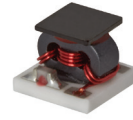


Surface Mount   
**Bias-Tee**

50Ω Wideband 20 to 2500 MHz

**TCBT-2R5G+**



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

**Features**

- wideband, 20 to 2500 MHz
- low insertion loss, 0.4 dB typ.
- miniature surface mount 0.15"x0.15"
- aqueous washable
- protected by US Patent 7,012,486

**Applications**

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

**Electrical Specifications**

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		20		2500	MHz
Insertion Loss	20-2500	—	0.2	0.8	dB
	200-1250	—	0.35	0.8	
	1250-2500	—	0.7	1.2	
Isolation (RF port to DC port) (RF & DC port to DC port)	20-2500	40	65	—	dB
	200-1250	25	44	—	
	1250-2500	20	40	—	
VSWR	20-2500	—	1.05	1.5	:1
	200-1250	—	1.05	1.2	
	1250-2500	—	1.1	1.25	

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

**Maximum Ratings**

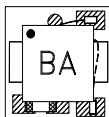
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30 dBm max.
Voltage at DC port	25 V max.
DC Current	200mA

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

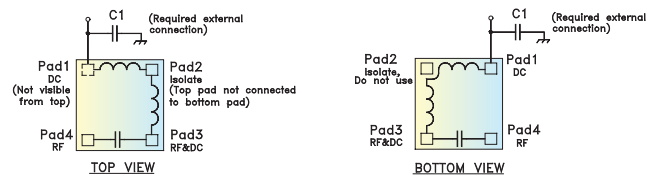
**Pad Terminations**

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

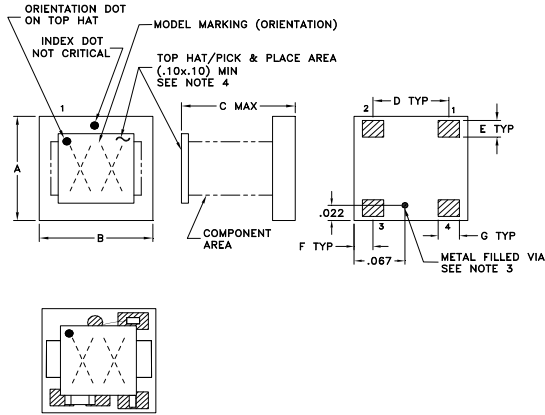
**Product Marking**



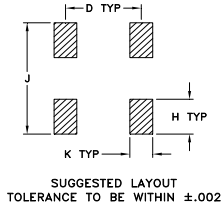
**Functional Schematic**



## Outline Drawing



## PCB Land Pattern



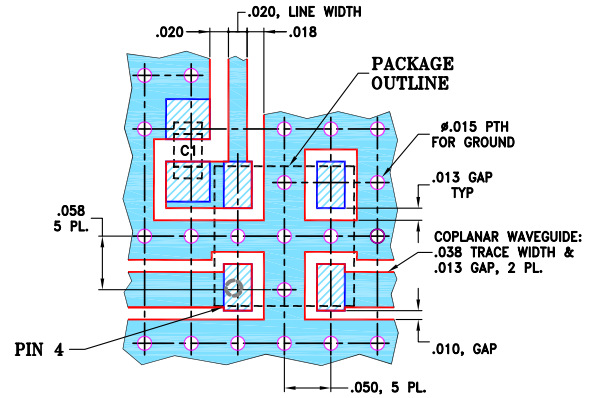
TOP VIEW OF "TCBT" SERIES MODELS

- Notes:
- 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.
  - Top-Hat total thickness: .013 inches MAX.

## 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)



CAPACITOR C1: .010 uF, 0603 SIZE

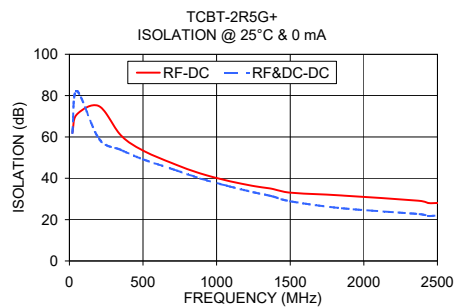
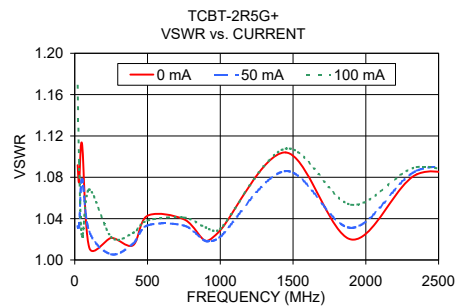
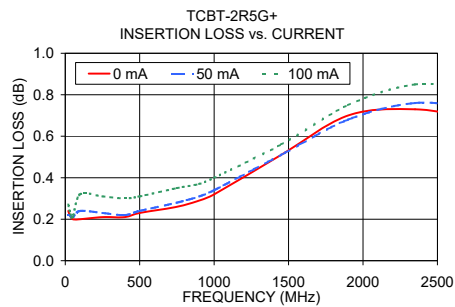
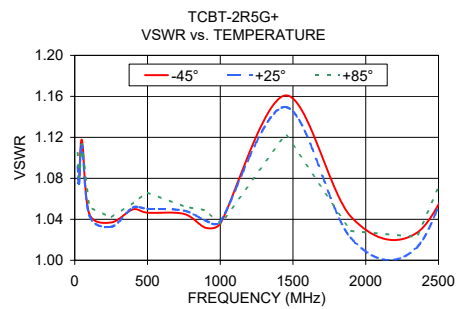
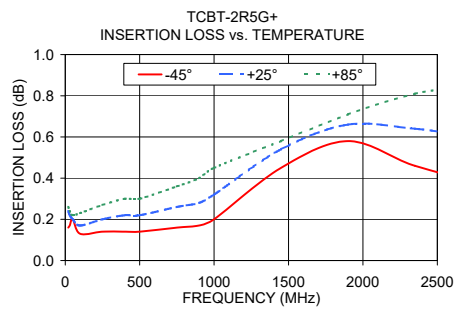
### NOTES:

- 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.
- 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 current			VSWR (:1) with current			FREQUENCY (MHz)	ISOLATION (dB) 0mA	
	0mA	50mA	100mA	0mA	50mA	100mA		RF - DC	RF&DC-DC
20.00	0.24	0.22	0.27	1.09	1.03	1.17	20	61.91	61.88
30.00	0.22	0.22	0.24	1.08	1.03	1.09	50	70.90	82.16
50.00	0.20	0.21	0.21	1.11	1.08	1.02	200	74.93	59.19
100.00	0.20	0.24	0.32	1.01	1.03	1.07	350	60.74	53.73
250.00	0.21	0.23	0.31	1.02	1.01	1.02	500	53.42	49.17
400.00	0.21	0.22	0.30	1.01	1.02	1.03	710	46.96	44.20
500.00	0.23	0.24	0.31	1.04	1.03	1.04	890	42.32	39.88
750.00	0.26	0.28	0.35	1.04	1.03	1.04	1070	38.90	36.40
900.00	0.29	0.31	0.37	1.02	1.02	1.03	1250	36.26	33.23
1000.00	0.32	0.34	0.40	1.03	1.02	1.03	1375	34.93	31.36
1450.00	0.51	0.51	0.56	1.10	1.09	1.11	1500	33.06	28.86
1900.00	0.70	0.68	0.75	1.02	1.03	1.05	1852	31.65	25.51
2350.00	0.73	0.76	0.85	1.08	1.09	1.09	2380	29.08	22.65
2800.00	0.69	0.74	0.83	1.08	1.09	1.08	2440	28.00	21.74
3250.00	0.71	0.76	0.85	1.07	1.09	1.07	2500	28.05	22.03



### 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)