

High Power

# Bi-Directional Coupler

SYBD-20-272HP+

50Ω 20dB Coupling DC Pass 1750 to 2700 MHz

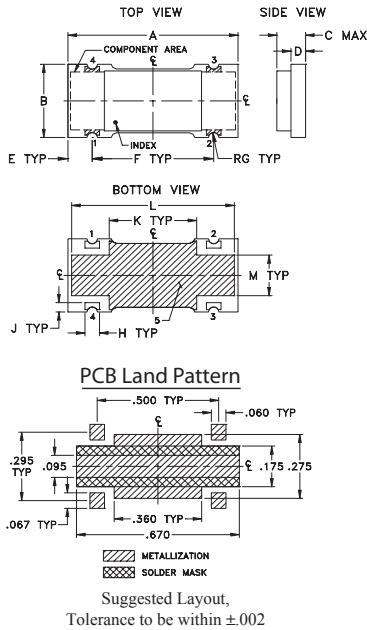
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| 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 |

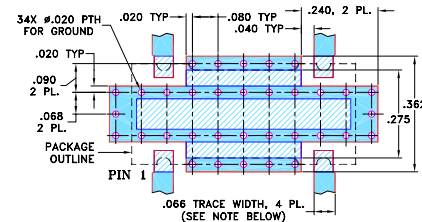
## Outline Drawing



## 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

## Features

- high power handling, 25 watts
- low mainline loss, 0.12 dB typ.
- excellent VSWR, 1.15:1 typ.
- good directivity 22 dB typ.
- wideband frequency, 1750 to 2700 MHz

## Applications

- PCS
- ISM
- cable TV relay
- defense communications
- federal communications

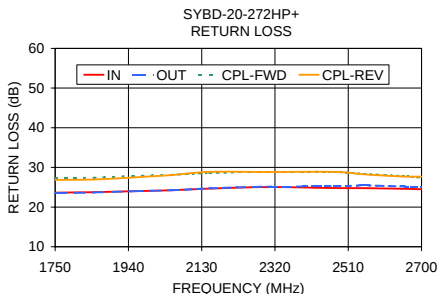
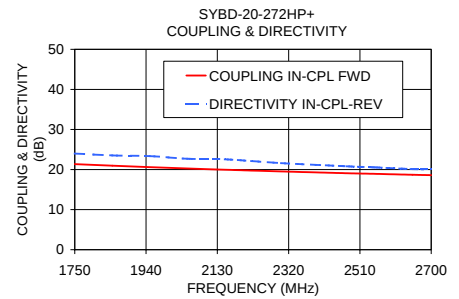
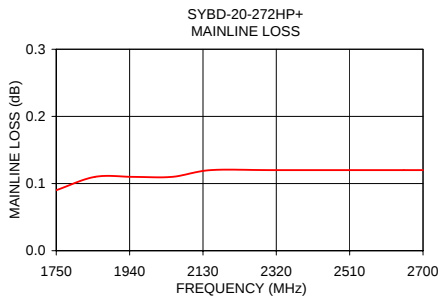
## Bi-Directional Coupler Electrical Specifications

| FREQ. (MHz) | COUPLING (dB) |          | MAINLINE LOSS <sup>1</sup> (dB) |      | DIRECTIVITY (dB) |      | VSWR (:1) | POWER INPUT (W) |
|-------------|---------------|----------|---------------------------------|------|------------------|------|-----------|-----------------|
| $f_c - f_u$ | Nom.          | Flatness | Typ.                            | Max. | Typ.             | Min. | Typ.      | Max.            |
| 1750-2700   |               |          | 0.12                            | 0.40 | 22               | 14   | 1.15      |                 |
| 1750-1950   | 20.7±0.7      | ±0.5     | 0.11                            | 0.35 | 23               | 16   | 1.10      | 25              |
| 1950-2300   | 19.8±0.8      | ±0.7     | 0.12                            | 0.35 | 22               | 15   | 1.15      | 25              |
| 2300-2700   | 18.8±0.8      | ±0.6     | 0.12                            | 0.40 | 20               | 14   | 1.15      | 25              |

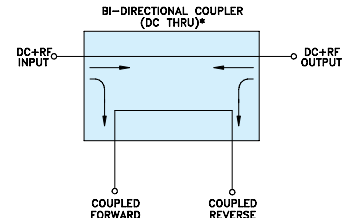
1. Mainline loss includes theoretical power loss at coupled port.

## 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 |
| 1750.00         | 0.09               | 21.35         | 21.36       | 23.73            | 24.00      | 23.64            | 23.52 | 27.29   | 26.85   |
| 1850.00         | 0.11               | 20.96         | 20.97       | 23.49            | 23.53      | 23.75            | 23.68 | 27.39   | 26.94   |
| 1950.00         | 0.11               | 20.59         | 20.60       | 23.48            | 23.35      | 23.99            | 23.98 | 27.80   | 27.45   |
| 2050.00         | 0.11               | 20.27         | 20.28       | 22.95            | 22.69      | 24.24            | 24.24 | 28.13   | 28.07   |
| 2150.00         | 0.12               | 19.96         | 19.96       | 22.75            | 22.55      | 24.66            | 24.72 | 28.57   | 28.86   |
| 2300.00         | 0.12               | 19.54         | 19.53       | 21.93            | 21.61      | 25.04            | 25.14 | 28.86   | 28.84   |
| 2475.00         | 0.12               | 19.08         | 19.05       | 21.27            | 20.82      | 24.79            | 25.22 | 28.84   | 28.87   |
| 2550.00         | 0.12               | 18.93         | 18.89       | 21.31            | 20.53      | 24.78            | 25.45 | 28.36   | 28.26   |
| 2650.00         | 0.12               | 18.70         | 18.65       | 20.94            | 20.11      | 24.62            | 25.21 | 27.82   | 27.72   |
| 2700.00         | 0.12               | 18.60         | 18.56       | 20.62            | 20.02      | 24.50            | 25.16 | 27.41   | 27.68   |



## 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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