

Surface Mount Directional Coupler

50Ω 5 to 1000 MHz

Maximum Ratings

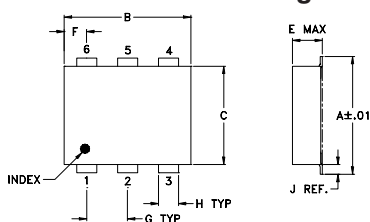
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |

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

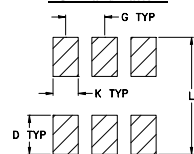
Pin Connections

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

Outline Drawing



PCB Land Pattern

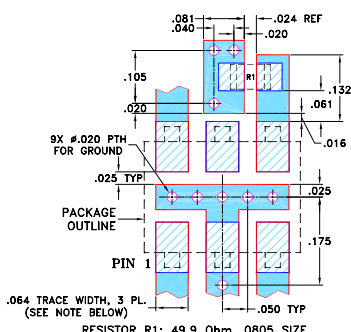


Suggested Layout,
Tolerance to be within ±.002

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)



- 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

- wideband, 5-1000 MHz
- low mainline loss, 0.8 dB typ.
- high directivity, 40 dB typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

Applications

- communications
- cable tv

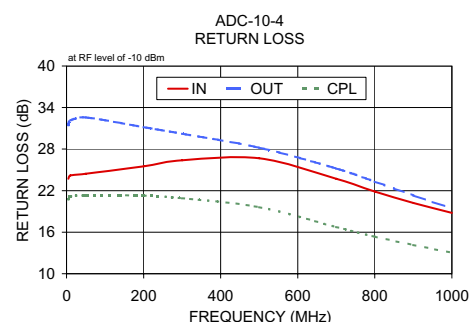
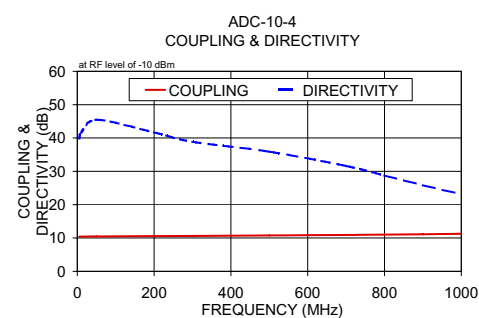
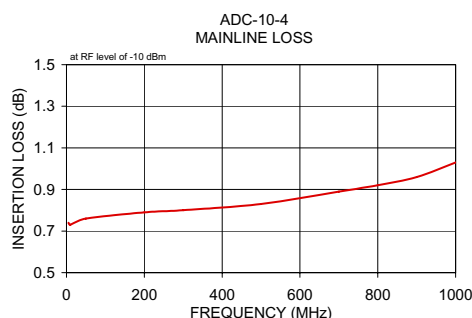
Directional Coupler Electrical Specifications

| FREQ. (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | | DIRECTIVITY (dB) | | | VSWR (:1) | POWER INPUT, W | | | | | | | |
|--------------------------------|---------------|----------|---------------------------------|------|------|------------------|------|------|-----------|----------------|--------|---------|----|----|-----|---|---|
| | Nom. | Flatness | L | M | U | L | M | U | | Typ. | L Max. | MU Max. | | | | | |
| f _c -f _u | | | Typ. | Max. | Typ. | Max. | Typ. | Max. | | | | | | | | | |
| 5-1000 | 10.5±0.5 | ±1.0 | 0.8 | 1.3 | 0.8 | 1.2 | 1.0 | 1.5 | 40 | 23 | 40 | 20 | 25 | 13 | 1.2 | 1 | 1 |

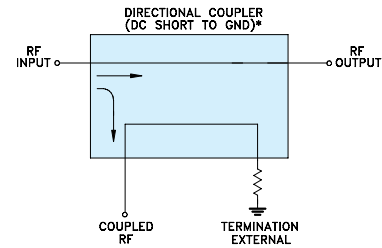
L= 5-50 MHz M= 50-500 MHz U= 500-1000 MHz
1. Mainline loss includes theoretical power loss at coupled port.

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 5.00 | 0.74 | 10.44 | 39.83 | 23.72 | 31.43 | 20.70 |
| 10.00 | 0.73 | 10.43 | 41.65 | 24.20 | 32.13 | 21.20 |
| 50.00 | 0.76 | 10.48 | 45.47 | 24.43 | 32.57 | 21.30 |
| 200.00 | 0.79 | 10.55 | 41.69 | 25.51 | 31.16 | 21.29 |
| 300.00 | 0.80 | 10.60 | 38.88 | 26.39 | 30.23 | 20.91 |
| 500.00 | 0.83 | 10.76 | 35.93 | 26.67 | 28.20 | 19.60 |
| 700.00 | 0.89 | 10.92 | 31.62 | 23.71 | 25.20 | 16.74 |
| 800.00 | 0.92 | 11.00 | 28.76 | 21.88 | 23.31 | 15.37 |
| 900.00 | 0.96 | 11.12 | 25.83 | 20.21 | 21.32 | 14.15 |
| 1000.00 | 1.03 | 11.25 | 23.20 | 18.78 | 19.45 | 13.03 |



Electrical Schematic



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

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