

# Surface Mount Directional Coupler

50Ω 5 to 1000 MHz

## ADC-15-4+ ADC-15-4



CASE STYLE: CD542

**+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

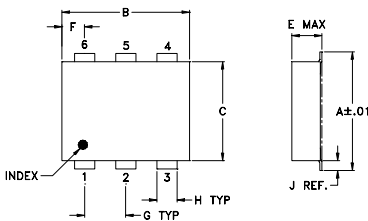
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |

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

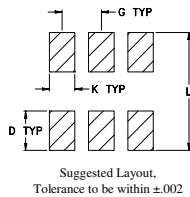
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern



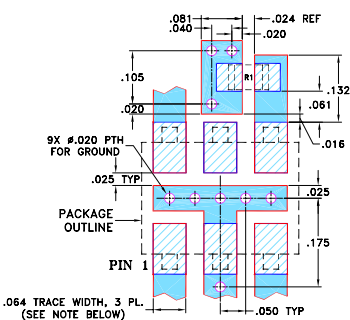
### Outline Dimensions (inch/mm)

| 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)



- 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-Circuits' applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document are subject to Mini-Circuits 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-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

### Features

- wideband, 5-1000 MHz
- low mainline loss, 0.6 dB typ.
- high directivity, 24 dB typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

### Applications

- cable tv
- communications

### Directional Coupler Electrical Specifications

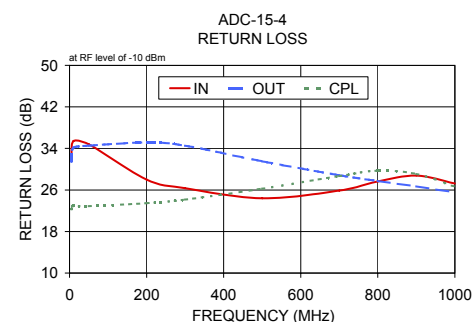
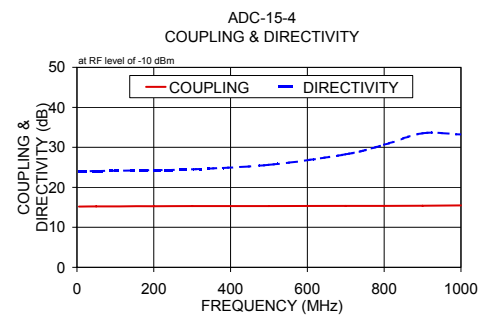
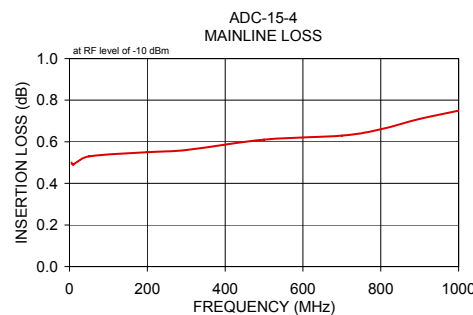
| FREQ. (MHz)                    | COUPLING (dB) |          | MAINLINE LOSS <sup>1</sup> (dB) |      |      | DIRECTIVITY (dB) |      |      | VSWR (:1) | POWER INPUT, W |      |    |    |    |      |     |     |
|--------------------------------|---------------|----------|---------------------------------|------|------|------------------|------|------|-----------|----------------|------|----|----|----|------|-----|-----|
|                                | Nom.          | Flatness | L                               | M    | U    | L                | M    | U    |           | Typ.           | L    | MU |    |    |      |     |     |
| f <sub>L</sub> -f <sub>U</sub> |               |          | Typ.                            | Max. | Typ. | Max.             | Typ. | Max. | Typ.      | Max.           | Max. |    |    |    |      |     |     |
| 5-1000                         | 15.5±0.5      | ±0.5     | 0.6                             | 1.0  | 0.6  | 1.0              | 0.8  | 1.2  | 23        | 20             | 24   | 20 | 28 | 17 | 1.20 | 1.0 | 1.0 |

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

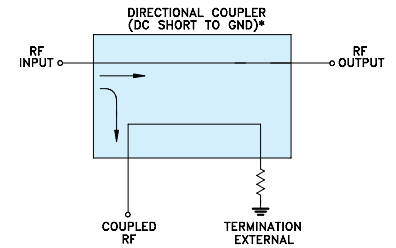
1. Mainline loss includes theoretical power loss at coupled port.

### Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) |       |       |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
|                 |                           |                      |                  | In               | Out   | Cpl   |
| 5.00            | 0.50                      | 15.21                | 24.01            | 31.88            | 31.38 | 22.25 |
| 10.00           | 0.49                      | 15.19                | 23.99            | 35.41            | 34.12 | 22.95 |
| 50.00           | 0.53                      | 15.23                | 24.08            | 34.79            | 34.52 | 22.89 |
| 200.00          | 0.55                      | 15.28                | 24.31            | 28.00            | 35.16 | 23.47 |
| 300.00          | 0.56                      | 15.30                | 24.52            | 26.35            | 34.54 | 24.15 |
| 500.00          | 0.61                      | 15.32                | 25.64            | 24.41            | 31.51 | 26.25 |
| 700.00          | 0.63                      | 15.34                | 28.27            | 25.88            | 28.84 | 28.66 |
| 800.00          | 0.66                      | 15.36                | 30.62            | 27.63            | 27.73 | 29.71 |
| 900.00          | 0.71                      | 15.42                | 33.51            | 28.77            | 26.69 | 29.10 |
| 1000.00         | 0.75                      | 15.49                | 33.23            | 27.25            | 25.54 | 26.64 |



### Electrical Schematic



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

