

Surface Mount Directional Coupler

75Ω, 16dB coupling, 5 to 1500 MHz

DBTC-16-5-75X+

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



Generic photo used for illustration purposes only

CASE STYLE: AT1667-1

+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
13"	500, 1000, 2000

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1500	MHz
Mainline Loss ¹	5-50		1.2	2.0	dB
	50-500		1.0	1.5	
	500-1000		1.1	1.6	
	1000-1500		1.3	1.9	
Nominal Coupling	5-1000		16.3±0.5		dB
	1000-1500		16.8±0.7		
Coupling Flatness(±)	5-1000			±0.7	dB
	1000-1500			±0.7	
Directivity	5-50	16	22		dB
	50-500	13	21		
	500-1000	—	20		
	1000-1500	—	19		
VSWR ²	5-1000		1.3		dB
	1000-1500		1.3		
Input Power	5-50			0.5	W
	50-500			1.0	
	500-1000			1.0	
	1000-1500			1.0	

1. Includes theoretical coupled power loss of 0.10 dB at 16 dB coupling.

2. For coupled port VSWR above 500 MHz, 1.6:1 typ.

Maximum Ratings

Parameter	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.

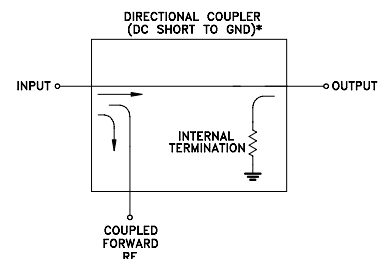
Pin Connections

Function	Pin Number
INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
ISOLATE (DO NOT USE)	6

Product Marking



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-279
Suggested PCB Layout (PL-151)


Figure 1: Dimensions of the package. The drawing shows a cross-section of a package with the following dimensions and labels:

- 4X $\phi .015$ PTH FOR GROUND
- PIN 6
- .083
- .017
- .015 TYP
- .050, 2 PL.
- .030 TRACE WIDTH, 3 PL. (SEE NOTE BELOW)
- PACKAGE OUTLINE

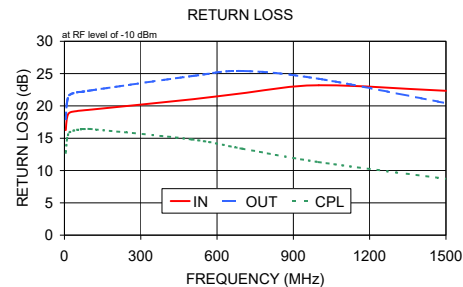
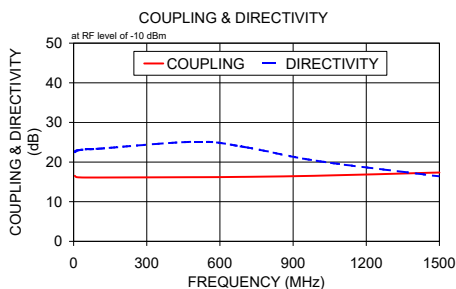
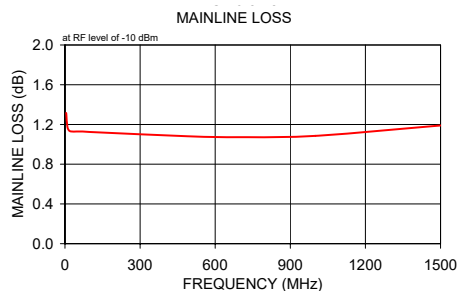
A	B	C	D	E	F
.150	.150	.150	.050	.030	.025
3.81	3.81	3.81	1.27	0.76	0.64
G	H	J	K		wt
.028	.050	.160	.030		grams
0.71	1.27	4.06	0.76		0.10

2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND
 DENOTES PCB COPPER LAYOUT WITH SMOBC

 DENOTES 100% COPPER LAYOUT WITH SMOBOS (SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss		
				In	(dB) Out	Cpl
5.0	1.32	16.54	22.53	16.26	17.94	12.74
10.0	1.18	16.25	22.81	18.13	20.48	14.84
20.0	1.13	16.14	23.00	18.94	21.68	15.90
50.0	1.13	16.11	23.19	19.20	22.11	16.31
70.0	1.13	16.10	23.23	19.30	22.19	16.37
100.0	1.12	16.10	23.35	19.41	22.38	16.43
500.0	1.08	16.18	25.13	21.01	24.62	14.81
700.0	1.07	16.27	23.81	21.95	25.41	13.38
1000.0	1.09	16.56	20.29	23.20	24.19	11.31
1500.0	1.19	17.35	16.40	22.34	20.43	8.71



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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[DBTC-16-5-75X+](#)