Surface Mount

Directional Coupler

ADC-12-4-75+
ADC-12-4-75

75Ω 12dB 5 to 1250 MHz

CASE STYLE: CD542

+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, 500
13"	500,1000

Features

- wideband, 5-1250 MHz
- low mainline loss, 0.9 dB typ.
- good directivity, 18 dB typ.
- good VSWR, 1.25:1 typ.
- excellent coupling flatness, ±0.15 dB typ.
- aqueous washable
- protected by U.S Patents 6,133,525 & 6,140,887

Applications

- cable tv

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1250	MHz
Mainline Loss[1]	5 - 870 870 - 1250	— —	0.85 1.0	1.2 1.6	dB
Coupling	5 - 1250	—	12.8±0.5	—	dB
Coupling Flatness (±)	5 - 870 5 - 1250	—	0.15 0.2	0.4 0.6	dB
Directivity	5 - 50 50 - 870 870 - 1250	20 12 8	25 16 11	— — —	dB
Return Loss (Input)	5 - 50 50 - 1250	16 15	18 17	— —	dB
Return Loss (Output)	5 - 50 50 - 1250	18 15	22 18	— —	dB
Return Loss (Coupling)	5 - 50 50 - 1250	15 10	18 16	— —	dB
Input Power	5 - 20 20 - 1250	— —	— —	0.5 1.0	W

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

Maximum Ratings

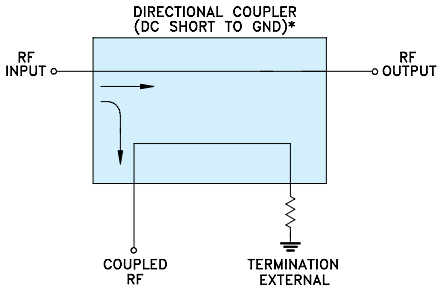
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

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

Pin Connections

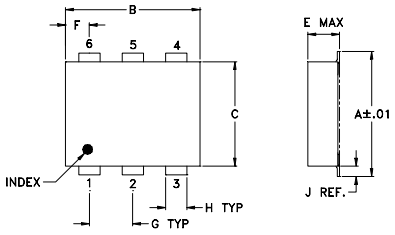
Function	Pin Number
INPUT	1
OUTPUT	6
COUPLED	3
GROUND	2
75Ω TERM EXTERNAL	4
ISOLATE (DO NOT USE)	5

Electrical Schematic

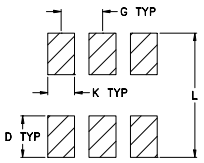


* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

Outline Drawing



PCB Land Pattern



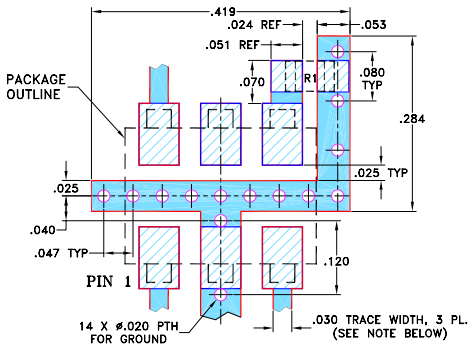
Suggested Layout,
Tolerance to be within ±.002

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-08
Suggested PCB Layout (PL-042)



RESISTOR R1: 75 Ohm, 0805 SIZE.

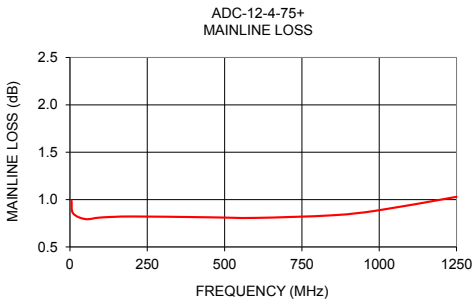
NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

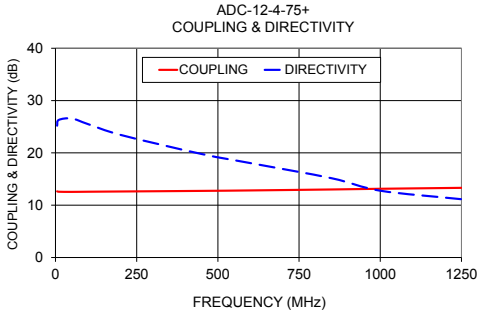
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

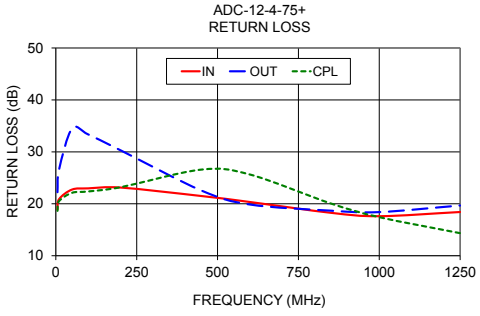
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
5	0.99	12.65	25.19	18.87	22.23	18.64
10	0.86	12.57	26.29	20.90	26.61	20.52
50	0.79	12.55	26.57	22.74	34.48	22.12
100	0.81	12.58	25.50	22.97	33.35	22.38
200	0.82	12.62	23.44	23.13	30.30	23.19
450	0.81	12.74	19.79	21.50	22.55	26.58
600	0.81	12.82	18.05	20.35	19.86	25.64
850	0.83	13.01	15.16	18.27	18.68	20.07
1000	0.89	13.14	12.77	17.61	18.41	17.43
1250	1.03	13.32	11.14	18.42	19.67	14.35







Additional 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/MCLStore/terms.jsp