

top hat™
Surface Mount
RF Transformer

TCM4-452X+

50Ω

20 to 4500 MHz



Maximum Ratings

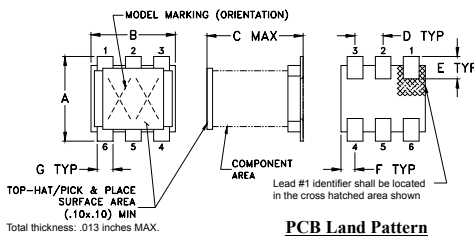
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.4W
DC Current	30mA

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

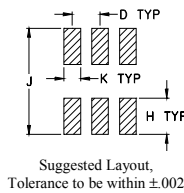
Pin Connections

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

Outline Drawing



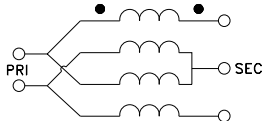
PCB Land Pattern



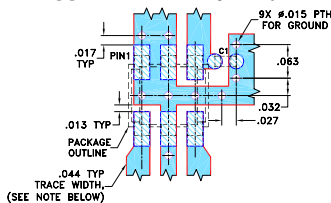
Outline Dimensions (inch/mm)

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. 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 0.020" ± 0.0015"; 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. 0402 SIZE CHIP COMPONENT FOOTPRINT IS SHOWN FOR REFERENCE. FOR COMPONENT VALUE REFER TO TB-697+.
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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-Circuits' 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

Features

- wide bandwidth 20 to 4500 MHz
- balanced transmission line
- good 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)			4		
Frequency Range		20	—	4500	MHz
Insertion Loss	20 - 4500	—	1.5	3.0	dB
Amplitude Unbalance	20 - 4500	—	0.5	—	dB
Phase Unbalance	20 - 4500	—	5	—	Degree

Typical Performance Data

FREQ. (MHz)	INS. LOSS (dB)	INPUT R. LOSS* (dB)	AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)
10.0	1.54	15.59	0.04	0.06
500.0	1.44	16.30	0.02	2.83
1000.0	1.45	12.89	0.03	4.85
1500.0	1.55	10.82	0.01	6.26
2000.0	1.60	10.63	0.17	6.46
2500.0	1.57	12.23	0.19	5.36
3000.0	1.54	15.11	0.22	4.87
3500.0	1.58	17.73	0.61	2.79
4000.0	1.73	21.68	0.85	0.04
4500.0	1.82	33.66	0.89	0.58

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

Electrical Schematic

