



Mini-Circuits

SURFACE MOUNT 

## Power Splitter/Combiner

SBTC-2-10LX+

2 Way-0° 50Ω 5 to 1000 MHz

## FEATURES

- Low Insertion Loss, 0.3 dB Typ.
- Excellent Amplitude Unbalance, 0.1 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



Generic photo used for illustration purposes only

CASE STYLE: AT1739

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

## APPLICATIONS

- UHF/VHF Receivers/Transmitters
- Cellular

## ELECTRICAL SPECIFICATIONS AT +25°C

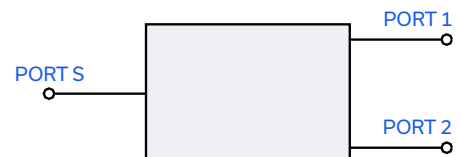
| Parameter                   | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|-----------------------------|-----------------|------|------|------|--------|
| Frequency Range             |                 | 5    |      | 1000 | MHz    |
| Insertion Loss Above 3.0 dB | 5-50            |      | 0.3  | 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  |        |

## ABSOLUTE MAXIMUM RATINGS

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

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

## ELECTRICAL SCHEMATIC



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REV. B  
ECO-015187  
SBTC-2-10LX+  
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PAGE 1 OF 3



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top hat

SURFACE MOUNT

## Power Splitter/Combiner

SBTC-2-10LX+

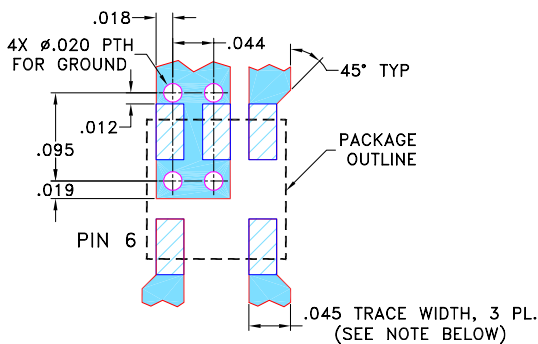
2 Way-0° 50Ω 5 to 1000 MHz

## PIN CONNECTIONS

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

## PRODUCT MARKING: PW

DEMO BOARD MCL P/N: TB-SBTC-2-10LX+  
SUGGESTED PCB LAYOUT (PL-152)

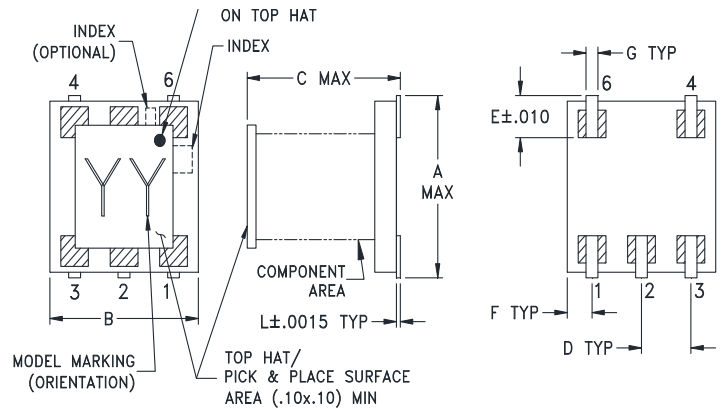


NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.020" \pm 0.0015"$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

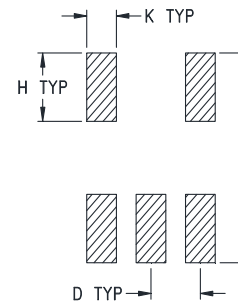
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

## OUTLINE DRAWING



## PCB Land Pattern



## OUTLINE DIMENSIONS (Inches/mm)

| A    | B    | C    | D    | E    | F     |
|------|------|------|------|------|-------|
| .166 | .150 | .155 | .050 | .037 | .025  |
| 4.22 | 3.81 | 3.94 | 1.27 | 0.94 | 0.64  |
| G    | H    | J    | K    | K    | wt    |
| .012 | .060 | .184 | .030 | .004 | grams |
| 0.30 | 1.52 | 4.67 | 0.76 | 0.10 | 0.10  |

## TAPE &amp; REEL INFORMATION: F76





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**SURFACE MOUNT** 

# Power Splitter/Combiner

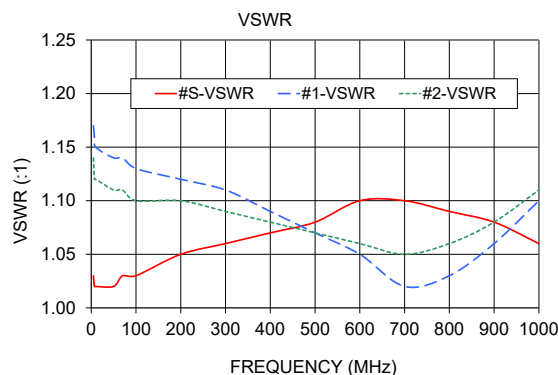
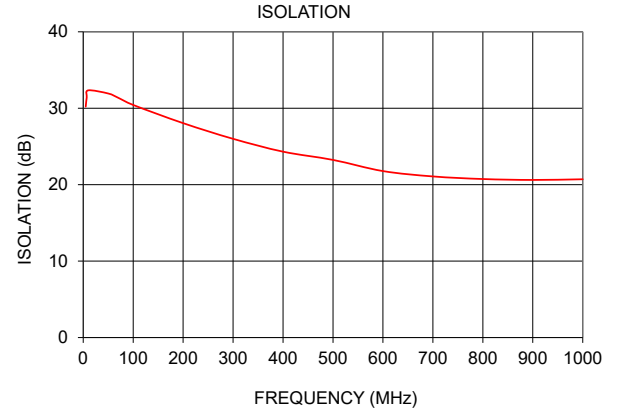
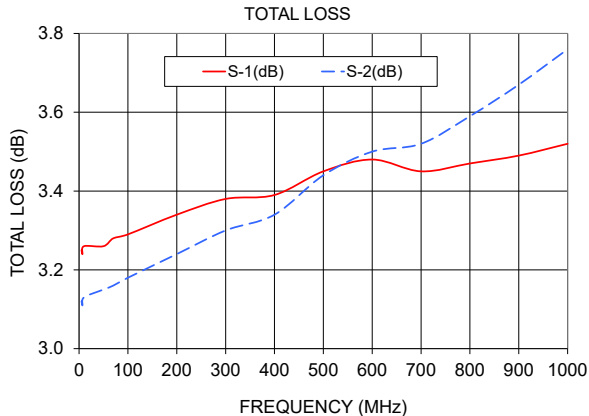
## SBTC-2-10LX+

2 Way-0° 50Ω 5 to 1000 MHz

### TYPICAL PERFORMANCE DATA

| Frequency<br>(MHz) | Total Loss <sup>1</sup><br>(dB) |      | Amplitude<br>Unbalance<br>(dB) | Isolation<br>(dB) | Phase<br>Unbalance<br>(deg.) | VSWR<br>(:1) |      |      |
|--------------------|---------------------------------|------|--------------------------------|-------------------|------------------------------|--------------|------|------|
|                    | S-1                             | S-2  |                                |                   |                              | S            | 1    | 2    |
| 5                  | 3.25                            | 3.12 | 0.13                           | 30.21             | 0.41                         | 1.03         | 1.17 | 1.14 |
| 7                  | 3.24                            | 3.11 | 0.13                           | 31.41             | 0.32                         | 1.02         | 1.16 | 1.12 |
| 10                 | 3.26                            | 3.13 | 0.13                           | 32.34             | 0.13                         | 1.02         | 1.15 | 1.12 |
| 50                 | 3.26                            | 3.15 | 0.12                           | 31.93             | 0.06                         | 1.02         | 1.14 | 1.11 |
| 70                 | 3.28                            | 3.16 | 0.12                           | 31.37             | 0.07                         | 1.03         | 1.14 | 1.11 |
| 100                | 3.29                            | 3.18 | 0.11                           | 30.43             | 0.12                         | 1.03         | 1.13 | 1.10 |
| 200                | 3.34                            | 3.24 | 0.10                           | 28.05             | 0.20                         | 1.05         | 1.12 | 1.10 |
| 300                | 3.38                            | 3.30 | 0.08                           | 26.00             | 0.24                         | 1.06         | 1.11 | 1.09 |
| 400                | 3.39                            | 3.34 | 0.05                           | 24.32             | 0.26                         | 1.07         | 1.09 | 1.08 |
| 500                | 3.45                            | 3.44 | 0.02                           | 23.24             | 0.28                         | 1.08         | 1.07 | 1.07 |
| 600                | 3.48                            | 3.50 | 0.02                           | 21.78             | 0.28                         | 1.10         | 1.05 | 1.06 |
| 700                | 3.45                            | 3.52 | 0.07                           | 21.08             | 0.21                         | 1.10         | 1.02 | 1.05 |
| 800                | 3.47                            | 3.59 | 0.12                           | 20.74             | 0.09                         | 1.09         | 1.03 | 1.06 |
| 900                | 3.49                            | 3.67 | 0.18                           | 20.62             | 0.06                         | 1.08         | 1.06 | 1.08 |
| 1000               | 3.52                            | 3.76 | 0.24                           | 20.71             | 0.27                         | 1.06         | 1.10 | 1.11 |

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



- 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-Circuits' 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)



# 2 Way-0° Power Splitter/Combiner

**SBTC-2-10LX+**

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

| FREQUENCY<br>(MHz) | TOTAL LOSS <sup>1</sup><br>(dB) |      | AMPLITUDE<br>UNBALANCE<br>(dB) | ISOLATION<br>(dB) | PHASE<br>UNBALANCE<br>(Deg) | FREQUENCY<br>(MHz) | VSWR<br>(:1) |      |      |
|--------------------|---------------------------------|------|--------------------------------|-------------------|-----------------------------|--------------------|--------------|------|------|
|                    | S-1                             | S-2  |                                |                   |                             |                    | S            | 1    | 2    |
| 5.0                | 3.25                            | 3.10 | 0.15                           | 31.14             | 0.38                        | 5.0                | 1.03         | 1.16 | 1.12 |
| 10.0               | 3.26                            | 3.13 | 0.13                           | 32.33             | 0.28                        | 10.0               | 1.02         | 1.15 | 1.10 |
| 20.0               | 3.25                            | 3.12 | 0.13                           | 32.53             | 0.09                        | 20.0               | 1.02         | 1.14 | 1.10 |
| 30.0               | 3.25                            | 3.12 | 0.13                           | 32.15             | 0.02                        | 30.0               | 1.02         | 1.14 | 1.10 |
| 40.0               | 3.26                            | 3.12 | 0.13                           | 31.86             | 0.03                        | 40.0               | 1.02         | 1.14 | 1.10 |
| 50.0               | 3.26                            | 3.13 | 0.14                           | 31.64             | 0.05                        | 50.0               | 1.02         | 1.14 | 1.10 |
| 100.0              | 3.29                            | 3.15 | 0.14                           | 30.58             | 0.14                        | 100.0              | 1.03         | 1.14 | 1.10 |
| 150.0              | 3.32                            | 3.18 | 0.14                           | 29.38             | 0.19                        | 150.0              | 1.03         | 1.13 | 1.10 |
| 200.0              | 3.33                            | 3.20 | 0.13                           | 28.13             | 0.28                        | 200.0              | 1.04         | 1.12 | 1.10 |
| 250.0              | 3.35                            | 3.22 | 0.13                           | 27.01             | 0.36                        | 250.0              | 1.04         | 1.11 | 1.09 |
| 300.0              | 3.36                            | 3.24 | 0.12                           | 25.87             | 0.42                        | 300.0              | 1.05         | 1.10 | 1.09 |
| 350.0              | 3.37                            | 3.26 | 0.11                           | 24.88             | 0.49                        | 350.0              | 1.05         | 1.09 | 1.08 |
| 400.0              | 3.39                            | 3.28 | 0.10                           | 24.03             | 0.59                        | 400.0              | 1.06         | 1.07 | 1.08 |
| 450.0              | 3.40                            | 3.31 | 0.09                           | 23.29             | 0.69                        | 450.0              | 1.06         | 1.06 | 1.07 |
| 500.0              | 3.42                            | 3.33 | 0.08                           | 22.59             | 0.76                        | 500.0              | 1.07         | 1.05 | 1.07 |
| 550.0              | 3.43                            | 3.36 | 0.07                           | 22.03             | 0.83                        | 550.0              | 1.07         | 1.04 | 1.07 |
| 600.0              | 3.45                            | 3.39 | 0.06                           | 21.55             | 0.89                        | 600.0              | 1.08         | 1.03 | 1.07 |
| 650.0              | 3.48                            | 3.42 | 0.05                           | 21.10             | 0.95                        | 650.0              | 1.08         | 1.03 | 1.07 |
| 700.0              | 3.50                            | 3.45 | 0.04                           | 20.73             | 0.98                        | 700.0              | 1.09         | 1.04 | 1.08 |
| 750.0              | 3.52                            | 3.49 | 0.03                           | 20.39             | 1.05                        | 750.0              | 1.09         | 1.05 | 1.09 |
| 800.0              | 3.54                            | 3.53 | 0.02                           | 20.10             | 1.09                        | 800.0              | 1.10         | 1.07 | 1.10 |
| 850.0              | 3.58                            | 3.57 | 0.01                           | 19.86             | 1.10                        | 850.0              | 1.10         | 1.09 | 1.11 |
| 900.0              | 3.61                            | 3.62 | 0.01                           | 19.66             | 1.12                        | 900.0              | 1.11         | 1.11 | 1.12 |
| 950.0              | 3.64                            | 3.67 | 0.03                           | 19.52             | 1.12                        | 950.0              | 1.11         | 1.13 | 1.13 |
| 1000.0             | 3.68                            | 3.72 | 0.04                           | 19.40             | 1.13                        | 1000.0             | 1.11         | 1.14 | 1.14 |
| 1100.0             | 3.77                            | 3.84 | 0.07                           | 19.21             | 1.12                        | 1100.0             | 1.12         | 1.18 | 1.17 |
| 1200.0             | 3.88                            | 3.97 | 0.10                           | 19.13             | 1.03                        | 1200.0             | 1.12         | 1.22 | 1.19 |
| 1300.0             | 4.02                            | 4.13 | 0.12                           | 19.08             | 0.89                        | 1300.0             | 1.13         | 1.26 | 1.22 |
| 1400.0             | 4.19                            | 4.33 | 0.13                           | 19.03             | 0.70                        | 1400.0             | 1.12         | 1.29 | 1.24 |
| 1500.0             | 4.42                            | 4.56 | 0.14                           | 18.93             | 0.48                        | 1500.0             | 1.12         | 1.32 | 1.26 |
| 1600.0             | 4.70                            | 4.84 | 0.14                           | 18.73             | 0.13                        | 1600.0             | 1.12         | 1.35 | 1.27 |
| 1700.0             | 5.07                            | 5.19 | 0.12                           | 18.52             | 0.13                        | 1700.0             | 1.13         | 1.39 | 1.29 |
| 1800.0             | 5.54                            | 5.63 | 0.08                           | 18.42             | 0.45                        | 1800.0             | 1.16         | 1.43 | 1.30 |
| 1900.0             | 6.14                            | 6.16 | 0.02                           | 18.55             | 0.66                        | 1900.0             | 1.20         | 1.47 | 1.32 |
| 2000.0             | 6.90                            | 6.81 | 0.09                           | 18.57             | 0.75                        | 2000.0             | 1.26         | 1.52 | 1.34 |

<sup>1</sup>Total Loss = Insertion Loss + 3dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS

REV. OR  
 SBTC-2-10LX+  
 7/25/2012  
 Page 1 of 3

# 2 Way-0° Power Splitter/Combiner

**SBTC-2-10LX+**

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -40°C

| FREQUENCY<br>(MHz) | TOTAL LOSS <sup>1</sup><br>(dB) |      | AMPLITUDE<br>UNBALANCE<br>(dB) | ISOLATION<br>(dB) | PHASE<br>UNBALANCE<br>(Deg) | FREQUENCY<br>(MHz) | VSWR<br>(:1) |      |      |
|--------------------|---------------------------------|------|--------------------------------|-------------------|-----------------------------|--------------------|--------------|------|------|
|                    | S-1                             | S-2  |                                |                   |                             |                    | S            | 1    | 2    |
| 5.0                | 3.27                            | 3.10 | 0.17                           | 26.45             | 1.05                        | 5.0                | 1.05         | 1.23 | 1.17 |
| 10.0               | 3.22                            | 3.11 | 0.11                           | 30.18             | 0.73                        | 10.0               | 1.03         | 1.16 | 1.11 |
| 20.0               | 3.18                            | 3.09 | 0.09                           | 33.64             | 0.35                        | 20.0               | 1.02         | 1.12 | 1.08 |
| 30.0               | 3.17                            | 3.08 | 0.09                           | 34.82             | 0.18                        | 30.0               | 1.02         | 1.11 | 1.07 |
| 40.0               | 3.17                            | 3.09 | 0.09                           | 35.53             | 0.13                        | 40.0               | 1.02         | 1.11 | 1.07 |
| 50.0               | 3.18                            | 3.09 | 0.09                           | 36.05             | 0.06                        | 50.0               | 1.02         | 1.10 | 1.07 |
| 100.0              | 3.20                            | 3.11 | 0.09                           | 33.70             | 0.04                        | 100.0              | 1.06         | 1.11 | 1.08 |
| 150.0              | 3.22                            | 3.13 | 0.09                           | 30.47             | 0.08                        | 150.0              | 1.05         | 1.10 | 1.07 |
| 200.0              | 3.23                            | 3.14 | 0.09                           | 29.34             | 0.13                        | 200.0              | 1.05         | 1.08 | 1.07 |
| 250.0              | 3.25                            | 3.16 | 0.09                           | 27.79             | 0.18                        | 250.0              | 1.07         | 1.09 | 1.08 |
| 300.0              | 3.25                            | 3.17 | 0.08                           | 25.82             | 0.22                        | 300.0              | 1.08         | 1.07 | 1.06 |
| 350.0              | 3.27                            | 3.19 | 0.08                           | 24.65             | 0.28                        | 350.0              | 1.09         | 1.07 | 1.06 |
| 400.0              | 3.27                            | 3.20 | 0.07                           | 23.94             | 0.34                        | 400.0              | 1.08         | 1.05 | 1.05 |
| 450.0              | 3.28                            | 3.22 | 0.06                           | 23.22             | 0.38                        | 450.0              | 1.09         | 1.04 | 1.05 |
| 500.0              | 3.29                            | 3.24 | 0.05                           | 22.52             | 0.42                        | 500.0              | 1.10         | 1.03 | 1.05 |
| 550.0              | 3.30                            | 3.26 | 0.04                           | 21.93             | 0.44                        | 550.0              | 1.10         | 1.02 | 1.05 |
| 600.0              | 3.31                            | 3.29 | 0.03                           | 21.43             | 0.45                        | 600.0              | 1.10         | 1.02 | 1.06 |
| 650.0              | 3.33                            | 3.31 | 0.02                           | 21.10             | 0.50                        | 650.0              | 1.10         | 1.03 | 1.07 |
| 700.0              | 3.34                            | 3.33 | 0.01                           | 20.80             | 0.51                        | 700.0              | 1.10         | 1.04 | 1.08 |
| 750.0              | 3.36                            | 3.36 | 0.00                           | 20.33             | 0.54                        | 750.0              | 1.11         | 1.05 | 1.09 |
| 800.0              | 3.38                            | 3.39 | 0.01                           | 19.99             | 0.51                        | 800.0              | 1.12         | 1.07 | 1.09 |
| 850.0              | 3.40                            | 3.43 | 0.03                           | 19.85             | 0.49                        | 850.0              | 1.11         | 1.09 | 1.11 |
| 900.0              | 3.43                            | 3.47 | 0.04                           | 19.62             | 0.48                        | 900.0              | 1.12         | 1.11 | 1.12 |
| 950.0              | 3.45                            | 3.51 | 0.06                           | 19.33             | 0.42                        | 950.0              | 1.14         | 1.12 | 1.13 |
| 1000.0             | 3.48                            | 3.55 | 0.07                           | 19.18             | 0.42                        | 1000.0             | 1.14         | 1.14 | 1.14 |
| 1100.0             | 3.55                            | 3.64 | 0.10                           | 19.06             | 0.28                        | 1100.0             | 1.15         | 1.17 | 1.16 |
| 1200.0             | 3.63                            | 3.75 | 0.13                           | 19.07             | 0.15                        | 1200.0             | 1.15         | 1.20 | 1.19 |
| 1300.0             | 3.74                            | 3.88 | 0.15                           | 19.05             | 0.14                        | 1300.0             | 1.14         | 1.24 | 1.22 |
| 1400.0             | 3.88                            | 4.04 | 0.16                           | 18.94             | 0.35                        | 1400.0             | 1.13         | 1.28 | 1.24 |
| 1500.0             | 4.07                            | 4.23 | 0.16                           | 18.82             | 0.61                        | 1500.0             | 1.11         | 1.32 | 1.26 |
| 1600.0             | 4.33                            | 4.48 | 0.16                           | 18.35             | 1.05                        | 1600.0             | 1.12         | 1.34 | 1.27 |
| 1700.0             | 4.67                            | 4.80 | 0.14                           | 17.83             | 1.49                        | 1700.0             | 1.13         | 1.37 | 1.28 |
| 1800.0             | 5.12                            | 5.22 | 0.10                           | 17.46             | 1.88                        | 1800.0             | 1.16         | 1.41 | 1.30 |
| 1900.0             | 5.75                            | 5.77 | 0.02                           | 17.57             | 2.18                        | 1900.0             | 1.21         | 1.47 | 1.32 |
| 2000.0             | 6.57                            | 6.48 | 0.10                           | 18.29             | 2.39                        | 2000.0             | 1.28         | 1.57 | 1.37 |

<sup>1</sup>Total Loss = Insertion Loss + 3dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS



REV. OR  
SBTC-2-10LX+  
7/25/2012  
Page 2 of 3

# 2 Way-0° Power Splitter/Combiner

**SBTC-2-10LX+**

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +85°C

| FREQUENCY<br>(MHz) | TOTAL LOSS <sup>1</sup><br>(dB) |      | AMPLITUDE<br>UNBALANCE<br>(dB) | ISOLATION<br>(dB) | PHASE<br>UNBALANCE<br>(Deg) | FREQUENCY<br>(MHz) | VSWR<br>(:1) |      |      |
|--------------------|---------------------------------|------|--------------------------------|-------------------|-----------------------------|--------------------|--------------|------|------|
|                    | S-1                             | S-2  |                                |                   |                             |                    | S            | 1    | 2    |
| 5.0                | 3.34                            | 3.14 | 0.20                           | 28.74             | 0.40                        | 5.0                | 1.03         | 1.21 | 1.15 |
| 10.0               | 3.35                            | 3.17 | 0.18                           | 29.26             | 0.25                        | 10.0               | 1.03         | 1.20 | 1.14 |
| 20.0               | 3.34                            | 3.16 | 0.18                           | 29.11             | 0.08                        | 20.0               | 1.03         | 1.19 | 1.14 |
| 30.0               | 3.35                            | 3.17 | 0.18                           | 28.67             | 0.01                        | 30.0               | 1.03         | 1.20 | 1.14 |
| 40.0               | 3.36                            | 3.17 | 0.18                           | 28.27             | 0.03                        | 40.0               | 1.04         | 1.20 | 1.14 |
| 50.0               | 3.37                            | 3.18 | 0.18                           | 27.95             | 0.03                        | 50.0               | 1.03         | 1.20 | 1.15 |
| 100.0              | 3.39                            | 3.21 | 0.18                           | 27.26             | 0.09                        | 100.0              | 1.01         | 1.18 | 1.13 |
| 150.0              | 3.41                            | 3.24 | 0.18                           | 27.56             | 0.16                        | 150.0              | 1.01         | 1.17 | 1.13 |
| 200.0              | 3.43                            | 3.26 | 0.17                           | 26.83             | 0.25                        | 200.0              | 1.03         | 1.17 | 1.14 |
| 250.0              | 3.44                            | 3.28 | 0.16                           | 25.78             | 0.33                        | 250.0              | 1.02         | 1.14 | 1.12 |
| 300.0              | 3.46                            | 3.30 | 0.15                           | 25.14             | 0.44                        | 300.0              | 1.02         | 1.12 | 1.12 |
| 350.0              | 3.47                            | 3.33 | 0.14                           | 24.54             | 0.53                        | 350.0              | 1.02         | 1.12 | 1.12 |
| 400.0              | 3.49                            | 3.35 | 0.13                           | 23.75             | 0.64                        | 400.0              | 1.02         | 1.09 | 1.10 |
| 450.0              | 3.50                            | 3.38 | 0.12                           | 23.08             | 0.75                        | 450.0              | 1.03         | 1.08 | 1.10 |
| 500.0              | 3.53                            | 3.42 | 0.11                           | 22.50             | 0.84                        | 500.0              | 1.03         | 1.07 | 1.09 |
| 550.0              | 3.54                            | 3.45 | 0.09                           | 22.01             | 0.92                        | 550.0              | 1.04         | 1.05 | 1.09 |
| 600.0              | 3.57                            | 3.49 | 0.08                           | 21.58             | 0.98                        | 600.0              | 1.04         | 1.04 | 1.09 |
| 650.0              | 3.60                            | 3.53 | 0.07                           | 21.18             | 1.09                        | 650.0              | 1.05         | 1.04 | 1.09 |
| 700.0              | 3.62                            | 3.57 | 0.05                           | 20.83             | 1.14                        | 700.0              | 1.06         | 1.05 | 1.09 |
| 750.0              | 3.65                            | 3.61 | 0.04                           | 20.49             | 1.23                        | 750.0              | 1.06         | 1.06 | 1.09 |
| 800.0              | 3.68                            | 3.66 | 0.02                           | 20.23             | 1.30                        | 800.0              | 1.07         | 1.07 | 1.10 |
| 850.0              | 3.72                            | 3.72 | 0.01                           | 20.03             | 1.35                        | 850.0              | 1.08         | 1.09 | 1.11 |
| 900.0              | 3.76                            | 3.77 | 0.01                           | 19.83             | 1.37                        | 900.0              | 1.08         | 1.11 | 1.12 |
| 950.0              | 3.80                            | 3.83 | 0.03                           | 19.66             | 1.40                        | 950.0              | 1.09         | 1.13 | 1.13 |
| 1000.0             | 3.85                            | 3.89 | 0.05                           | 19.55             | 1.47                        | 1000.0             | 1.10         | 1.15 | 1.15 |
| 1100.0             | 3.96                            | 4.04 | 0.08                           | 19.36             | 1.51                        | 1100.0             | 1.11         | 1.19 | 1.18 |
| 1200.0             | 4.08                            | 4.20 | 0.12                           | 19.31             | 1.49                        | 1200.0             | 1.12         | 1.23 | 1.20 |
| 1300.0             | 4.24                            | 4.38 | 0.15                           | 19.38             | 1.39                        | 1300.0             | 1.13         | 1.27 | 1.23 |
| 1400.0             | 4.42                            | 4.59 | 0.18                           | 19.58             | 1.28                        | 1400.0             | 1.13         | 1.30 | 1.25 |
| 1500.0             | 4.64                            | 4.83 | 0.19                           | 19.83             | 1.09                        | 1500.0             | 1.12         | 1.33 | 1.27 |
| 1600.0             | 4.91                            | 5.12 | 0.21                           | 20.08             | 0.87                        | 1600.0             | 1.12         | 1.36 | 1.29 |
| 1700.0             | 5.23                            | 5.44 | 0.21                           | 20.27             | 0.58                        | 1700.0             | 1.11         | 1.39 | 1.30 |
| 1800.0             | 5.63                            | 5.83 | 0.19                           | 20.23             | 0.36                        | 1800.0             | 1.13         | 1.41 | 1.31 |
| 1900.0             | 6.13                            | 6.28 | 0.16                           | 19.76             | 0.16                        | 1900.0             | 1.16         | 1.43 | 1.3  |
| 2000.0             | 6.74                            | 6.84 | 0.10                           | 18.56             | 0.06                        | 2000.0             | 1.22         | 1.43 | 1.29 |

<sup>1</sup>Total Loss = Insertion Loss + 3dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS

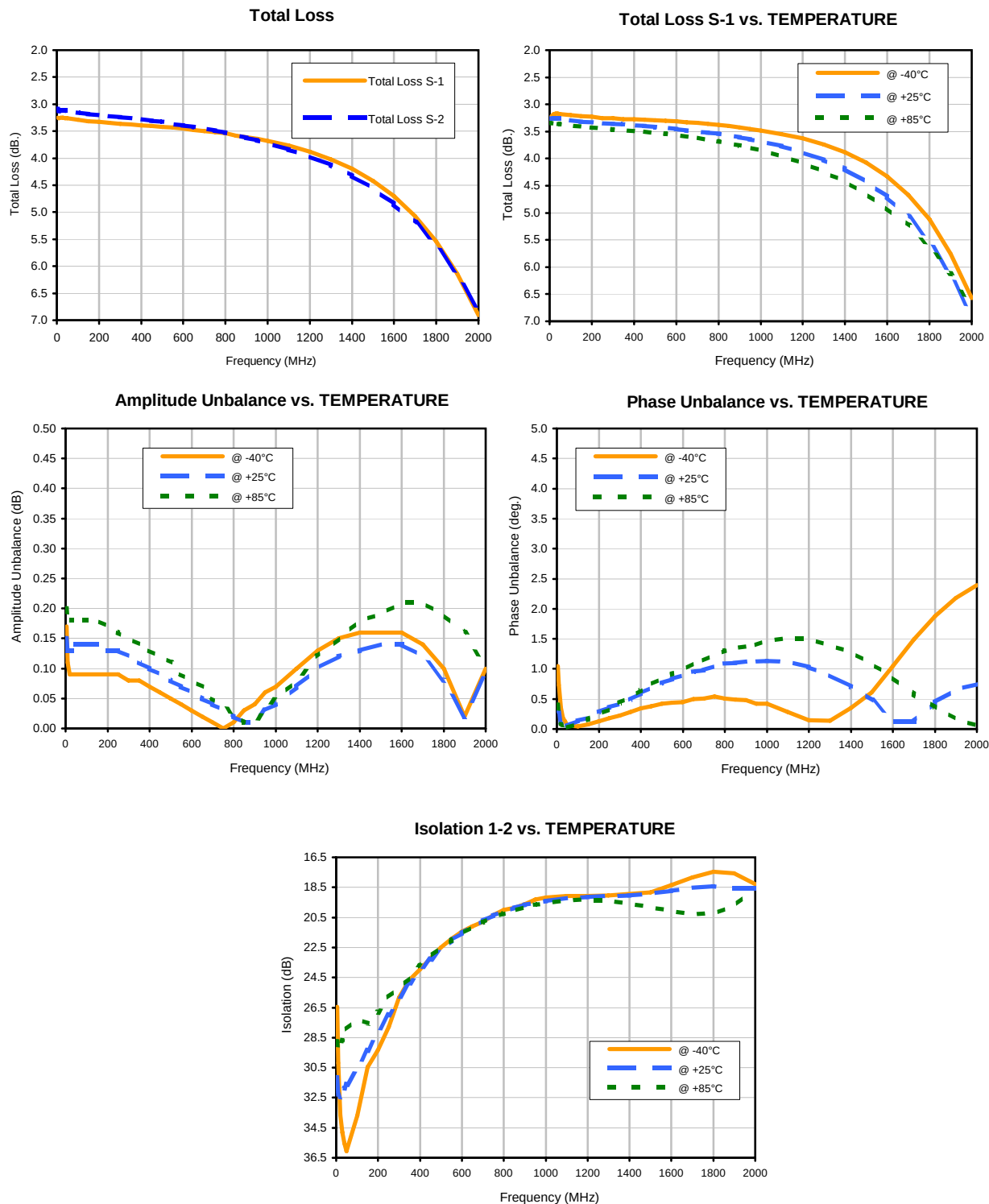


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SBTC-2-10LX+  
7/25/2012  
Page 3 of 3

# 2 Way-0° Power Splitter/Combiner

SBTC-2-10LX+

## Typical Performance Curves



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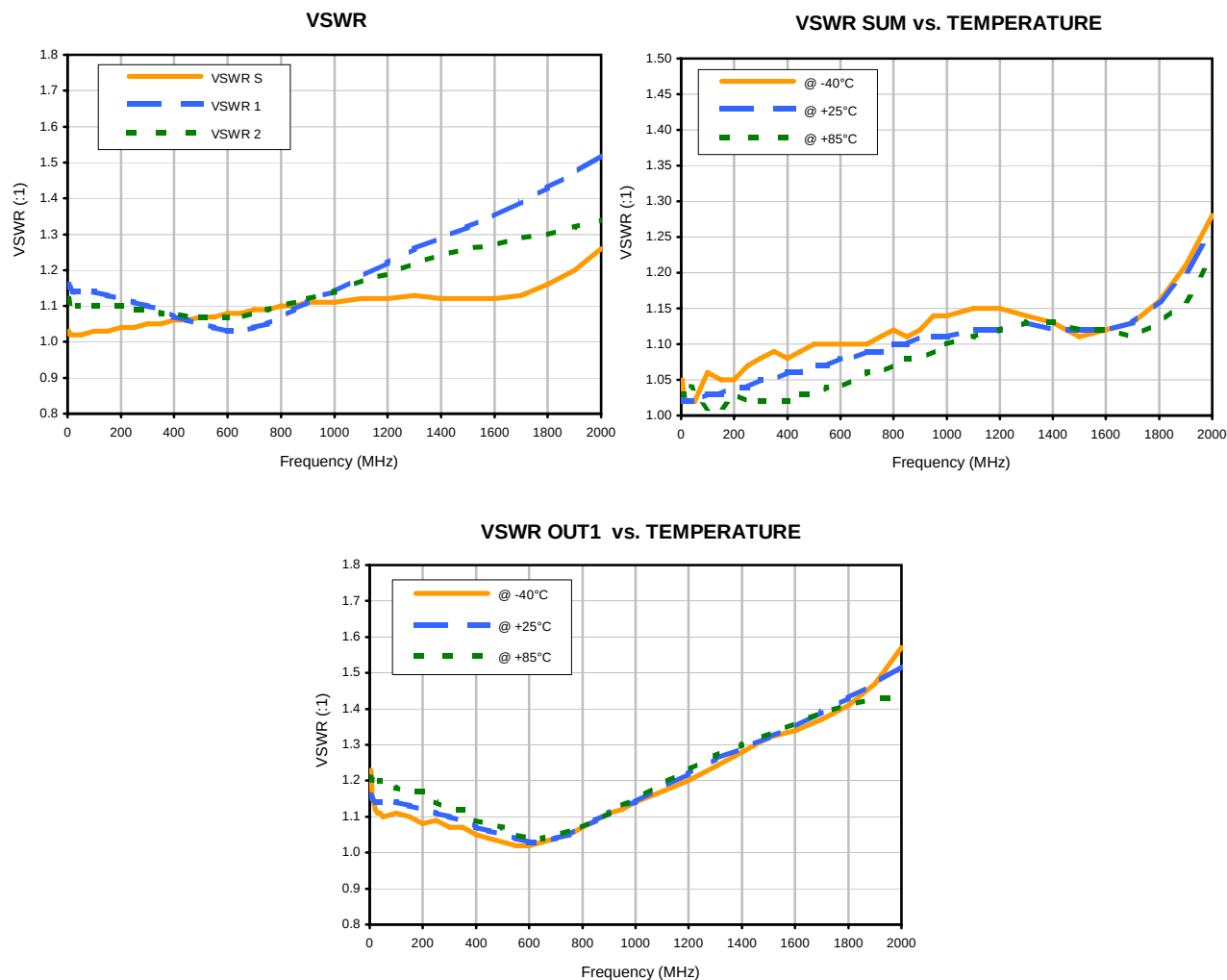
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# 2 Way-0° Power Splitter/Combiner

# SBTC-2-10LX+

## Typical Performance Curves



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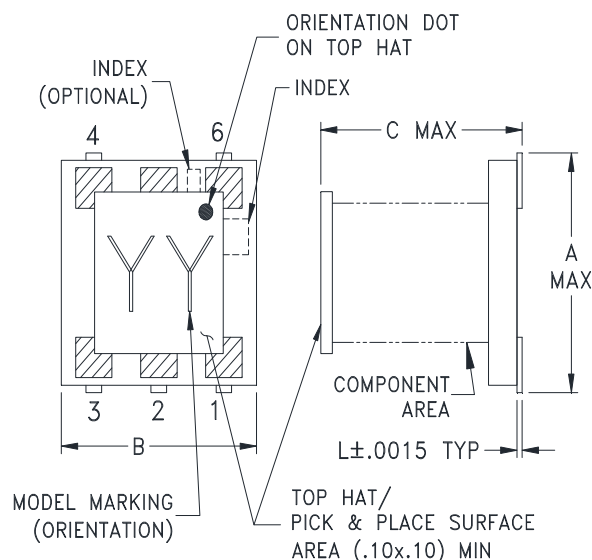


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Page 2 of 2

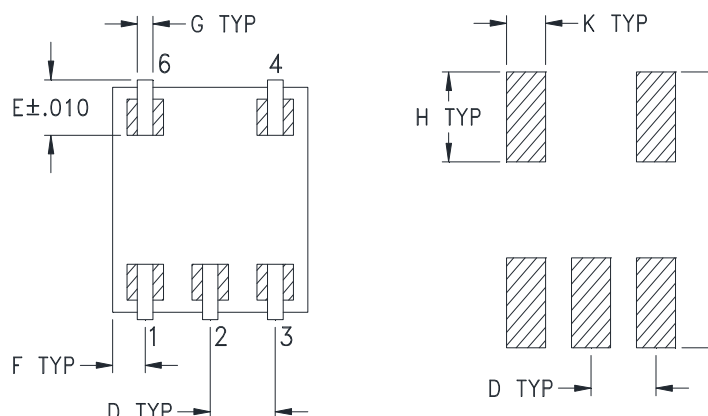


## Outline Dimensions

AT1739



## PCB Land Pattern



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

| CASE # | A              | B              | C              | D              | E              | F              | G              | H              | J              | K              | L              | WT. GRAMS |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------|
| AT1739 | .166<br>(4.22) | .150<br>(3.81) | .155<br>(3.94) | .050<br>(1.27) | .037<br>(0.94) | .025<br>(0.64) | .012<br>(0.30) | .060<br>(1.52) | .184<br>(4.67) | .030<br>(0.76) | .004<br>(0.10) | .10       |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; 3 Pl.  $\pm .005$

### Notes:

- Open style, Ceramic base.
- Termination finish:  
For RoHS Case Styles: Tin plate.  
For RoHS-5 Case Styles: Tin-Lead plate.
- Top-hat thickness .013 max.
- Orientation Dot on Top Hat & Marking on the Substrate both refers to Pin #6 of the Unit.



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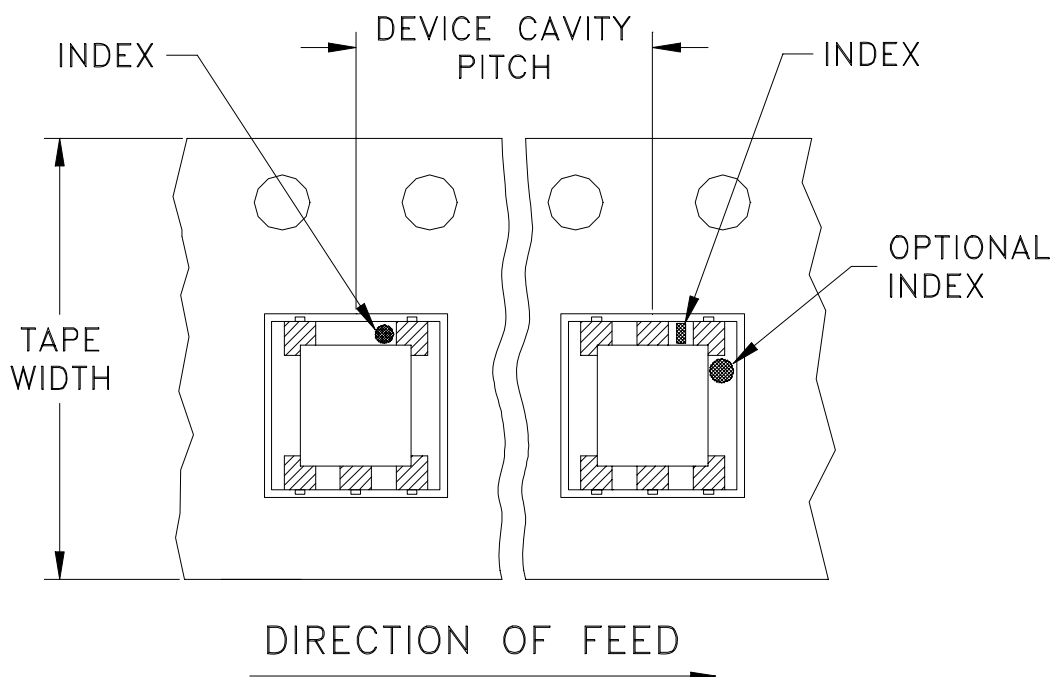


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RF/IF MICROWAVE COMPONENTS

# Tape & Reel Packaging TR-F76

## DEVICE ORIENTATION IN T&R



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel |
|-------------------|----------------------------|----------------------|------------------|
| 12                | 8                          | 7                    | 20               |
|                   |                            |                      | 50               |
|                   |                            |                      | 100              |
|                   |                            |                      | 200              |
|                   |                            |                      | 500              |
|                   |                            | 13                   | 1000             |
|                   |                            |                      | 2000             |

**Note:** Please consult individual model data sheet to determine device per reel availability.

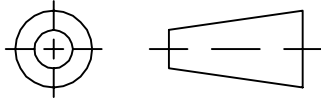
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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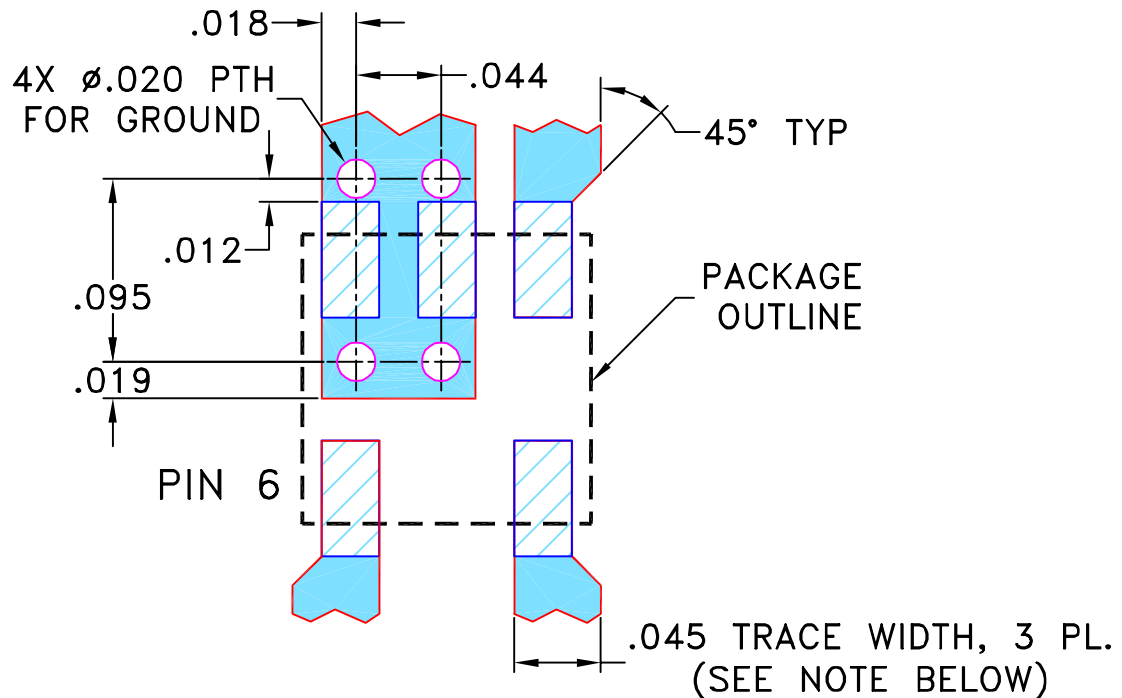
## THIRD ANGLE PROJECTION



## REVISIONS

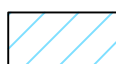
| REV | ECN No. | DESCRIPTION           | DATE     | DR | AUTH |
|-----|---------|-----------------------|----------|----|------|
| OR  | M90456  | NEW RELEASE           | 01/16/04 | AV | WP   |
| A   | M102713 | ADDED "...WITH SMOBC" | 01/12/06 | GF | IL   |
|     |         |                       |          |    |      |
|     |         |                       |          |    |      |

SUGGESTED MOUNTING CONFIGURATION FOR  
AT1029 CASE STYLE, "nc" PIN CONNECTION



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS  $\pm$ 3 PL DECIMALS  $\pm$  .005ANGLES  $\pm$ FRACTIONS  $\pm$ 
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ASHEETA1.DWG REV:A DATE:01/12/95



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PL, nc, AT1029, SBTC, TB-274

SIZE  
A

CODE IDENT  
15542

DRAWING NO:  
98-PL-152

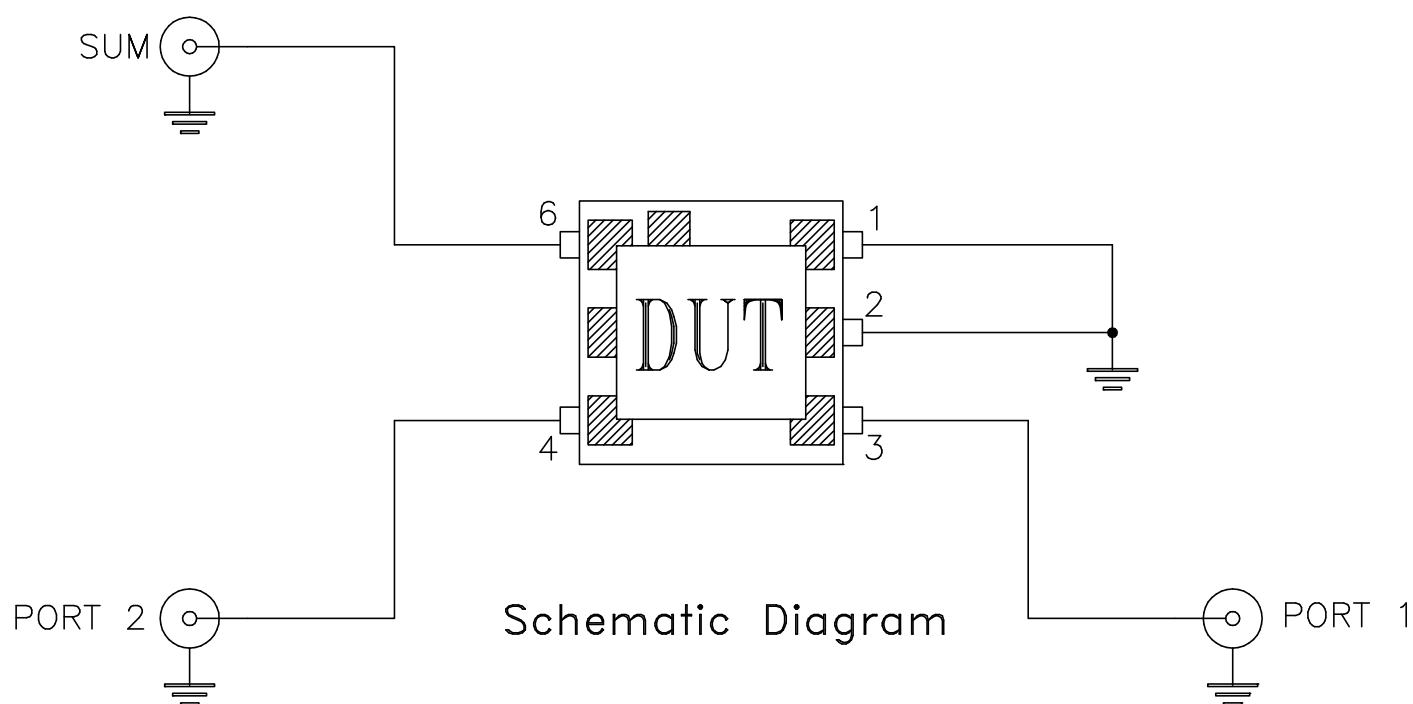
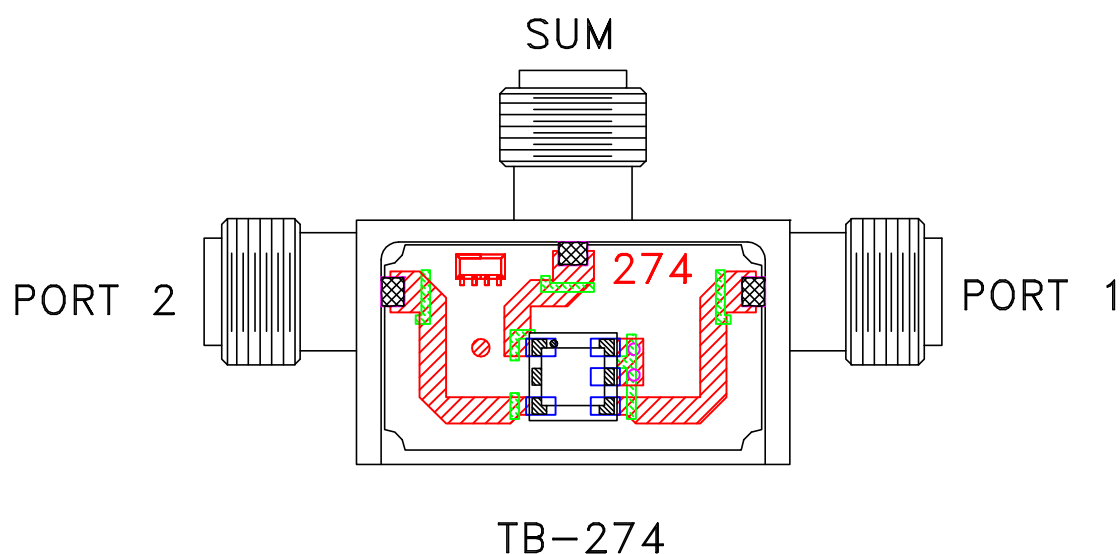
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FILE: 98PL152

SCALE: 10:1

SHEET: 1 OF 1

# Evaluation Board and Circuit



## Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.020 inch.

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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification                  | Test/Inspection Condition                                                                                                                                       | Reference/Spec                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Operating Temperature          | -40° to 85°C<br>Ambient Environment                                                                                                                             | Individual Model Data Sheet                                                                          |
| Storage Temperature            | -55° to 100° C<br>Ambient Environment                                                                                                                           | Individual Model Data Sheet                                                                          |
| Humidity                       | 90 to 95% RH, 240 hours, 50°C                                                                                                                                   | MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours |
| Thermal Shock                  | -55° to 100°C, 100 cycles                                                                                                                                       | MIL-STD-202, Method 107, Condition A-3, except +100°C                                                |
| Solder Reflow Heat             | Sn-Pb Eutetic Process: 225°C peak<br>Pb-Free Process 245° - 250°C peak                                                                                          | J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1                                                        |
| Solderability                  | 10X Magnification                                                                                                                                               | J-STD-002, 95% Coverage                                                                              |
| Vibration (High Frequency)     | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)                                                                             | MIL-STD-202, Method 204, Condition D                                                                 |
| Mechanical Shock               | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes                                                                                               | MIL-STD-202, Method 213, Condition A                                                                 |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215                                                                              |