

Directional Couplers

50Ω, 13dB coupling, 5 to 1000 MHz

DBTC-13-4+

DBTC-13-4L+

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)	
		L		M		U		L		M		U			L	MU
		Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.			
f _i -f _u	Nom. Max. Flatness															
5-1000	13.0±0.5 ±0.6	0.7	1.3	0.7	1.3	1.1	1.6	21	17	18	13	13	—	1.2	0.5	1.0

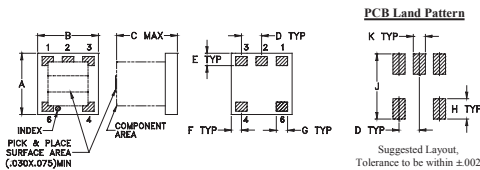
L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]

* Includes theoretical coupled power loss of 0.22 dB at 13 dB coupling

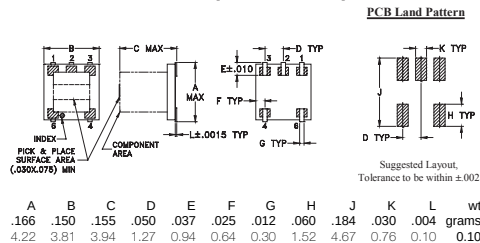
** For coupled port VSWR above 500 MHz, 1.4:1 typ.

Outline Drawing / Dimensions (inch mm)

AT790-1 (DBTC-13-4)

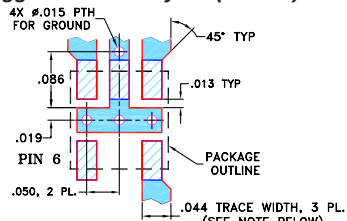


AT1030 (DBTC-13-4L)



Demo Board MCL P/N: TB-278

Suggested PCB Layout (PL-150)

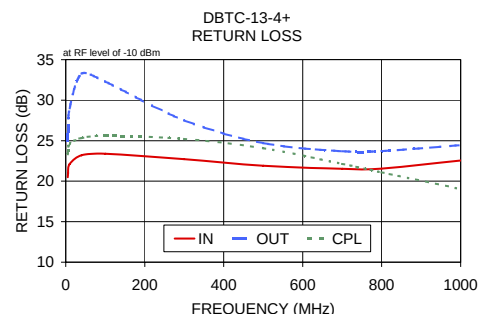
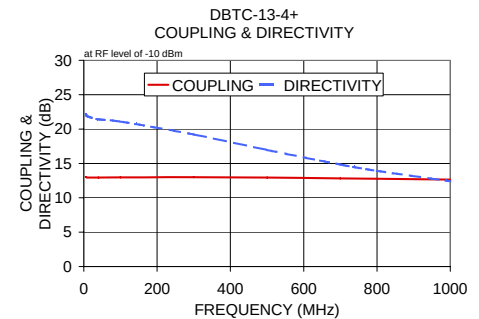
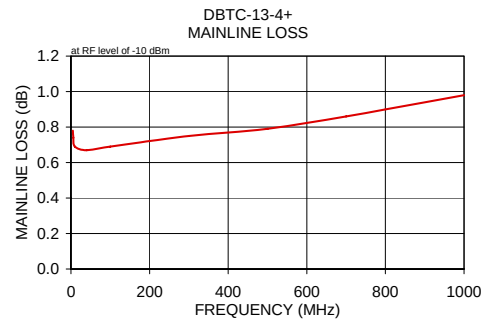


NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

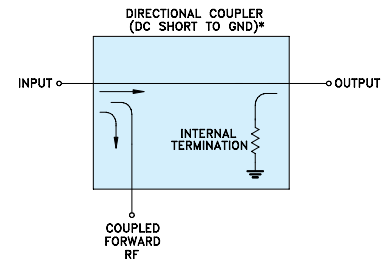
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
5.00	0.77	13.08	22.34	19.78	23.72	22.27
10.00	0.70	13.00	21.94	21.65	27.70	23.92
50.00	0.65	12.95	21.49	23.18	32.43	25.26
100.00	0.67	12.98	21.06	23.12	31.88	25.46
300.00	0.74	13.04	19.82	22.41	26.20	24.99
500.00	0.79	13.05	18.10	21.80	23.68	24.06
600.00	0.82	13.03	16.98	21.37	22.90	23.20
800.00	0.89	13.01	15.16	21.11	22.22	21.19
900.00	0.93	12.99	14.48	21.34	22.35	20.16
1000.00	0.98	12.97	13.82	21.62	22.42	19.03



Electrical Schematic



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

For detailed performance specs & shopping online see web site

Mini-Circuits®

ISO 9001 ISO 14001 AS 9100 CERTIFIED

The Design Engineers Search Engine

IF/RF MICROWAVE COMPONENTS

Provides ACTUAL Data Instantly at minicircuits.com

REV. J
M119986
DBTC-13-4+
WZTDC/PIAM
090903

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.