Surface Mount top hat®

Bias-Tee

50Ω Wideband 50 to 6000 MHz

TCBT-6G+

CASE STYLE: GU1604

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

Maximum Ratings

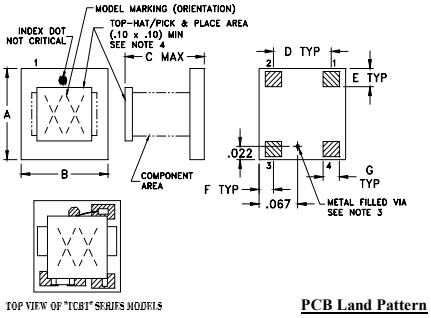
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	30dBm max.
Voltage at DC port	25V max.
Input Current	200mA

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

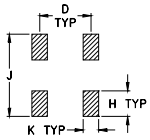
Pad Terminations

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

Outline Drawing



PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

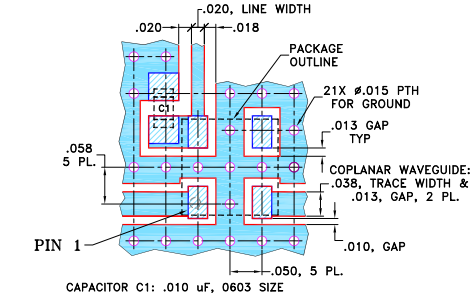
Notes:
1. Open style, Ceramic Base.
2. Termination Finish: Palladium Silver.
3. Must be isolated from external conductors on mounting surface. Suggested solder mask area is .025 x .025
At Mini-Circuits option via may be removed.
4. Top-Hat total thickness: .013 inches MAX.

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

NOTE: 1. COPLANAR WAVEGUIDE PARAMETERS ARE 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.

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

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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

Bias-Tee Electrical Specifications

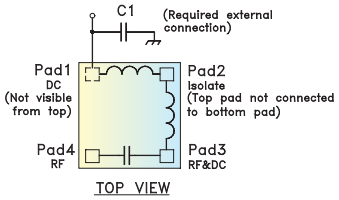
FREQUENCY (MHz)		INSERTION LOSS (dB)						ISOLATION (dB) (RF port to DC port) (RF&DC port to DC port)						VSWR (:1)					
		L		M		U		L		M		U		L		M		U	
f_L	f_U	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.
50	6000	0.2	0.8	0.7	1.8	1.1	2.5	52	38	28	18	19	17	1.05	1.5	1.1	1.3	1.2	2.2

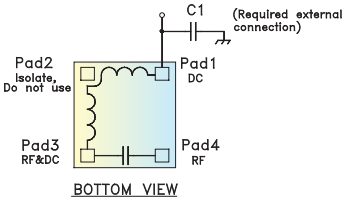
L= 50-500 MHz M=500-3000 MHz U=3000-6000 MHz
External C1(0.01µF) is required. See functional schematic and PCB layout.

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

Functional 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