SURFACE MOUNT top hat®

RF Transformer

TCM2-63WX+

50Ω 30 to 6000 MHz

THE BIG DEAL

- Wideband, 30 to 6000 MHz
- Low insertion loss, 1.5 dB typ. up to 4 GHz
- Good amplitude unbalance, ±0.4 dB typ.
- Good input return loss, 15 dB typ.
- Low phase unbalance, ±4˚ typ.

Generic photo used for illustration purposes only

CASE STYLE: DB1627

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- PCS
- Wideband push-pull amplifiers
- Cellular

PRODUCT OVERVIEW

Mini-Circuits' TCM2-63WX+ is a surface-mount transmission line core and wire transformer covering a very wide frequency range from 30 to 6000 MHz. The transformer provides low insertion loss. 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, 30 to 6000 MHz	Very wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 1.5 dB up to 4 GHz	TCM2-63WX+ provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Good input return loss, 15 dB typ.	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.

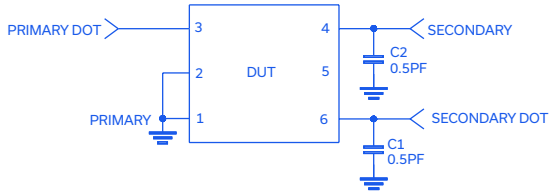
REV. A
ECO-013812
TCM2-63WX+
WZ/CP/AM
220606

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Impedance Ratio (secondary/primary)			2		Ohm
Frequency Range		30		6000	MHz
Insertion Loss*	100-4000	—	0.9	1.9	dB
	30-5000	—	1.5	2.9	
	5000-6000	—	2.5	3.9	
Amplitude Unbalance	100-4500	—	0.4	—	dB
	30-6000	—	0.5	—	
Phase Unbalance	100-4500	—	4	—	Degree
	30-6000	—	5	—	
Common Mode Rejection	100-4500	18	25	—	dB
	30-6000	15	20	—	

*Average Insertion Loss is referenced to mid-band loss 0.9 dB.

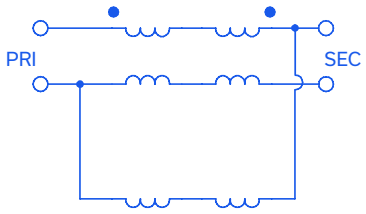
ELECTRICAL SCHEMATIC



MAXIMUM RATINGS

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

CONFIGURATION K



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50Ω 30 to 6000 MHz

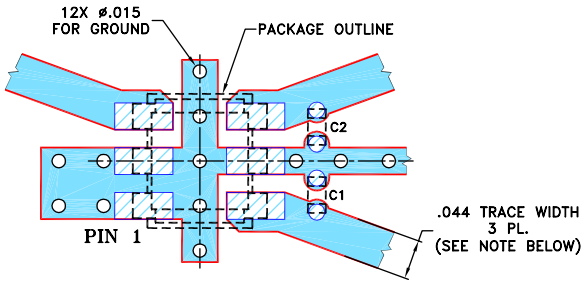
PAD CONNECTIONS

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

PRODUCT MARKING: WJ

DEMOBOARD MCL P/N: TB-TCM2-63WX+

SUGGESTED PCB LAYOUT (PL-380)

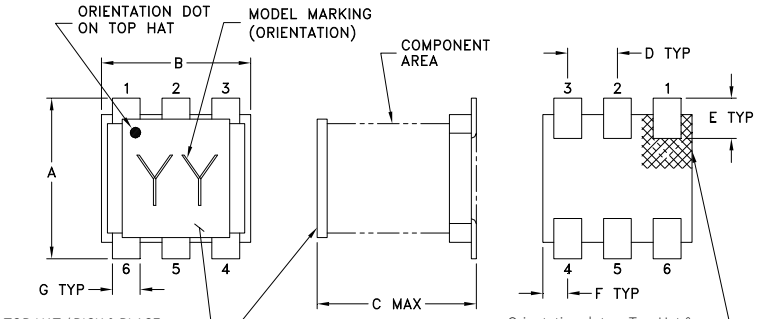


COMPONENT	SIZE
C1, C2	0402

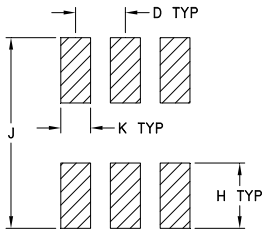
NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES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

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

OUTLINE DRAWING



PCB Land Pattern



SUGGESTED LAYOUT
TOLERANCE TO BE WITHIN ±.002

OUTLINE DIMENSIONS (Inches / 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

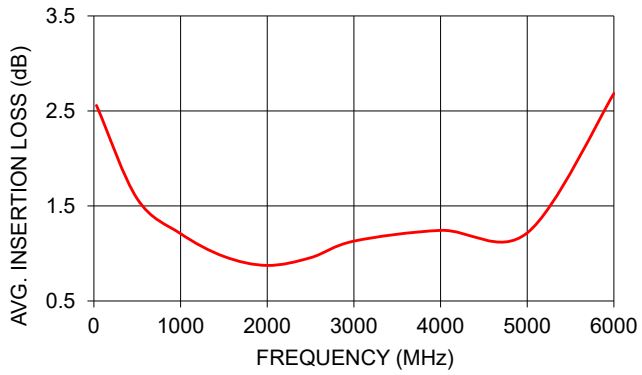
G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.15

TAPE & REEL INFORMATION: F47

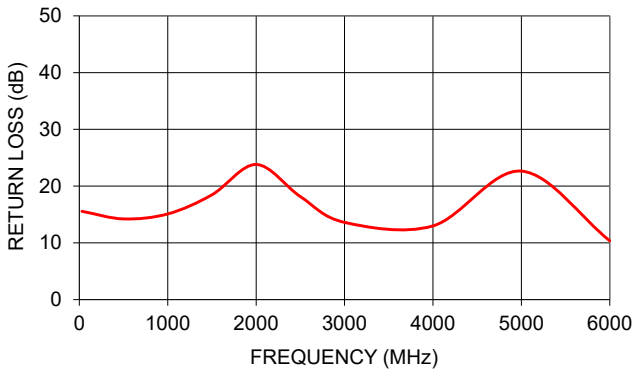
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)	CMRR (dB)
30	2.56	15.56	0.14	1.23	37.38
500	1.58	14.22	0.50	2.86	28.38
1000	1.21	15.10	0.57	2.89	27.62
1500	0.97	18.46	0.41	2.70	29.50
2000	0.87	23.81	0.16	2.68	32.03
2500	0.96	18.16	0.09	2.59	32.73
3000	1.13	13.61	0.30	2.04	32.14
4000	1.24	12.99	0.64	0.83	28.47
5000	1.22	22.65	0.85	4.94	23.73
6000	2.68	10.37	0.59	10.30	20.32

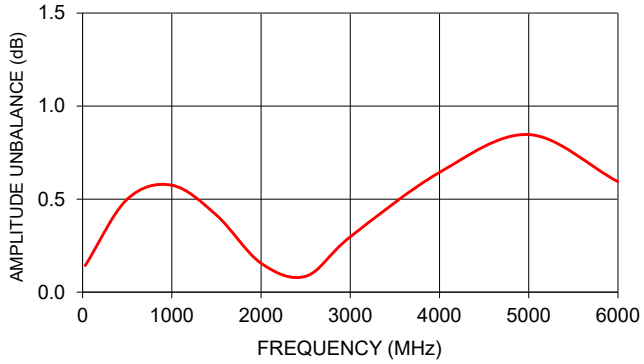
TCM2-63WX+
AVG. INSERTION LOSS



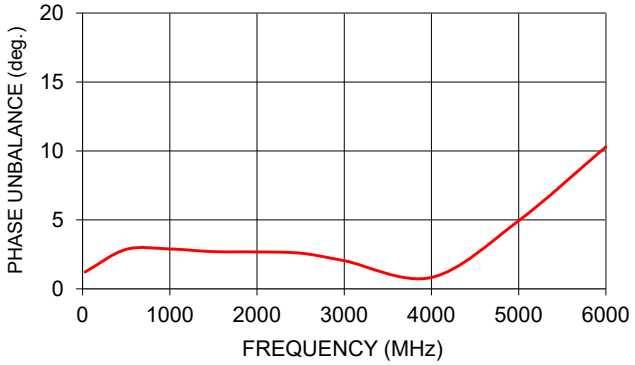
TCM2-63WX+
INPUT RETURN LOSS



TCM2-63WX+
AMPLITUDE UNBALANCE



TCM2-63WX+
PHASE UNBALANCE



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