



**THE DATASHEET OF  
SBTC-2-10X+**



Surface Mount  **Power Splitter/Combiner**

**SBTC-2-10X+**

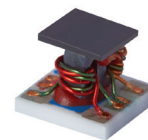
2 Way-0° 50Ω 5 to 1000 MHz

**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**

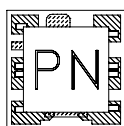
| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 0.5W max.      |
| Internal Dissipation        | 0.125W max     |

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          |

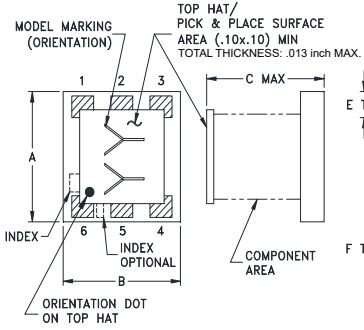
**Product Marking**



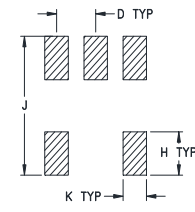
**Electrical Schematic**



## Outline Drawing



## PCB Land Pattern

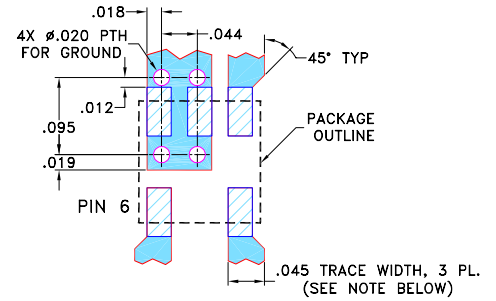


Suggested Layout,  
Tolerance to be within ±.002

## 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)



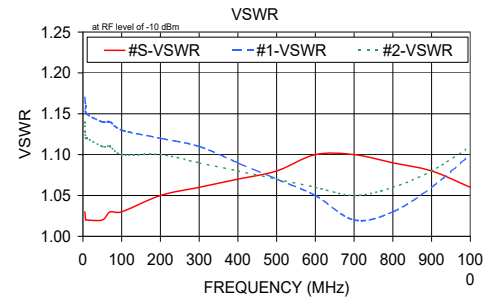
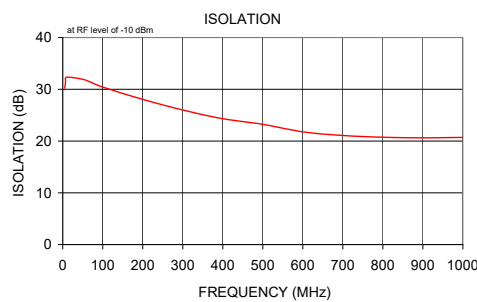
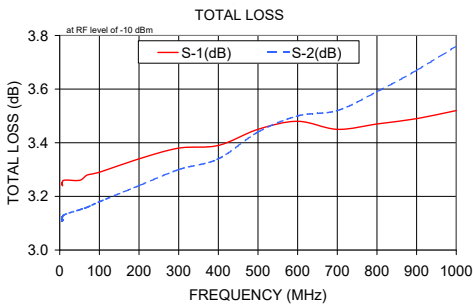
NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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   | 1.17   | 1.14   |
| 7.00            | 3.24                         | 3.11 | 0.13                     | 31.41          | 0.32                   | 1.02   | 1.16   | 1.12   |
| 10.00           | 3.26                         | 3.13 | 0.13                     | 32.34          | 0.13                   | 1.02   | 1.15   | 1.12   |
| 50.00           | 3.26                         | 3.15 | 0.12                     | 31.93          | 0.06                   | 1.02   | 1.14   | 1.11   |
| 70.00           | 3.28                         | 3.16 | 0.12                     | 31.37          | 0.07                   | 1.03   | 1.14   | 1.11   |
| 100.00          | 3.29                         | 3.18 | 0.11                     | 30.43          | 0.12                   | 1.03   | 1.13   | 1.10   |
| 200.00          | 3.34                         | 3.24 | 0.10                     | 28.05          | 0.20                   | 1.05   | 1.12   | 1.10   |
| 300.00          | 3.38                         | 3.30 | 0.08                     | 26.00          | 0.24                   | 1.06   | 1.11   | 1.09   |
| 400.00          | 3.39                         | 3.34 | 0.05                     | 24.32          | 0.26                   | 1.07   | 1.09   | 1.08   |
| 500.00          | 3.45                         | 3.44 | 0.02                     | 23.24          | 0.28                   | 1.08   | 1.07   | 1.07   |
| 600.00          | 3.48                         | 3.50 | 0.02                     | 21.78          | 0.28                   | 1.10   | 1.05   | 1.06   |
| 700.00          | 3.45                         | 3.52 | 0.07                     | 21.08          | 0.21                   | 1.10   | 1.02   | 1.05   |
| 800.00          | 3.47                         | 3.59 | 0.12                     | 20.74          | 0.09                   | 1.09   | 1.03   | 1.06   |
| 900.00          | 3.49                         | 3.67 | 0.18                     | 20.62          | 0.06                   | 1.08   | 1.06   | 1.08   |
| 1000.00         | 3.52                         | 3.76 | 0.24                     | 20.71          | 0.27                   | 1.06   | 1.10   | 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.
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