

Surface Mount   
**RF Transformer**

**TCM2-672X+**

50Ω 1700 to 6700 MHz

### The Big Deal

- Wideband, 1700 to 6700 MHz
- Low insertion loss, 1.1 dB
- Flat insertion loss,  $\pm 0.4$  dB typ.
- Good input return loss, 12 to 31 dB typ.
- Low phase and amplitude unbalance,  $6^\circ$ , 0.8 dB



CASE STYLE: DB1627

### Product Overview

Mini-Circuits' TCM2-672X+ is a surface-mount transmission line core and wire transformer covering a very wide frequency range from 1700 to 6700 MHz. The transformer provides low insertion loss with excellent flatness over its entire frequency range. It achieves low phase and amplitude unbalance and excellent input return loss performance. Featuring core and wire construction on a 6-lead plastic base with tin over nickel termination finish, the unit measures 0.16 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 and easy visual inspection.

### Key Features

Feature	Advantages
Wideband, 1700 to 6700 MHz	Very wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 1.1 dB	TCM2-672X+ provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Good input return loss, 12 to 31 dB	Provides good matching with minimal signal reflection.
Small footprint (0.16 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.

#### 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)



top hat<sup>®</sup>  
Surface Mount  
**RF Transformer**

50Ω 1700 to 6700 MHz

**TCM2-672X+**



**Maximum Ratings**

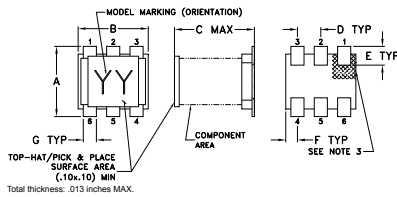
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.4W
DC Current	30mA

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

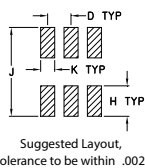
**Pin Connections**

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

**Outline Drawing**



**PCB Land Pattern**



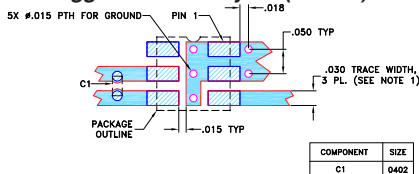
**Outline Dimensions (inch/mm)**

A	B	C	D	E	F	
.160	.150	.160	.050	.040	.025	
4.06	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	

**Config. G**



**Demo Board MCL P/N: TB-742+ Suggested PCB Layout (PL-422)**



- NOTES:**
- TRACE WIDTH PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0133"±.001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-742+.
  - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

**Features**

- wide bandwidth 1700 to 6700 MHz
- balanced transmission line
- excellent return loss
- aqueous washable

**Applications**

- PCS
- wideband push-pull amplifiers
- cellular

CASE STYLE: DB1627

**+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

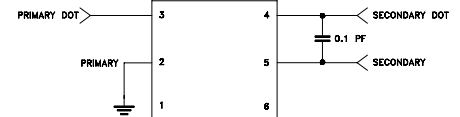
**Electrical Specifications at 25°C**

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		1700		6700	MHz
Insertion Loss	1700-6700	—	1.1	2.5	dB
Amplitude Unbalance	1700-6700	—	0.8	—	dB
Phase Unbalance	1700-6700	—	6	—	Degree

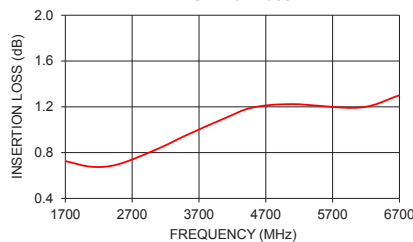
**Typical Performance Data**

FREQ. (MHz)	INS. LOSS (dB)	INPUT R. LOSS (dB)	AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)
1700	0.73	12.81	1.02	2.84
2100	0.68	14.88	0.67	4.96
2500	0.70	16.69	0.42	6.09
3100	0.84	15.62	0.09	6.95
3500	0.95	14.56	0.17	6.87
4100	1.10	13.88	0.35	5.43
4500	1.19	14.52	0.48	4.87
5100	1.22	19.23	0.57	2.98
6100	1.19	22.57	0.39	0.25
6700	1.30	31.04	0.20	0.17

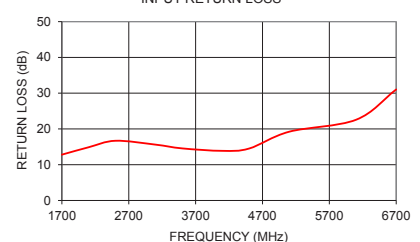
**Electrical Schematic**



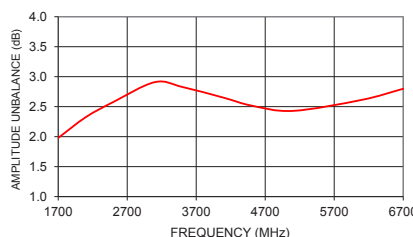
TCM2-672X+ INSERTION LOSS



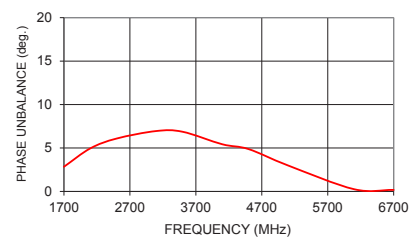
TCM2-672X+ INPUT RETURN LOSS



TCM2-672X+ AMPLITUDE UNBALANCE



TCM2-672X+ PHASE UNBALANCE



**Notes**

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at [www.minicircuits.com/WCLStore/terms.jsp](http://www.minicircuits.com/WCLStore/terms.jsp)

