SURFACE MOUNT top hat

Directional Coupler TCD-9-1W-75X+

75Ω 5 to 2000 MHz

FEATURES

- Wideband, 5 to 2000 MHz
- Low Mainline Loss, 1.3 dB Typ. (5 to 1000 MHz)
- Aqueous Washable
- Leads for Excellent Solderability
- Protected by US Patent 6,140,887



Generic photo used for illustration purposes only

CASE STYLE: DB1627

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

APPLICATIONS

- GPS
- Cellular
- Satellite Distribution
- CATV

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		2000	MHz
Mainline Loss[1] (Above Theoretical 0.1 dB)	5-50 50-500 500-1000 1000-2000		1.3 1.3 1.8 2.5	2.1 2.0 2.4	dB
Coupling	5-1000 1000-2000		8.9±0.5 8.5±0.5		dB
Coupling Flatness (±)	5-2000		±0.6		dB
Directivity	5-50 50-500 500-1000 1000-2000	17	21 15 10 10		dB
VSWR	5-1000 1000-2000		1.30 1.60		:1
Input Power	5-1000 1000-2000			0.5 1.0	W

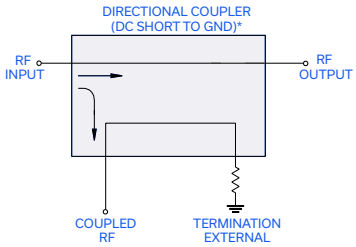
1. Mainline loss includes theoretical power loss at coupled port.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C[2]
Storage Temperature	-55°C to +100°C

2. Case temperature is defined as temperature on ground leads.
Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC



*Electrical schematic is for Directional coupler with internal transformer(s) and external termination

REV. D
ECO-027946
TCD-9-1W-75X+
MCL NY
260205

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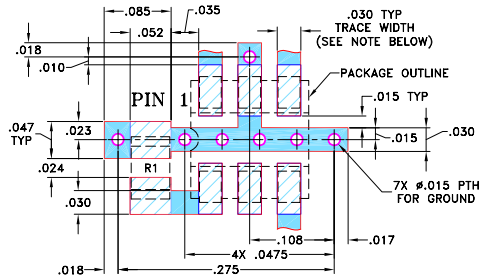
PIN CONNECTIONS

INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
75Ω TERM EXTERNAL	6
NOT USED	5

PRODUCT MARKING: DL

DEMO BOARD MCL P/N: TB-TCD9-1W-75X+

SUGGESTED PCB LAYOUT (PL-010)



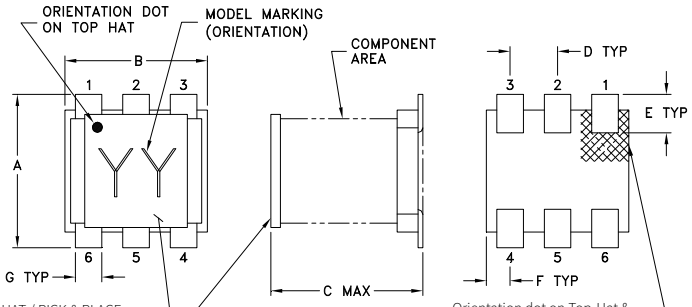
RESISTOR R1: 75 ± 1% Ohm, 0805 SIZE

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

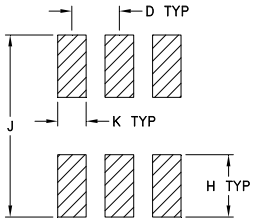
OUTLINE DRAWING



TOP-HAT / PICK & PLACE SURFACE AREA (.10X.10) MIN
TOP-HAT TOTAL THICKNESS: .013 inches MAX.

Orientation dot on Top-Hat & orientation feature on substrate corresponds to pin #1.

PCB Land Pattern



SUGGESTED LAYOUT
TOLERANCE TO BE WITHIN ±.002

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F
.160	.150	.160	.050	.040	.025
4.06	3.81	4.06	1.27	1.02	0.64

G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.15

TAPE & REEL INFORMATION: F47

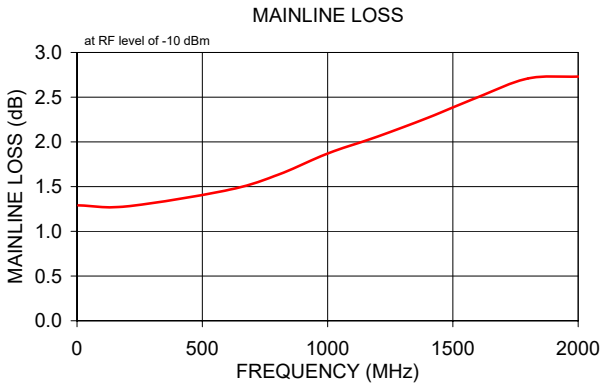
SURFACE MOUNT top hat

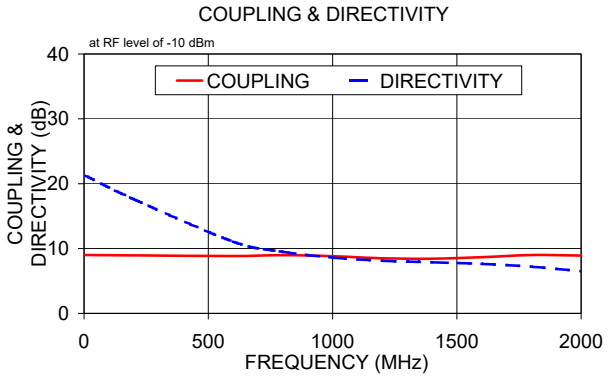
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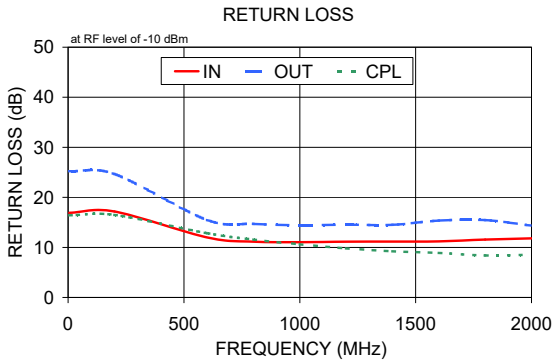
75Ω 5 to 2000 MHz

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Out	Cpl
5	1.29	8.99	21.24	16.92	25.24	16.42
200	1.28	8.94	17.61	17.17	24.67	16.49
600	1.46	8.84	11.06	12.00	15.49	12.84
800	1.63	8.98	9.49	11.14	14.69	11.57
1000	1.87	8.81	8.59	11.05	14.44	10.62
1200	2.06	8.50	8.12	11.15	14.53	9.81
1400	2.27	8.43	7.88	11.16	14.51	9.22
1600	2.50	8.66	7.63	11.20	15.36	8.91
1800	2.71	9.00	7.19	11.56	15.46	8.40
2000	2.73	8.92	6.49	11.81	14.35	8.53







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.

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/terms/viewterm.html