

# Surface Mount Directional Coupler

## D171+ D171

50Ω 2300 to 2600 MHz



CASE STYLE: CA531-1  
PRICE: \$ 0.99 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   | -65°C to 150°C |
| Permanent damage may occur if any of these limits are exceeded. |                |

### Pin Connections

|         |       |
|---------|-------|
| INPUT   | 4     |
| OUTPUT  | 6     |
| COUPLED | 3     |
| GROUND  | 1,2,5 |

### Features

- low mainline loss, 0.3 dB typ.
- excellent VSWR, 1.2:1 typ.
- excellent repeatability
- miniature low profile package
- aqueous washable

### Applications

- WLAN
- WiMAX
- Aeronautical

### Directional Coupler Electrical Specifications

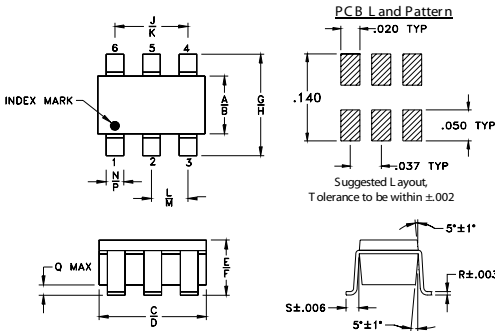
| FREQ. RANGE (MHz) | COUPLING (dB) | MAINLINE LOSS <sup>1</sup> (dB) |      | DIRECTIVITY (dB) |      | VSWR (:1) | POWER INPUT <sup>2</sup> |
|-------------------|---------------|---------------------------------|------|------------------|------|-----------|--------------------------|
|                   |               | Typ.                            | Max. | Typ.             | Min. |           |                          |
| 2300-2600         | 18.2±1.3      | 0.5                             | 0.8  | 14               | 9    | 1.3       | 1.0                      |

1. Mainline loss includes theoretical power loss at coupled port.
2. 4W CW when operating with a 2.0:1 maximum VSWR on all ports.

### Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) |       |       |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
|                 |                           |                      |                  | In               | Out   | Cpl   |
| 2300.00         | 0.30                      | 18.72                | 17.37            | 37.17            | 37.46 | 22.94 |
| 2400.00         | 0.32                      | 18.40                | 17.11            | 35.65            | 36.45 | 22.12 |
| 2440.00         | 0.33                      | 18.28                | 17.05            | 36.10            | 36.80 | 21.93 |
| 2460.00         | 0.33                      | 18.23                | 17.08            | 35.73            | 37.51 | 21.74 |
| 2480.00         | 0.33                      | 18.16                | 17.05            | 34.79            | 37.40 | 21.55 |
| 2500.00         | 0.33                      | 18.10                | 16.93            | 34.49            | 36.89 | 21.39 |
| 2540.00         | 0.35                      | 17.99                | 16.76            | 35.20            | 36.35 | 21.20 |
| 2560.00         | 0.35                      | 17.94                | 16.81            | 35.68            | 36.80 | 21.06 |
| 2580.00         | 0.35                      | 17.88                | 16.80            | 35.01            | 37.11 | 20.87 |
| 2600.00         | 0.35                      | 17.82                | 16.70            | 34.48            | 36.62 | 20.68 |

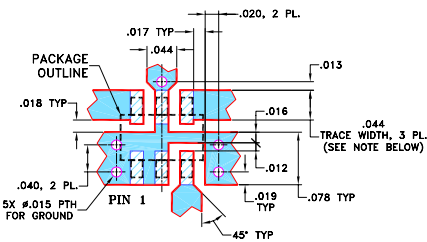
### Outline Drawing



### Outline Dimensions (inch/mm)

|      |      |      |      |      |      |      |      |       |
|------|------|------|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F    | G    | H    | J     |
| .052 | .067 | .106 | .122 | .035 | .064 | .087 | .118 | .067  |
| 1.32 | 1.70 | 2.69 | 3.10 | 0.89 | 1.63 | 2.21 | 3.00 | 1.70  |
| K    | L    | M    | N    | P    | Q    | R    | S    | wt    |
| .083 | .033 | .042 | .012 | .020 | .012 | .006 | .018 | grams |
| 2.11 | 0.84 | 1.07 | 0.30 | 0.51 | 0.30 | 0.15 | 0.46 | 0.020 |

### Demo Board MCL P/N: TB-396+ Suggested PCB Layout (PL-270)

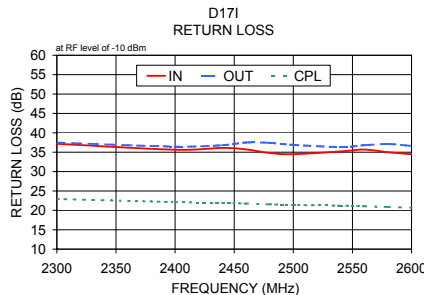
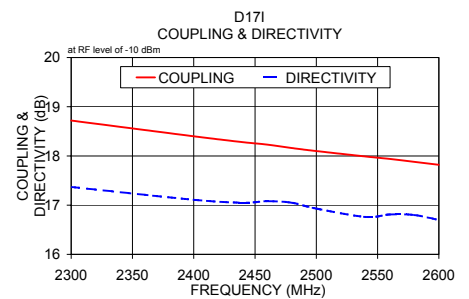


NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

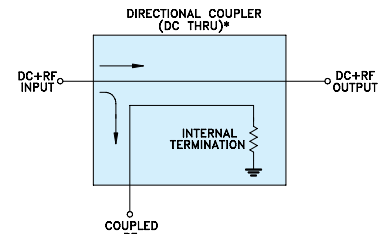
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK



### Electrical Schematic



\* ELECTRICAL SCHEMATIC FOR DIRECTIONAL COUPLER THAT IS DESIGNED WITHOUT INTERNAL TRANSFORMERS.

ESD Rating

Human Body Model (HBM): Class 1A (250 v to <500 v) in accordance with ANSI/ESD STM 5.1 - 2001  
Machine Model (MM): Class M1 (< 100 v) in accordance with ANSI/ESD STM 5.2 - 1999 (pass 50V)

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