

Surface Mount Directional Coupler

TCD-13-4+ TCD-13-4

50Ω

5 to 1000 MHz



CASE STYLE: DB714
PRICE: \$1.49 ea. QTY (25)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

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

Maximum Ratings

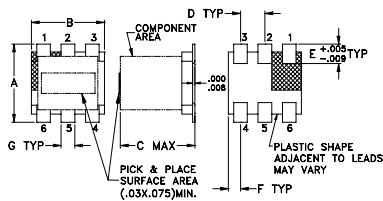
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |

* Case temperature is defined as temperature on ground leads. Permanent damage may occur if any of these limits are exceeded.

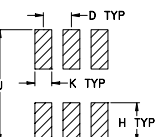
Pin Connections

| | |
|-------------------|---|
| INPUT | 3 |
| OUTPUT | 4 |
| COUPLED | 1 |
| GROUND | 2 |
| 50Ω TERM EXTERNAL | 6 |
| NOT USED | 5 |

Outline Drawing



PCB Land Pattern

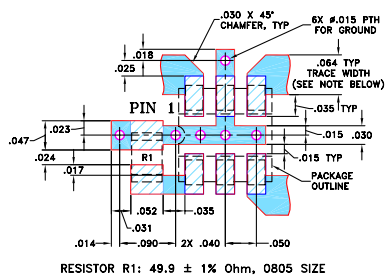


Suggested L layout, Tolerance to be within ±.002

Outline Dimensions (inch/mm)

| A | B | C | D | E | F |
|------|------|------|------|-------|------|
| .160 | .150 | .160 | .050 | .040 | .025 |
| 4.06 | 3.81 | 4.06 | 1.27 | 1.02 | 0.64 |
| G | H | J | K | wt | |
| .028 | .065 | .190 | .030 | grams | |
| 0.71 | 1.65 | 4.83 | 0.76 | grams | 0.15 |

Demo Board MCL P/N: TB-71
Suggested PCB Layout (PL-009)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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 to 1000 MHz
- low mainline loss, 0.7 dB typ.
- aqueous washable
- leads for excellent solderability
- protected by US Patent 6,140,887

Applications

- VHF/UHF
- CATV
- cellular

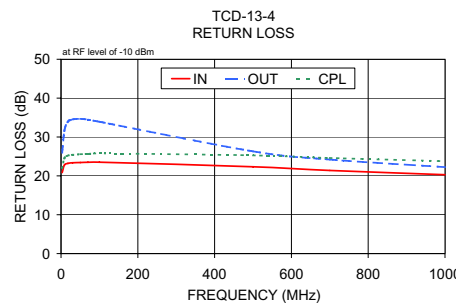
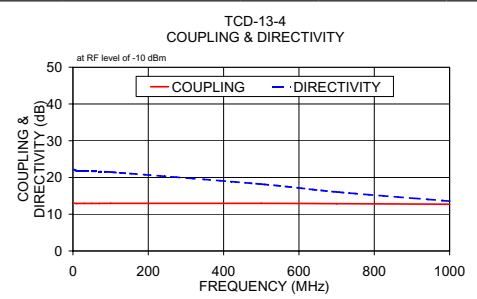
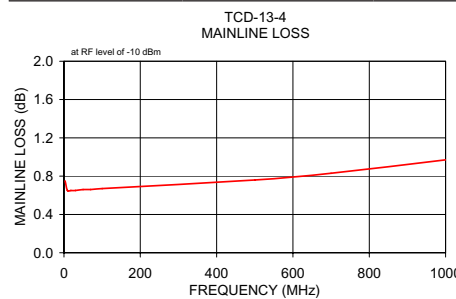
Directional Coupler Electrical Specifications

| FREQ. RANGE (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | | | | | DIRECTIVITY (dB) | | | VSWR (:1) | POWER INPUT, W | | | | |
|-------------------|---------------|----------|---------------------------------|-----|-----|-----|-----|-----|------------------|----|----|-----------|----------------|---|------|-----|-----|
| | Nom. | Flatness | L | | M | | U | | L | M | U | | Typ. | L | MU | | |
| 5-1000 | 13.0±0.5 | ±0.6 | 0.7 | 1.3 | 0.7 | 1.3 | 0.8 | 1.5 | 21 | 17 | 18 | 12 | 15 | — | 1.20 | 0.5 | 1.0 |

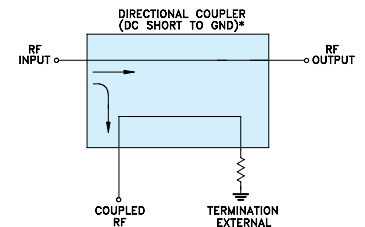
L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
1. Mainline loss includes theoretical power loss at coupled port.

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 3.00 | 0.75 | 13.03 | 22.20 | 20.84 | 25.98 | 21.97 |
| 9.00 | 0.65 | 12.92 | 21.84 | 22.79 | 31.81 | 24.61 |
| 18.00 | 0.65 | 12.93 | 21.83 | 23.21 | 33.94 | 25.22 |
| 30.00 | 0.65 | 12.93 | 21.74 | 23.36 | 34.53 | 25.43 |
| 50.00 | 0.66 | 12.94 | 21.71 | 23.44 | 34.67 | 25.58 |
| 70.00 | 0.66 | 12.94 | 21.62 | 23.49 | 34.47 | 25.69 |
| 100.00 | 0.67 | 12.96 | 21.48 | 23.51 | 33.94 | 25.79 |
| 500.00 | 0.76 | 12.96 | 18.19 | 22.34 | 26.31 | 25.28 |
| 700.00 | 0.83 | 12.87 | 16.07 | 21.40 | 24.21 | 24.61 |
| 1000.00 | 0.97 | 12.71 | 13.56 | 20.29 | 22.25 | 23.79 |



Electrical Schematic



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

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