SURFACE MOUNT top hat

Directional Coupler DBTC-16-5-75LX+

75Ω 16 dB 5 to 1500 MHz

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

Generic photo used for illustration purposes only

CASE STYLE: AT1642

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- VHF/UHF Receivers/Transmitters
- Cellular

ELECTRICAL SPECIFICATIONS AT +25°C

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

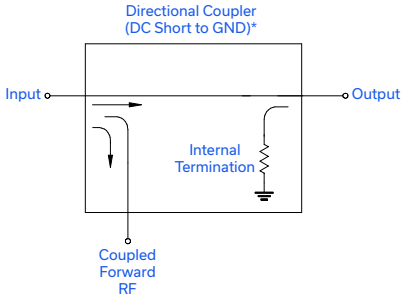
1. Includes theoretical coupled power loss of 0.10 dB at 16 dB coupling.
2. For coupled port VSWR above 500 MHz, 1.6:1 typ.

ABSOLUTE 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.

ELECTRICAL SCHEMATIC



* Electrical schematic is for directional coupler with internal transformer(s) that routes DC from RF ports to ground.

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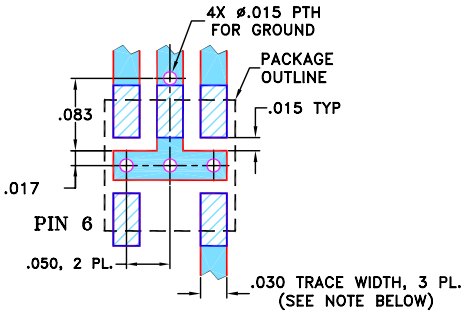
PIN CONNECTIONS

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

PRODUCT MARKING: DW

DEMO BOARD MCL P/N: TB-DBTC16575LX+

SUGGESTED PCB LAYOUT (PL-151)

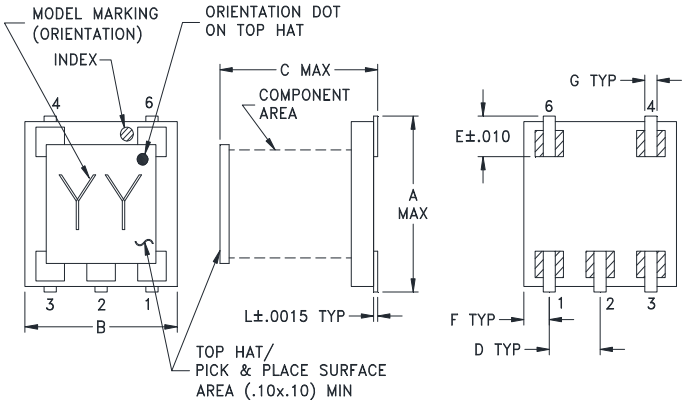


NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

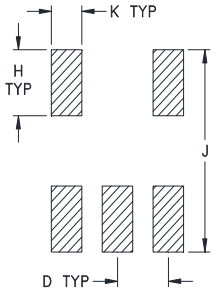
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within±.002

OUTLINE DIMENSIONS (Inches / 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

TAPE & REEL INFORMATION: F76

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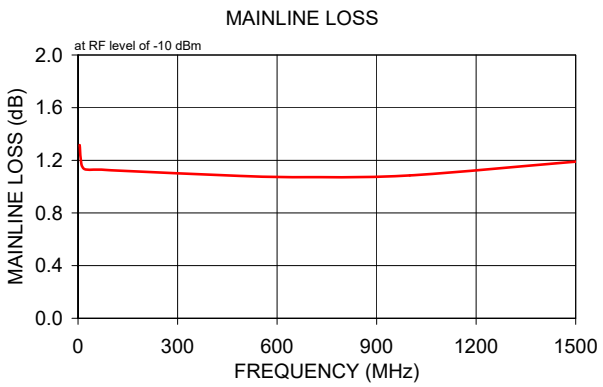
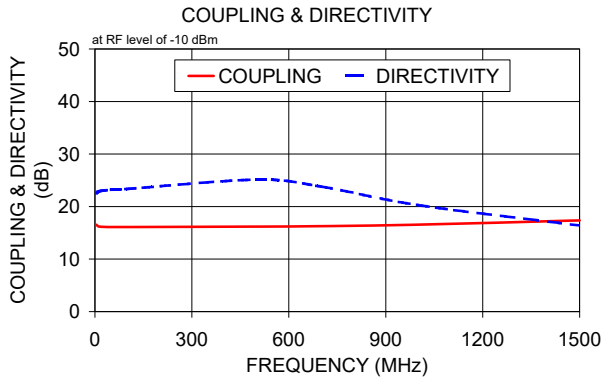
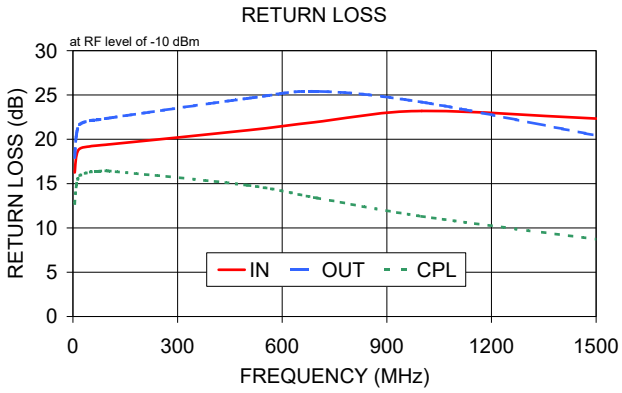
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Out	Cpl
5	1.32	16.54	22.53	16.26	17.94	12.74
10	1.18	16.25	22.81	18.13	20.48	14.84
20	1.13	16.14	23.00	18.94	21.68	15.90
50	1.13	16.11	23.19	19.20	22.11	16.31
70	1.13	16.10	23.23	19.30	22.19	16.37
100	1.12	16.10	23.35	19.41	22.38	16.43
500	1.08	16.18	25.13	21.01	24.62	14.81
700	1.07	16.27	23.81	21.95	25.41	13.38
1000	1.09	16.56	20.29	23.20	24.19	11.31
1500	1.19	17.35	16.40	22.34	20.43	8.71







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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