

# Surface Mount Directional Coupler

75Ω, 12dB Coupling, 5 to 1200 MHz

## DBTC-12-4-75LX+

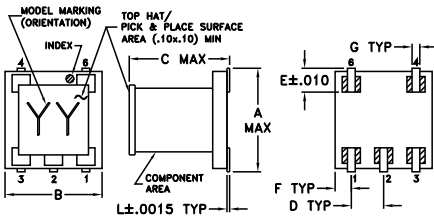
### Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| 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. |                |

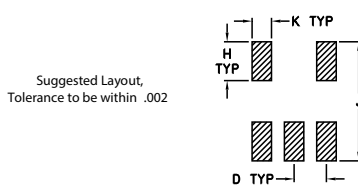
### Pin Connections

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

### Outline Drawing



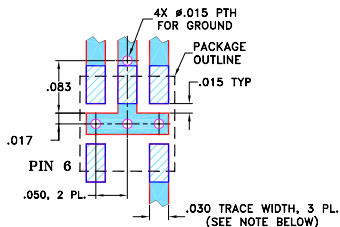
### PCB Land Pattern



### Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E    | F     |
|------|------|------|------|------|-------|
| .166 | .150 | .155 | .050 | .037 | .025  |
| 4.22 | 3.81 | 3.94 | 1.27 | 0.94 | 0.64  |
| G    | H    | J    | K    | L    | wt    |
| .012 | .060 | .184 | .030 | .004 | grams |
| 0.30 | 1.52 | 4.67 | 0.76 | 0.10 | 0.10  |

### Demo Board MCL P/N: TB-279 Suggested PCB Layout (PL-151)



- 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

- very flat coupling
- very broadband, multi octave
- temperature stable, LTCC base
- all welded construction
- leads attached for better solderability
- micro miniature coupler
- aqueous washable
- protected by US Patents 6,140,887 & 6,784,521

### Applications

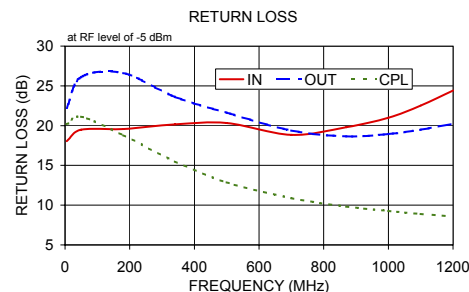
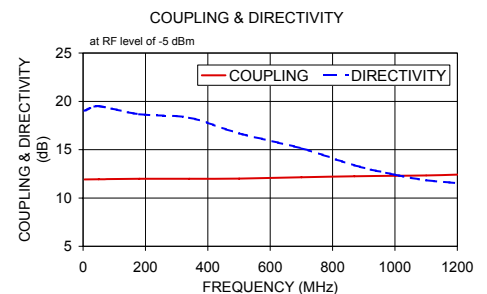
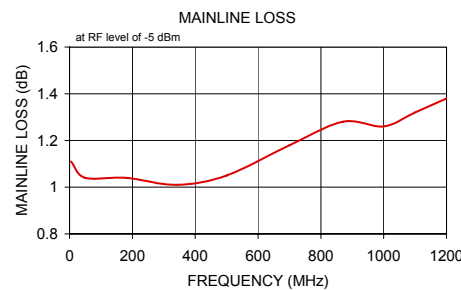
- CATV
- wire-line broadband access

### Electrical Specifications

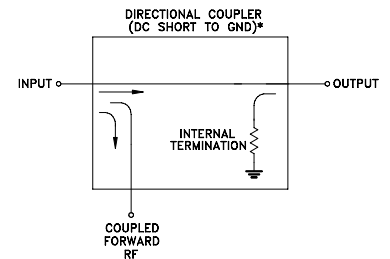
| FREQ.<br>(MHz) | COUPLING<br>(dB) |                  | MAINLINE LOSS <sup>1</sup> (dB) |      | DIRECTIVITY<br>(dB) |      | VSWR<br>(:1) | POWER<br>INPUT<br>(W) |
|----------------|------------------|------------------|---------------------------------|------|---------------------|------|--------------|-----------------------|
|                | Nom.             | Max.<br>Flatness | Typ.                            | Max. | Typ.                | Min. |              |                       |
| 5-1200         | 12±0.5           | ±0.6             |                                 |      |                     |      |              |                       |
| 5-50           |                  |                  | 1.1                             | 1.8  | 19                  | 17   | 1.3          | 0.5                   |
| 50-500         |                  |                  | 1.1                             | 1.4  | 18                  | 15   | 1.3          | 1.0                   |
| 500-1000       |                  |                  | 1.2                             | 1.6  | 17                  | 10   | 1.3          | 1.0                   |
| 1000-1200      |                  |                  | 1.3                             | 1.9  | 13                  | 8    | 1.3          | 1.0                   |

### 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   |
| 5.00               | 1.11                            | 11.92                      | 19.03               | 18.05               | 22.21 | 20.18 |
| 50.00              | 1.04                            | 11.93                      | 19.50               | 19.49               | 26.11 | 21.12 |
| 180.00             | 1.04                            | 11.98                      | 18.67               | 19.58               | 26.61 | 18.80 |
| 340.00             | 1.01                            | 11.99                      | 18.30               | 20.15               | 23.62 | 15.48 |
| 500.00             | 1.05                            | 12.00                      | 16.68               | 20.32               | 21.63 | 12.88 |
| 700.00             | 1.18                            | 12.15                      | 15.13               | 18.84               | 19.39 | 10.88 |
| 870.00             | 1.28                            | 12.24                      | 13.39               | 19.80               | 18.65 | 9.82  |
| 1000.00            | 1.26                            | 12.29                      | 12.40               | 21.00               | 18.94 | 9.27  |
| 1100.00            | 1.32                            | 12.34                      | 11.84               | 22.53               | 19.49 | 8.90  |
| 1200.00            | 1.38                            | 12.41                      | 11.54               | 24.40               | 20.24 | 8.59  |



### 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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