

# Surface Mount Power Splitter/Combiner

## SBTC-2-25+

2 Way-0° 50Ω 1000 to 2500 MHz

### Features

- wide band frequency, 1000-2500 MHz
- excellent amplitude unbalance, 0.2 dB typ.
- small size, 0.166"x0.150"x0.155"
- temperature stable LTCC base
- small size
- low cost
- aqueous washable
- protected by US patent 6,963,255

### Applications

- PCN/PCS
- DECT
- PHS
- VSAT

For Model  
with Leads see  
SBTC-2-25L+



Generic photo used for illustration purposes only

CASE STYLE: AT790

### +RoHS Compliant

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

| Available Tape and Reel<br>at no extra cost |                  |
|---|------------------|
| Reel Size                                   | Devices/Reel     |
| 7"  | 20, 50, 100, 200 |
| 13"   | 500, 1000, 2000  |

### Electrical Specifications

| Parameter                   | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|-----------------------------|-----------------|------|------|------|--------|
| Frequency Range             |                 | 1000 |      | 2500 | MHz    |
| Insertion Loss Above 3.0 dB | 1000 - 2500     | —    | 1.4  | 2.5  | dB     |
|                             | 1400 - 1800     | —    | 0.9  | 1.7  |        |
|                             | 1800 - 2000     | —    | 1.0  | 1.7  |        |
| Isolation                   | 1000 - 2500     | 14   | 20   | —    | dB     |
|                             | 1400 - 1800     | 14   | 18   | —    |        |
|                             | 1800 - 2000     | 16   | 19   | —    |        |
| Phase Unbalance             | 1000 - 2500     | —    | —    | 14   | Degree |
|                             | 1400 - 1800     | —    | —    | 8    |        |
|                             | 1800 - 2000     | —    | —    | 8    |        |
| Amplitude Unbalance         | 1000 - 2500     | —    | —    | 1.2  | dB     |
|                             | 1400 - 1800     | —    | —    | 0.7  |        |
|                             | 1800 - 2000     | —    | —    | 0.8  |        |

### Maximum Ratings

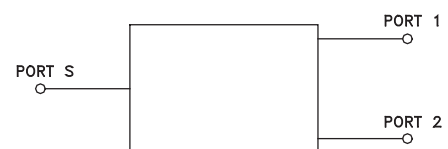
| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 1W max.        |
| Internal Dissipation        | 0.125W max     |

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

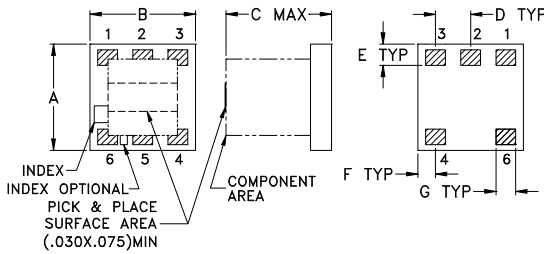
### Pin Connections

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

### Electrical Schematic

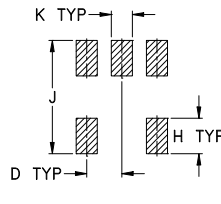


## Outline Drawing

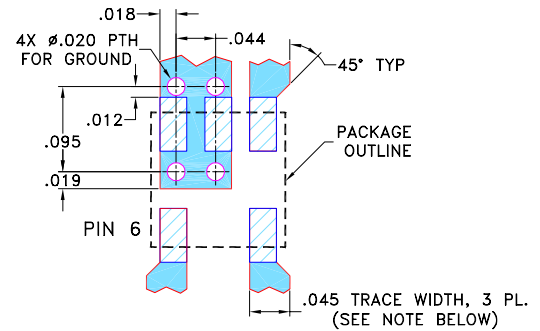


## PCB Land Pattern

Suggested Layout,  
Tolerance to be within  $\pm 0.02$



## 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

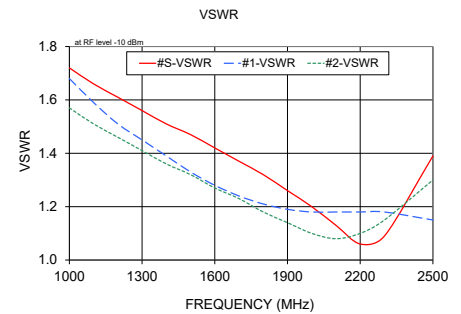
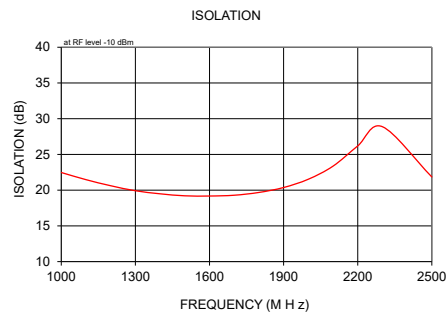
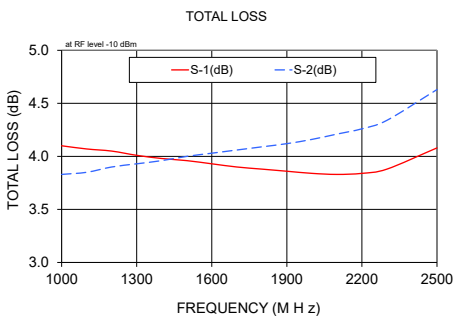
## Outline Dimensions (inch mm)

| A    | B    | C    | D    | E    | F    | G    | H    | J    | K    | wt grams |
|------|------|------|------|------|------|------|------|------|------|----------|
| .150 | .150 | .150 | .050 | .030 | .025 | .028 | .050 | .160 | .030 | 0.10     |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 | 0.71 | 1.27 | 4.06 | 0.76 |          |

## 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  |                          |                |                        |        |        |        |
| 1000            | 4.10                         | 3.83 | 0.28                     | 22.47          | 2.79                   | 1.72   | 1.68   | 1.57   |
| 1100            | 4.07                         | 3.85 | 0.21                     | 21.47          | 2.54                   | 1.66   | 1.59   | 1.51   |
| 1200            | 4.05                         | 3.90 | 0.15                     | 20.62          | 2.39                   | 1.61   | 1.51   | 1.46   |
| 1300            | 4.01                         | 3.93 | 0.08                     | 19.92          | 2.34                   | 1.56   | 1.45   | 1.41   |
| 1400            | 3.98                         | 3.96 | 0.04                     | 19.49          | 2.36                   | 1.51   | 1.39   | 1.36   |
| 1500            | 3.96                         | 4.00 | 0.05                     | 19.21          | 2.47                   | 1.47   | 1.33   | 1.32   |
| 1600            | 3.93                         | 4.03 | 0.10                     | 19.18          | 2.66                   | 1.42   | 1.28   | 1.27   |
| 1700            | 3.90                         | 4.06 | 0.16                     | 19.29          | 2.92                   | 1.37   | 1.24   | 1.23   |
| 1800            | 3.88                         | 4.09 | 0.21                     | 19.68          | 3.28                   | 1.32   | 1.21   | 1.18   |
| 1900            | 3.86                         | 4.12 | 0.27                     | 20.37          | 3.70                   | 1.26   | 1.19   | 1.14   |
| 2000            | 3.84                         | 4.16 | 0.32                     | 21.53          | 4.23                   | 1.20   | 1.18   | 1.10   |
| 2100            | 3.83                         | 4.21 | 0.37                     | 23.36          | 4.87                   | 1.13   | 1.18   | 1.08   |
| 2200            | 3.84                         | 4.26 | 0.42                     | 26.19          | 5.57                   | 1.06   | 1.18   | 1.10   |
| 2300            | 3.88                         | 4.34 | 0.46                     | 28.88          | 6.36                   | 1.09   | 1.18   | 1.15   |
| 2500            | 4.08                         | 4.63 | 0.55                     | 21.85          | 8.22                   | 1.39   | 1.15   | 1.30   |

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



## 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-Circuit's applicable established test performance criteria and measurement instructions.
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