*Engineering Development Model*

# Power Splitter/Combiner ADP-ED7657/1

2 Way-0°

### Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

**CASE STYLE : CD636**

| ELECTRICAL SPECIFICATIONS 50Ω @ +25°C | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Min.** | **Typ.** | **Max.** | **Units** |
| **Frequency** | | 4.6 | | 506 | MHz |
| **Isolation** | **4.6-46 MHz** | | 34 | | dB |
| | **46-253 MHz** | | 35 | | dB |
| | **253-506 MHz** | | 40 | | dB |
| **Insertion Loss Above 3.0 dB** | **4.6-46 MHz** | | 0.18 | | dB |
| | **46-253 MHz** | | 0.23 | | dB |
| | **253-506 MHz** | | 0.38 | | dB |
| **Phase Unbalance** | **4.6-46 MHz** | | 0.015 | | deg. |
| | **46-253 MHz** | | 0.012 | | deg. |
| | **253-506 MHz** | | 0.055 | | deg. |
| **Amplitude Unbalance** | **4.6-46 MHz** | | 0.001 | | dB |
| | **46-253 MHz** | | 0.008 | | dB |
| | **253-506 MHz** | | 0.023 | | dB |
| **VSWR** | **SUM Port** | | 1.07 | | (:1) |
| | **OUT Ports** | | 1.09 | | (:1) |

| MAXIMUM RATINGS | |
|---|---|
| **Operating Temperature** | -40°C to 85°C |
| **Storage Temperature** | -55°C to 100°C |

| PIN CONNECTIONS | |
|---|---|
| **SUM PORT** | 1 |
| **PORT 1** | 3 |
| **PORT 2** | 4 |
| **GROUND** | 6 |
| **Externally connect together & isolate** | 2 & 5 |

## Functional Diagram

# 2 Way-0° Power Splitter/Combiner ADP-ED7657/1

*Typical Performance Data*

| FREQ. (MHz) | TOTAL LOSS[1] (dB) S-1 | TOTAL LOSS[1] (dB) S-2 | AMP. UNBAL. (dB) | ISOLATION (dB) 1-2 | PHASE UNBAL. (deg.) |
|---|---|---|---|---|---|
| 4.6 | 3.14 | 3.13 | 0.00 | 26.42 | 0.03 |
| 6.4 | 3.17 | 3.17 | 0.00 | 29.68 | 0.01 |
| 8.2 | 3.18 | 3.18 | 0.00 | 31.61 | 0.00 |
| 10.0 | 3.19 | 3.19 | 0.00 | 32.93 | 0.02 |
| 18.0 | 3.19 | 3.19 | 0.00 | 36.38 | 0.01 |
| 26.0 | 3.19 | 3.19 | 0.00 | 38.21 | 0.01 |
| 34.0 | 3.19 | 3.19 | 0.00 | 39.17 | 0.02 |
| 42.0 | 3.19 | 3.19 | 0.00 | 39.38 | 0.02 |
| 50.0 | 3.19 | 3.19 | 0.00 | 39.16 | 0.02 |
| 75.0 | 3.19 | 3.20 | 0.01 | 37.71 | 0.02 |
| 100.0 | 3.21 | 3.22 | 0.01 | 36.26 | 0.00 |
| 150.0 | 3.23 | 3.24 | 0.01 | 34.12 | 0.00 |
| 200.0 | 3.27 | 3.28 | 0.01 | 32.97 | 0.01 |
| 250.0 | 3.29 | 3.30 | 0.01 | 32.75 | 0.02 |
| 300.0 | 3.32 | 3.33 | 0.01 | 33.56 | 0.03 |
| 323.0 | 3.28 | 3.29 | 0.02 | 34.39 | 0.02 |
| 346.0 | 3.35 | 3.36 | 0.02 | 35.80 | 0.04 |
| 369.0 | 3.33 | 3.34 | 0.02 | 37.86 | 0.05 |
| 392.0 | 3.34 | 3.36 | 0.02 | 41.47 | 0.05 |
| 415.0 | 3.36 | 3.37 | 0.02 | 50.58 | 0.06 |
| 432.5 | 3.42 | 3.45 | 0.03 | 53.73 | 0.06 |
| 450.0 | 3.39 | 3.42 | 0.02 | 42.56 | 0.04 |
| 477.8 | 3.42 | 3.45 | 0.03 | 35.09 | 0.07 |
| 505.6 | 3.51 | 3.55 | 0.04 | 30.61 | 0.13 |

| FREQ. (MHz) | VSWR (:1) S | VSWR (:1) 1 | VSWR (:1) 2 |
|---|---|---|---|
| 4.6 | 1.15 | 1.27 | 1.27 |
| 6.4 | 1.11 | 1.19 | 1.19 |
| 8.2 | 1.09 | 1.15 | 1.15 |
| 10.0 | 1.08 | 1.13 | 1.13 |
| 18.0 | 1.06 | 1.09 | 1.09 |
| 26.0 | 1.05 | 1.08 | 1.08 |
| 34.0 | 1.04 | 1.06 | 1.07 |
| 42.0 | 1.04 | 1.06 | 1.06 |
| 50.0 | 1.04 | 1.05 | 1.05 |
| 75.0 | 1.04 | 1.04 | 1.04 |
| 100.0 | 1.04 | 1.03 | 1.03 |
| 150.0 | 1.04 | 1.02 | 1.02 |
| 200.0 | 1.04 | 1.02 | 1.01 |
| 250.0 | 1.03 | 1.02 | 1.01 |
| 300.0 | 1.01 | 1.03 | 1.02 |
| 323.0 | 1.01 | 1.04 | 1.03 |
| 346.0 | 1.02 | 1.05 | 1.04 |
| 369.0 | 1.04 | 1.07 | 1.06 |
| 392.0 | 1.06 | 1.08 | 1.07 |
| 415.0 | 1.08 | 1.10 | 1.08 |
| 432.5 | 1.10 | 1.11 | 1.10 |
| 450.0 | 1.13 | 1.13 | 1.11 |
| 477.8 | 1.17 | 1.15 | 1.14 |
| 505.6 | 1.22 | 1.18 | 1.17 |

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



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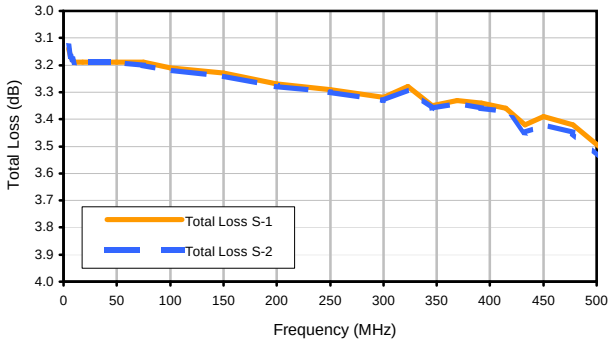
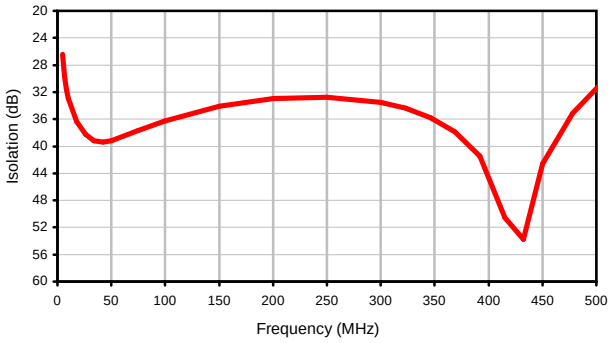
# 2 Way-0° Power Splitter/Combiner ADP-ED7657/1

*Typical Performance Curves*

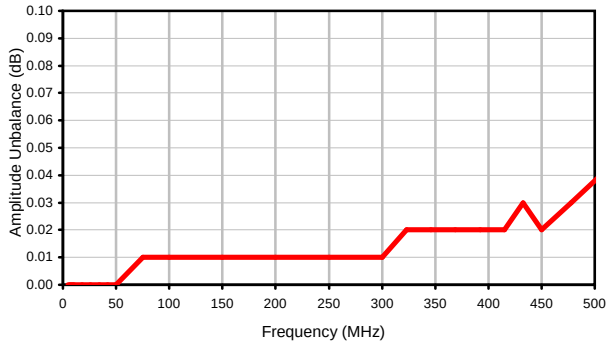
**Total Loss**



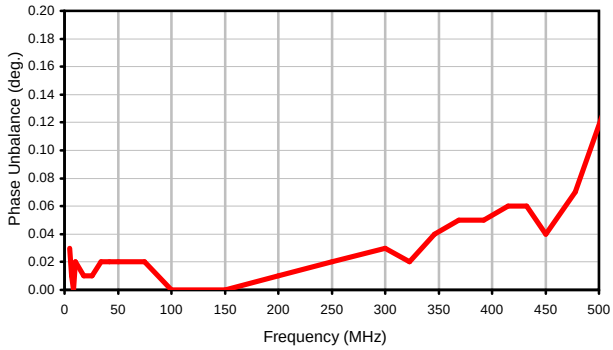

**Isolation**



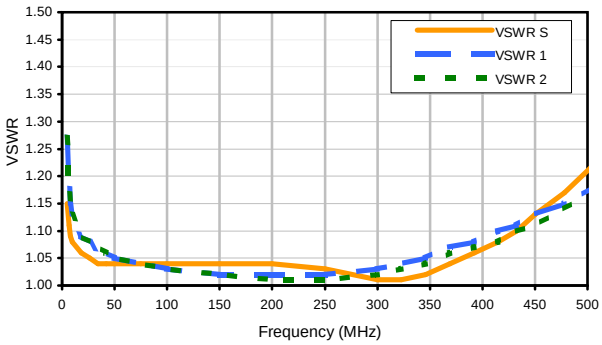

**Amplitude Unbalance**




**Phase Unbalance**




**VSWR**



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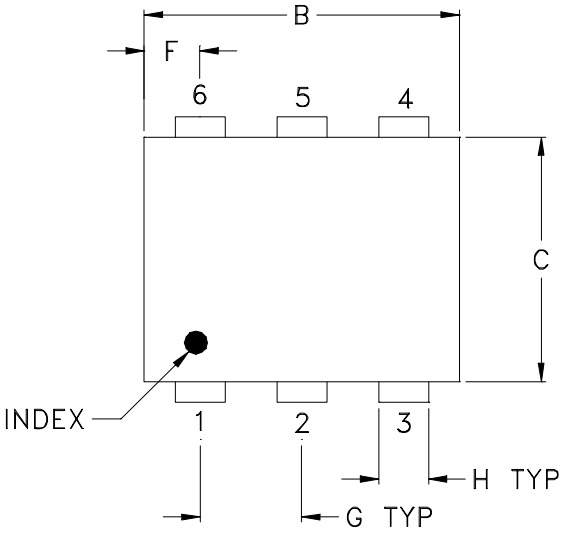
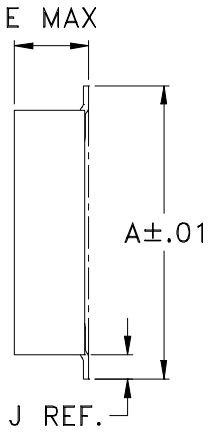
# Case Style CD

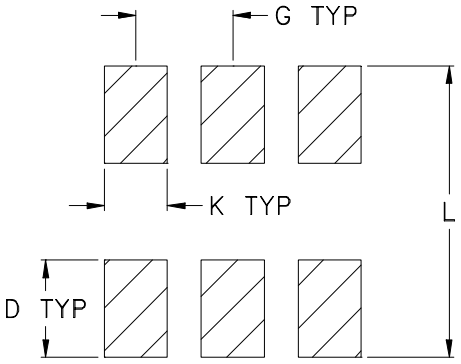
**CD541**
**CD542**
**CD636**
**CD637**

## Outline Dimensions




## PCB Land Pattern




Suggested Layout,
Tolerance to be within ±.002

| CASE# | A | B | C | D | E | F | G | H | J | K | L | WT, GRAM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD541 | .272 (6.91) | .310 (7.87) | .220 (5.58) | .100 (2.54) | .082 (2.08) | .055 (1.40) | .100 (2.54) | .030 (0.76) | .026 (0.66) | .065 (1.65) | .300 (7.62) | .15 |
| CD542 | | | | | .112 (2.84) | | | | | | | .20 |
| CD636 | | | | | .162 (4.11) | | | | | | | .25 |
| CD637 | | | | | .206 (5.23) | | | | | | | .40 |

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

**Notes:**

1. Case material: Plastic.
2. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.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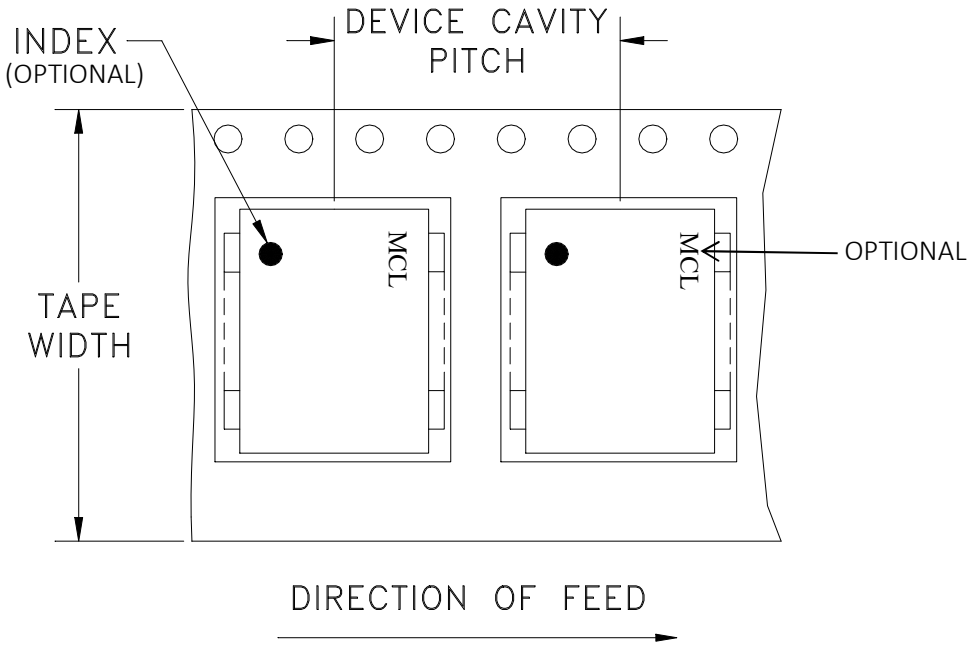
# Tape & Reel Packaging TR-F34

DEVICE ORIENTATION IN T&R




| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel see note | |
|---|---|---|---|---|
| 16 | 12 | 7 | Small quantity standard (see note) | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | 13 | Standard | 500 |
| | | | | 1000 |

Note: Availability of small reel quantity varies by model.
Refer to pricing and availability on individual model dashboard.

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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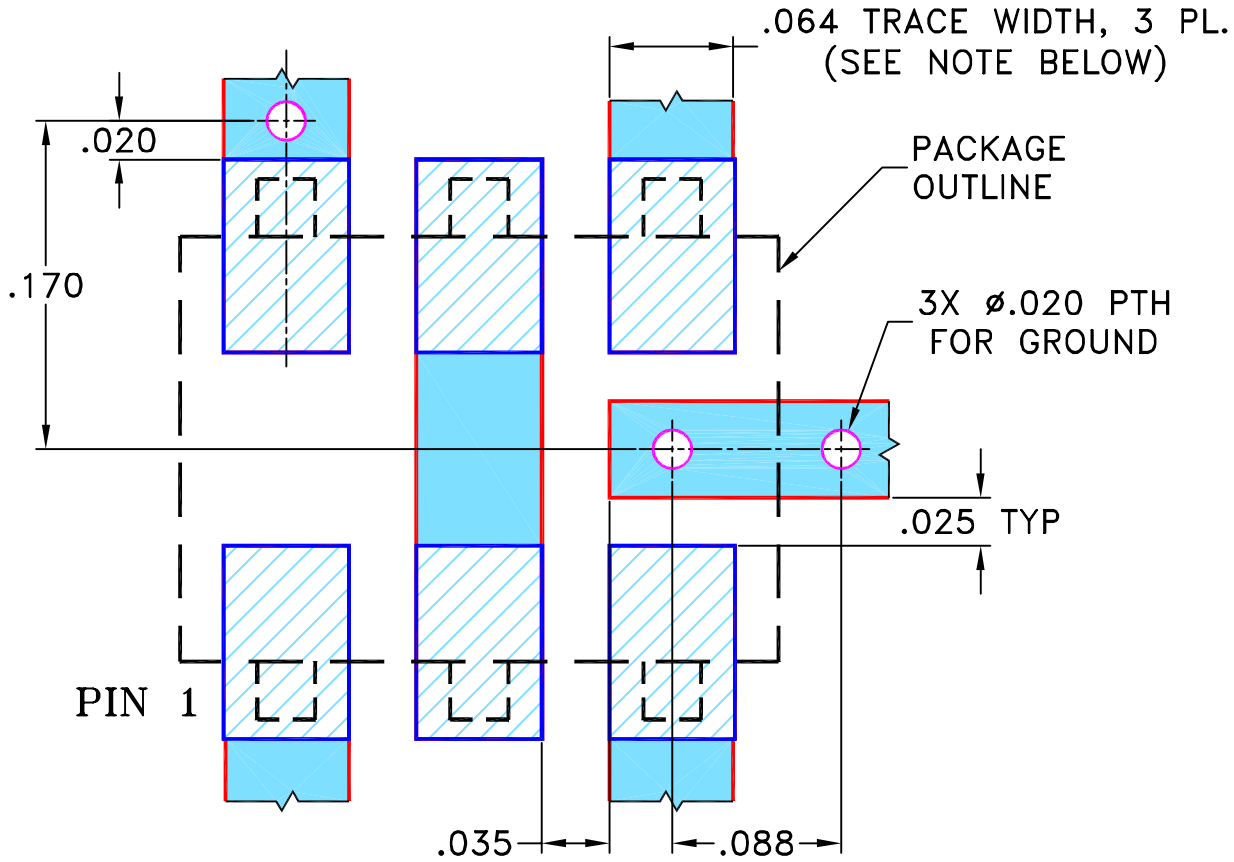
THIRD ANGLE PROJECTION

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
| OR | M82448 | NEW RELEASE | 12/06/02 | MMG | HY |
| A | M102713 | ADDED "...WITH SMOBC" | 01/17/06 | MMG | IL |
| | | | | | |
| | | | | | |

# SUGGESTED MOUNTING CONFIGURATION
# FOR CD636 CASE STYLE, "mp" PIN CONNECTION




NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .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 | MMG | 11/19/02 |
| TOLERANCES ON: | CHECKED | AV | 12/05/02 |
| 2 PL DECIMALS ± | APPROVED | HY | 12/06/02 |
| 3 PL DECIMALS ± .005 | | | |
| ANGLES ± | | | |
| FRACTIONS ± | | | |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ASHEETA1.DWG REV:A DATE:01/12/95


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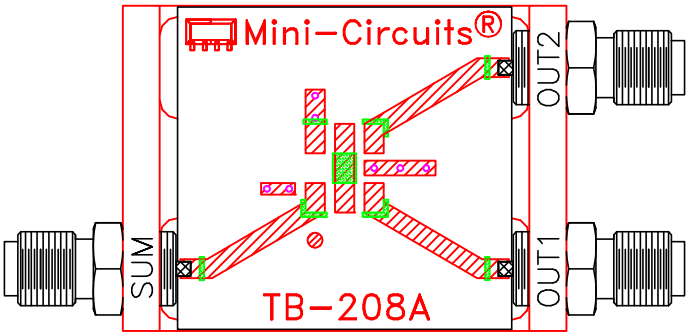
# PL, mp, CD636, ADP, TB-208

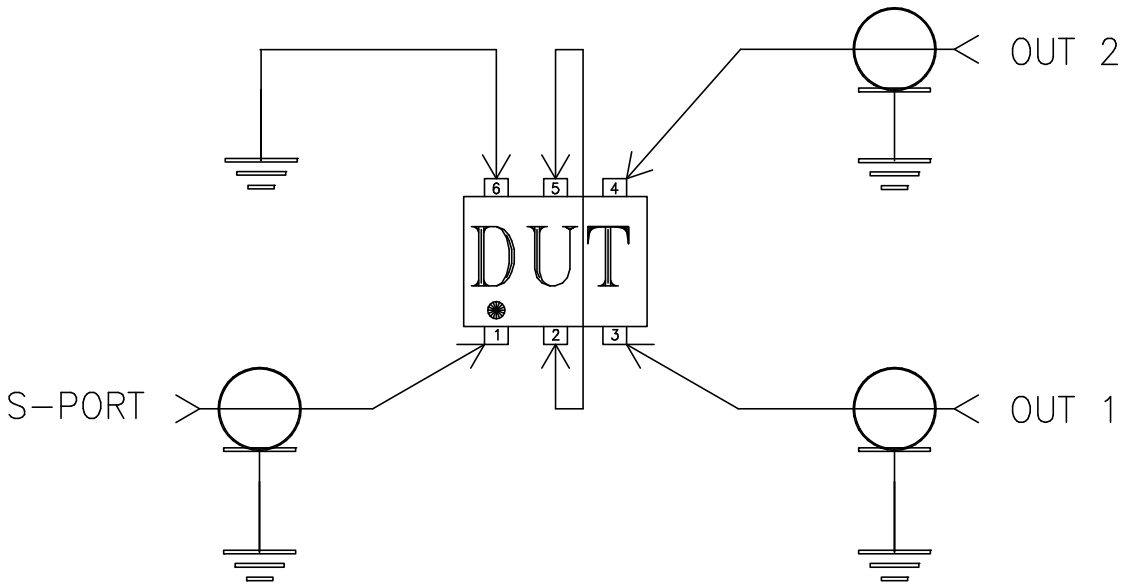
| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---|---|---|---|
| A | 15542 | 98-PL-116 | A |

| FILE: | SCALE: | SHEET: |
|---|---|---|
| 98PL116 | 10:1 | 1 OF 1 |

# Evaluation Board and Circuit




TB-208




Schematic Diagram

## Notes:

1. 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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