

Directional Couplers

50Ω, 17dB coupling, 50 to 2000 MHz

DBTC-17-5+ DBTC-17-5L+



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

- cellular
- PCS
- DECT/PHS
- GSM

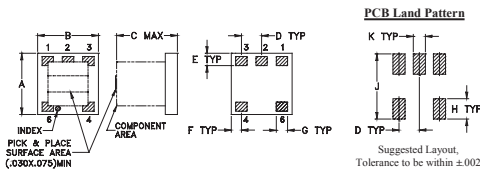
Electrical Specifications

| FREQ. RANGE (MHz) | COUPLING (dB) | | MAINLINE LOSS* (dB) | | DIRECTIVITY (dB) | | VSWR** (:1) | POWER INPUT (W) |
|-------------------|---------------|---------------|---------------------|------|------------------|------|-------------|-----------------|
| | Nom. | Max. Flatness | Typ. | Max. | Typ. | Min. | | |
| $f_c - f_u$ | | | | | | | | |
| 50-1000 | 17.0±0.7 | ±0.9 | 0.9 | 1.4 | 20 | 13 | 1.2 | 2.0 |
| 1000-1500 | 17.2±0.9 | ±1.0 | 1.0 | 1.5 | 20 | 10 | 1.2 | 2.0 |
| 1500-2000 | 17.5±1.0 | ±0.8 | 1.1 | 1.6 | 14 | — | 1.2 | 2.0 |

* Includes theoretical coupled power loss of 0.07 dB at 17 dB coupling
 ** For coupled port VSWR above 500 MHz, 1.6:1 typ.

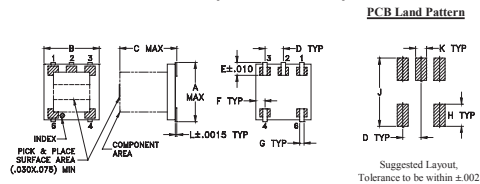
Outline Drawing / Dimensions (inch/mm)

AT790-1 (DBTC-17-5)



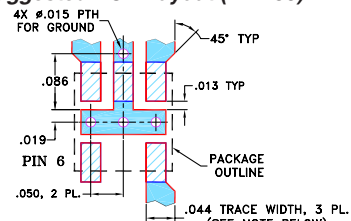
| A | B | C | D | E | F | G | H | J | K | wt |
|------|------|------|------|------|------|------|------|------|------|-------|
| .150 | .150 | .150 | .050 | .030 | .025 | .028 | .050 | .160 | .030 | grams |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 | 0.71 | 1.27 | 4.06 | 0.76 | 0.10 |

AT1030 (DBTC-17-5L)



| 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-278 Suggested PCB Layout (PL-150)



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.

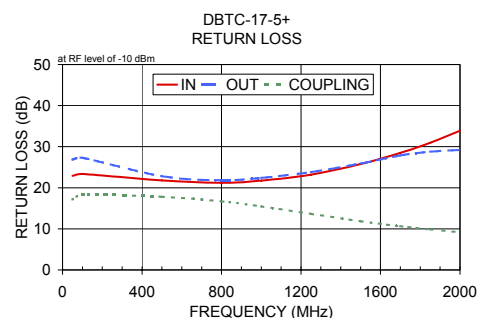
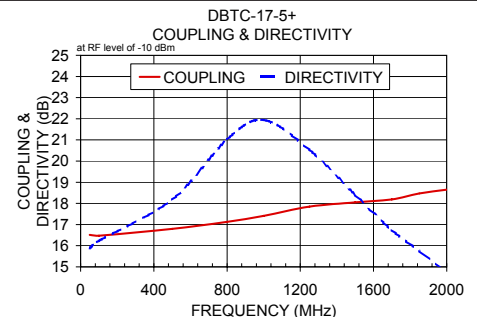
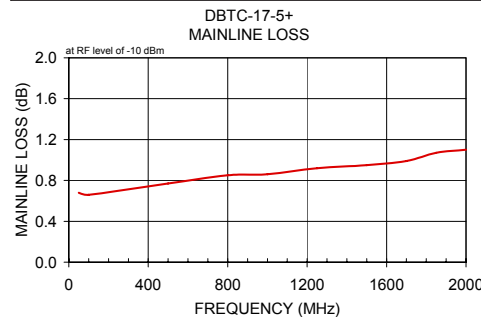
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Notes

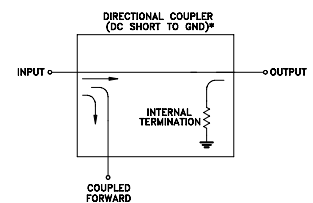
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 - Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
 - FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
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Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 50.00 | 0.64 | 16.41 | 15.92 | 23.43 | 27.62 | 18.46 |
| 100.00 | 0.66 | 16.42 | 16.17 | 23.56 | 27.75 | 18.62 |
| 500.00 | 0.76 | 16.74 | 18.53 | 22.36 | 23.13 | 18.78 |
| 800.00 | 0.85 | 17.06 | 22.42 | 21.45 | 21.80 | 18.22 |
| 1000.00 | 0.91 | 17.30 | 22.32 | 21.67 | 21.94 | 17.08 |
| 1300.00 | 0.99 | 17.63 | 17.74 | 22.81 | 22.71 | 14.85 |
| 1500.00 | 1.05 | 17.81 | 15.41 | 24.84 | 24.12 | 13.40 |
| 1600.00 | 1.08 | 17.88 | 14.43 | 25.91 | 24.48 | 12.71 |
| 1900.00 | 1.18 | 18.07 | 12.20 | 28.04 | 25.71 | 10.95 |
| 2000.00 | 1.21 | 18.11 | 11.55 | 28.07 | 25.97 | 10.50 |



Electrical Schematic



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