

Surface Mount

# Power Splitter/Combiner

## SBTC-2-10-75+

2 Way-0° 75Ω 10 to 1000 MHz

### Features

- low insertion loss, 0.8 dB typ.
- high isolation
- excellent amplitude unbalance, 0.15 dB typ.
- very good phase unbalance, 1.0 deg. typ.
- temperature stable LTCC base
- small size
- low cost
- aqueous washable

### Applications

- UHF/VHF receivers/transmitters
- cellular

For Model  
with Leads see  
[SBTC-2-10-75L+](#)



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 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             |                 | 10   |      | 1000 | MHz    |
| Insertion Loss Above 3.0 dB | 10 - 100        | —    | 0.7  | 1.2  | dB     |
|                             | 100 - 500       | —    | 0.6  | 1.2  |        |
|                             | 500 - 1000      | —    | 0.7  | 1.4  |        |
| Isolation                   | 10 - 100        | 20   | 35   | —    | dB     |
|                             | 100 - 500       | 20   | 28   | —    |        |
|                             | 500 - 1000      | 21   | 21   | —    |        |
| Phase Unbalance             | 10 - 100        | —    | —    | 3    | Degree |
|                             | 100 - 500       | —    | —    | 3    |        |
|                             | 500 - 1000      | —    | —    | 5    |        |
| Amplitude Unbalance         | 10 - 100        | —    | —    | 0.7  | dB     |
|                             | 100 - 500       | —    | —    | 0.6  |        |
|                             | 500 - 1000      | —    | —    | 0.6  |        |

### 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.

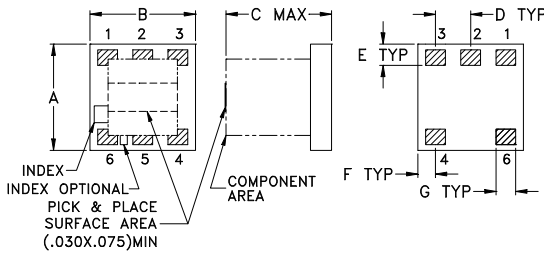
### Pin Connections

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

### Electrical Schematic



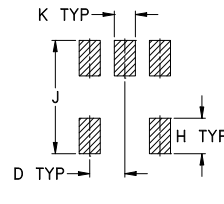
## Outline Drawing



## Outline Dimensions (inch mm)

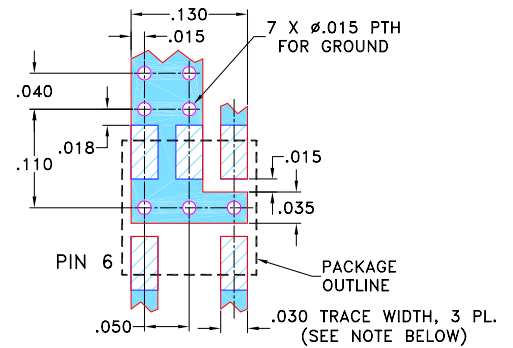
| A    | B    | C    | D    | E    | F    | G    | H    | J    | K    | wt grams |
|------|------|------|------|------|------|------|------|------|------|----------|
| .150 | .150 | .150 | .050 | .030 | .025 | .028 | .050 | .160 | .030 | 0.10     |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 | 0.71 | 1.27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

## PCB Land Pattern



Suggested Layout, Tolerance to be within ±0.002

## Demo Board MCL P/N: TB-277 Suggested PCB Layout (PL-153)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.030 \pm 0.002$ ; 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.

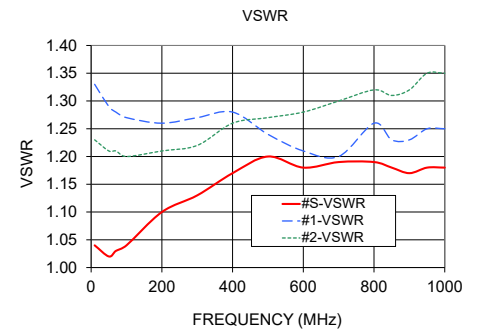
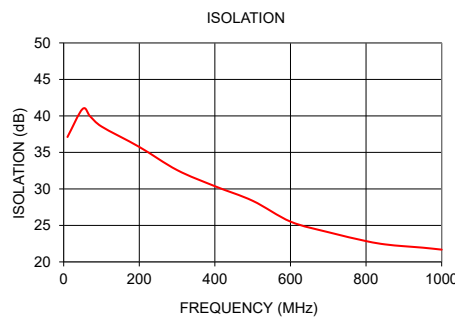
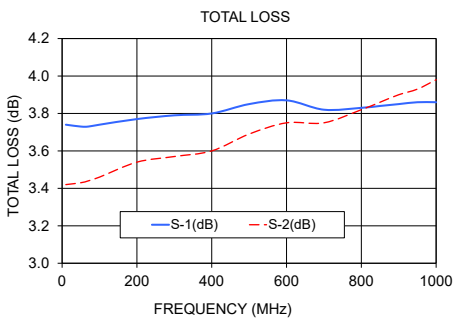
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

▨ 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  |                          |                |                        |        |        |        |
| 10              | 3.74                         | 3.42 | 0.31                     | 37.11          | 0.66                   | 1.04   | 1.33   | 1.23   |
| 50              | 3.73                         | 3.43 | 0.3                      | 40.95          | 0.14                   | 1.02   | 1.29   | 1.21   |
| 70              | 3.73                         | 3.44 | 0.29                     | 39.94          | 0.14                   | 1.03   | 1.28   | 1.21   |
| 100             | 3.74                         | 3.46 | 0.29                     | 38.55          | 0.13                   | 1.04   | 1.27   | 1.2    |
| 200             | 3.77                         | 3.54 | 0.22                     | 35.75          | 0.09                   | 1.1    | 1.26   | 1.21   |
| 300             | 3.79                         | 3.57 | 0.22                     | 32.58          | 0.54                   | 1.13   | 1.27   | 1.22   |
| 400             | 3.8                          | 3.6  | 0.2                      | 30.37          | 0.6                    | 1.17   | 1.28   | 1.26   |
| 500             | 3.85                         | 3.69 | 0.16                     | 28.37          | 0.64                   | 1.2    | 1.24   | 1.27   |
| 600             | 3.87                         | 3.75 | 0.12                     | 25.52          | 0.74                   | 1.18   | 1.21   | 1.28   |
| 700             | 3.82                         | 3.75 | 0.07                     | 24.07          | 0.75                   | 1.19   | 1.2    | 1.3    |
| 800             | 3.83                         | 3.82 | 0.03                     | 22.85          | 0.77                   | 1.19   | 1.26   | 1.32   |
| 850             | 3.84                         | 3.86 | 0.03                     | 22.4           | 0.73                   | 1.18   | 1.23   | 1.31   |
| 900             | 3.85                         | 3.9  | 0.06                     | 22.15          | 0.69                   | 1.17   | 1.23   | 1.32   |
| 950             | 3.86                         | 3.93 | 0.08                     | 21.95          | 0.64                   | 1.18   | 1.25   | 1.35   |
| 1000            | 3.86                         | 3.98 | 0.11                     | 21.68          | 0.58                   | 1.18   | 1.25   | 1.35   |

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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