

Directional Couplers

50Ω, 12dB coupling, 5 to 1000 MHz

DBTC-12-4+

DBTC-12-4L+



No Leads

CASE STYLE:AT790-1
PRICE:\$1.99 ea. QTY (25)
\$1.69 ea. QTY (1000)



Leads

CASE STYLE:AT1030
PRICE:\$2.14 ea. QTY (25)
\$1.84 ea. QTY (1000)

Maximum Ratings

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

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. | Max. Flatness | L Typ. | M Max. | U Typ. | L Typ. | M Min. | U Typ. | | L Max. | MU Max. | | | | | | |
| 5-1000 | 12.2±0.5 | ±0.9 | 0.9 | 1.8 | 0.7 | 1.3 | 1.1 | 1.6 | 33 | 22 | 21 | 14 | 15 | — | 1.2 | 0.5 | 1.0 |

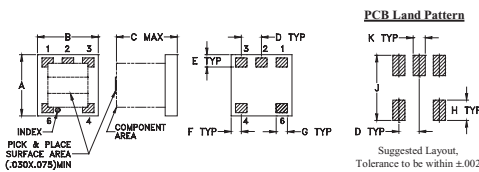
L = low range [f_l to 10 f_l] M = mid range [10 f_l to f_h/2] U = upper range [f_h/2 to f_h]
* Includes theoretical coupled power loss of 0.27 dB at 12 dB coupling
** For coupled port VSWR above 500 MHz, 1.5:1 typ.

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

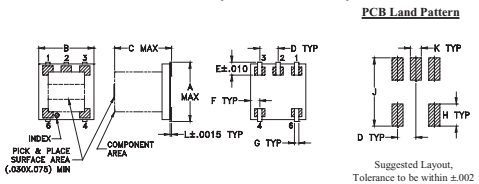
Outline Drawing / Dimensions (inch/mm)

AT790-1 (DBTC-12-4)



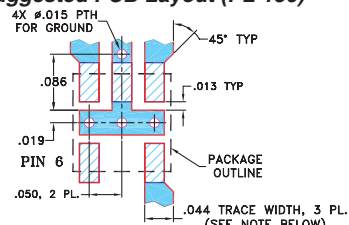
| | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|-------|
| A | B | C | D | E | F | G | H | J | K | wt |
| .150 | .150 | .150 | .050 | .030 | .025 | .028 | .050 | .160 | .030 | grams |
| 3.81 | 3.81 | 3.81 | 1.27 | 0.76 | 0.64 | 0.71 | 1.27 | 4.06 | 0.76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

AT1030 (DBTC-12-4L)



| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|-------|
| 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 |

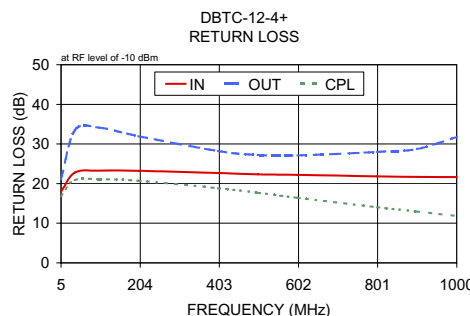
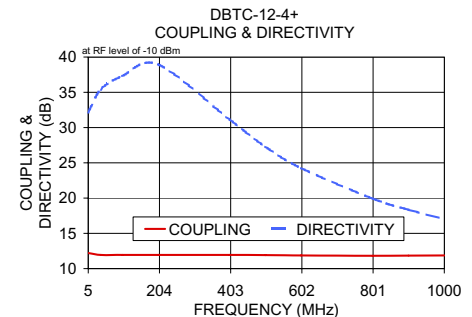
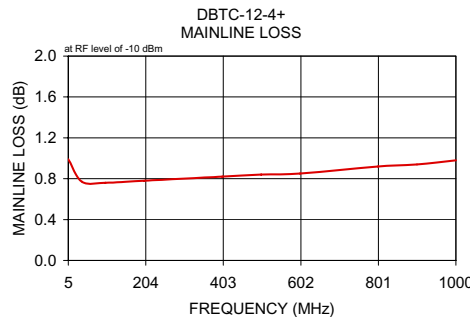
Demo Board MCL P/N: TB-278 Suggested PCB Layout (PL-150)



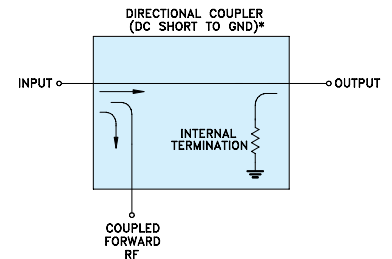
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) | | |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
| | | | | In | Out | Cpl |
| 5.00 | 0.88 | 12.07 | 34.34 | 19.19 | 23.31 | 17.81 |
| 10.00 | 0.79 | 11.96 | 34.86 | 21.25 | 27.96 | 19.68 |
| 50.00 | 0.73 | 11.90 | 35.53 | 22.99 | 35.09 | 21.01 |
| 100.00 | 0.75 | 11.93 | 37.41 | 22.94 | 34.58 | 21.11 |
| 500.00 | 0.85 | 11.99 | 25.82 | 22.00 | 26.19 | 18.96 |
| 600.00 | 0.88 | 11.99 | 22.32 | 21.56 | 25.58 | 17.94 |
| 800.00 | 0.95 | 12.03 | 17.75 | 20.94 | 25.46 | 15.62 |
| 900.00 | 1.00 | 12.07 | 16.15 | 20.79 | 26.14 | 14.55 |
| 1000.00 | 1.06 | 12.13 | 14.74 | 20.48 | 26.70 | 13.43 |



Electrical Schematic



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



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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

IF/RF MICROWAVE COMPONENTS

REV. J
M119966
DBTC-12-4+
DBTC-12-4L+
WZ/TD/CP/AM
ED-8654/1
ED-8654A
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