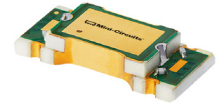


High Power Bi-Directional Coupler

SYBD-24-142HP+

50Ω 24dB Coupling DC Pass 960 to 1400 MHz



Generic photo used for illustration purposes only

CASE STYLE: JB1233

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

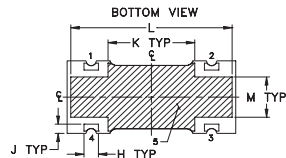
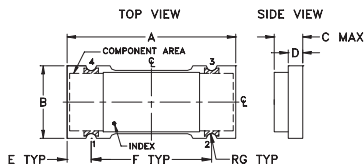
| | |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| DC Current | 2A |

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

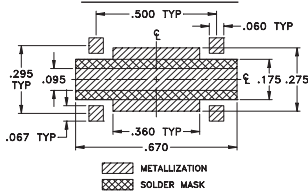
Pin Connections

| | |
|-------------------|---|
| INPUT | 1 |
| OUTPUT | 2 |
| COUPLED (forward) | 4 |
| COUPLED (reverse) | 3 |
| GROUND | 5 |

Outline Drawing



PCB Land Pattern



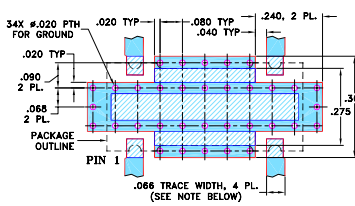
Suggested Layout,
Tolerance to be within ±0.02

Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G |
|-------|------|------|------|------|-------|------|
| .70 | .32 | .13 | .060 | .100 | .500 | .022 |
| 17.78 | 8.13 | 3.30 | 1.52 | 2.54 | 12.70 | 0.56 |

| H | J | K | L | M | wt |
|------|------|------|-------|------|-------|
| .060 | .040 | .360 | .670 | .175 | grams |
| 1.52 | 1.02 | 9.14 | 17.02 | 4.45 | 0.68 |

Demo Board MCL P/N: TB-398 Suggested PCB Layout (PL-260)



- 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

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

- high power handling, 50 watts
- low mainline loss, 0.04 dB typ.
- excellent VSWR, 1.15:1 typ.
- excellent directivity 25 dB typ.
- wideband frequency, 960 to 1400 MHz

Applications

- GPS
- defense communications

Bi-Directional Coupler Electrical Specifications

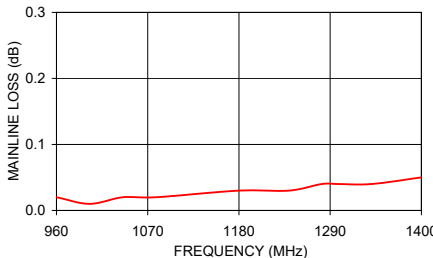
| FREQ. (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | DIRECTIVITY (dB) | | VSWR (:1) | POWER INPUT (W) |
|---------------|---------------|----------|---------------------------------|------|------------------|------|-----------|-----------------|
| | Nom. | Flatness | Typ. | Max. | Typ. | Min. | | |
| f_L - f_U | | | | | | | | |
| 960-1400 | | | 0.04 | 0.30 | 25 | 17 | 1.15 | |
| 960-1240 | 24.8±0.8 | ±1.2 | 0.04 | 0.25 | 26 | 18 | 1.15 | 50 |
| 1240-1400 | 23.2±0.8 | ±0.7 | 0.05 | 0.30 | 24 | 17 | 1.15 | 50 |

1. Mainline loss includes theoretical power loss at coupled port.

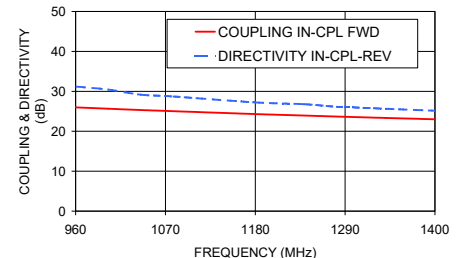
Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) | | Coupling (dB) | | Directivity (dB) | | Return Loss (dB) | | |
|-----------------|--------------------|------------|---------------|-------------|------------------|-------|------------------|---------|---------|
| | In-Out | In-Cpl Fwd | Out-Cpl Rev | Out-Cpl Fwd | In-Cpl Rev | In | Out | Cpl Fwd | Cpl Rev |
| 960.00 | 0.02 | 25.98 | 26.00 | 29.78 | 31.19 | 37.45 | 33.59 | 39.26 | 36.79 |
| 1000.00 | 0.01 | 25.65 | 25.67 | 28.84 | 30.44 | 35.49 | 32.57 | 37.59 | 35.15 |
| 1040.00 | 0.02 | 25.32 | 25.34 | 28.31 | 29.15 | 33.39 | 31.25 | 36.91 | 34.33 |
| 1080.00 | 0.02 | 25.02 | 25.04 | 27.73 | 28.70 | 32.16 | 30.39 | 35.34 | 33.49 |
| 1180.00 | 0.03 | 24.31 | 24.34 | 26.37 | 27.22 | 29.13 | 28.08 | 32.71 | 31.38 |
| 1240.00 | 0.03 | 23.94 | 23.97 | 25.90 | 26.79 | 27.85 | 27.07 | 31.20 | 29.91 |
| 1280.00 | 0.04 | 23.69 | 23.71 | 25.45 | 26.12 | 27.03 | 26.37 | 30.45 | 29.60 |
| 1300.00 | 0.04 | 23.57 | 23.59 | 25.29 | 25.99 | 26.78 | 26.07 | 30.20 | 29.46 |
| 1340.00 | 0.04 | 23.34 | 23.36 | 24.95 | 25.64 | 26.17 | 25.68 | 29.59 | 28.67 |
| 1400.00 | 0.05 | 23.00 | 23.02 | 24.67 | 25.14 | 25.39 | 24.98 | 28.86 | 28.19 |

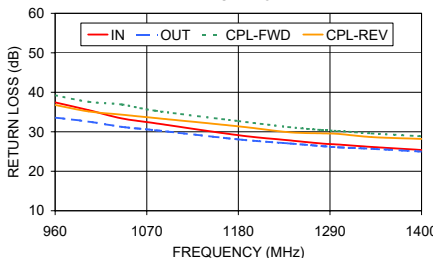
SYBD-24-142HP+
MAINLINE LOSS



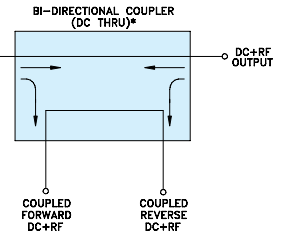
SYBD-24-142HP+
COUPLING & DIRECTIVITY



SYBD-24-142HP+
RETURN LOSS



Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

