Surface Mount

Directional Couplers

DBTC-12-4+ DBTC-12-4L+

50Ω, 12dB coupling, 5 to 1000 MHz

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

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

+RoHS Compliant

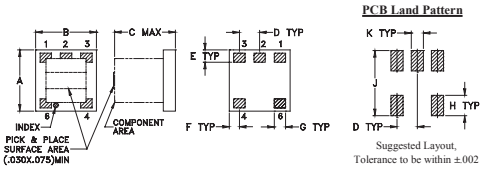
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Applications

- VHF/UHF receivers/transmitters
- cellular

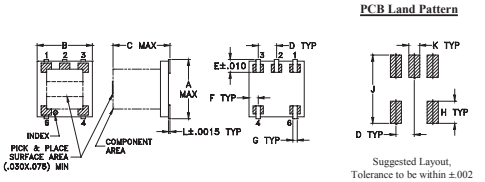
Outline Drawing / Dimensions (inch / mm)

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

Electrical Specifications

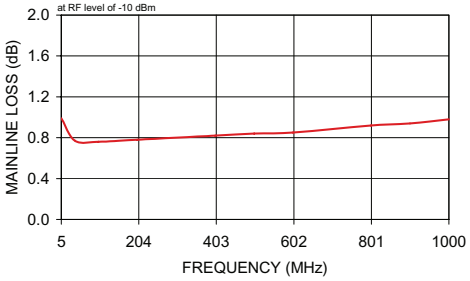
FREQ. RANGE (MHz)	COUPLING (dB)		MAINLINE LOSS* (dB)						DIRECTIVITY (dB)						VSWR** (:1)	POWER INPUT (W)	
			L		M		U		L		M		U			L	MU
f_L-f_U	Nom.	Max. Flatness	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Max.	Max.
5-1000	12.2±0.5	±0.9	0.9	1.8	0.7	1.3	1.1	1.6	33	22	21	14	15	—	1.2	0.5	1.0

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

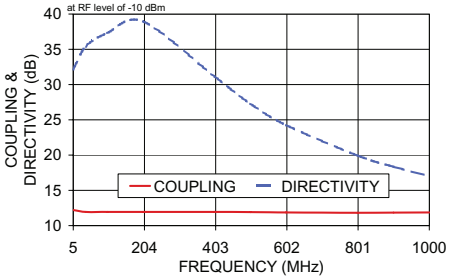
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) 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

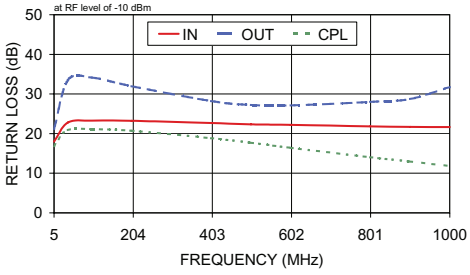
DBTC-12-4+
MAINLINE LOSS



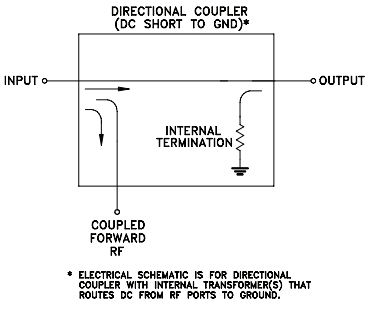
DBTC-12-4+
COUPLING & DIRECTIVITY



DBTC-12-4+
RETURN LOSS

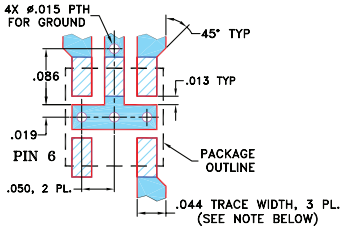


Electrical Schematic



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

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
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-Circuits 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-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

REV. J
M119986
DBTC-12-4+ ED-8954/1
DBTC-12-4L+ ED-8954A
WZ/TD/CP/AM
081117

Mini-Circuits®
www.minicircuits.com P.O. Box 35166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com