

# Surface Mount Directional Coupler

75Ω 30 to 1200 MHz

## Maximum Ratings

Operating Temperature -40°C to 85°C

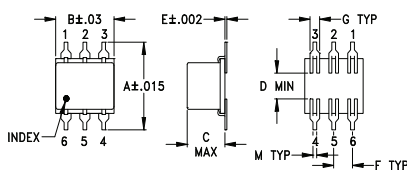
Storage Temperature -55°C to 100°C

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

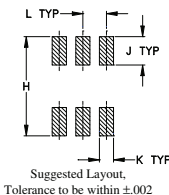
## Pin Connections

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

## Outline Drawing



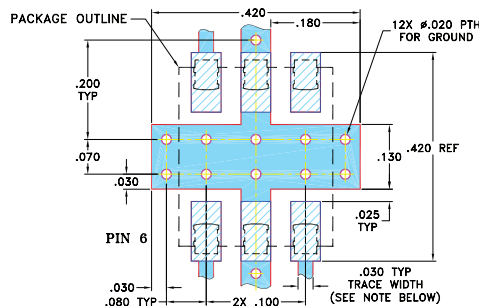
## PCB Land Pattern



## Outline Dimensions (inch)

| A     | B    | C    | D    | E    | F     | G    |
|-------|------|------|------|------|-------|------|
| .400  | .31  | .200 | .10  | .010 | .100  | .050 |
| 10.16 | 7.87 | 5.08 | 2.54 | 0.25 | 2.54  | 1.27 |
| H     | J    | K    | L    | M    | wt    |      |
| .420  | .120 | .060 | .100 | .020 | grams |      |
| 10.67 | 3.05 | 1.52 | 2.54 | 0.51 | 0.55  |      |

## Demo Board MCL P/N: TB-34 Suggested PCB Layout (PL-043)



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

- low mainline loss, 1.1 dB typ.
- high directivity, 22 dB typ.

## Applications

- VHF/UHF
- cellular
- communications
- cable tv



CASE STYLE: QQQ130

PRICE: \$15.95 ea. QTY (1-9)

## +RoHS Compliant

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

## Directional Coupler Electrical Specifications

| FREQ.<br>(MHz)                 | COUPLING<br>(dB) |          | MAINLINE LOSS <sup>1</sup><br>(dB) |      |      |      |      |      | DIRECTIVITY<br>(dB) |      |      |      |      |      | VSWR<br>(:1) | POWER<br>INPUT, W |     |
|--------------------------------|------------------|----------|------------------------------------|------|------|------|------|------|---------------------|------|------|------|------|------|--------------|-------------------|-----|
|                                |                  |          | L                                  |      | M    |      | U    |      | L                   |      | M    |      | U    |      |              |                   |     |
|                                |                  |          | Typ.                               | Max. | Typ. | Max. | Typ. | Max. | Typ.                | Min. | Typ. | Min. | Typ. | Min. |              |                   |     |
| f <sub>L</sub> -f <sub>U</sub> | Nom.             | Flatness |                                    |      |      |      |      |      |                     |      |      |      |      |      |              |                   |     |
| 30-1200                        | 10.0±0.5         | ±0.8     | 1.0                                | 1.5  | 1.1  | 1.6  | 1.3  | 2.0  | 21                  | 17   | 22   | 17   | 18   | 15   | 1.3          | 1.0               | 1.0 |

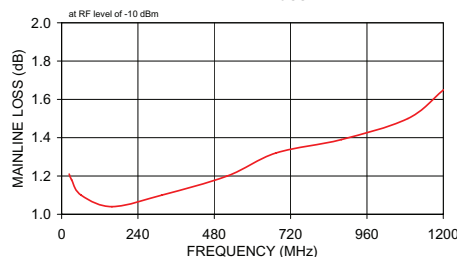
L = low range [ $f_L$  to  $10 f_L$ ] M = mid range [ $10 f_L$  to  $f_U/2$ ] U = upper range [ $f_U/2$  to  $f_U$ ]

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

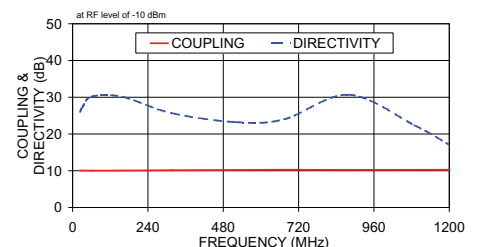
## Typical Performance Data

| Frequency<br>(MHz) | Mainline Loss<br>(dB)<br>In-Out | Coupling<br>(dB)<br>In-Cpl | Directivity<br>(dB) | Return Loss<br>(dB) |       |       |
|--------------------|---------------------------------|----------------------------|---------------------|---------------------|-------|-------|
|                    |                                 |                            |                     | In                  | Out   | Cpl   |
| 23.68              | 1.21                            | 10.10                      | 26.05               | 21.46               | 17.01 | 17.25 |
| 31.16              | 1.18                            | 10.06                      | 27.31               | 23.65               | 17.77 | 17.99 |
| 61.06              | 1.10                            | 10.05                      | 30.20               | 31.44               | 19.11 | 19.37 |
| 158.23             | 1.04                            | 10.06                      | 30.12               | 28.87               | 19.46 | 19.51 |
| 315.21             | 1.10                            | 10.15                      | 25.69               | 20.41               | 17.63 | 17.24 |
| 520.77             | 1.20                            | 10.22                      | 23.25               | 16.78               | 15.56 | 15.15 |
| 674.01             | 1.32                            | 10.29                      | 23.99               | 15.97               | 14.88 | 14.50 |
| 879.57             | 1.39                            | 10.25                      | 30.70               | 17.10               | 15.37 | 14.92 |
| 1088.87            | 1.50                            | 10.27                      | 22.42               | 21.86               | 17.37 | 17.06 |
| 1201.00            | 1.65                            | 10.28                      | 17.05               | 27.27               | 18.70 | 19.19 |

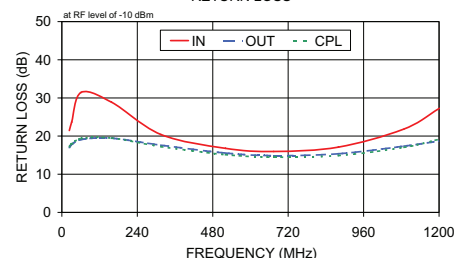
LRDC-10-2W-75  
MAINLINE LOSS



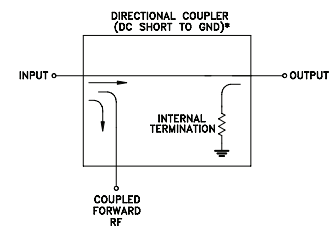
LRDC-10-2W-75  
COUPLING & DIRECTIVITY



LRDC-10-2W-75  
RETURN LOSS



## Electrical Schematic



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

## 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.
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