

# Surface Mount Directional Coupler

50Ω 5 to 1000 MHz

## ADC-20-4+ ADC-20-4



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

**Available Tape and Reel at no extra cost**

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

### Maximum Ratings

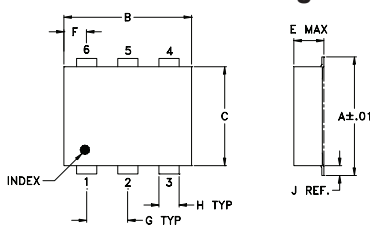
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |

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

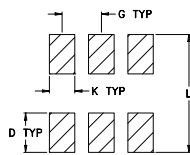
### Pin Connections

|                      |   |
|----------------------|---|
| INPUT                | 1 |
| OUTPUT               | 6 |
| COUPLED              | 3 |
| GROUND               | 2 |
| 50Ω TERM EXTERNAL    | 4 |
| ISOLATE (DO NOT USE) | 5 |

### Outline Drawing



### PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.002

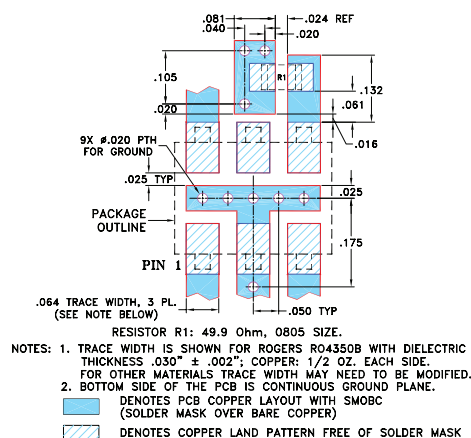
### Outline Dimensions (inch/mm)

| 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-05 Suggested PCB Layout (PL-095)



### Features

- wideband, 5-1000 MHz
- low mainline loss, 0.5 dB typ.
- high directivity, 21 dB typ.
- aqueous washable
- protected by U.S Patents 6,133,525 & 6,140,887

### Applications

- cable tv
- communications

### Directional Coupler Electrical Specifications

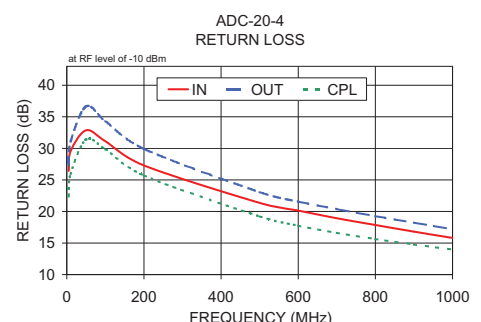
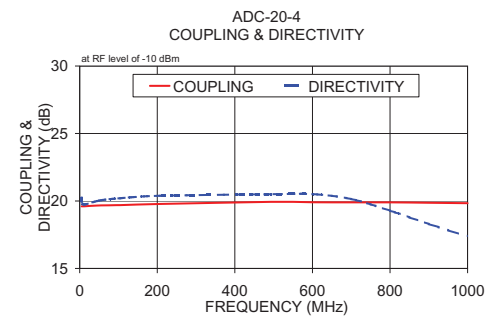
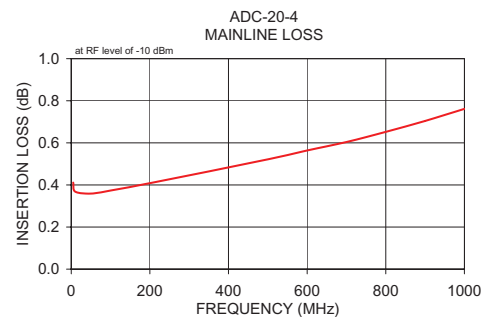
| FREQ. (MHz)                    | COUPLING (dB) |          | MAINLINE LOSS <sup>1</sup> (dB) |      |      | DIRECTIVITY (dB) |      |      | VSWR (:1) | POWER INPUT, W |      |    |    |    |     |     |     |
|--------------------------------|---------------|----------|---------------------------------|------|------|------------------|------|------|-----------|----------------|------|----|----|----|-----|-----|-----|
|                                | Nom.          | Flatness | L                               | M    | U    | L                | M    | U    |           | Typ.           | L    | MU |    |    |     |     |     |
| f <sub>c</sub> -f <sub>u</sub> |               |          | Typ.                            | Max. | Typ. | Max.             | Typ. | Max. | Typ.      | Max.           | Max. |    |    |    |     |     |     |
| 5-1000                         | 20.0±0.5      | ±0.8     | 0.4                             | 0.8  | 0.5  | 1.0              | 0.7  | 1.3  | 20        | 18             | 21   | 17 | 21 | 15 | 1.1 | 1.0 | 1.0 |

L= 5-50 MHz M= 50-500 MHz U= 500-1000 MHz

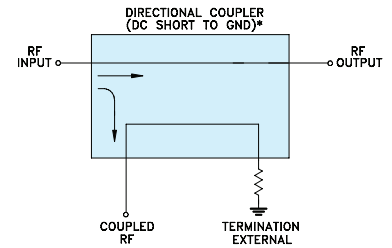
1. Mainline loss includes theoretical power loss at coupled port.

### Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) |        | Coupling (dB) | Directivity (dB) | Return Loss (dB) |       |     |
|-----------------|--------------------|--------|---------------|------------------|------------------|-------|-----|
|                 | In-Out             | In-Cpl |               |                  | In               | Out   | Cpl |
| 5.00            | 0.41               | 19.60  | 20.25         | 26.42            | 27.32            | 22.39 |     |
| 10.00           | 0.37               | 19.61  | 19.75         | 29.58            | 31.08            | 25.96 |     |
| 50.00           | 0.36               | 19.67  | 20.03         | 32.86            | 36.64            | 31.40 |     |
| 100.00          | 0.37               | 19.69  | 20.19         | 31.12            | 34.33            | 29.86 |     |
| 200.00          | 0.41               | 19.77  | 20.38         | 27.29            | 29.92            | 25.70 |     |
| 500.00          | 0.52               | 19.94  | 20.50         | 21.37            | 23.07            | 19.21 |     |
| 600.00          | 0.56               | 19.91  | 20.51         | 20.13            | 21.56            | 17.75 |     |
| 700.00          | 0.60               | 19.90  | 20.14         | 18.93            | 20.38            | 16.62 |     |
| 800.00          | 0.65               | 19.90  | 19.28         | 17.86            | 19.26            | 15.63 |     |
| 900.00          | 0.70               | 19.86  | 18.29         | 16.81            | 18.23            | 14.77 |     |
| 1000.00         | 0.76               | 19.84  | 17.38         | 15.80            | 17.18            | 13.97 |     |



### Electrical Schematic



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

For detailed performance specs & shopping online see web site

**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

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IF/RF MICROWAVE COMPONENTS

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