

top hat®
Surface Mount
RF Transformer

TCM2-452X-2+

50Ω

20 to 4000 MHz



CASE STYLE: DB1627

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.4W
DC Current	60mA

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

Pin Connections

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

Note: Using schematic below, apply DC at pin 5 to distribute to pin 4 and 6

Features

- wide bandwidth 20 to 4000 MHz
- balanced transmission line
- good return loss
- aqueous washable

Applications

- PCS
- wideband push-pull amplifiers
- cellular

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

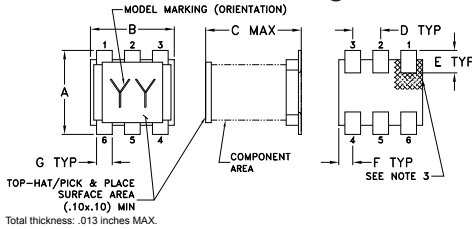
Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500
13"	1000, 2000

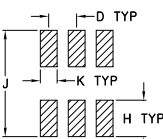
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		20	—	4000	MHz
Insertion Loss	20 - 4000	—	1.5	2.5	dB
Amplitude Unbalance	20 - 4000	—	0.5	—	dB
Phase Unbalance	20 - 4000	—	10	—	Degree

Outline Drawing



PCB Land Pattern

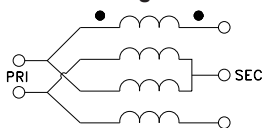


Suggested Layout

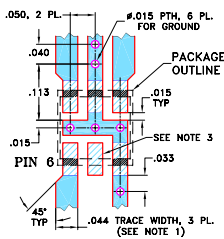
Outline Dimensions (inch/mm)

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. H



Demo Board MCL P/N: TB-697+ Suggested PCB Layout (PL-381)



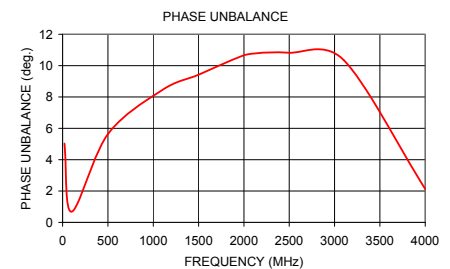
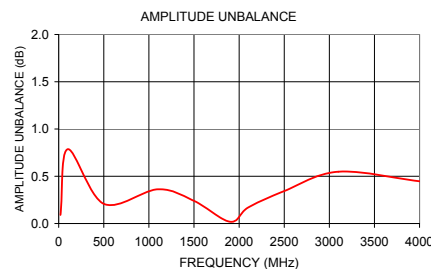
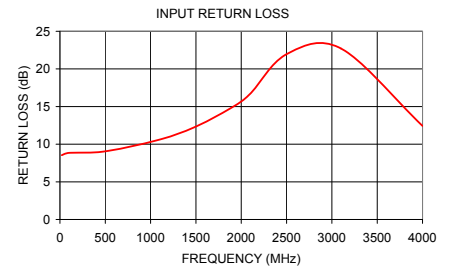
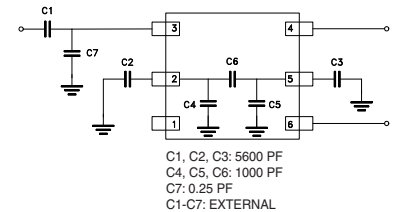
- NOTES:**
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. ON EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
 3. THIS PAD IS NOT REQUIRED FOR AT224 CASE STYLE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

FREQ. (MHz)	INS. LOSS (dB)	INPUT R. LOSS (dB)	AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)
20.0	1.75	8.54	0.09	5.03
100.0	1.85	8.85	0.79	0.68
500.0	1.63	9.05	0.21	5.63
1100.0	1.50	10.61	0.36	8.44
1500.0	1.42	12.35	0.24	9.42
1900.0	1.36	14.90	0.02	10.43
2100.0	1.34	16.71	0.17	10.77
2500.0	1.32	21.96	0.34	10.82
3100.0	1.34	22.72	0.55	10.36
4000.0	1.57	12.43	0.45	2.13

* Note: 0.25 PF capacitor is suggested to be added at primary to ground to improve return loss.

Electrical Schematic



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

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