

# Surface Mount Directional Coupler

50Ω 17 dB coupling 50 to 2000 MHz

## DBTC-17-5LX+



CASE STYLE: AT1642

**+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

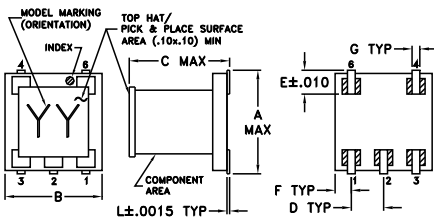
- cellular
- PCS
- DECT/PHS
- GSM

### Electrical Specifications

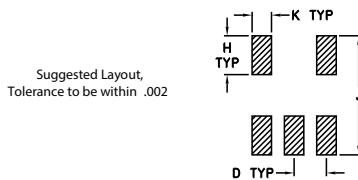
FREQ. RANGE (MHz)	COUPLING (dB)		MAINLINE LOSS* (dB)		DIRECTIVITY (dB)		VSWR** (:1)	POWER INPUT (W)	
	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.		Typ.	Max.
$f_1 - f_2$									
50-1000	17.0±0.7	±0.9	0.9	1.4	20	13	1.2	2.0	2.0
1000-1500	17.2±0.9	±1.0	1.0	1.5	20	10	1.2	2.0	2.0
1500-2000	17.5±1.0	±0.8	1.1	1.6	14	—	1.2	2.0	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



### PCB Land Pattern

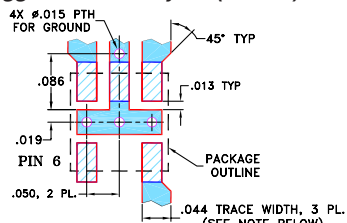


Suggested Layout, Tolerance to be within .002

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	
.166	.150	.155	.050	.037	.025	
4.22	3.81	3.94	1.27	0.94	0.64	
G	H	J	K	L	wt	
.012	.060	.184	.030	.004	grams	
0.30	1.52	4.67	0.76	0.10	0.10	

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



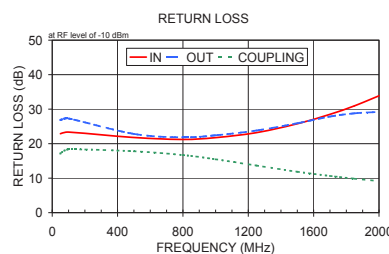
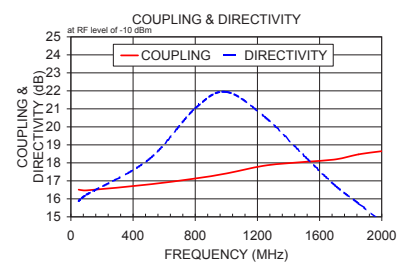
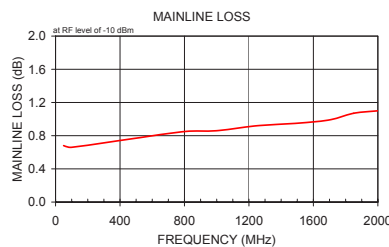
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)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

### Notes

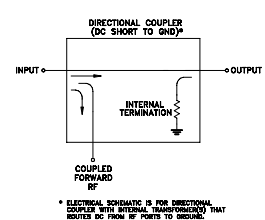
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
 B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
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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 TERMINATIONS THAT ROUTES DC FROM RF PORTS TO GROUND.

