

Surface Mount Directional Coupler

TCD-10-4-75+

75Ω 5 to 1000 MHz



CASE STYLE: AT224-1A

Maximum Ratings

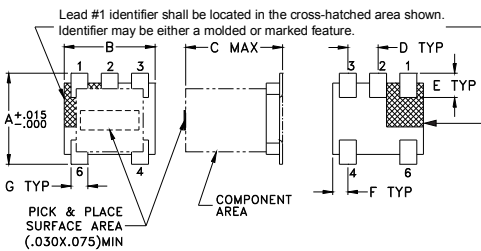
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |

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

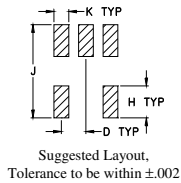
Pin Connections

| | |
|-------------------|---|
| INPUT | 3 |
| OUTPUT | 4 |
| COUPLED | 1 |
| GROUND | 2 |
| 75Ω TERM EXTERNAL | 6 |

Outline Drawing



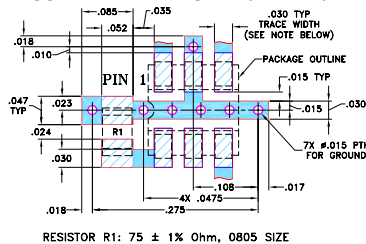
PCB Land Pattern



Outline Dimensions (inch/mm)

| | | | | | |
|------|------|------|------|-------|------|
| A | B | C | D | E | F |
| .150 | .150 | .160 | .050 | .040 | .025 |
| 3.81 | 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 | 0.15 | |

Demo Board MCL P/N: TB-72 Suggested PCB Layout (PL-010)



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

Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

Features

- wideband, 5-1000 MHz
- excellent flatness, ±0.1 dB typ.
- better performance than MA-COM EMDC-10-1-75
- footprint compatible to EMDC-10-1-75
- aqueous washable

Applications

- CATV

Directional Coupler Electrical Specifications

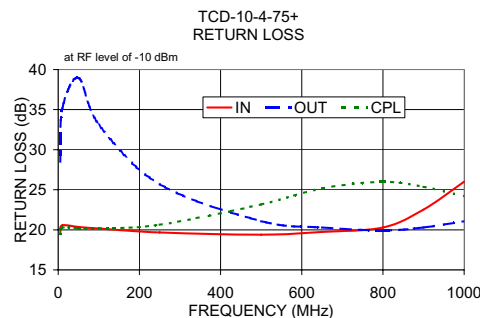
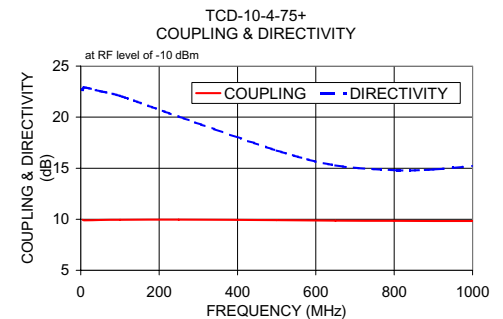
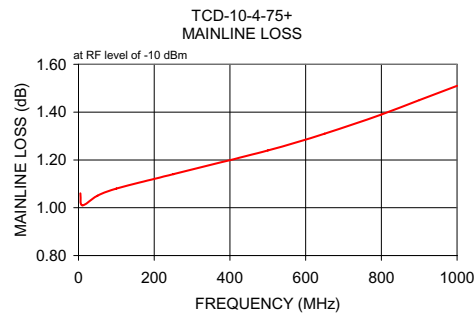
| FREQ. (MHz) | COUPLING (dB) | | MAINLINE LOSS ¹ (dB) | | | | | | DIRECTIVITY (dB) | | | VSWR (:1) | POWER INPUT, W | | | |
|--------------------------------|---------------|----------|---------------------------------|------|------|------|------|------|------------------|------|------|-----------|----------------|------|------|-----|
| | Nom. | Flatness | L | | M | | U | | L | M | U | | | | | |
| f _L -f _U | | | Typ. | Max. | Typ. | Max. | Typ. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Max. | | |
| 5-1000 | 9.9±0.5 | ±0.3 | 1.0 | 1.5 | 1.1 | 1.5 | 1.3 | 1.9 | 22 | 19 | 20 | 13 | 15 | 11 | 1.25 | 1.0 |

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

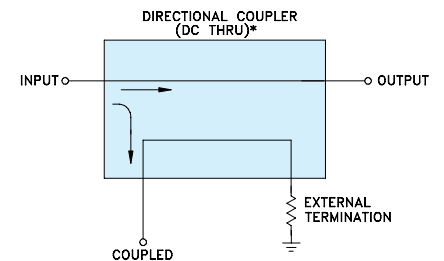
1. Mainline loss includes theoretical power loss at coupled port.

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 5.00 | 1.06 | 9.94 | 22.66 | 19.73 | 28.50 | 19.46 |
| 10.00 | 1.01 | 9.90 | 22.91 | 20.57 | 35.13 | 20.26 |
| 50.00 | 1.05 | 9.93 | 22.54 | 20.35 | 38.95 | 20.20 |
| 100.00 | 1.08 | 9.95 | 22.09 | 20.17 | 33.10 | 20.18 |
| 250.00 | 1.14 | 9.96 | 20.05 | 19.68 | 25.68 | 20.63 |
| 500.00 | 1.24 | 9.92 | 16.74 | 19.39 | 21.07 | 23.17 |
| 650.00 | 1.31 | 9.86 | 15.28 | 19.74 | 20.28 | 25.18 |
| 800.00 | 1.39 | 9.85 | 14.81 | 20.28 | 19.92 | 25.99 |
| 900.00 | 1.45 | 9.82 | 14.88 | 22.54 | 20.29 | 25.37 |
| 1000.00 | 1.51 | 9.83 | 15.23 | 26.00 | 21.07 | 24.19 |



Electrical Schematic



* ELECTRICAL SCHEMATIC FOR DIRECTIONAL COUPLERS REQUIRING EXTERNAL TERMINATION THAT IS DESIGNED WITHOUT INTERNAL TRANSFORMERS.



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TCD-10-4-75+
DY/LC/CP/AM
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