

# Surface Mount Directional Coupler

75Ω 5 to 1000 MHz

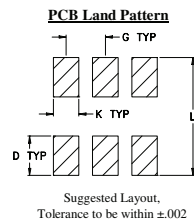
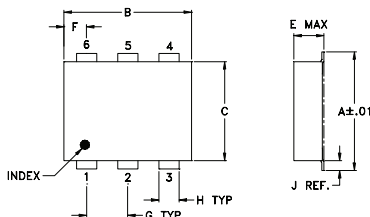
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| Permanent damage may occur if any of these limits are exceeded. |                |

## Pin Connections

|                      |   |
|----------------------|---|
| INPUT                | 1 |
| OUTPUT               | 6 |
| COUPLED              | 3 |
| GROUND               | 2 |
| 75Ω TERM EXTERNAL    | 4 |
| ISOLATE (DO NOT USE) | 5 |

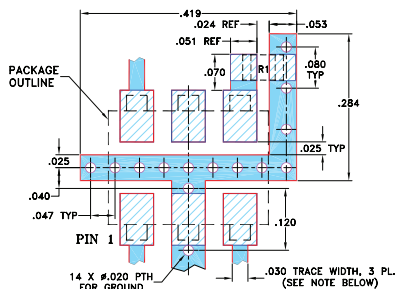
## Outline Drawing



## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E     | F    | G    |
|------|------|------|------|-------|------|------|
| .272 | .310 | .220 | .100 | .112  | .055 | .100 |
| 6.91 | 7.87 | 5.59 | 2.54 | 2.84  | 1.40 | 2.54 |
| H    | J    | K    | L    | wt    |      |      |
| .030 | .026 | .065 | .300 | grams |      |      |
| 0.76 | 0.66 | 1.65 | 7.62 | 0.20  |      |      |

## Demo Board MCL P/N: TB-08 Suggested PCB Layout (PL-042)



- 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.
  3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
  4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Features

- wideband, 5-1000 MHz
- low mainline loss, 0.5 dB typ.
- high directivity, 23 dB typ.
- excellent VSWR, 1.15:1 typ.
- excellent coupling flatness, ±0.15 dB typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

## Applications

- cable tv
- communications

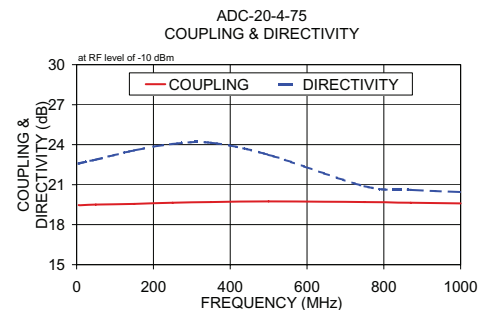
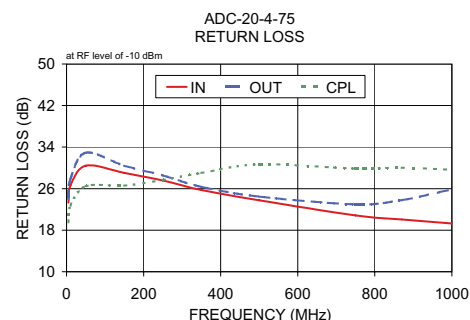
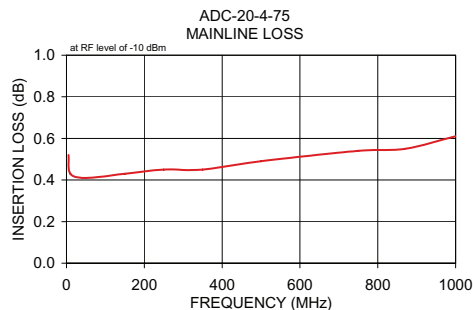
## Directional Coupler Electrical Specifications

| FREQ.<br>(MHz)                 | COUPLING<br>(dB) |          | MAINLINE LOSS <sup>1</sup><br>(dB) |           |           | DIRECTIVITY<br>(dB) |           |           | VSWR<br>(:1) | POWER<br>INPUT, W |      |
|--------------------------------|------------------|----------|------------------------------------|-----------|-----------|---------------------|-----------|-----------|--------------|-------------------|------|
|                                | Nom.             | Flatness | L                                  | M         | U         | L                   | M         | U         |              | L                 | MU   |
| f <sub>L</sub> -f <sub>U</sub> |                  |          | Typ. Max.                          | Typ. Max. | Typ. Max. | Typ. Min.           | Typ. Min. | Typ. Min. | Typ.         | Max.              | Max. |
| 5-1000                         | 19.7±0.5         | ±0.5     | 0.5 0.8                            | 0.5 1.0   | 0.6 1.2   | 22 18               | 23 15     | 20 13     | 1.15         | 1.0               | 1.0  |

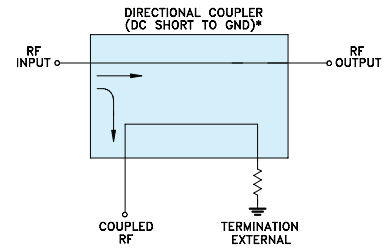
L= 5-50 MHz M= 50-500 MHz U= 500-1000 MHz  
1. Mainline loss includes theoretical power loss at coupled port.

## Typical Performance Data

| Frequency<br>(MHz) | Mainline Loss<br>(dB)<br>In-Out | Coupling<br>(dB)<br>In-Cpl | Directivity<br>(dB) | Return Loss<br>(dB) |       |
|--------------------|---------------------------------|----------------------------|---------------------|---------------------|-------|
|                    |                                 |                            |                     | In                  | Out   |
| 5.00               | 0.52                            | 19.47                      | 22.58               | 23.30               | 23.95 |
| 10.00              | 0.43                            | 19.46                      | 22.63               | 26.59               | 27.83 |
| 50.00              | 0.41                            | 19.51                      | 22.88               | 30.43               | 32.90 |
| 150.00             | 0.43                            | 19.56                      | 23.57               | 29.02               | 30.41 |
| 250.00             | 0.45                            | 19.64                      | 24.05               | 27.57               | 28.54 |
| 350.00             | 0.45                            | 19.69                      | 24.14               | 25.74               | 26.33 |
| 500.00             | 0.49                            | 19.75                      | 23.24               | 23.76               | 24.45 |
| 750.00             | 0.54                            | 19.70                      | 20.88               | 20.84               | 22.98 |
| 870.00             | 0.55                            | 19.65                      | 20.61               | 20.05               | 23.79 |
| 1000.00            | 0.61                            | 19.59                      | 20.45               | 19.28               | 25.85 |



## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

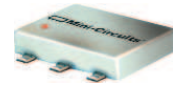
## Notes

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ADC-20-4-75+  
ADC-20-4-75



CASE STYLE: CD542  
PRICE:\$6.95 ea. QTY (10)

## +RoHS Compliant

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

| Reel Size | Devices/Reel              |
|-----------|---------------------------|
| 7"        | 10, 20, 50, 100, 200, 500 |
| 13"       | 500, 1000                 |

REV. D  
M119986  
ED-6814/1  
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