

# High Power Bi-Directional Coupler

50Ω 16dB Coupling DC Pass 1400 to 1750 MHz

SYBD-16-172HP+



CASE STYLE: JB1233

PRICE: \$29.95 ea. QTY (1-9)

## +RoHS Compliant

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

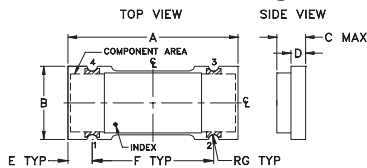
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| 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. |                |

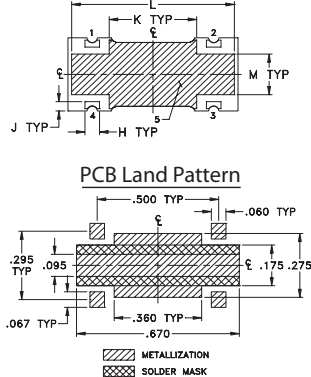
## Pin Connections

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

## Outline Drawing



## PCB Land Pattern

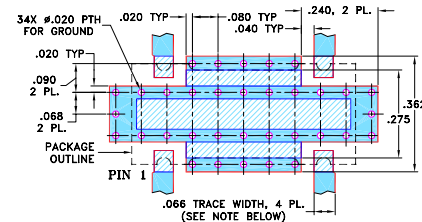


Suggested Layout,  
Tolerance to be within ±0.02

## 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

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

## Features

- high power handling, 50 watts max.
- low mainline loss, 0.22 dB typ.
- excellent VSWR, 1.10:1 typ.
- excellent directivity, 23 dB typ.
- wideband frequency, 1400 to 1750 MHz

## Applications

- GPS
- instrumentation
- defense communications

## Bi-Directional Coupler Electrical Specifications

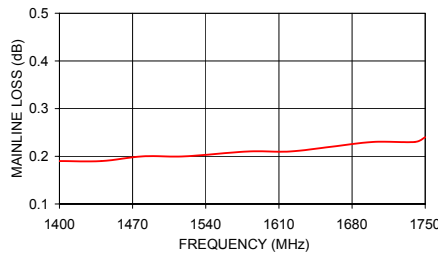
| FREQ.<br>(MHz) | COUPLING<br>(dB) |          | MAINLINE LOSS <sup>1</sup><br>(dB) |      | DIRECTIVITY<br>(dB) |      | VSWR<br>(:1) | POWER<br>INPUT<br>(W) |
|----------------|------------------|----------|------------------------------------|------|---------------------|------|--------------|-----------------------|
|                | Nom.             | Flatness | Typ.                               | Max. | Typ.                | Min. |              |                       |
| 1400-1750      |                  |          | 0.22                               | 0.5  | 23                  | 18   | 1.10         |                       |
| 1400-1580      | 17.0±0.7         | ±0.7     | 0.20                               | 0.45 | 23                  | 18   | 1.10         | 50                    |
| 1580-1750      | 16.0±0.7         | ±0.6     | 0.22                               | 0.50 | 23                  | 17   | 1.10         | 25                    |

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

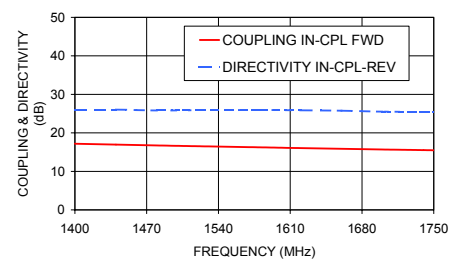
## Typical Performance Data

| Frequency<br>(MHz) | Mainline Loss<br>(dB) |            | Coupling<br>(dB) |             | Directivity<br>(dB) |       | Return Loss<br>(dB) |         |         |
|--------------------|-----------------------|------------|------------------|-------------|---------------------|-------|---------------------|---------|---------|
|                    | In-Out                | In-Cpl Fwd | Out-Cpl Rev      | Out-Cpl Fwd | In-Cpl Rev          | In    | Out                 | Cpl Fwd | Cpl Rev |
| 1400.00            | 0.19                  | 17.18      | 17.13            | 24.96       | 26.06               | 29.33 | 26.82               | 32.71   | 33.70   |
| 1440.00            | 0.19                  | 16.96      | 16.90            | 24.98       | 26.04               | 30.09 | 27.42               | 33.65   | 34.76   |
| 1480.00            | 0.20                  | 16.74      | 16.69            | 25.00       | 25.82               | 31.14 | 28.29               | 35.49   | 37.02   |
| 1520.00            | 0.20                  | 16.54      | 16.49            | 25.14       | 25.87               | 32.58 | 29.43               | 37.65   | 40.00   |
| 1580.00            | 0.21                  | 16.24      | 16.19            | 25.05       | 25.94               | 34.80 | 31.26               | 42.49   | 45.85   |
| 1620.00            | 0.21                  | 16.04      | 15.99            | 25.20       | 25.85               | 36.75 | 33.41               | 44.47   | 44.86   |
| 1660.00            | 0.22                  | 15.86      | 15.81            | 25.10       | 25.75               | 37.67 | 35.64               | 43.01   | 42.20   |
| 1700.00            | 0.23                  | 15.69      | 15.64            | 24.79       | 25.51               | 37.14 | 38.63               | 40.47   | 39.42   |
| 1740.00            | 0.23                  | 15.52      | 15.47            | 24.88       | 25.47               | 34.91 | 42.40               | 36.76   | 35.45   |
| 1750.00            | 0.24                  | 15.48      | 15.44            | 24.90       | 25.49               | 34.46 | 42.66               | 36.15   | 34.86   |

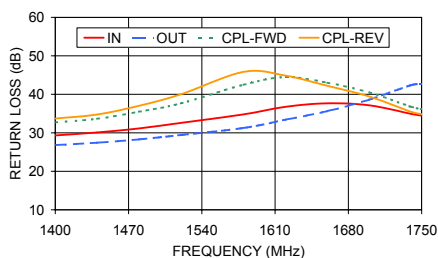
SYBD-16-172HP+  
MAINLINE LOSS



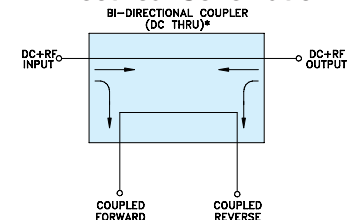
SYBD-16-172HP+  
COUPLING & DIRECTIVITY



SYBD-16-172HP+  
RETURN LOSS



## Electrical Schematic



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

For detailed performance specs & shipping online see web site

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