SURFACE MOUNT top hat

Directional Coupler TCD-6-122-75X+

75Ω 6.7 dB 5 to 1250 MHz

FEATURES

- Wideband, 5 to 1250 MHz
- Low mainline loss, 2.5 dB typ.
- Aqueous washable
- Leads for excellent solderability
- Protected by US Patent 6,140,887



Generic photo used for illustration purposes only

CASE STYLE: AT1521

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

APPLICATIONS

- DOCSIS® 3.1 Systems
- VHF/UHF
- CATV
- Cellular

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range	—	5	—	1250	MHz
Mainline Loss[1] (above theoretical 0.1 dB)	5-100	—	2.2	2.8	dB
	100-1000	—	2.3	2.9	
	1000-1250	—	2.8	3.5	
Coupling	5-1250	—	6.7±0.3	—	dB
Coupling Flatness	5-1250	—	±0.2	±0.5	dB
Directivity	5-100	13	15	—	dB
	100-1000	10	13	—	
	1000-1250	8	12	—	
Return Loss (Input)	5-100	10	15	—	dB
	100-1000	14	16	—	
	1000-1250	13	15	—	
Return Loss (Output)	5-100	15	20	—	dB
	100-1000	15	18	—	
	1000-1250	13	18	—	
Return Loss (Coupling)	5-100	10	15	—	dB
	100-1000	13	15	—	
	1000-1250	13	16	—	
Input Power	5-500	—	—	0.3	W
	500-1250	—	—	0.5	

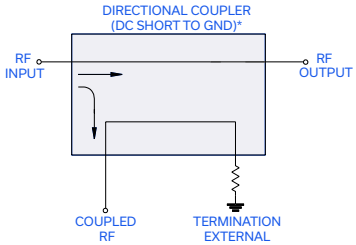
1. Mainline loss includes theoretical power loss 1.1dB at coupled port.

ABSOLUTE MAXIMUM RATINGS[2]

Parameter	Ratings
Operating Temperature	-40°C to +85°C[3]
Storage Temperature	-55°C to +100°C

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

ELECTRICAL SCHEMATIC



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

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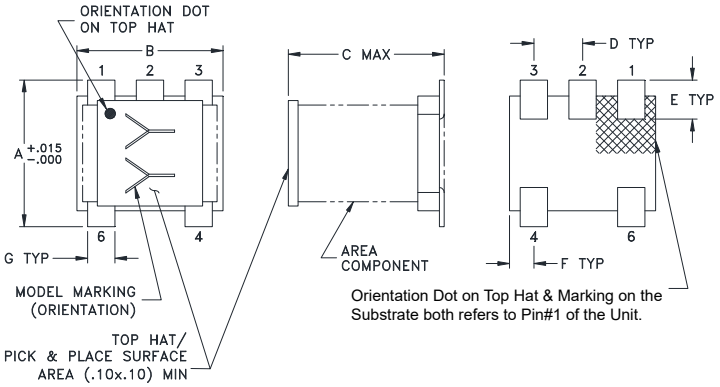
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PIN CONNECTIONS

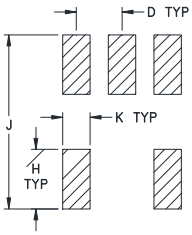
INPUT	3
OUTPUT	4
COUPLED	1
GROUND	2
75Ω TERM EXTERNAL	6

OUTLINE DRAWING



PRODUCT MARKING: UH

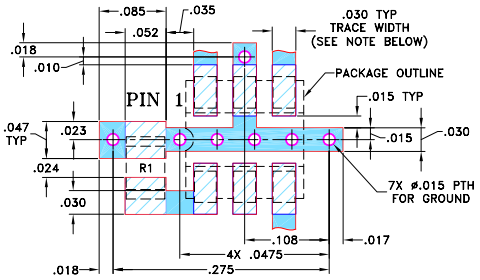
PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

DEMO BOARD MCL P/N: TB-TCD6122-75X+

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 DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	K
.150	.150	.160	.050	.040	.025	.028	.065	.190	.030
3.81	3.81	4.06	1.27	1.02	0.64	0.71	1.65	4.83	0.76

Weight: 0.15 grams

TAPE & REEL INFORMATION: F17

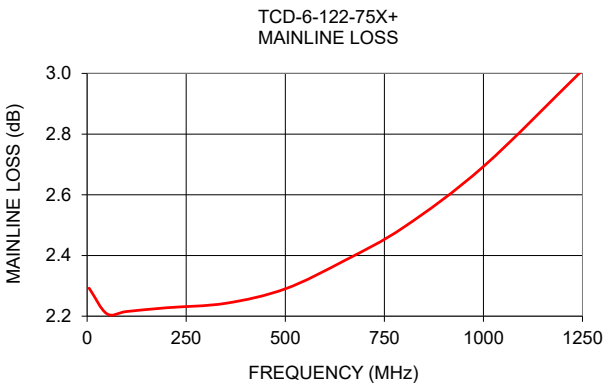
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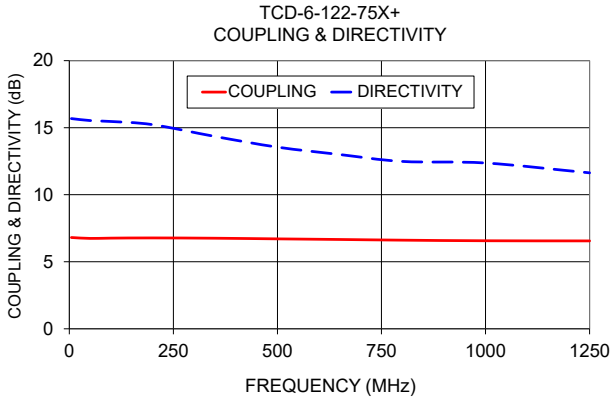
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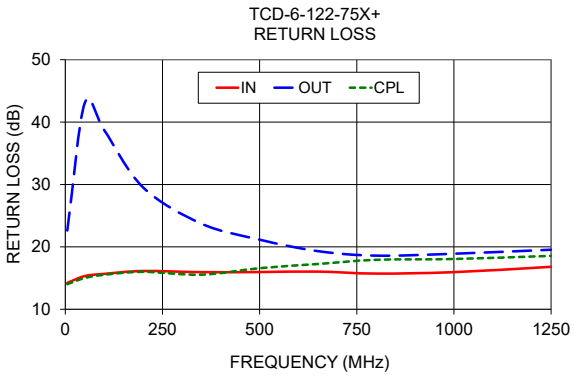
75Ω 6.7 dB 5 to 1250 MHz

TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB) Out-Cpl	Return Loss (dB) In	Out	Cpl
5	2.29	6.81	15.68	14.24	22.63	14.03
50	2.21	6.74	15.53	15.33	43.05	15.02
100	2.22	6.76	15.46	15.68	38.71	15.53
200	2.23	6.78	15.23	16.14	29.54	16.00
350	2.24	6.76	14.34	15.95	23.73	15.55
500	2.29	6.71	13.55	15.97	21.16	16.59
650	2.38	6.66	13.00	16.04	19.32	17.26
800	2.49	6.61	12.48	15.72	18.60	17.93
1000	2.69	6.57	12.37	15.96	18.91	18.06
1250	3.01	6.56	11.63	16.81	19.55	18.56







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