

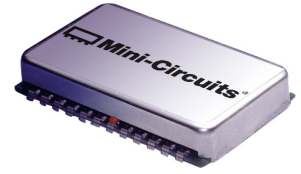
Surface Mount

Power Splitter/Combiner

NON-CATALOG

JEPS-16-1W

16 Way-0° 50Ω 5 to 1000 MHz



CASE STYLE: BL372

Maximum Ratings

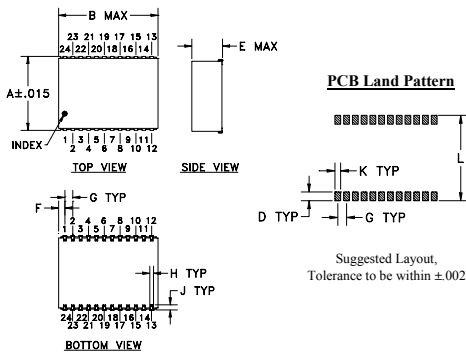
| | |
|-----------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Power Input (as a splitter) | 0.5W max. |
| Internal Dissipation | 1.875W max. |

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

Pin Connections

| | | | |
|----------|----|---------|------------------|
| SUM PORT | 18 | PORT 9 | 13 |
| PORT 1 | 2 | PORT 10 | 14 |
| PORT 2 | 3 | PORT 11 | 15 |
| PORT 3 | 4 | PORT 12 | 16 |
| PORT 4 | 5 | PORT 13 | 20 |
| PORT 5 | 9 | PORT 14 | 21 |
| PORT 6 | 10 | PORT 15 | 22 |
| PORT 7 | 11 | PORT 16 | 23 |
| PORT 8 | 12 | GROUND | 1,6,7,8,17,19,24 |

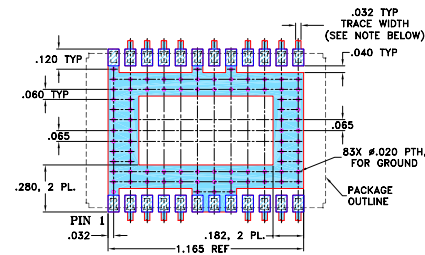
Outline Drawing



Outline Dimensions (inch/mm)

| A | B | C | D | E | F |
|-------|-------|------|------|-------|-------|
| .940 | 1.426 | -- | .100 | .250 | .163 |
| 23.88 | 36.22 | -- | 2.54 | 6.35 | 4.14 |
| G | H | J | K | L | wt |
| .100 | .047 | .065 | .065 | .970 | grams |
| 2.54 | 1.19 | 1.65 | 1.65 | 24.64 | 6.4 |

Demo Board MCL P/N: TB-135 Suggested PCB Layout (PL-090)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.0307 ± 0.0027. 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

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-Circuit's 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-Circuit's website at www.minicircuits.com/WCLStore/terms.jsp

Features

- wideband, 5 to 1000 MHz
- good VSWR, 1.2 typ.
- good isolation, 23 dB typ.
- shielded metal case
- J-leads for good solderability and strain relief
- aqueous washable
- protected by U.S Patent 6,963,255

Applications

- clock distribution
- cellular

Electrical Specifications

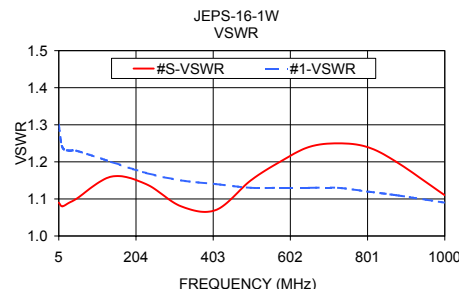
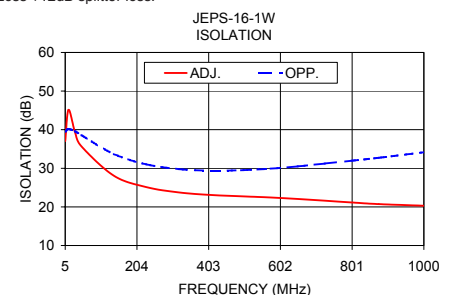
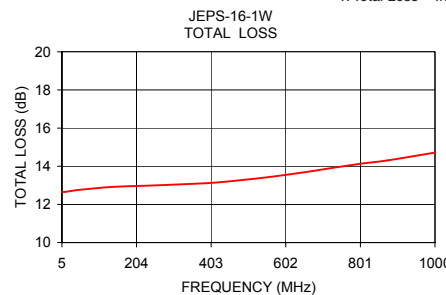
| FREQ. RANGE (MHz) | ISOLATION (dB) | | | | | | INSERTION LOSS (dB) ABOVE 12 dB | | | | | | PHASE UNBALANCE (Degrees) | | | AMPLITUDE UNBALANCE (dB) | | | VSWR (:1) | |
|-------------------|----------------|-----|------|-----|------|-----|---------------------------------|------|------|------|------|------|---------------------------|------|------|--------------------------|------|------|-----------|------|
| | L | | M | | U | | L | | M | | U | | L | M | U | L | M | U | S | OUT |
| f_L - f_U | Typ. | Min | Typ. | Min | Typ. | Min | Typ. | Max. | Typ. | Max. | Typ. | Max. | Max. | Max. | Max. | Max. | Max. | Max. | Typ. | Typ. |
| 5-1000 | 36 | 23 | 23 | 17 | 20 | 15 | 0.8 | 2.0 | 1.5 | 2.5 | 3.0 | 4.2 | 8 | 13 | 20 | 1.5 | 1.2 | 1.8 | 1.2 | 1.2 |

L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]

Typical Performance Data

| Freq. (MHz) | Total Loss ¹ (dB) | Amplitude Unbalance (dB) | Isolation (dB) | | Phase Unbalance (deg.) | VSWR S | VSWR OUT |
|-------------|------------------------------|--------------------------|----------------|----------|------------------------|--------|----------|
| | | | Adjacent | Opposite | | | |
| 5.00 | 12.65 | 0.71 | 37.04 | 39.47 | 1.56 | 1.09 | 1.30 |
| 14.00 | 12.66 | 0.66 | 45.14 | 40.14 | 0.51 | 1.08 | 1.24 |
| 32.00 | 12.71 | 0.63 | 39.39 | 39.61 | 0.34 | 1.09 | 1.23 |
| 50.00 | 12.76 | 0.64 | 35.69 | 38.58 | 0.71 | 1.10 | 1.23 |
| 140.00 | 12.92 | 0.64 | 28.07 | 33.68 | 2.06 | 1.16 | 1.20 |
| 230.00 | 12.98 | 0.70 | 25.13 | 31.03 | 2.97 | 1.14 | 1.17 |
| 320.00 | 13.05 | 0.77 | 23.75 | 29.80 | 3.41 | 1.08 | 1.15 |
| 410.00 | 13.14 | 0.74 | 23.08 | 29.39 | 4.59 | 1.07 | 1.14 |
| 500.00 | 13.31 | 0.58 | 22.73 | 29.52 | 5.75 | 1.15 | 1.13 |
| 575.00 | 13.48 | 0.37 | 22.43 | 29.92 | 6.57 | 1.20 | 1.13 |
| 650.00 | 13.68 | 0.42 | 22.06 | 30.50 | 7.25 | 1.24 | 1.13 |
| 725.00 | 13.91 | 0.54 | 21.62 | 31.22 | 7.63 | 1.25 | 1.13 |
| 800.00 | 14.13 | 0.61 | 21.14 | 31.98 | 7.58 | 1.24 | 1.12 |
| 875.00 | 14.31 | 0.63 | 20.72 | 32.72 | 9.11 | 1.20 | 1.11 |
| 1000.00 | 14.72 | 0.55 | 20.30 | 34.16 | 11.29 | 1.11 | 1.09 |

1. Total Loss = Insertion Loss + 12dB splitter loss.



electrical schematic



16 Way-0° Power Splitter/Combiner

JEPS-16-1W

Typical Performance Data

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | AMP. UNBAL. (dB) | ISOLATION (dB) | | PHASE UNBAL. (deg.) | FREQ. (MHz) | VSWR (:1) | |
|----------------|------------------------------------|------------------------|-------------------|----------|---------------------------|----------------|--------------|---------|
| | | | Adjacent | Opposite | | | S | OUTPUTS |
| 5.0 | 12.65 | 0.71 | 37.04 | 39.47 | 1.56 | 5.0 | 1.09 | 1.30 |
| 14.0 | 12.66 | 0.66 | 45.14 | 40.14 | 0.51 | 14.0 | 1.08 | 1.24 |
| 23.0 | 12.69 | 0.64 | 42.37 | 40.00 | 0.50 | 23.0 | 1.08 | 1.23 |
| 32.0 | 12.71 | 0.63 | 39.39 | 39.61 | 0.34 | 32.0 | 1.09 | 1.23 |
| 41.0 | 12.73 | 0.64 | 37.26 | 39.15 | 0.55 | 41.0 | 1.10 | 1.23 |
| 50.0 | 12.76 | 0.64 | 35.69 | 38.58 | 0.71 | 50.0 | 1.10 | 1.23 |
| 80.0 | 12.82 | 0.63 | 32.04 | 36.72 | 1.27 | 80.0 | 1.13 | 1.22 |
| 110.0 | 12.86 | 0.64 | 29.71 | 35.06 | 1.63 | 110.0 | 1.15 | 1.21 |
| 140.0 | 12.92 | 0.64 | 28.07 | 33.68 | 2.06 | 140.0 | 1.16 | 1.20 |
| 170.0 | 12.94 | 0.63 | 26.84 | 32.58 | 2.45 | 170.0 | 1.16 | 1.19 |
| 200.0 | 12.96 | 0.66 | 25.88 | 31.70 | 2.76 | 200.0 | 1.15 | 1.18 |
| 230.0 | 12.98 | 0.70 | 25.13 | 31.03 | 2.97 | 230.0 | 1.14 | 1.17 |
| 260.0 | 13.02 | 0.73 | 24.55 | 30.50 | 3.23 | 260.0 | 1.12 | 1.16 |
| 290.0 | 13.01 | 0.74 | 24.08 | 30.09 | 3.33 | 290.0 | 1.10 | 1.16 |
| 320.0 | 13.05 | 0.77 | 23.75 | 29.80 | 3.41 | 320.0 | 1.08 | 1.15 |
| 350.0 | 13.08 | 0.76 | 23.47 | 29.59 | 3.80 | 350.0 | 1.06 | 1.14 |
| 380.0 | 13.11 | 0.75 | 23.24 | 29.43 | 4.20 | 380.0 | 1.06 | 1.14 |
| 410.0 | 13.14 | 0.74 | 23.08 | 29.39 | 4.59 | 410.0 | 1.07 | 1.14 |
| 440.0 | 13.20 | 0.70 | 22.95 | 29.39 | 5.02 | 440.0 | 1.10 | 1.13 |
| 470.0 | 13.23 | 0.64 | 22.80 | 29.40 | 5.41 | 470.0 | 1.12 | 1.13 |
| 500.0 | 13.31 | 0.58 | 22.73 | 29.52 | 5.75 | 500.0 | 1.15 | 1.13 |
| 525.0 | 13.36 | 0.51 | 22.64 | 29.63 | 6.08 | 525.0 | 1.17 | 1.13 |
| 550.0 | 13.41 | 0.44 | 22.52 | 29.75 | 6.36 | 550.0 | 1.19 | 1.13 |
| 575.0 | 13.48 | 0.37 | 22.43 | 29.92 | 6.57 | 575.0 | 1.20 | 1.13 |
| 600.0 | 13.56 | 0.35 | 22.33 | 30.10 | 6.81 | 600.0 | 1.22 | 1.13 |
| 625.0 | 13.61 | 0.37 | 22.20 | 30.32 | 7.09 | 625.0 | 1.23 | 1.13 |
| 650.0 | 13.68 | 0.42 | 22.06 | 30.50 | 7.25 | 650.0 | 1.24 | 1.13 |
| 675.0 | 13.75 | 0.47 | 21.91 | 30.72 | 7.32 | 675.0 | 1.24 | 1.13 |
| 700.0 | 13.84 | 0.50 | 21.77 | 30.97 | 7.45 | 700.0 | 1.24 | 1.13 |
| 725.0 | 13.91 | 0.54 | 21.62 | 31.22 | 7.63 | 725.0 | 1.25 | 1.13 |
| 750.0 | 13.97 | 0.59 | 21.45 | 31.46 | 7.71 | 750.0 | 1.24 | 1.12 |
| 775.0 | 14.04 | 0.61 | 21.28 | 31.70 | 7.62 | 775.0 | 1.24 | 1.12 |
| 800.0 | 14.13 | 0.61 | 21.14 | 31.98 | 7.58 | 800.0 | 1.24 | 1.12 |
| 825.0 | 14.20 | 0.61 | 21.01 | 32.23 | 8.31 | 825.0 | 1.23 | 1.12 |
| 850.0 | 14.25 | 0.63 | 20.86 | 32.48 | 8.95 | 850.0 | 1.22 | 1.11 |
| 875.0 | 14.31 | 0.63 | 20.72 | 32.72 | 9.11 | 875.0 | 1.20 | 1.11 |
| 900.0 | 14.42 | 0.58 | 20.65 | 33.05 | 9.55 | 900.0 | 1.19 | 1.10 |
| 925.0 | 14.49 | 0.55 | 20.56 | 33.34 | 10.40 | 925.0 | 1.17 | 1.10 |
| 950.0 | 14.53 | 0.57 | 20.44 | 33.66 | 10.84 | 950.0 | 1.15 | 1.10 |
| 975.0 | 14.61 | 0.55 | 20.34 | 33.87 | 10.91 | 975.0 | 1.13 | 1.09 |
| 1000.0 | 14.72 | 0.55 | 20.30 | 34.16 | 11.29 | 1000.0 | 1.11 | 1.09 |

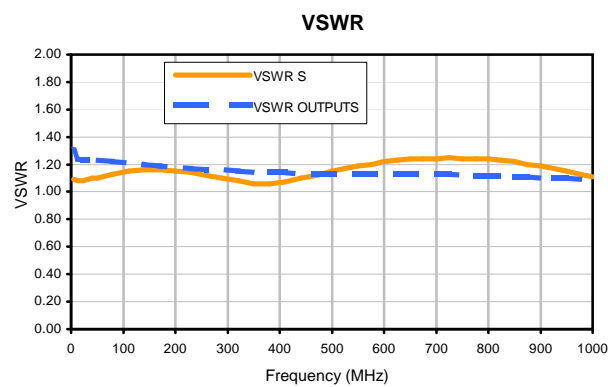
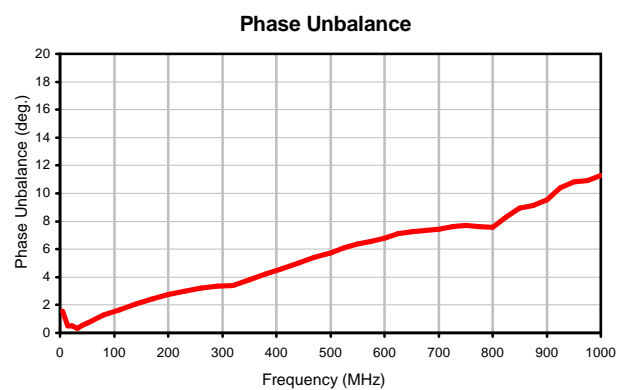
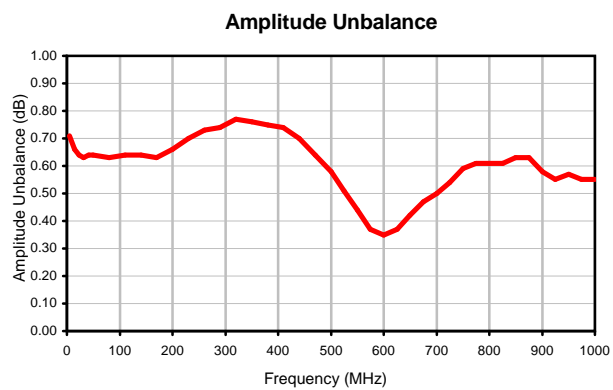
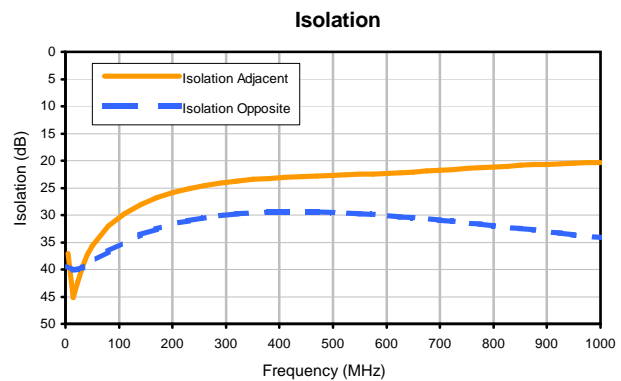
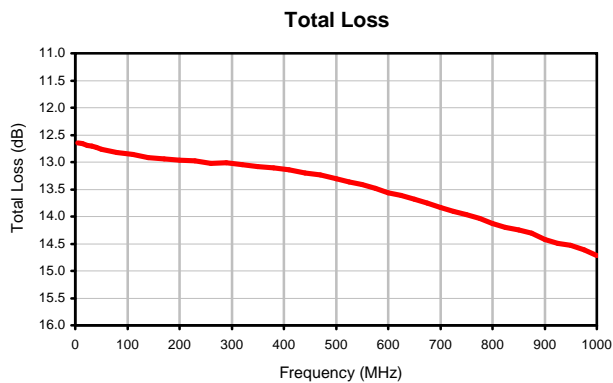
¹Total Loss = Insertion Loss + 12dB Splitter Loss



16 Way-0° Power Splitter/Combiner

JEPS-16-1W

Typical Performance Curves



REV. X2
JEPS-16-1W
100623
Page 1 of 1



IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

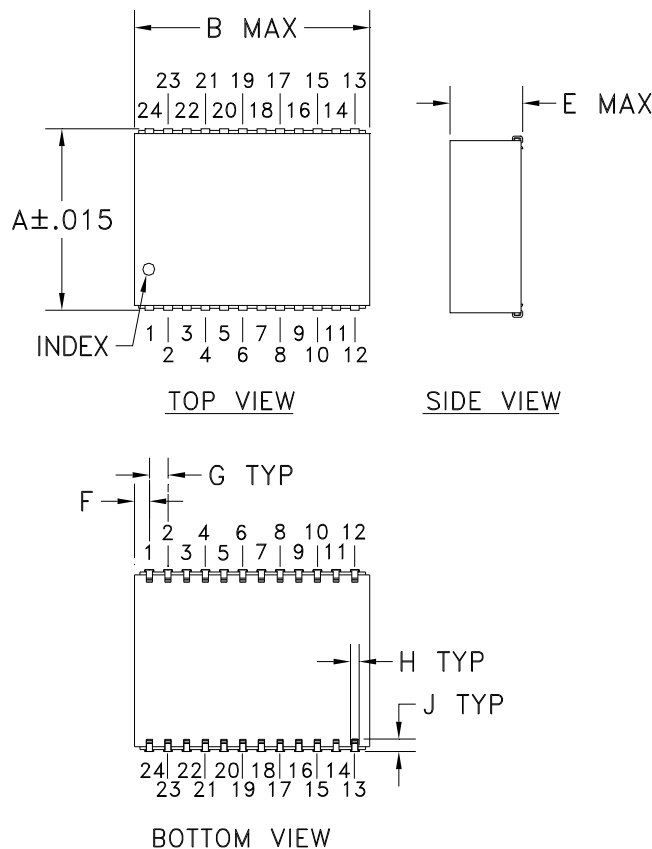


The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see

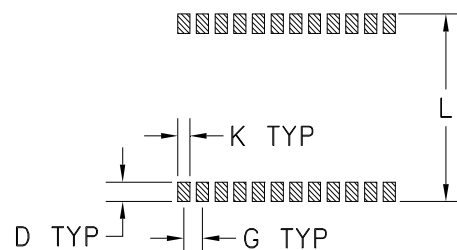


Outline Dimensions

BL372



PCB Land Pattern



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

| CASE # | A | B | C | D | E | F | G | H | J | K | L | WT. GRAM |
|--------|-----------------|------------------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------|
| BL372 | .940 (23.88) | 1.426 (36.22) | -- -- | .100 (2.54) | .250 (6.35) | .163 (4.14) | .100 (2.54) | .047 (1.19) | .065 (1.65) | .065 (1.65) | .970 (24.64) | 6.4 |

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

Notes:

- Case material: Copper-Nickel alloy.
- Base material: Printed wiring laminate.
- 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.



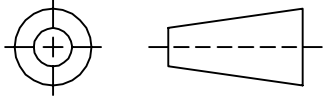
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

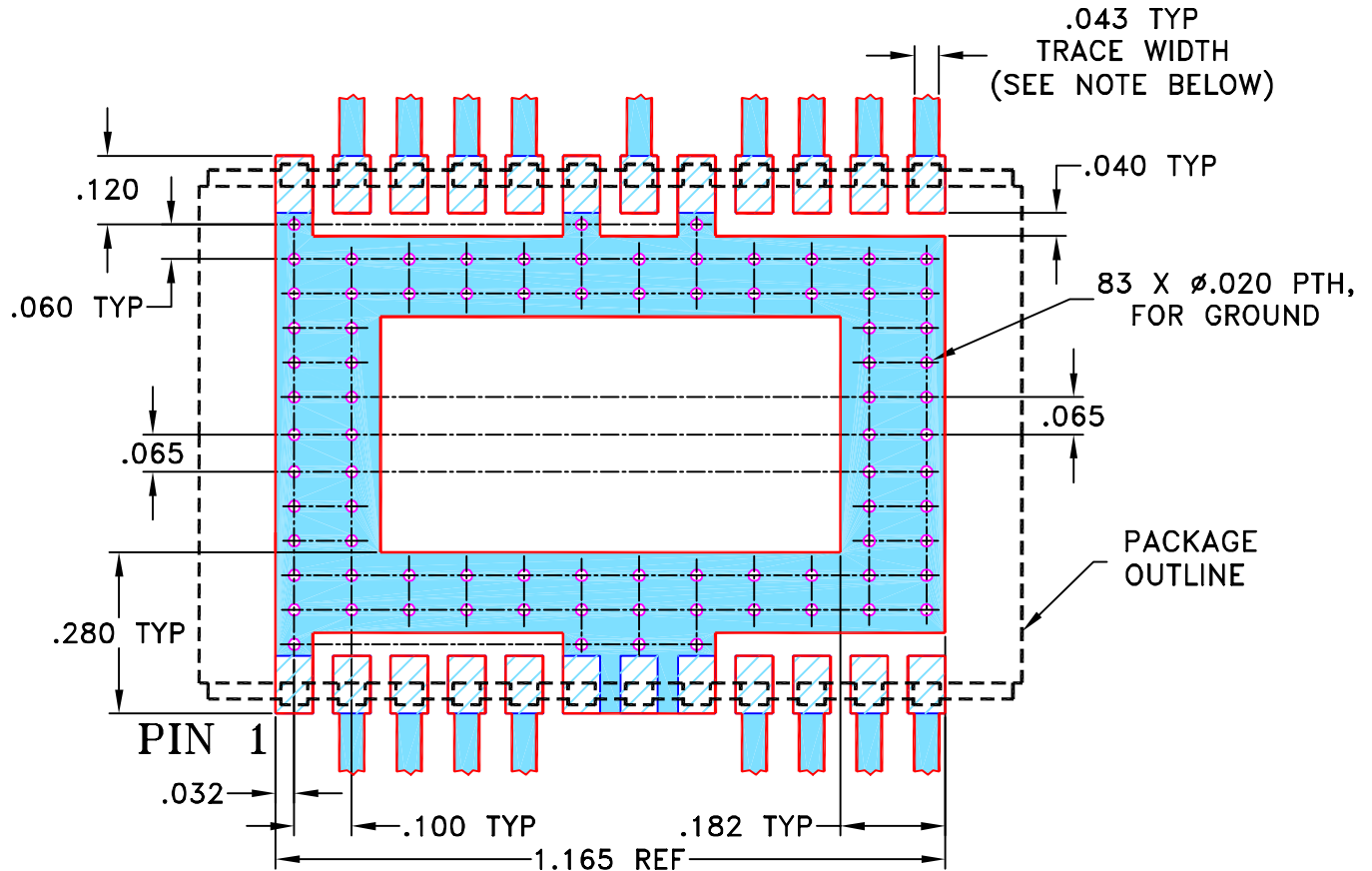
THIRD ANGLE PROJECTION



REVISIONS

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

SUGGESTED MOUNTING CONFIGURATION FOR
BL372 CASE STYLE, "kf" PIN CONNECTION



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 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 | DRAWN GF | 07/23/02 |
| TOLERANCES ON: | CHECKED HY | 08/06/02 |
| 2 PL DECIMALS ± | APPROVED DJ | 08/06/02 |
| 3 PL DECIMALS ± .005 | | |
| ANGLES ± | | |
| FRACTIONS ± | | |

Mini-Circuits[®] 13 Neptune Avenue
Brooklyn NY 11235

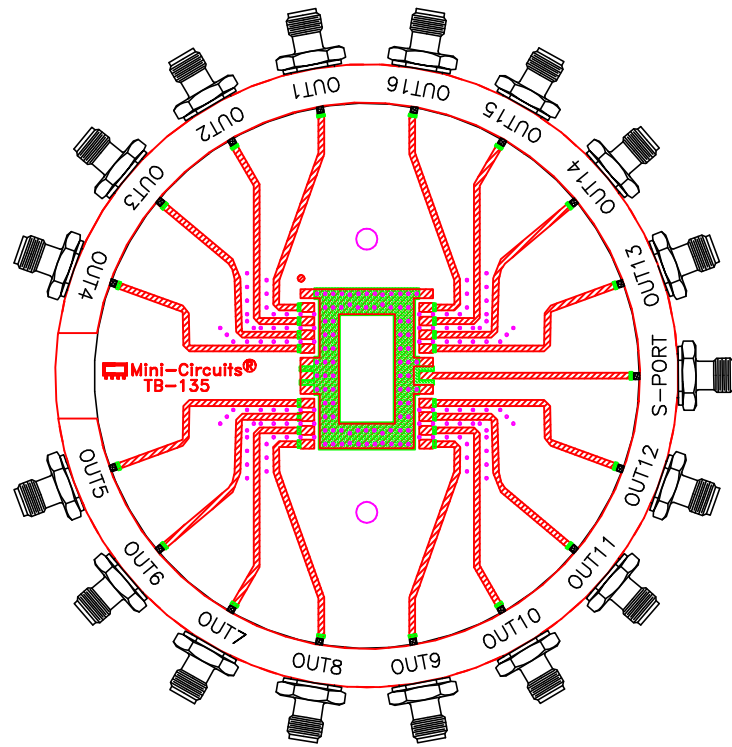
PL, kf, BL372, JEPS, TB-135

Mini-Circuits[®]
THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

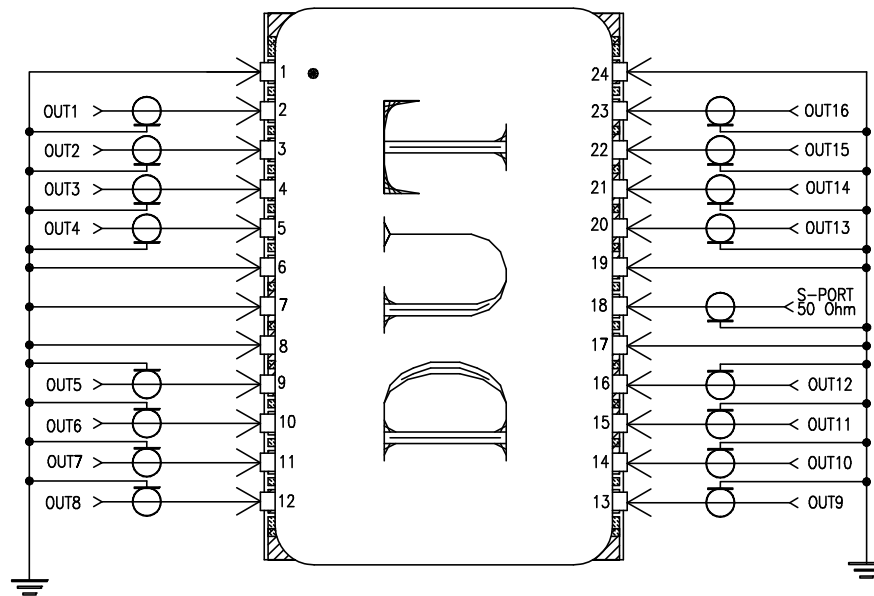
ASHEETA1.DWG REV:A DATE:01/12/95

| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---------------|------------|---------------|------|
| A | 15542 | 98-PL-090 | A |
| FILE: 98PL090 | SCALE: 3:1 | SHEET: 1 OF 1 | |

Evaluation Board and Circuit




TB-135



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

 **Mini-Circuits®**



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 Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C 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 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; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215 |