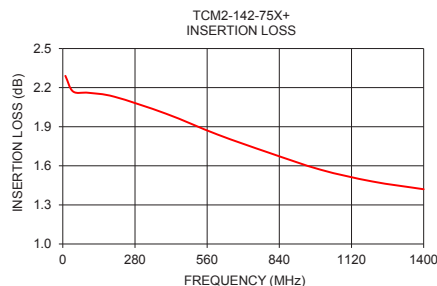
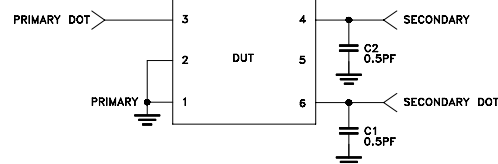
## Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		10		1400	MHz
Insertion Loss	10-1400	—	1.3	3.0	dB
Amplitude Unbalance	10-1400	—	0.5	—	dB
Phase Unbalance	10-1400	—	10	—	Degree

## Typical Performance Data

FREQ. (MHz)	INS. LOSS (dB)	INPUT R. LOSS (dB)	AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)
10	2.29	17.26	0.11	1.78
40	2.17	18.92	0.01	0.91
100	2.16	18.89	0.03	1.03
200	2.13	18.57	0.03	1.55
400	2.00	18.02	0.04	2.80
600	1.84	17.63	0.05	3.83
800	1.70	17.26	0.04	4.70
1000	1.57	16.86	0.00	5.64
1200	1.48	16.54	0.07	6.31
1400	1.42	16.27	0.18	6.85

## Electrical Schematic



[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

TCM2-142-75X+



CASE STYLE: AT1740

+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

REV. OR  
M162092  
TCM2-142-75X+  
ED-16110902  
IG/CP/AM  
170615  
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