

# Surface Mount Directional Coupler

## DBTC-6-4-75LX+

75Ω, 6dB coupling, 5 to 1250 MHz

### 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

- CATV



CASE STYLE: AT1642  
PRICE: \$2.14 ea. QTY (20)  
\$1.84 ea. QTY (1000)

+ 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.

### Electrical Specifications

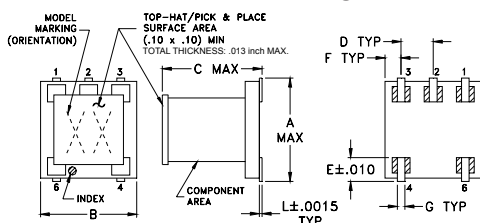
FREQ. (MHz)	COUPLING (dB)	MAINLINE LOSS* (dB)								DIRECTIVITY (dB)								VSWR** (:1)	POWER INPUT (W)	
		Max.		L	M	U	U <sup>1</sup>	L	M	U	U <sup>1</sup>	L	M	U	U <sup>1</sup>	Typ.	Max.		Max.	
		Nom.	Flatness																	Typ.
5-1250	6.8±0.3 ±0.8	2.2	3.1	2.2	2.6	2.3	2.8	2.3	2.9	15	13	17	13	16	10	12	7	1.4	0.5	1.0

L = low range [f<sub>l</sub> to 10 f<sub>l</sub>] M = mid range [10 f<sub>l</sub> to 500 MHz] U = 500 - 1000 MHz U<sup>1</sup> = 1000 - 1250 MHz  
\* Includes theoretical coupled power loss of 1.02 dB at 6 dB coupling  
\*\* For coupled port VSWR above 500 MHz, 1.6:1 typ.

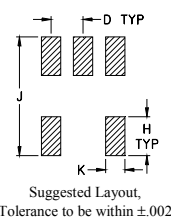
### Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
5.00	2.41	6.80	14.87	13.53	18.73	13.56
10.00	2.23	6.72	15.49	14.64	24.15	14.72
100.00	2.21	6.78	15.54	15.55	30.88	15.56
400.00	2.24	6.94	16.04	16.09	18.42	14.47
600.00	2.26	7.01	15.94	16.32	16.33	13.60
800.00	2.28	7.16	15.12	17.08	15.48	13.11
1000.00	2.32	7.36	13.45	18.22	15.61	12.36
1050.00	2.34	7.44	12.88	18.62	15.75	12.10
1100.00	2.40	7.51	12.50	18.66	15.58	12.04
1250.00	2.46	7.75	11.03	19.78	14.75	11.49

### Outline Drawing



### PCB Land Pattern

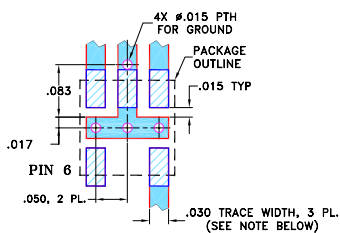


Suggested Layout, Tolerance to be within ±0.02

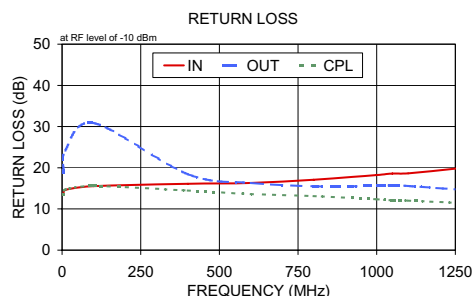
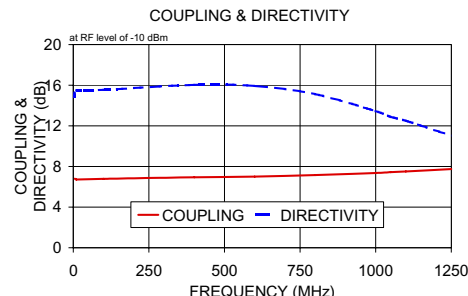
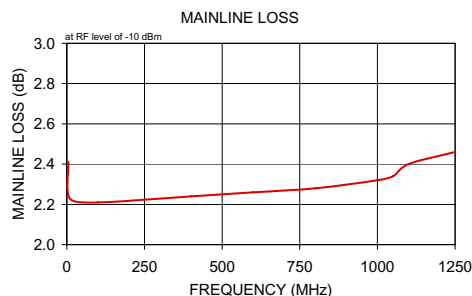
### Outline Dimensions (inch/mm)

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

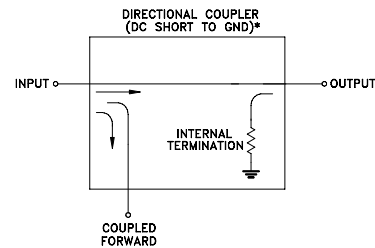
### Demo Board MCL P/N: TB-279 Suggested PCB Layout (PL-151)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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



### 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



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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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

REV. OR  
M135283  
ED-10488C/1  
DBTC-20-4-75LX+  
WP/CP/AM  
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