



**THE DATASHEET OF  
ADC-6-1R+**



# Surface Mount Directional Coupler

## ADC-6-1R+

50Ω 5 to 200 MHz

### Maximum Ratings

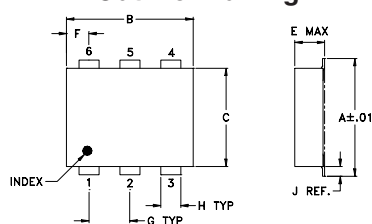
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |

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

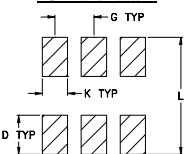
### Pin Connections

|                      |     |
|----------------------|-----|
| INPUT                | 1   |
| OUTPUT               | 6   |
| COUPLED              | 3   |
| GROUND               | 2,5 |
| ISOLATE (DO NOT USE) | 4   |

### Outline Drawing



### PCB Land Pattern

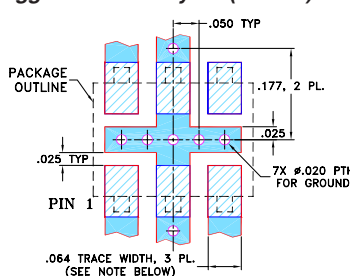


Suggested Layout,  
Tolerance to be within ±.002

### 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-32 Suggested PCB Layout (PL-094)



- NOTES:
- 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.
  - 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-Circuit's applicable established test performance criteria and measurement instructions.  
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### Features

- wideband, 5 to 200 MHz
- low mainline loss, 1.7 dB typ.
- excellent coupling flatness, ±0.1 typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

### Applications

- communications
- cable tv



Generic photo used for illustration purposes only  
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"        | 20, 50, 100, 200 |
| 13"       | 500, 1000        |

### Directional Coupler Electrical Specifications

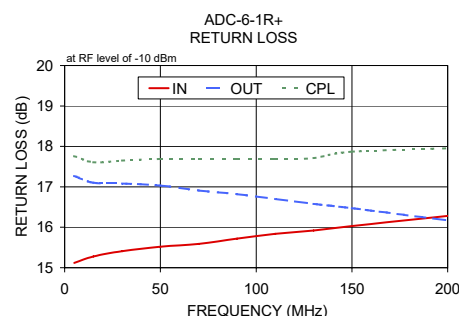
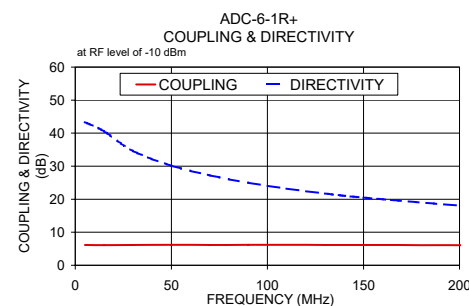
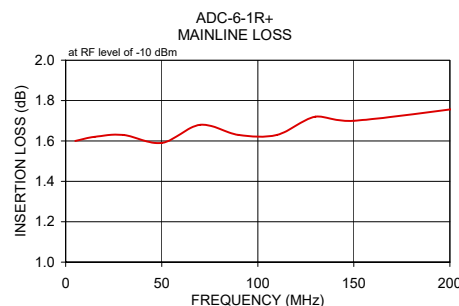
| FREQ. (MHz)                    | COUPLING (dB) |          | MAINLINE LOSS <sup>1</sup> (dB) |      |      | DIRECTIVITY (dB) |      |      | VSWR (:1) | POWER INPUT, W |      |    |    |    |      |     |     |
|--------------------------------|---------------|----------|---------------------------------|------|------|------------------|------|------|-----------|----------------|------|----|----|----|------|-----|-----|
|                                | 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. |    |    |    |      |     |     |
| 5-200                          | 6.2±0.3       | ±0.3     | 1.6                             | 2.0  | 1.7  | 2.0              | 1.7  | 2.1  | 35        | 22             | 25   | 18 | 17 | 13 | 1.33 | 0.5 | 0.5 |

L= 5-50 MHz M= 50-100 MHz U= 100-200 MHz

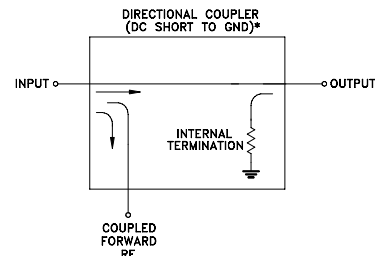
1. Mainline loss includes theoretical power loss at coupled port.

### Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) |       |       |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
|                 |                           |                      |                  | In               | Out   | Cpl   |
| 5.00            | 1.60                      | 6.15                 | 43.32            | 15.12            | 17.27 | 17.76 |
| 15.00           | 1.62                      | 6.11                 | 40.58            | 15.28            | 17.10 | 17.61 |
| 30.00           | 1.63                      | 6.14                 | 34.62            | 15.41            | 17.08 | 17.65 |
| 50.00           | 1.59                      | 6.18                 | 30.14            | 15.52            | 17.03 | 17.69 |
| 70.00           | 1.68                      | 6.13                 | 27.21            | 15.59            | 16.91 | 17.69 |
| 90.00           | 1.63                      | 6.19                 | 24.97            | 15.72            | 16.82 | 17.69 |
| 110.00          | 1.63                      | 6.19                 | 23.20            | 15.84            | 16.70 | 17.69 |
| 130.00          | 1.72                      | 6.15                 | 21.73            | 15.92            | 16.58 | 17.71 |
| 150.00          | 1.70                      | 6.17                 | 20.47            | 16.03            | 16.47 | 17.87 |
| 220.00          | 1.78                      | 6.07                 | 17.12            | 16.38            | 16.05 | 17.98 |



### Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.



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Page 1 of 1

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