

top hat®  
Surface Mount  
**Power Splitter/Combiner**

**SBTC-2-10X+**

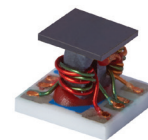
2 Way-0° 50Ω 5 to 1000 MHz

### Features

- low insertion loss, 0.3 dB typ.
- excellent amplitude unbalance, 0. dB typ.
- very good phase unbalance, 1.0 deg. typ.
- temperature stable LTCC base
- small size
- low cost
- aqueous washable
- protected by US patent 6,963,255

### Applications

- UHF/VHF receivers/transmitters
- cellular



Generic photo used for illustration purposes only

CASE STYLE: AT1667

**+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
13"	500

### Electrical Specifications

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1000	MHz
Insertion Loss Above 3.0 dB	5 - 50	—	0.3	0.7	dB
	50 - 500	—	0.3	0.8	
	500 - 1000	—	0.5	1.4	
Isolation	5 - 50	20	29	—	dB
	50 - 500	18	25	—	
	500 - 1000	16	21	—	
Phase Unbalance	5 - 50	—	—	3	Degree
	50 - 500	—	—	3	
	500 - 1000	—	—	5	
Amplitude Unbalance	5 - 50	—	—	0.6	dB
	50 - 500	—	—	0.5	
	500 - 1000	—	—	0.5	

### Maximum Ratings

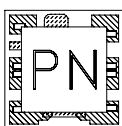
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.125W max

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

### Pin Connections

Function	Pin Number
SUM PORT	6
PORT 1	3
PORT 2	4
GROUND	1,2
NOT USED	5

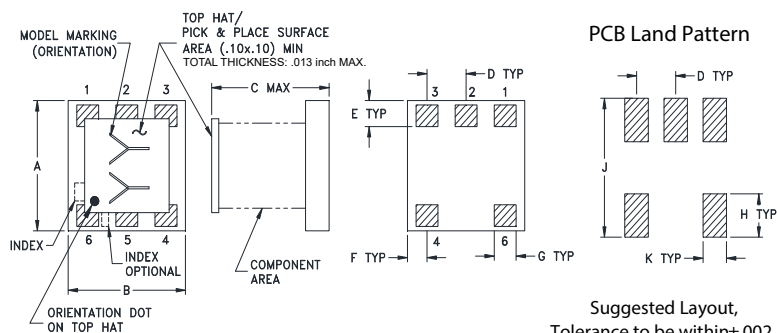
### Product Marking



### Electrical Schematic



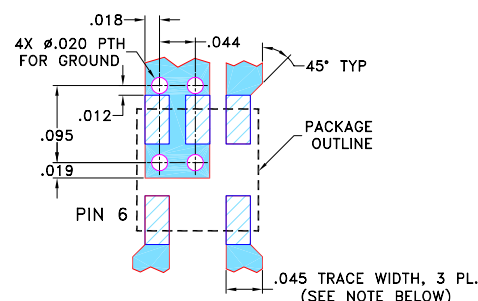
## Outline Drawing



## Outline Dimensions (inch/mm)

A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	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-274 Suggested PCB Layout (PL-152)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.020 \pm 0.0015$ "; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

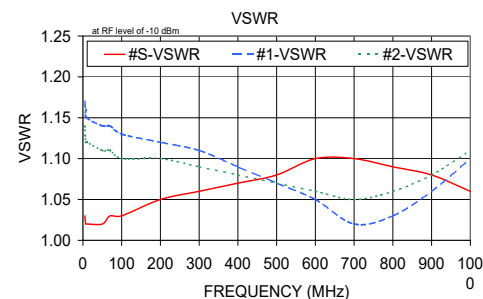
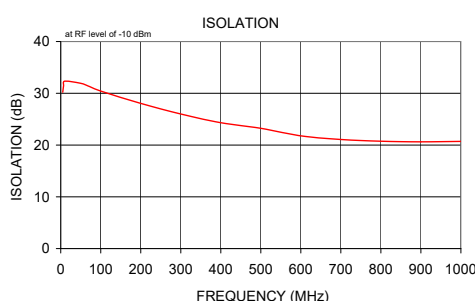
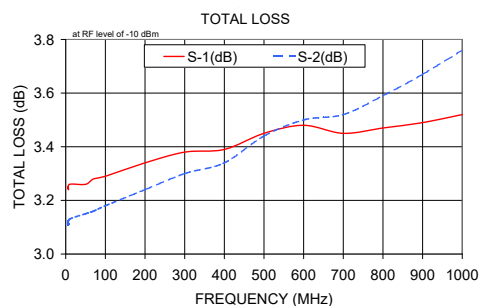
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Typical Performance Data

Frequency (MHz)	Total Loss <sup>1</sup> (dB)	Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2					
5.00	3.25	3.12	0.13	30.21	0.41	1.03	1.14
7.00	3.24	3.11	0.13	31.41	0.32	1.02	1.12
10.00	3.26	3.13	0.13	32.34	0.13	1.02	1.12
50.00	3.26	3.15	0.12	31.93	0.06	1.02	1.11
70.00	3.28	3.16	0.12	31.37	0.07	1.03	1.11
100.00	3.29	3.18	0.11	30.43	0.12	1.03	1.10
200.00	3.34	3.24	0.10	28.05	0.20	1.05	1.10
300.00	3.38	3.30	0.08	26.00	0.24	1.06	1.09
400.00	3.39	3.34	0.05	24.32	0.26	1.07	1.08
500.00	3.45	3.44	0.02	23.24	0.28	1.08	1.07
600.00	3.48	3.50	0.02	21.78	0.28	1.10	1.06
700.00	3.45	3.52	0.07	21.08	0.21	1.10	1.05
800.00	3.47	3.59	0.12	20.74	0.09	1.09	1.06
900.00	3.49	3.67	0.18	20.62	0.06	1.08	1.08
1000.00	3.52	3.76	0.24	20.71	0.27	1.06	1.11

1. Total Loss = Insertion Loss + 3dB splitter loss.



## Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[SBTC-2-10X+](#)