IMPEDANCE MATCHING

# Power Splitter/Combiner SBTC-2-10-7550+

2 Way-0° 50/75Ω 5 to 1000 MHz

## FEATURES

- 75Ω Input, 50Ω Output
- Excellent Isolation, 24 dB Typ.
- Very Good Phase Unbalance, 1.0 Deg. Typ.
- Small Size, 0.15x0.15x0.15"
- 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: AT790

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

## APPLICATIONS

- Impedance Matching
- Balanced Amplifiers

## 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<br>50-500<br>500-1000 | | 0.5<br>0.6<br>0.7 | 1.3<br>1.1<br>1.5 | dB |
| Isolation | 5-50<br>50-500<br>500-1000 | 13<br>20<br>20 | 23<br>24<br>26 | | dB |
| Phase Unbalance | 5-50<br>50-500<br>500-1000 | | | 6<br>3<br>5 | Degree |
| Amplitude Unbalance | 5-50<br>50-500<br>500-1000 | | | 0.8<br>0.5<br>0.5 | dB |

## 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




REV. F
ECO-015187
SBTC-2-10-7550+
MCL NY
250929

IMPEDANCE MATCHING

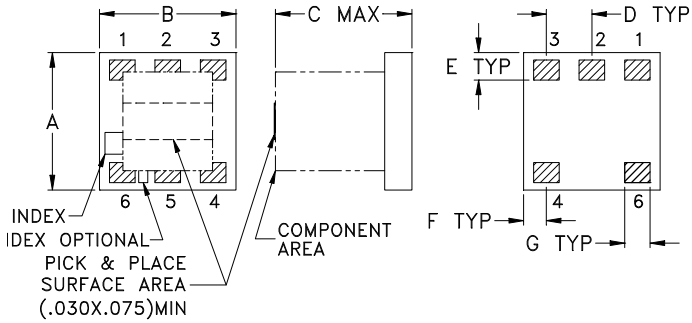
# Power Splitter/Combiner SBTC-2-10-7550+

2 Way-0° 50/75Ω 5 to 1000 MHz

## PIN CONNECTIONS

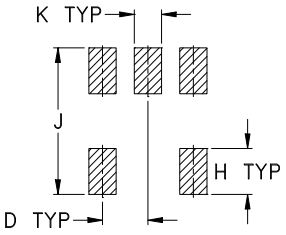
| | |
|---|---|
| SUM PORT | 6 (75Ω) |
| PORT 1 | 3 (50Ω) |
| PORT 2 | 4 (50Ω) |
| GROUND | 1,2 |
| NOT USED | 5 |

## OUTLINE DRAWING




**PRODUCT MARKING:** N/A

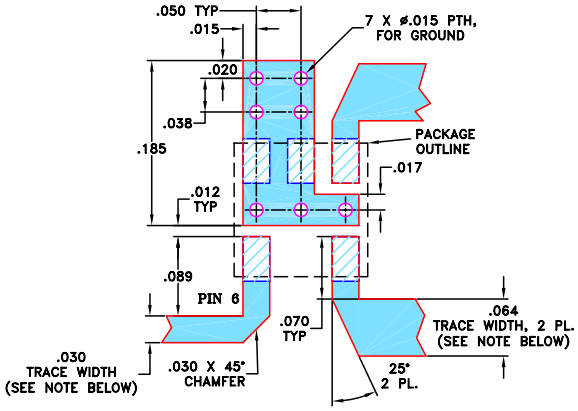
PCB Land Pattern




Suggested Layout,
Tolerance to be within±002

**DEMO BOARD MCL P/N:** TB-SBTC2107550+

**SUGGESTED PCB LAYOUT** (PL-092)




NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS 0.030" ± 0.002", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

DENOTES PCB COPPER LAYOUT

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## OUTLINE DIMENSIONS (Inches / mm)

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

**TAPE & REEL INFORMATION: F15**

IMPEDANCE MATCHING

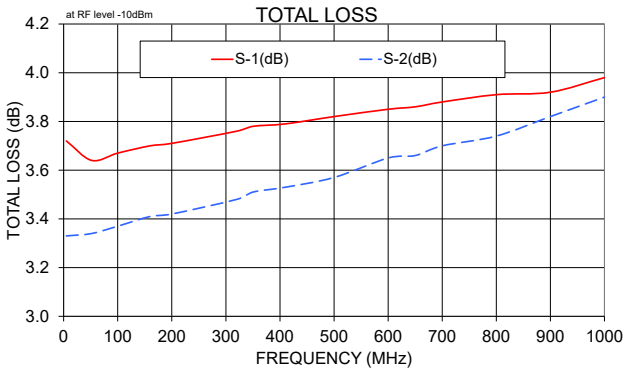
# Power Splitter/Combiner SBTC-2-10-7550+

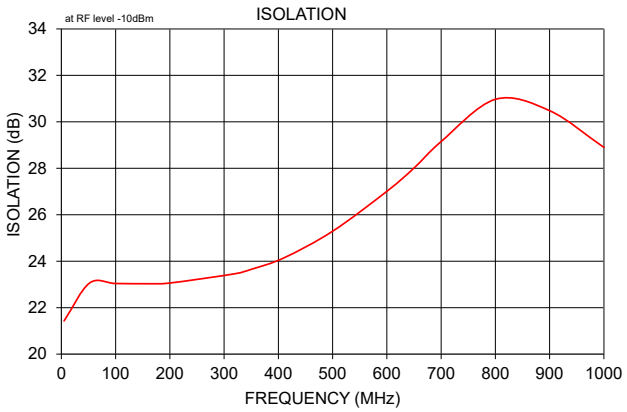
2 Way-0° 50/75Ω 5 to 1000 MHz

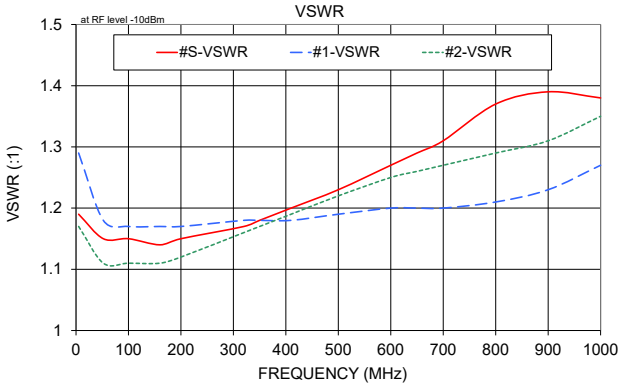
## TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Total Loss[1] (dB) | | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | VSWR (:1) | | |
|---|---|---|---|---|---|---|---|---|
| | S-1 | S-2 | | | | S | 1 | 2 |
| 5 | 3.72 | 3.33 | 0.39 | 21.43 | 1.97 | 1.19 | 1.29 | 1.17 |
| 52 | 3.64 | 3.34 | 0.29 | 23.06 | 0.18 | 1.15 | 1.18 | 1.11 |
| 100 | 3.67 | 3.37 | 0.30 | 23.04 | 0.08 | 1.15 | 1.17 | 1.11 |
| 160 | 3.70 | 3.41 | 0.29 | 23.03 | 0.35 | 1.14 | 1.17 | 1.11 |
| 200 | 3.71 | 3.42 | 0.28 | 23.06 | 0.43 | 1.15 | 1.17 | 1.12 |
| 320 | 3.76 | 3.48 | 0.28 | 23.46 | 0.73 | 1.17 | 1.18 | 1.16 |
| 350 | 3.78 | 3.51 | 0.27 | 23.65 | 0.72 | 1.18 | 1.18 | 1.17 |
| 410 | 3.79 | 3.53 | 0.26 | 24.14 | 0.91 | 1.20 | 1.18 | 1.19 |
| 500 | 3.82 | 3.57 | 0.25 | 25.29 | 1.00 | 1.23 | 1.19 | 1.22 |
| 600 | 3.85 | 3.65 | 0.20 | 27.01 | 1.12 | 1.27 | 1.20 | 1.25 |
| 650 | 3.86 | 3.66 | 0.20 | 28.01 | 1.15 | 1.29 | 1.20 | 1.26 |
| 700 | 3.88 | 3.70 | 0.18 | 29.15 | 1.15 | 1.31 | 1.20 | 1.27 |
| 800 | 3.91 | 3.74 | 0.17 | 30.97 | 1.23 | 1.37 | 1.21 | 1.29 |
| 900 | 3.92 | 3.82 | 0.11 | 30.48 | 1.25 | 1.39 | 1.23 | 1.31 |
| 1000 | 3.98 | 3.90 | 0.07 | 28.90 | 1.23 | 1.38 | 1.27 | 1.35 |

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




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.

C. 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

# 2 Way-0° Power Splitter/Combiner SBTC-2-10-7550+

## *Typical Performance Data*

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

| FREQ. (MHz) | TOTAL LOSS[1] (dB) | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | VSWR (:1) | | |
|---|---|---|---|---|---|---|---|---|
| | S-1 | S-2 | | | 1-2 | S | 1 | 2 |
| 5 | 3.51 | 3.29 | 0.22 | 0.39 | 23.02 | 1.04 | 1.20 | 1.14 |
| 10 | 3.50 | 3.29 | 0.21 | 0.20 | 23.34 | 1.04 | 1.18 | 1.12 |
| 15 | 3.51 | 3.29 | 0.21 | 0.08 | 23.50 | 1.04 | 1.17 | 1.12 |
| 20 | 3.52 | 3.30 | 0.22 | 0.03 | 23.49 | 1.04 | 1.17 | 1.11 |
| 25 | 3.52 | 3.31 | 0.21 | 0.00 | 23.46 | 1.04 | 1.17 | 1.11 |
| 50 | 3.55 | 3.33 | 0.22 | 0.06 | 23.32 | 1.04 | 1.17 | 1.11 |
| 75 | 3.57 | 3.34 | 0.23 | 0.09 | 23.28 | 1.04 | 1.17 | 1.11 |
| 100 | 3.58 | 3.37 | 0.21 | 0.15 | 23.25 | 1.05 | 1.16 | 1.11 |
| 150 | 3.60 | 3.39 | 0.21 | 0.20 | 23.26 | 1.05 | 1.16 | 1.11 |
| 200 | 3.62 | 3.42 | 0.20 | 0.27 | 23.36 | 1.06 | 1.15 | 1.11 |
| 250 | 3.65 | 3.45 | 0.20 | 0.33 | 23.59 | 1.07 | 1.15 | 1.11 |
| 300 | 3.66 | 3.46 | 0.20 | 0.41 | 23.95 | 1.08 | 1.15 | 1.12 |
| 350 | 3.68 | 3.49 | 0.19 | 0.48 | 24.46 | 1.09 | 1.15 | 1.13 |
| 400 | 3.70 | 3.52 | 0.18 | 0.55 | 25.12 | 1.10 | 1.16 | 1.14 |
| 425 | 3.71 | 3.53 | 0.18 | 0.59 | 25.51 | 1.11 | 1.16 | 1.15 |
| 450 | 3.72 | 3.54 | 0.18 | 0.61 | 25.95 | 1.11 | 1.17 | 1.16 |
| 475 | 3.73 | 3.56 | 0.17 | 0.63 | 26.41 | 1.11 | 1.17 | 1.17 |
| 500 | 3.73 | 3.58 | 0.15 | 0.68 | 26.91 | 1.12 | 1.17 | 1.17 |
| 525 | 3.74 | 3.59 | 0.15 | 0.69 | 27.38 | 1.12 | 1.18 | 1.18 |
| 550 | 3.75 | 3.60 | 0.15 | 0.73 | 27.84 | 1.13 | 1.18 | 1.19 |
| 575 | 3.76 | 3.62 | 0.14 | 0.76 | 28.24 | 1.13 | 1.18 | 1.19 |
| 600 | 3.77 | 3.63 | 0.14 | 0.76 | 28.53 | 1.14 | 1.19 | 1.20 |
| 650 | 3.79 | 3.66 | 0.13 | 0.81 | 28.70 | 1.14 | 1.19 | 1.21 |
| 700 | 3.81 | 3.70 | 0.11 | 0.84 | 28.13 | 1.15 | 1.19 | 1.21 |
| 750 | 3.83 | 3.73 | 0.10 | 0.86 | 27.17 | 1.15 | 1.19 | 1.21 |
| 800 | 3.84 | 3.76 | 0.08 | 0.89 | 25.98 | 1.15 | 1.18 | 1.21 |
| 850 | 3.86 | 3.80 | 0.06 | 0.89 | 24.87 | 1.15 | 1.17 | 1.20 |
| 900 | 3.88 | 3.83 | 0.05 | 0.92 | 23.95 | 1.14 | 1.16 | 1.20 |
| 925 | 3.89 | 3.86 | 0.03 | 0.92 | 23.56 | 1.14 | 1.15 | 1.19 |
| 950 | 3.90 | 3.87 | 0.03 | 0.91 | 23.22 | 1.13 | 1.14 | 1.19 |
| 975 | 3.90 | 3.89 | 0.01 | 0.89 | 22.97 | 1.13 | 1.14 | 1.18 |
| 1000 | 3.91 | 3.91 | 0.00 | 0.89 | 22.75 | 1.12 | 1.13 | 1.18 |
| 1025 | 3.92 | 3.92 | 0.00 | 0.93 | 22.61 | 1.12 | 1.13 | 1.17 |
| 1050 | 3.93 | 3.93 | 0.00 | 0.97 | 22.60 | 1.11 | 1.13 | 1.17 |
| 1075 | 3.94 | 3.96 | 0.02 | 0.83 | 22.51 | 1.10 | 1.13 | 1.17 |
| 1100 | 3.95 | 3.97 | 0.02 | 0.82 | 22.54 | 1.10 | 1.14 | 1.16 |
| 1150 | 3.97 | 4.02 | 0.05 | 0.78 | 22.85 | 1.09 | 1.15 | 1.17 |
| 1200 | 4.00 | 4.07 | 0.07 | 0.73 | 23.55 | 1.09 | 1.18 | 1.18 |
| 1250 | 4.03 | 4.12 | 0.09 | 0.68 | 24.66 | 1.09 | 1.22 | 1.20 |
| 1300 | 4.08 | 4.18 | 0.10 | 0.60 | 26.44 | 1.11 | 1.26 | 1.24 |
| 1400 | 4.21 | 4.35 | 0.14 | 0.37 | 33.63 | 1.16 | 1.35 | 1.31 |
| 1500 | 4.41 | 4.58 | 0.16 | 0.09 | 30.91 | 1.22 | 1.44 | 1.40 |
| 1600 | 4.67 | 4.87 | 0.20 | 0.25 | 22.89 | 1.26 | 1.51 | 1.49 |
| 1700 | 5.00 | 5.21 | 0.21 | 0.63 | 18.52 | 1.28 | 1.55 | 1.57 |
| 1800 | 5.37 | 5.59 | 0.22 | 1.05 | 15.70 | 1.27 | 1.55 | 1.62 |
| 1900 | 5.76 | 5.99 | 0.23 | 1.63 | 13.78 | 1.24 | 1.52 | 1.65 |
| 2000 | 6.15 | 6.37 | 0.22 | 1.93 | 12.41 | 1.21 | 1.47 | 1.66 |
| 2100 | 6.54 | 6.73 | 0.18 | 2.28 | 11.44 | 1.17 | 1.42 | 1.66 |
| 2200 | 6.94 | 7.08 | 0.14 | 2.67 | 10.67 | 1.15 | 1.37 | 1.66 |
| 2300 | 7.40 | 7.47 | 0.06 | 2.88 | 10.01 | 1.17 | 1.33 | 1.67 |
| 2400 | 7.96 | 7.94 | 0.02 | 2.92 | 9.37 | 1.21 | 1.29 | 1.70 |
| 2500 | 8.63 | 8.53 | 0.10 | 2.43 | 8.72 | 1.25 | 1.27 | 1.72 |
| 2600 | 9.42 | 9.22 | 0.20 | 1.70 | 8.13 | 1.28 | 1.25 | 1.73 |

[1] Total Loss = Insertion Loss+ 3dB Splitter Loss



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# 2 Way-0° Power Splitter/Combiner SBTC-2-10-7550+

## *Typical Performance Data*

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

| FREQ. (MHz) | TOTAL LOSS[1] (dB) | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | VSWR (:1) | | |
|---|---|---|---|---|---|---|---|---|
| | S-1 | S-2 | | | 1-2 | S | 1 | 2 |
| 5 | 3.62 | 3.33 | 0.29 | 1.16 | 20.62 | 1.05 | 1.34 | 1.24 |
| 10 | 3.51 | 3.28 | 0.24 | 0.79 | 22.53 | 1.04 | 1.23 | 1.16 |
| 15 | 3.46 | 3.25 | 0.21 | 0.53 | 23.72 | 1.04 | 1.17 | 1.12 |
| 20 | 3.45 | 3.25 | 0.20 | 0.39 | 24.20 | 1.04 | 1.15 | 1.10 |
| 25 | 3.44 | 3.25 | 0.19 | 0.32 | 24.35 | 1.04 | 1.14 | 1.09 |
| 50 | 3.45 | 3.26 | 0.19 | 0.15 | 24.58 | 1.03 | 1.13 | 1.07 |
| 75 | 3.46 | 3.27 | 0.19 | 0.11 | 24.55 | 1.04 | 1.12 | 1.07 |
| 100 | 3.47 | 3.29 | 0.18 | 0.07 | 24.50 | 1.04 | 1.11 | 1.07 |
| 150 | 3.49 | 3.31 | 0.18 | 0.05 | 24.53 | 1.05 | 1.11 | 1.07 |
| 200 | 3.51 | 3.33 | 0.18 | 0.05 | 24.63 | 1.06 | 1.11 | 1.07 |
| 250 | 3.53 | 3.35 | 0.18 | 0.09 | 24.87 | 1.07 | 1.11 | 1.08 |
| 300 | 3.54 | 3.37 | 0.17 | 0.10 | 25.31 | 1.07 | 1.12 | 1.10 |
| 350 | 3.56 | 3.39 | 0.17 | 0.11 | 25.89 | 1.09 | 1.13 | 1.11 |
| 400 | 3.57 | 3.40 | 0.17 | 0.14 | 26.73 | 1.09 | 1.13 | 1.12 |
| 425 | 3.57 | 3.41 | 0.16 | 0.13 | 27.18 | 1.10 | 1.14 | 1.13 |
| 450 | 3.58 | 3.42 | 0.16 | 0.18 | 27.69 | 1.10 | 1.14 | 1.14 |
| 475 | 3.59 | 3.44 | 0.15 | 0.18 | 28.24 | 1.11 | 1.15 | 1.15 |
| 500 | 3.59 | 3.45 | 0.14 | 0.20 | 28.83 | 1.11 | 1.15 | 1.15 |
| 525 | 3.60 | 3.46 | 0.14 | 0.22 | 29.36 | 1.12 | 1.16 | 1.16 |
| 550 | 3.61 | 3.47 | 0.14 | 0.23 | 29.79 | 1.12 | 1.16 | 1.16 |
| 575 | 3.62 | 3.48 | 0.14 | 0.27 | 30.11 | 1.12 | 1.16 | 1.17 |
| 600 | 3.62 | 3.49 | 0.13 | 0.31 | 30.24 | 1.13 | 1.17 | 1.17 |
| 650 | 3.64 | 3.52 | 0.12 | 0.37 | 29.81 | 1.14 | 1.17 | 1.18 |
| 700 | 3.65 | 3.54 | 0.11 | 0.44 | 28.63 | 1.14 | 1.17 | 1.18 |
| 750 | 3.66 | 3.57 | 0.09 | 0.53 | 27.21 | 1.15 | 1.17 | 1.19 |
| 800 | 3.68 | 3.60 | 0.08 | 0.62 | 25.83 | 1.15 | 1.16 | 1.19 |
| 850 | 3.69 | 3.62 | 0.07 | 0.73 | 24.66 | 1.15 | 1.15 | 1.18 |
| 900 | 3.70 | 3.64 | 0.06 | 0.80 | 23.74 | 1.14 | 1.13 | 1.17 |
| 925 | 3.70 | 3.66 | 0.04 | 0.90 | 23.36 | 1.14 | 1.13 | 1.17 |
| 950 | 3.71 | 3.67 | 0.04 | 0.96 | 23.06 | 1.13 | 1.12 | 1.16 |
| 975 | 3.71 | 3.69 | 0.02 | 0.98 | 22.82 | 1.13 | 1.12 | 1.16 |
| 1000 | 3.72 | 3.70 | 0.02 | 1.02 | 22.63 | 1.12 | 1.11 | 1.15 |
| 1025 | 3.72 | 3.71 | 0.01 | 1.09 | 22.52 | 1.11 | 1.11 | 1.15 |
| 1050 | 3.73 | 3.73 | 0.00 | 1.09 | 22.56 | 1.11 | 1.11 | 1.15 |
| 1075 | 3.73 | 3.74 | 0.01 | 1.26 | 22.49 | 1.10 | 1.12 | 1.14 |
| 1100 | 3.74 | 3.75 | 0.01 | 1.32 | 22.57 | 1.09 | 1.12 | 1.14 |
| 1150 | 3.75 | 3.79 | 0.04 | 1.49 | 22.96 | 1.08 | 1.15 | 1.15 |
| 1200 | 3.77 | 3.83 | 0.06 | 1.65 | 23.77 | 1.08 | 1.18 | 1.17 |
| 1250 | 3.80 | 3.87 | 0.07 | 1.80 | 25.02 | 1.09 | 1.22 | 1.20 |
| 1300 | 3.84 | 3.92 | 0.08 | 2.00 | 26.99 | 1.11 | 1.26 | 1.23 |
| 1400 | 3.95 | 4.06 | 0.11 | 2.45 | 34.87 | 1.16 | 1.35 | 1.31 |
| 1500 | 4.12 | 4.26 | 0.13 | 2.94 | 29.32 | 1.21 | 1.44 | 1.39 |
| 1600 | 4.36 | 4.52 | 0.16 | 3.50 | 22.03 | 1.25 | 1.52 | 1.49 |
| 1700 | 4.66 | 4.84 | 0.18 | 4.10 | 17.90 | 1.27 | 1.55 | 1.57 |
| 1800 | 5.00 | 5.18 | 0.18 | 4.75 | 15.19 | 1.26 | 1.55 | 1.62 |
| 1900 | 5.36 | 5.54 | 0.18 | 5.49 | 13.32 | 1.23 | 1.53 | 1.65 |
| 2000 | 5.74 | 5.89 | 0.16 | 6.10 | 11.99 | 1.20 | 1.48 | 1.67 |
| 2100 | 6.11 | 6.23 | 0.11 | 6.68 | 11.02 | 1.17 | 1.43 | 1.67 |
| 2200 | 6.49 | 6.56 | 0.07 | 7.35 | 10.27 | 1.17 | 1.38 | 1.69 |
| 2300 | 6.95 | 6.94 | 0.02 | 7.85 | 9.60 | 1.20 | 1.34 | 1.71 |
| 2400 | 7.52 | 7.42 | 0.10 | 8.21 | 8.94 | 1.25 | 1.31 | 1.76 |
| 2500 | 8.16 | 7.98 | 0.18 | 8.00 | 8.25 | 1.29 | 1.28 | 1.74 |
| 2600 | 8.99 | 8.71 | 0.29 | 7.64 | 7.67 | 1.32 | 1.26 | 1.78 |

[1] Total Loss = Insertion Loss+ 3dB Splitter Loss



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# 2 Way-0° Power Splitter/Combiner SBTC-2-10-7550+

## *Typical Performance Data*

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

| FREQ. (MHz) | TOTAL LOSS[1] (dB) | | AMP. UNBAL. (dB) | PHASE UNBAL. (deg.) | ISOLATION (dB) | VSWR (:1) | | |
|---|---|---|---|---|---|---|---|---|
| | S-1 | S-2 | | | 1-2 | S | 1 | 2 |
| 5 | 3.67 | 3.37 | 0.30 | 0.43 | 21.66 | 1.05 | 1.27 | 1.19 |
| 10 | 3.67 | 3.38 | 0.29 | 0.22 | 21.86 | 1.05 | 1.25 | 1.17 |
| 15 | 3.67 | 3.38 | 0.29 | 0.09 | 21.95 | 1.05 | 1.24 | 1.17 |
| 20 | 3.68 | 3.39 | 0.29 | 0.06 | 21.94 | 1.05 | 1.24 | 1.17 |
| 25 | 3.68 | 3.40 | 0.28 | 0.01 | 21.91 | 1.05 | 1.24 | 1.17 |
| 50 | 3.71 | 3.43 | 0.28 | 0.07 | 21.79 | 1.05 | 1.24 | 1.17 |
| 75 | 3.73 | 3.45 | 0.28 | 0.13 | 21.77 | 1.05 | 1.24 | 1.17 |
| 100 | 3.75 | 3.47 | 0.28 | 0.17 | 21.78 | 1.05 | 1.24 | 1.16 |
| 150 | 3.77 | 3.49 | 0.27 | 0.23 | 21.80 | 1.06 | 1.23 | 1.15 |
| 200 | 3.79 | 3.52 | 0.27 | 0.32 | 21.89 | 1.07 | 1.22 | 1.15 |
| 250 | 3.81 | 3.56 | 0.25 | 0.42 | 22.07 | 1.08 | 1.21 | 1.15 |
| 300 | 3.83 | 3.58 | 0.25 | 0.51 | 22.32 | 1.09 | 1.20 | 1.15 |
| 350 | 3.85 | 3.61 | 0.24 | 0.61 | 22.69 | 1.10 | 1.20 | 1.16 |
| 400 | 3.87 | 3.64 | 0.23 | 0.72 | 23.16 | 1.10 | 1.20 | 1.17 |
| 425 | 3.88 | 3.66 | 0.22 | 0.77 | 23.44 | 1.11 | 1.20 | 1.18 |
| 450 | 3.89 | 3.67 | 0.22 | 0.81 | 23.74 | 1.11 | 1.20 | 1.19 |
| 475 | 3.90 | 3.69 | 0.21 | 0.87 | 24.08 | 1.12 | 1.20 | 1.19 |
| 500 | 3.90 | 3.71 | 0.19 | 0.91 | 24.44 | 1.12 | 1.20 | 1.20 |
| 525 | 3.92 | 3.73 | 0.19 | 0.97 | 24.81 | 1.13 | 1.20 | 1.20 |
| 550 | 3.92 | 3.74 | 0.18 | 1.02 | 25.18 | 1.13 | 1.20 | 1.21 |
| 575 | 3.94 | 3.77 | 0.17 | 1.08 | 25.54 | 1.13 | 1.20 | 1.21 |
| 600 | 3.94 | 3.78 | 0.16 | 1.07 | 25.87 | 1.14 | 1.20 | 1.22 |
| 650 | 3.97 | 3.82 | 0.15 | 1.20 | 26.37 | 1.14 | 1.20 | 1.22 |
| 700 | 3.99 | 3.86 | 0.13 | 1.26 | 26.47 | 1.15 | 1.20 | 1.23 |
| 750 | 4.01 | 3.90 | 0.11 | 1.33 | 26.21 | 1.15 | 1.20 | 1.23 |
| 800 | 4.03 | 3.94 | 0.09 | 1.40 | 25.56 | 1.15 | 1.19 | 1.23 |
| 850 | 4.05 | 3.98 | 0.07 | 1.46 | 24.79 | 1.15 | 1.18 | 1.22 |
| 900 | 4.07 | 4.02 | 0.05 | 1.52 | 24.03 | 1.14 | 1.17 | 1.21 |
| 925 | 4.08 | 4.05 | 0.03 | 1.54 | 23.67 | 1.14 | 1.16 | 1.20 |
| 950 | 4.09 | 4.06 | 0.03 | 1.56 | 23.37 | 1.13 | 1.16 | 1.20 |
| 975 | 4.10 | 4.09 | 0.01 | 1.60 | 23.12 | 1.13 | 1.15 | 1.19 |
| 1000 | 4.11 | 4.12 | 0.01 | 1.62 | 22.91 | 1.12 | 1.14 | 1.19 |
| 1025 | 4.12 | 4.13 | 0.01 | 1.66 | 22.74 | 1.12 | 1.14 | 1.18 |
| 1050 | 4.15 | 4.15 | 0.01 | 1.78 | 22.73 | 1.11 | 1.13 | 1.18 |
| 1075 | 4.15 | 4.18 | 0.03 | 1.67 | 22.61 | 1.10 | 1.13 | 1.17 |
| 1100 | 4.16 | 4.20 | 0.04 | 1.68 | 22.61 | 1.10 | 1.14 | 1.17 |
| 1150 | 4.19 | 4.25 | 0.06 | 1.69 | 22.87 | 1.09 | 1.15 | 1.17 |
| 1200 | 4.23 | 4.32 | 0.09 | 1.68 | 23.46 | 1.09 | 1.17 | 1.18 |
| 1250 | 4.27 | 4.38 | 0.11 | 1.72 | 24.46 | 1.10 | 1.21 | 1.20 |
| 1300 | 4.32 | 4.45 | 0.13 | 1.67 | 26.07 | 1.11 | 1.25 | 1.23 |
| 1400 | 4.48 | 4.65 | 0.17 | 1.55 | 33.30 | 1.17 | 1.33 | 1.31 |
| 1500 | 4.69 | 4.91 | 0.21 | 1.39 | 36.24 | 1.22 | 1.42 | 1.40 |
| 1600 | 4.98 | 5.23 | 0.25 | 1.18 | 24.63 | 1.27 | 1.49 | 1.48 |
| 1700 | 5.33 | 5.62 | 0.29 | 0.91 | 19.67 | 1.29 | 1.53 | 1.56 |
| 1800 | 5.73 | 6.03 | 0.30 | 0.59 | 16.62 | 1.28 | 1.54 | 1.61 |
| 1900 | 6.14 | 6.47 | 0.33 | 0.07 | 14.60 | 1.25 | 1.51 | 1.65 |
| 2000 | 6.55 | 6.87 | 0.33 | 0.14 | 13.14 | 1.21 | 1.47 | 1.66 |
| 2100 | 6.94 | 7.26 | 0.32 | 0.49 | 12.10 | 1.18 | 1.42 | 1.66 |
| 2200 | 7.34 | 7.63 | 0.29 | 0.79 | 11.30 | 1.16 | 1.37 | 1.66 |
| 2300 | 7.79 | 8.04 | 0.25 | 1.02 | 10.61 | 1.17 | 1.33 | 1.68 |
| 2400 | 8.31 | 8.51 | 0.20 | 1.11 | 9.98 | 1.20 | 1.30 | 1.69 |
| 2500 | 8.94 | 9.06 | 0.12 | 0.69 | 9.33 | 1.24 | 1.28 | 1.71 |
| 2600 | 9.67 | 9.74 | 0.08 | 0.14 | 8.74 | 1.26 | 1.26 | 1.73 |

[1] Total Loss = Insertion Loss+ 3dB Splitter Loss

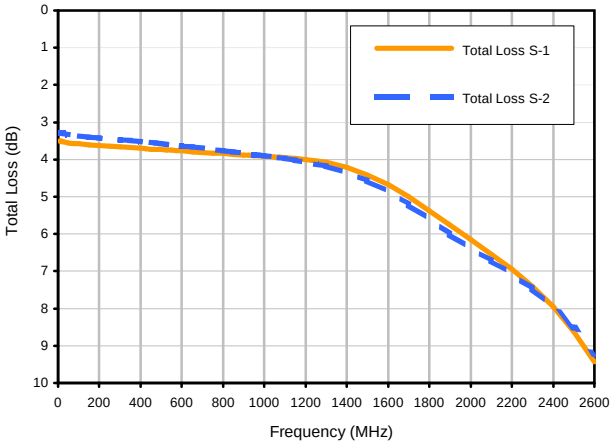


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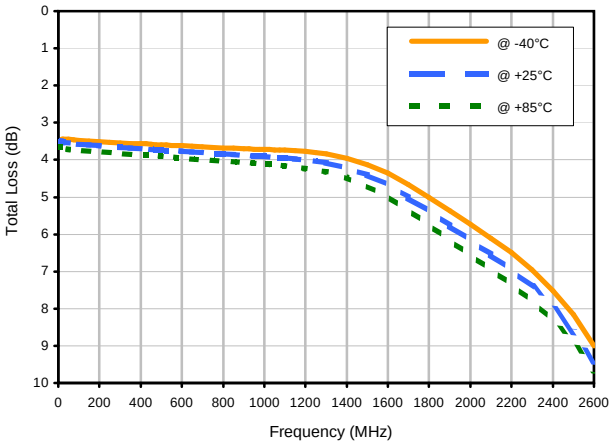
# 2 Way-0° Power Splitter/Combiner SBTC-2-10-7550+

*Typical Performance Curves*

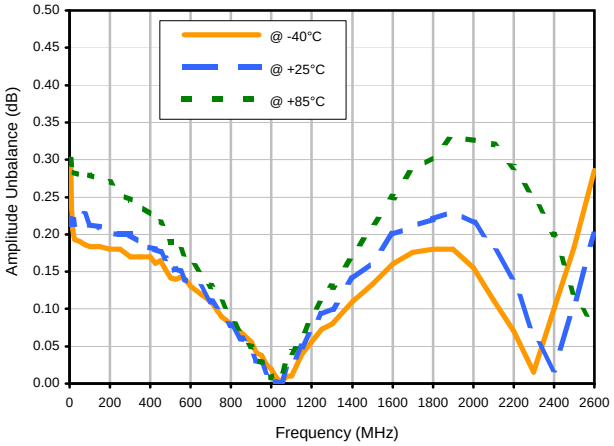
**Total Loss**



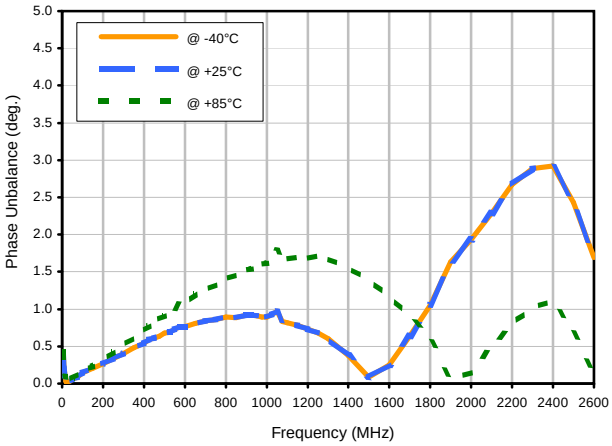

**Total Loss S-1 vs. TEMPERATURE**



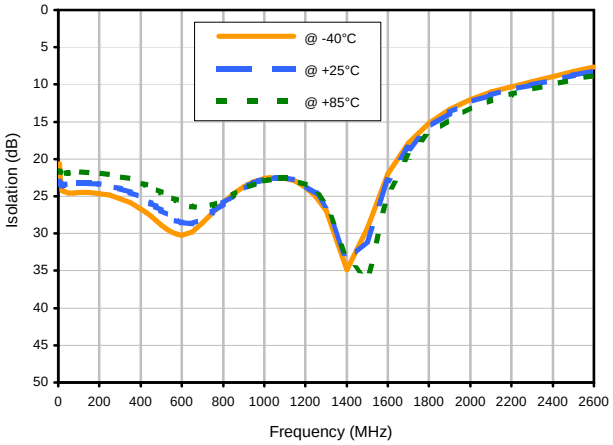

**Amplitude Unbalance vs. TEMPERATURE**




**Phase Unbalance vs. TEMPERATURE**




**Isolation 1-2 vs. TEMPERATURE**





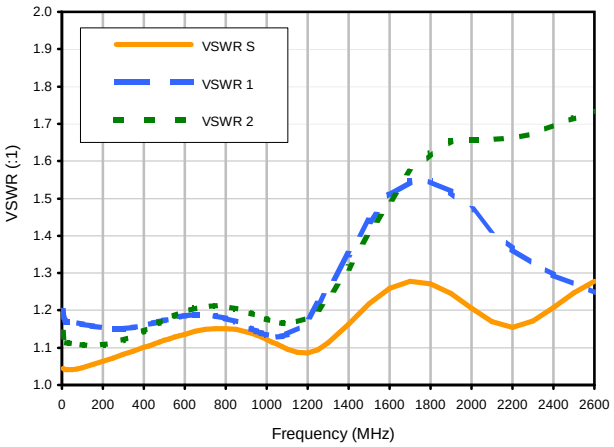


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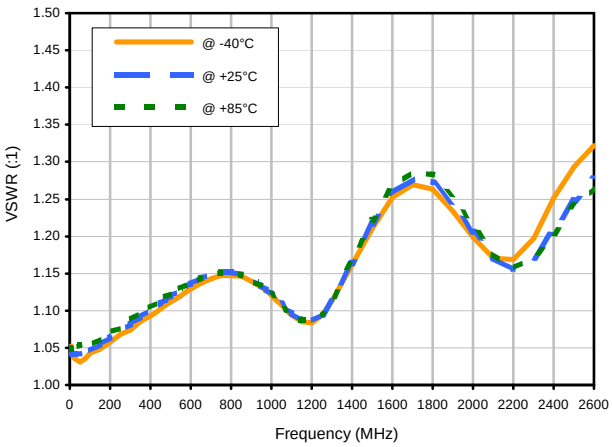
# 2 Way-0° Power Splitter/Combiner SBTC-2-10-7550+

*Typical Performance Curves*

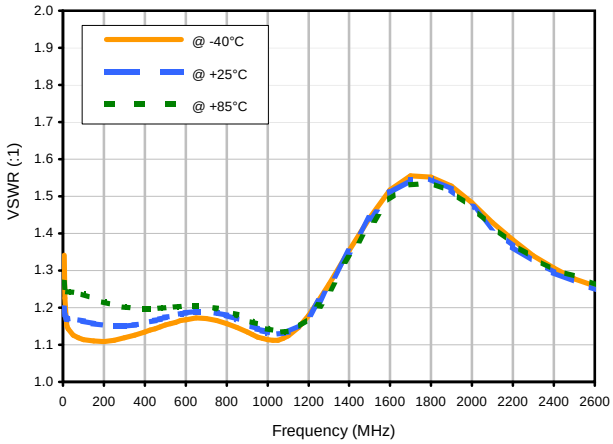
**VSWR**




**VSWR SUM vs. TEMPERATURE**




**VSWR OUT1 vs. TEMPERATURE**





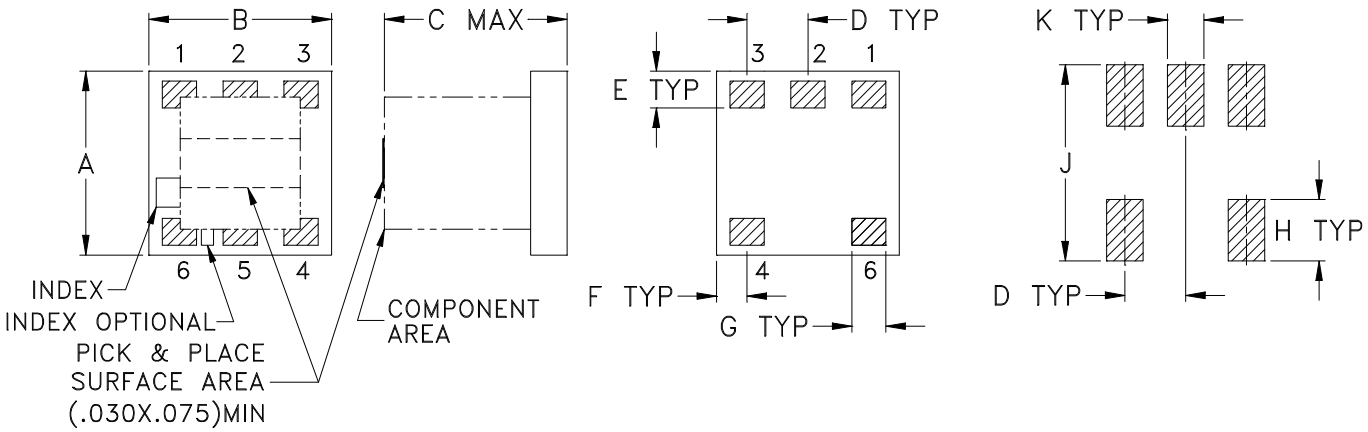

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# Case Style AT

## Outline Dimensions

**AT790**

### PCB Land Pattern




Suggested Layout,
Tolerance to be within ±.002

| CASE # | A | B | C | D | E | F | G | H | J | K | L | WT. GRAMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT790 | .150<br>(3.81) | .150<br>(3.81) | .150<br>(3.81) | .050<br>(1.27) | .030<br>(0.76) | .025<br>(0.64) | .028<br>(0.71) | .050<br>(1.27) | .160<br>(4.06) | .030<br>(0.76) | --<br>-- | .10 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005**

**Notes:**

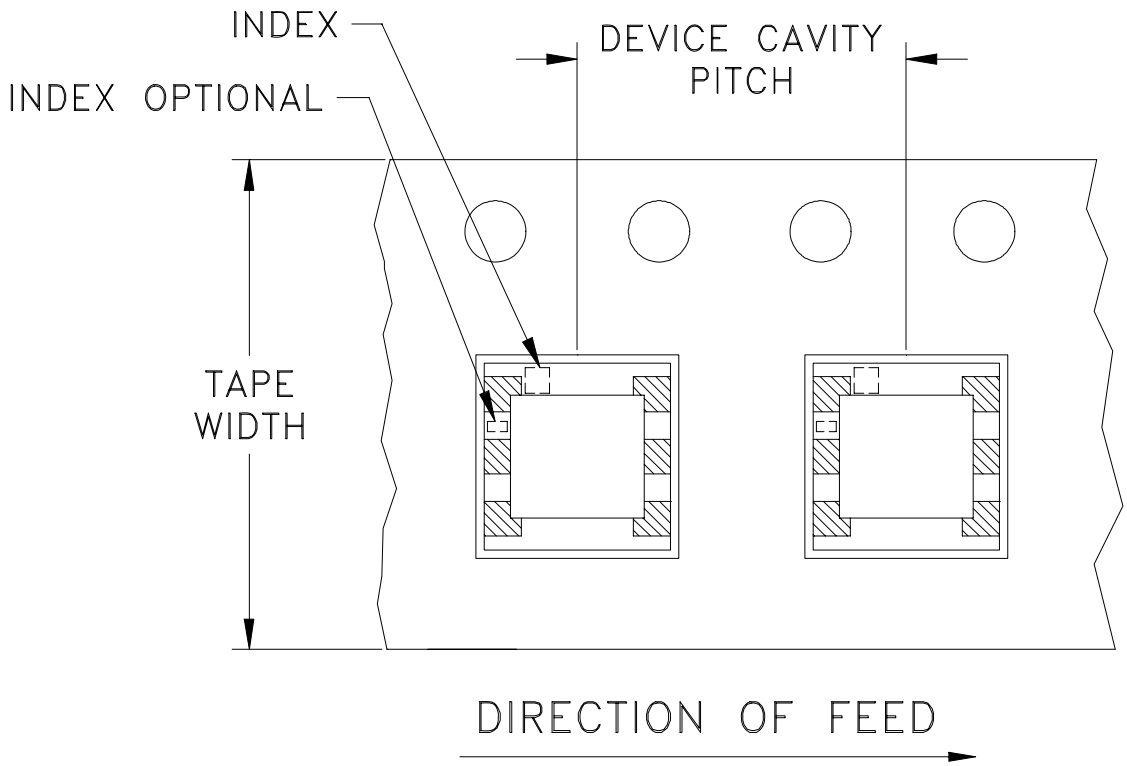
1. Open style, Ceramic base.
2. Termination finish: Silver palladium or gold over nickel based on stock availability.



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# Tape & Reel Packaging TR-F15

DEVICE ORIENTATION IN T&R




| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel |
|---|---|---|---|
| 12 | 8 | 7 | 20 |
| | | | 50 |
| | | | 100 |
| | | | 200 |
| | | 13 | 500 |
| | | | 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.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

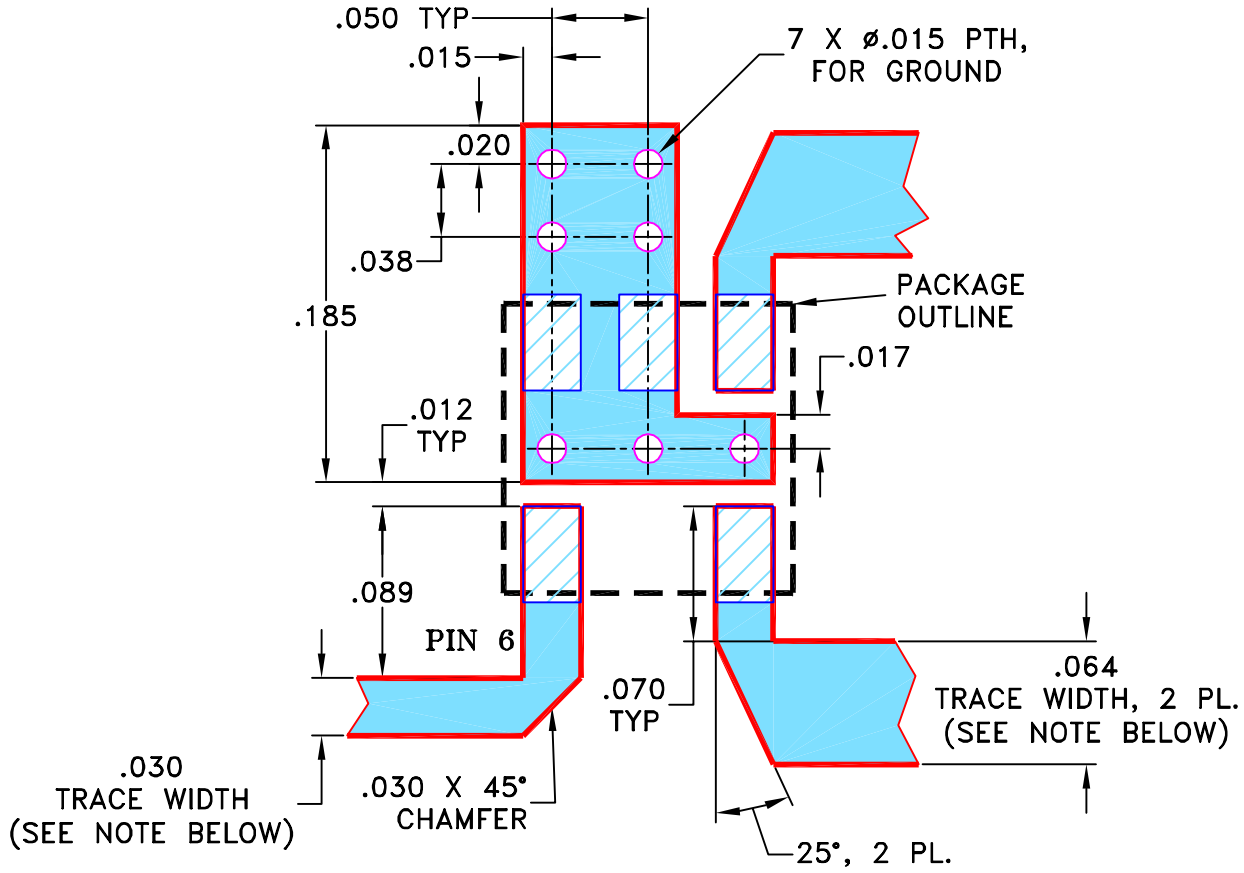
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THIRD ANGLE PROJECTION

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
| OR | M82272 | NEW RELEASE | 08/05/02 | GF | DJ |
| A | M102713 | UPDATED NOTES, ADDED "...WITH SMOBC" | 01/16/06 | GT | IL |
| | | | | | |
| | | | | | |

# SUGGESTED MOUNTING CONFIGURATION FOR AT790 CASE STYLE, "nc" PIN CONNECTION




NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 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

| UNLESS OTHERWISE SPECIFIED | | INITIALS | DATE |
|---|---|---|---|
| DIMENSIONS ARE IN INCHES | DRAWN | GF | 07/23/02 |
| TOLERANCES ON: | CHECKED | HY | 08/01/02 |
| 2 PL DECIMALS ± | APPROVED | DJ | 08/05/02 |
| 3 PL DECIMALS ± .005 | | | |
| ANGLES ± | | | |
| FRACTIONS ± | | | |

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ASHEETA1.DWG REV:A DATE:01/12/95

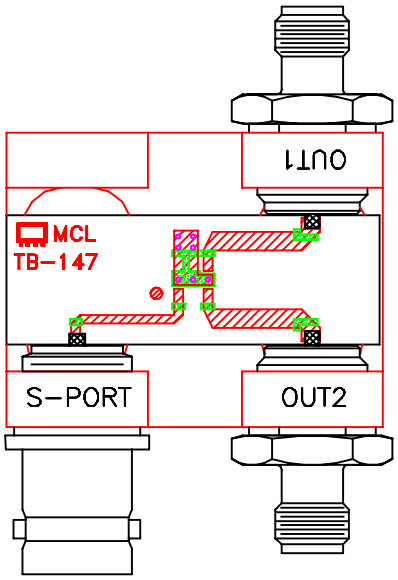
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PL, nc, 7550, AT790, SBTC, TB-147

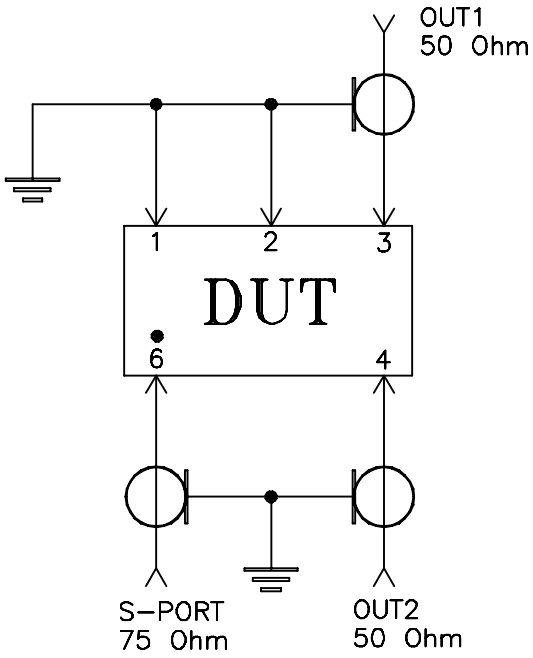
| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---|---|---|---|
| A | 15542 | 98-PL-092 | A |

| FILE: | SCALE: | SHEET: |
|---|---|---|
| 98PL092 | 10:1 | 1 OF 1 |

# Evaluation Board and Circuit




TB-147




Schematic Diagram

## Notes:

1. 75 Ohm BNC AND 50 Ohm SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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# Environmental Specifications ENV02T1

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 |


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