

# Surface Mount Directional Coupler

# ADC-10-4+ ADC-10-4

50Ω 5 to 1000 MHz



CASE STYLE: CD542

## Maximum Ratings

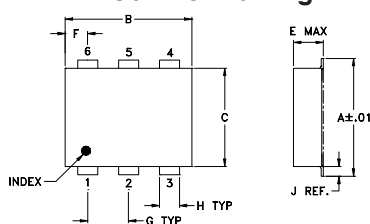
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

Permanent damage may occur if any of these limits are exceeded.

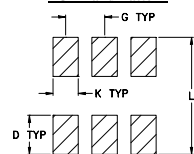
## Pin Connections

INPUT	1
OUTPUT	6
COUPLED	3
GROUND	2
50Ω TERM EXTERNAL	4
ISOLATE (DO NOT USE)	5

## Outline Drawing



## PCB Land Pattern

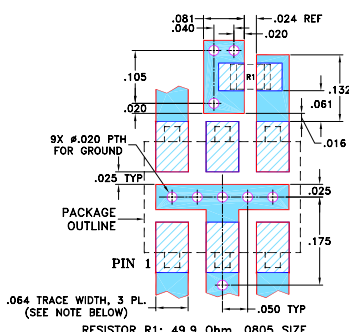


Suggested Layout,  
Tolerance to be within ±.002

## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.112	.055	.100
6.91	7.87	5.59	2.54	2.84	1.40	2.54
H	J	K	L		wt	
.030	.026	.065	.300		grams	
0.76	0.66	1.65	7.62		0.20	

## Demo Board MCL P/N: TB-05 Suggested PCB Layout (PL-095)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .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

## 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-Circuits' applicable established test performance criteria and measurement instructions.  
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## Features

- wideband, 5-1000 MHz
- low mainline loss, 0.8 dB typ.
- high directivity, 40 dB typ.
- aqueous washable
- protected by U.S. Patents 6,133,525 & 6,140,887

## Applications

- communications
- cable tv

**+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"	10, 20, 50, 100, 200, 500
13"	500, 1000

## Directional Coupler Electrical Specifications

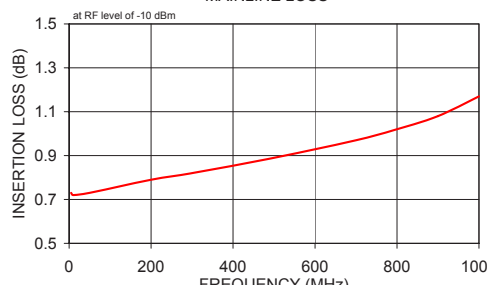
FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS <sup>1</sup> (dB)			DIRECTIVITY (dB)			VSWR (:1)	POWER INPUT, W							
	Nom.	Flatness	L	M	U	L	M	U		Typ.	L	MU					
f <sub>c</sub> -f <sub>u</sub>			Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Max.						
5-1000	10.5±0.5	±1.0	0.8	1.3	0.8	1.2	1.0	1.5	40	23	40	20	25	13	1.2	1	1

L= 5-50 MHz M= 50-500 MHz U= 500-1000 MHz  
1. Mainline loss includes theoretical power loss at coupled port.

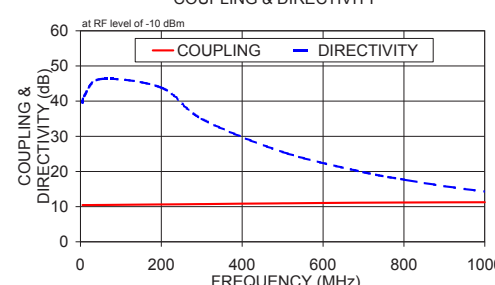
## Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB)		
				In	Out	Cpl
5.00	0.73	10.45	39.49	22.96	30.01	20.21
10.00	0.72	10.44	41.58	23.49	31.11	20.71
50.00	0.73	10.47	46.29	23.98	31.76	20.95
200.00	0.79	10.62	43.84	22.59	26.52	18.33
300.00	0.82	10.73	34.95	21.24	24.15	16.40
500.00	0.89	10.94	25.53	19.19	20.98	13.59
700.00	0.97	11.12	19.79	18.06	19.06	11.89
800.00	1.02	11.18	17.70	17.82	18.42	11.33
900.00	1.08	11.22	15.83	17.78	17.99	10.91
1000.00	1.17	11.24	14.27	17.91	17.72	10.60

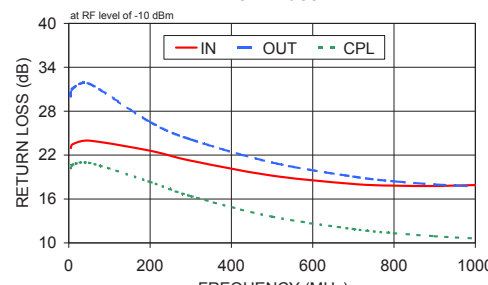
ADC-10-4  
MAINLINE LOSS



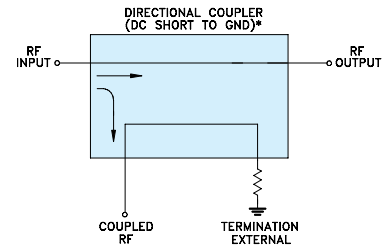
ADC-10-4  
COUPLING & DIRECTIVITY



ADC-10-4  
RETURN LOSS



## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

