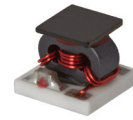


## Features

- wideband, 50 to 6000 MHz
- low insertion loss, 0.7 dB typ.
- miniature surface mount 0.15"x0.15"
- protected by US Patent, 7,012,486
- aqueous washable

## Applications

- biasing amplifiers
- biasing of laser diodes
- biasing of active antennas



Generic photo used for illustration purposes only

CASE STYLE: GU1604

**+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, 1000
13"	2000

## Electrical Specifications

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		50		6000	MHz
Insertion Loss	50-500	—	0.2	0.8	dB
	500-3000	—	0.7	1.8	
	3000-6000	—	1.1	2.5	
Isolation (RF port to DC port) (RF & DC port to DC port)	50-500	38	52	—	dB
	500-3000	18	28	—	
	3000-6000	17	19	—	
VSWR	50-500	—	1.05	1.5	:1
	500-3000	—	1.1	1.3	
	3000-6000	—	1.2	2.2	

External C1(0.01μF) is required. See functional schematic and PCB layout.

## Maximum Ratings

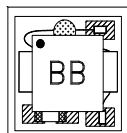
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30 dBm max.
Voltage at DC port	25 V max.
DC Current	200mA

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

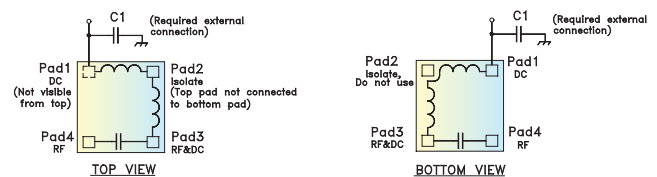
## Pad Terminations

Function	Pad Number
RF	4
RF&DC	3
DC	1
ISOLATE (see PCB Layout)	2

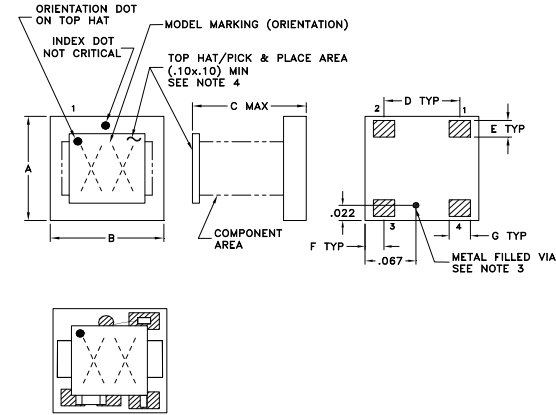
## Product Marking



## Functional Schematic



## Outline Drawing

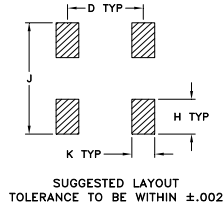


TOP VIEW OF "TCBT" SERIES MODELS

### Notes:

3. Must be isolated from external conductors on mounting surface. Suggested solder mask area is .025 x .025. At Mini-Circuits option via may be removed.
4. Top-Hat total thickness: .013 inches MAX.

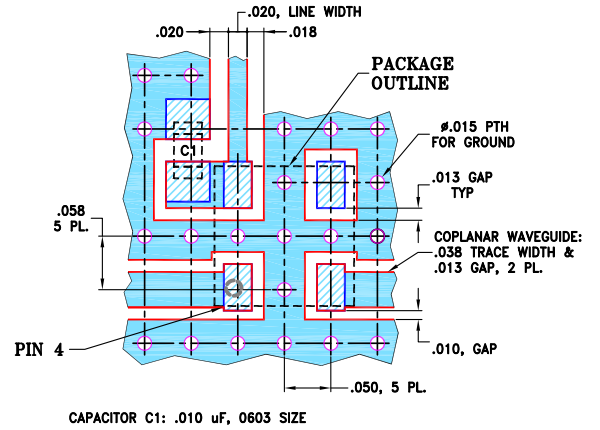
## PCB Land Pattern



## Outline Dimensions (inch/mm)

A	B	C	D	E	F
.150	.150	.150	.100	.030	.025
3.81	3.81	3.81	2.54	0.76	0.64
G	H	J	K	wt	
.028	.050	.160	.030	grams	
0.71	1.27	4.06	0.76	0.10	

## Demo Board MCL P/N: TB-268 Suggested PCB Layout (PL-146)



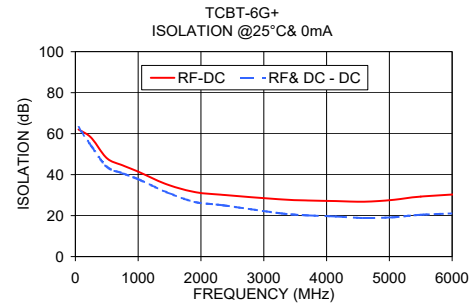
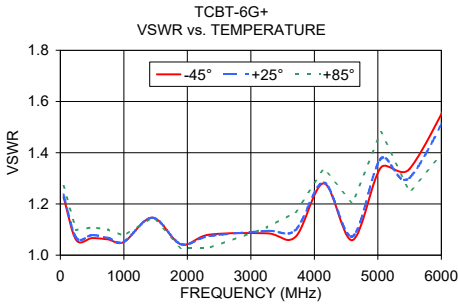
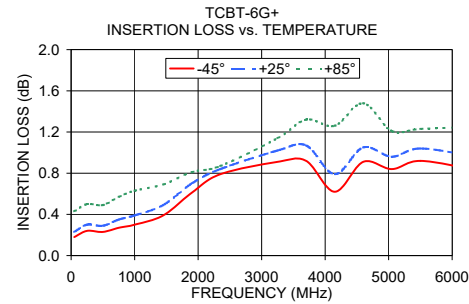
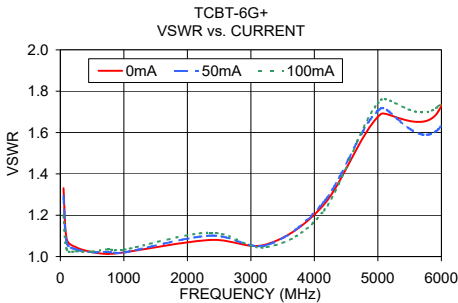
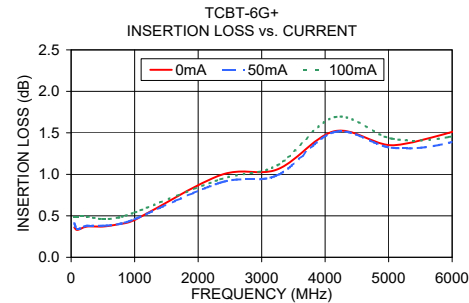
### NOTES:

1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.020 \pm 0.0015$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. 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.

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB) with temperature			VSWR (:1) with temperature			ISOLATION (dB) 0mA	
	-45°C	+25°C	+85°C	-45°C	+25°C	+85°C	RF - DC	RF & DC-DC
50.00	0.18	0.23	0.43	1.23	1.24	1.27	62.01	63.14
250.00	0.24	0.30	0.50	1.06	1.07	1.10	58.05	54.10
500.00	0.23	0.29	0.49	1.07	1.08	1.11	48.04	43.88
750.00	0.27	0.35	0.57	1.06	1.07	1.10	44.58	40.67
1000.00	0.30	0.39	0.63	1.05	1.05	1.08	41.47	37.79
1450.00	0.39	0.49	0.69	1.15	1.15	1.15	35.33	31.47
1900.00	0.61	0.70	0.81	1.04	1.04	1.03	31.51	26.67
2350.00	0.79	0.84	0.87	1.08	1.07	1.03	30.13	25.03
3250.00	0.91	1.02	1.14	1.09	1.09	1.11	27.98	21.20
3700.00	0.92	1.07	1.32	1.07	1.10	1.17	27.37	20.10
4150.00	0.62	0.79	1.26	1.28	1.28	1.34	27.10	19.55
4600.00	0.91	1.05	1.48	1.06	1.07	1.20	26.78	18.79
5050.00	0.84	0.96	1.21	1.34	1.38	1.48	27.64	19.18
5500.00	0.92	1.04	1.23	1.34	1.30	1.25	29.30	20.39
6400.00	0.83	0.96	1.25	1.74	1.70	1.51	31.01	21.50



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

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