

Directional Couplers

DBTC-16-5-75+ DBTC-16-5-75L+

75Ω, 16dB coupling, 5 to 1500 MHz



Generic photo used for illustration purposes only

No Leads

Leads

CASE STYLE:AT790-1

CASE STYLE:AT1030

+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, 500 |
| 13" | 1000, 2000 |

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 |

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

- VHF/UHF receivers/transmitters
- cellular

Electrical Specifications

| FREQ. RANGE (MHz) | COUPLING (dB) | | MAINLINE LOSS* (dB) | | | | DIRECTIVITY (dB) | | | | VSWR** (:1) | POWER INPUT (W) | | | | | |
|-------------------|---------------|----------|---------------------|-----|-----|-----|------------------|-----|------|------|-------------|-----------------|------|---|-----|-----|-----|
| | Nom. | Flatness | L | M | U | L | M | U | Typ. | Min. | | Typ. | Min. | L | MU | | |
| 5-1000 | 16.3±0.5 | ±0.7 | 1.2 | 2.0 | 1.0 | 1.5 | 1.1 | 1.6 | 22 | 16 | 21 | 13 | 20 | — | 1.3 | 0.5 | 1.0 |
| 1000-1500 | 16.8±0.7 | ±0.7 | — | — | 1.3 | 1.9 | — | — | — | — | 19 | — | — | — | 1.3 | — | 1.0 |

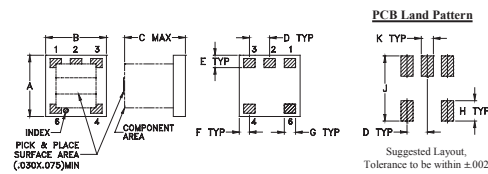
L = 5-50 MHz, M=50-500 MHz, U=500-1000 MHz apply to upper row of specs. 2nd row is for 1000-1500 MHz.

* Includes theoretical coupled power loss of 0.10 dB at 16 dB coupling

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

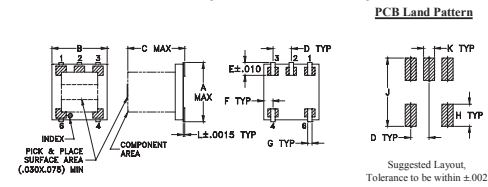
Outline Drawing / Dimensions (inch mm)

AT790-1 (DBTC-16-5-75)



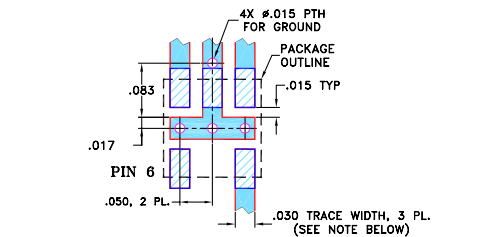
| A | B | C | D | E | F | G | H | J | K | wt |
|------|------|------|------|------|------|------|------|------|------|-------|
| .150 | .150 | .150 | .050 | .030 | .025 | .028 | .050 | .160 | .030 | grams |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 | 0.71 | 1.27 | 4.06 | 0.76 | 0.10 |

AT1030 (DBTC-16-5-75L)



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

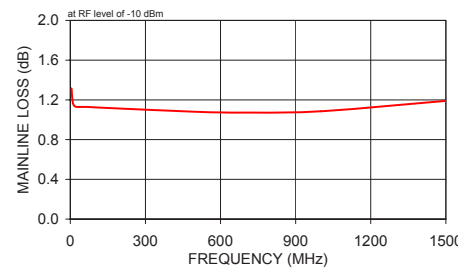
Notes

- 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.
- C. The parts covered by this specification document are subject to Mini-Circuit's standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuit's website at www.minicircuits.com/WCLStore/terms.jsp

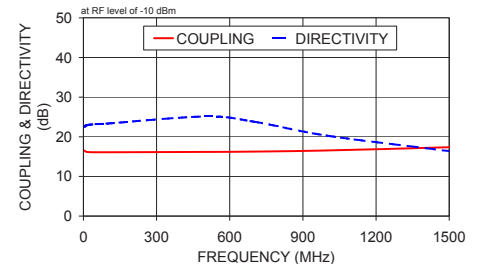
Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 5.0 | 1.32 | 16.54 | 22.53 | 16.26 | 17.94 | 12.74 |
| 10.0 | 1.18 | 16.25 | 22.81 | 18.13 | 20.48 | 14.84 |
| 20.0 | 1.13 | 16.14 | 23.00 | 18.94 | 21.68 | 15.90 |
| 50.0 | 1.13 | 16.11 | 23.19 | 19.20 | 22.11 | 16.31 |
| 70.0 | 1.13 | 16.10 | 23.23 | 19.30 | 22.19 | 16.37 |
| 100.0 | 1.12 | 16.10 | 23.35 | 19.41 | 22.38 | 16.43 |
| 500.0 | 1.08 | 16.18 | 25.13 | 21.01 | 24.62 | 14.81 |
| 700.0 | 1.07 | 16.27 | 23.81 | 21.95 | 25.41 | 13.38 |
| 1000.0 | 1.09 | 16.56 | 20.29 | 23.20 | 24.19 | 11.31 |
| 1500.0 | 1.19 | 17.35 | 16.40 | 22.34 | 20.43 | 8.71 |

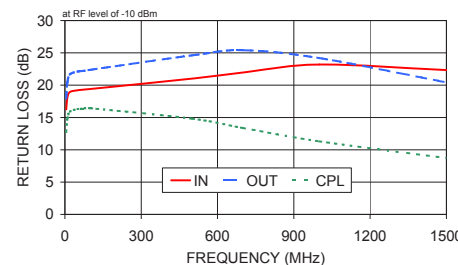
DBTC-16-5-75+ MAINLINE LOSS



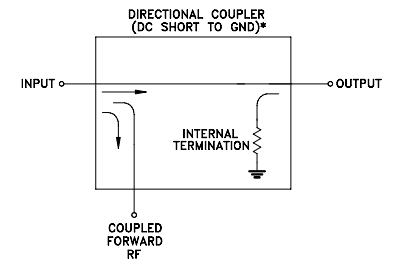
DBTC-16-5-75+ COUPLING & DIRECTIVITY



DBTC-16-5-75+ RETURN LOSS



Electrical Schematic



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