



Mini-Circuits

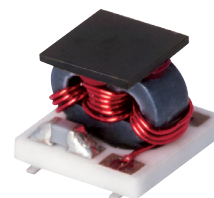
SURFACE MOUNT ^{top hat} Bias Tee

TCBT-2R5GL+

50Ω Wideband 20 to 2500 MHz

FEATURES

- Wideband, 20 to 2500 MHz
- Low Insertion Loss, 0.4 dB Typ.
- Miniature Surface Mount 0.15x0.15"
- Aqueous Washable
- Protected by US Patent 7,012,486



Generic photo used for illustration purposes only

CASE STYLE: GU1840

APPLICATIONS

- Biasing Amplifiers
- Biasing of Laser Diodes
- Biasing of Active Antennas

+RoHS Compliant

The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

PRODUCT OVERVIEW

Mini-Circuits' TCBT-2R5GL+ is an ultra-wideband surface-mount bias tee covering applications from 20 to 2500 MHz with low insertion loss, excellent VSWR, and high DC-RF isolation over its entire frequency range. This model is capable of handling up to +30 dBm (1 W) RF input power and DC input current up to 200 mA. The unit features core and wire construction mounted on a ceramic base (0.15x0.15x0.14") with Mini-Circuits Top-Hat feature for faster, more accurate pick and place assembly.

KEY FEATURES

Feature	Advantages
Wideband, 20 to 2500 MHz	Supports a wide range of applications with a single device, including biasing broadband amplifiers, laser diodes, active antennas and more.
Low Insertion Loss, 0.4 dB	Preserves signal strength from input to output and minimizes overall system loss.
Excellent VSWR, 1.05:1	Provides excellent matching for 50Ω systems with minimal signal reflection.
RF Power Handling Up to 1 W	This model supports applications with a variety of power requirements.
Excellent DC-RF Isolation	High DC-RF isolation (44 dB typ. at midband) minimizes RF leakage and interference with other elements in the system.
Miniature Size, 0.15x0.15x0.14"	Small footprint makes the TCBT-2R5GL+ a space-saver in dense PCB-layouts.
Top-Hat Feature	Improves speed and accuracy of pick and place assembly.
Leads for Excellent Solderability	This model features leads to facilitate soldering on PCB assemblies.

REV. C
ECO-026344
TCBT-2R5GL+
MCL NY
250728





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ELECTRICAL SPECIFICATIONS AT +25°C

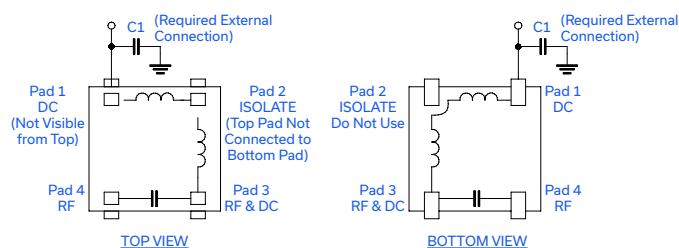
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		20		2500	MHz
Insertion Loss	20-200		0.2	0.8	dB
	200-1250		0.35	0.8	
	1250-2500		0.7	1.2	
Isolation	20-200	40	65		dB
	200-1250	25	44		
	1250-2500	20	40		
VSWR	20-200		1.05	1.5	:1
	200-1250		1.05	1.2	
	1250-2500		1.1	1.25	
DC Resistance, DC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

ABSOLUTE MAXIMUM 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	200 mA

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

FUNCTIONAL SCHEMATIC





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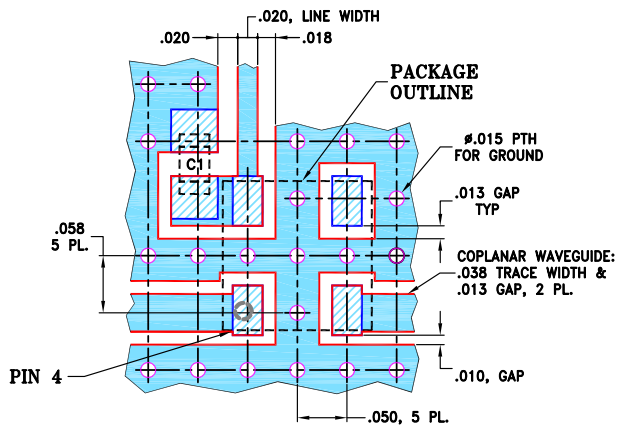
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PAD CONNECTIONS

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

PRODUCT MARKING: UF

DEMO BOARD MCL P/N: TB-TCBT-2R5GL+
SUGGESTED PCB LAYOUT (PL-146)

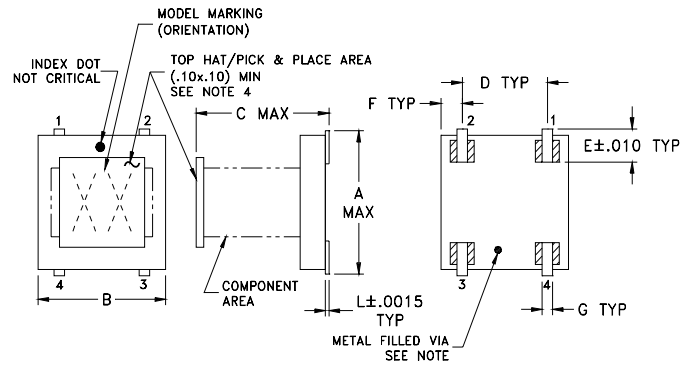
NOTES:

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 AND GAP MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

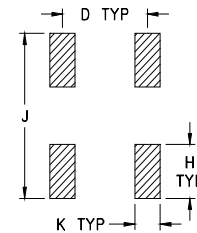
 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

OUTLINE DIMENSIONS (Inches)
mm

A	B	C	D	E	F
.166	.150	.155	.100	.037	.025
4.22	3.81	3.94	2.54	0.94	0.64
G	H	J	K	L	wt
.012	.060	.184	.030	0.004	grams
0.30	1.52	4.67	0.76	0.10	0.10

TAPE & REEL INFORMATION: F77

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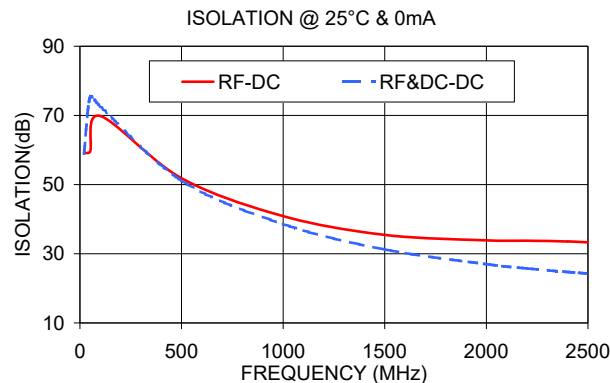
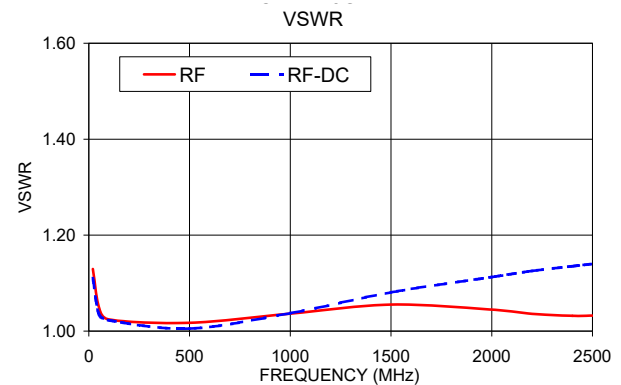
Bias Tee

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TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)		Isolation 0 mA	
		RF	RF & DC	RF-DC	RF & DC - DC
20	0.26	1.13	1.11	59.24	58.93
50	0.24	1.05	1.04	59.60	75.37
100	0.22	1.02	1.02	69.83	72.61
500	0.28	1.02	1.01	51.83	51.15
1000	0.43	1.04	1.04	40.89	38.59
1500	0.64	1.06	1.08	35.46	31.24
2000	0.72	1.04	1.11	33.88	26.97
2200	0.74	1.04	1.13	33.78	25.75
2400	0.75	1.03	1.14	33.55	24.74
2500	0.75	1.03	1.14	33.30	24.28



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/terms/viewterm.html

