

Surface Mount Directional Coupler

DBTC-18-4-75X+

75Ω, 18dB coupling, 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: AT1667-1

+RoHS Compliant

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

| Available Tape and Reel at no extra cost | |
|--|------------------|
| Reel Size | Devices/Reel |
| 7" | 20, 50, 100, 200 |
| 13" | 500, 1000, 2000 |

Applications

- cable tv

Electrical Specifications at 25°C

| Parameter | Condition (MHz) | Min. | Typ. | Max. | Unit |
|----------------------------|-----------------|------|----------|------|------|
| Frequency Range | | 5 | | 1000 | MHz |
| Mainline Loss ¹ | 5-50 | | 0.8 | 1.5 | dB |
| | 50-500 | | 0.8 | 1.4 | |
| | 500-1000 | | 1.0 | 1.6 | |
| Nominal Coupling | 5-1000 | | 18.2±0.5 | | dB |
| Coupling Flatness(±) | 5-1000 | | | ±0.7 | dB |
| Directivity | 5-50 | 16 | 25 | | dB |
| | 50-500 | 14 | 21 | | |
| | 500-1000 | — | 15 | | |
| VSWR ² | 5-1000 | | 1.3 | | dB |
| Input Power | 5-50 | | | 1.0 | W |
| | 50-500 | | | 1.0 | |
| | 500-1000 | | | 1.0 | |

1. Includes theoretical coupled power loss of 0.07 dB at 18 dB coupling.

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

Maximum Ratings

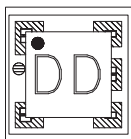
| Parameter | Ratings |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |

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

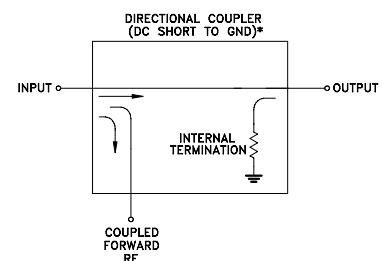
Pin Connections

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

Product Marking



Electrical Schematic



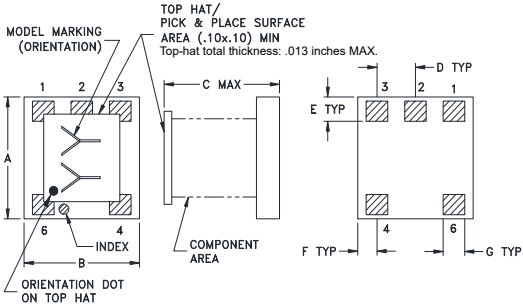
* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.

REV. A
M151107
ED-8956A/1
DBTC-18-4-75X+
WP/CP/AM
190827



DBTC-18-4-75X+

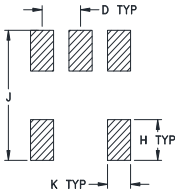
Outline Drawing



Outline Dimensions (inch/mm)

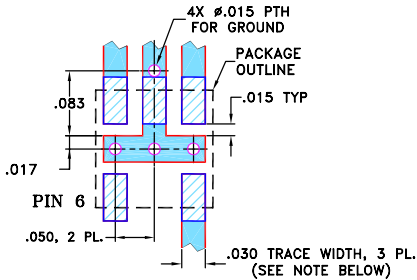
| | | | | | |
|------|------|------|------|-------|------|
| A | B | C | D | E | F |
| .150 | .150 | .150 | .050 | .030 | .025 |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 |
| G | H | J | K | wt | |
| .028 | .050 | .160 | .030 | grams | |
| 0.71 | 1.27 | 4.06 | 0.76 | 0.10 | |

PCB Land Pattern



Suggested Layout, Tolerance to be within ±.002

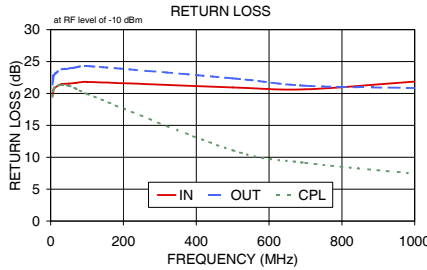
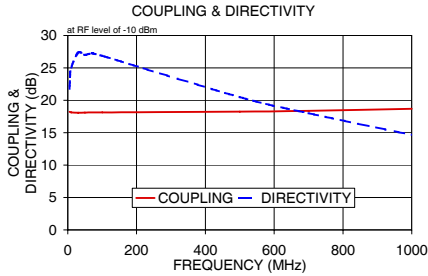
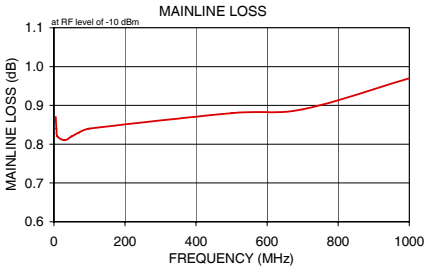
Demo Board MCL P/N: TB-279 Suggested PCB Layout (PL-151)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 5.00 | 0.87 | 18.24 | 21.78 | 19.58 | 21.40 | 19.46 |
| 7.00 | 0.84 | 18.17 | 23.60 | 20.35 | 22.32 | 20.29 |
| 10.00 | 0.82 | 18.14 | 25.06 | 20.85 | 22.98 | 20.87 |
| 30.00 | 0.81 | 18.08 | 27.35 | 21.44 | 23.78 | 21.40 |
| 50.00 | 0.82 | 18.10 | 27.01 | 21.54 | 23.92 | 21.18 |
| 70.00 | 0.83 | 18.12 | 27.23 | 21.66 | 24.08 | 20.74 |
| 100.00 | 0.84 | 18.14 | 26.88 | 21.81 | 24.29 | 19.93 |
| 500.00 | 0.88 | 18.26 | 20.48 | 20.94 | 22.37 | 11.09 |
| 700.00 | 0.89 | 18.38 | 18.00 | 20.66 | 21.20 | 9.14 |
| 1000.00 | 0.97 | 18.68 | 14.66 | 21.86 | 20.85 | 7.41 |



Additional 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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