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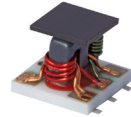
SURFACE MOUNT 

# Directional Coupler DBTC-10-4-75LX+

75Ω 10 dB 5 to 1000 MHz

## 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



Generic photo used for illustration purposes only

CASE STYLE: AT1642

### +RoHS Compliant

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

## APPLICATIONS

- Cable TV

## ELECTRICAL SPECIFICATIONS AT +25°C

| Parameter                  | Condition (MHz) | Min. | Typ.     | Max. | Unit |
|----------------------------|-----------------|------|----------|------|------|
| Frequency Range            |                 | 5    |          | 1000 | MHz  |
| Mainline Loss <sup>1</sup> | 5-50            |      | 1.5      | 2.2  | dB   |
|                            | 50-500          |      | 1.4      | 2.0  |      |
|                            | 500-1000        |      | 1.5      | 2.0  |      |
| Nominal Coupling           | 5-1000          |      | 10.5±0.5 |      | dB   |
| Coupling Flatness          | 5-1000          |      |          | ±0.7 | dB   |
| Directivity                | 5-50            | 16   | 21       |      | dB   |
|                            | 50-500          | 13   | 20       |      |      |
|                            | 500-1000        |      | 16       |      |      |
| VSWR <sup>2</sup>          | 5-1000          |      | 1.3      |      | :1   |
| Input Power                | 5-500           |      |          | 0.5  | W    |
|                            | 500-1000        |      |          | 1.0  |      |

1. Includes theoretical coupled power loss of 0.4 dB at 10 dB coupling.

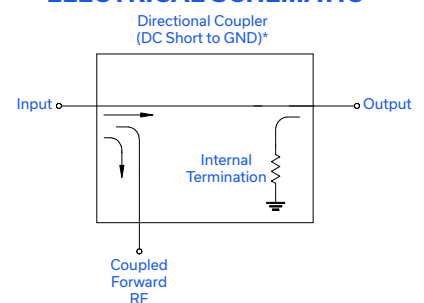
2. For coupled port VSWR above 500 MHz, 1.6:1 typ.

## ABSOLUTE MAXIMUM RATINGS

| Parameter             | 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.

## ELECTRICAL SCHEMATIC



\* Electrical schematic is for directional coupler with internal transformer(s) that routes DC from RF ports to ground.

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REV. B  
ECO-027366  
DBTC-10-4-75LX+  
MCL NY  
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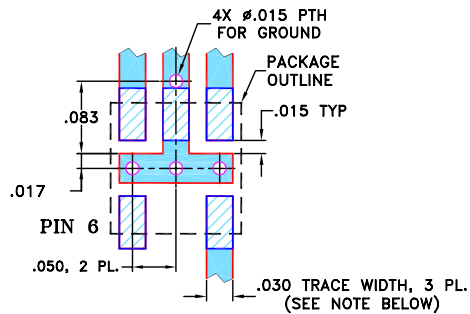
SURFACE MOUNT Directional Coupler **DBTC-10-4-75LX+**

75Ω 10 dB 5 to 1000 MHz

## PIN CONNECTIONS

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

PRODUCT MARKING: EL

DEMO BOARD MCL P/N: TB-DBTC10475LX+  
SUGGESTED PCB LAYOUT (PL-151)

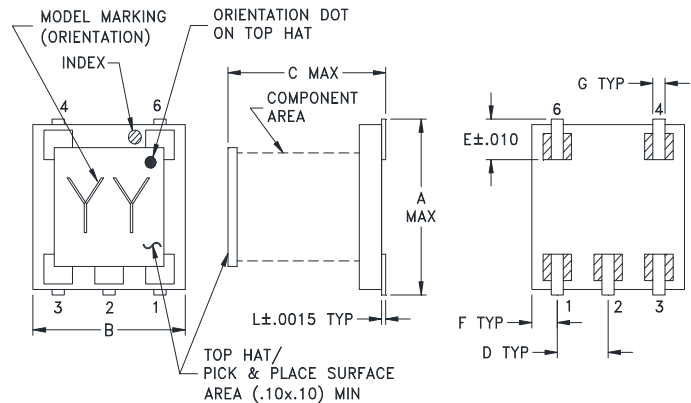
NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.030" \pm 0.002"$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

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

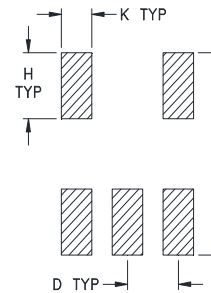
 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## OUTLINE DRAWING



## PCB Land Pattern

Suggested Layout,  
Tolerance to be within ±.002

## OUTLINE DIMENSIONS (Inches/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  |

TAPE &amp; REEL INFORMATION: F76



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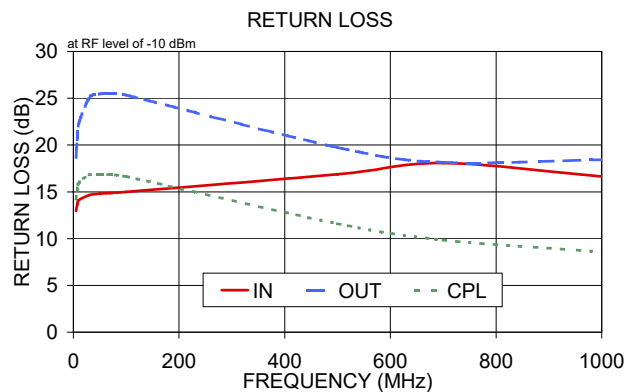
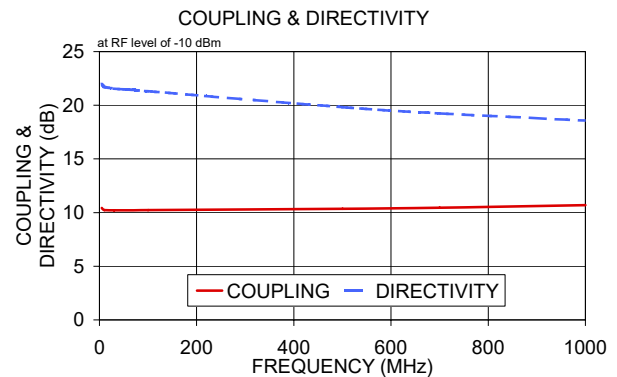
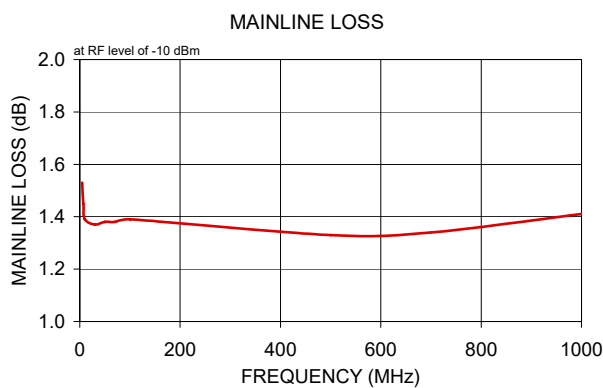
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75Ω 10 dB 5 to 1000 MHz

## TYPICAL PERFORMANCE DATA

| Frequency<br>(MHz) | Mainline Loss<br>(dB) | Coupling<br>(dB) | Directivity<br>(dB) | Return Loss<br>(dB) |       |       |
|--------------------|-----------------------|------------------|---------------------|---------------------|-------|-------|
|                    | In-Out                |                  |                     | In                  | Out   | Cpl   |
| 5                  | 1.53                  | 10.44            | 21.95               | 12.96               | 18.66 | 14.22 |
| 7                  | 1.45                  | 10.32            | 21.83               | 13.63               | 20.55 | 15.21 |
| 10                 | 1.39                  | 10.24            | 21.71               | 14.11               | 22.29 | 15.95 |
| 30                 | 1.37                  | 10.21            | 21.54               | 14.66               | 25.03 | 16.80 |
| 50                 | 1.38                  | 10.21            | 21.49               | 14.79               | 25.45 | 16.88 |
| 70                 | 1.38                  | 10.22            | 21.42               | 14.86               | 25.51 | 16.83 |
| 100                | 1.39                  | 10.24            | 21.31               | 14.98               | 25.34 | 16.64 |
| 500                | 1.33                  | 10.35            | 19.83               | 16.88               | 19.74 | 11.59 |
| 700                | 1.34                  | 10.46            | 19.25               | 18.06               | 18.15 | 9.84  |
| 1000               | 1.41                  | 10.70            | 18.57               | 16.64               | 18.44 | 8.57  |



- 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.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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