Surface Mount

Directional Coupler

ADC-20-13+

50Ω 450 to 1000 MHz



Generic photo used for illustration purposes only

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
13"	500, 1000

Maximum Ratings

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

Pin Connections

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

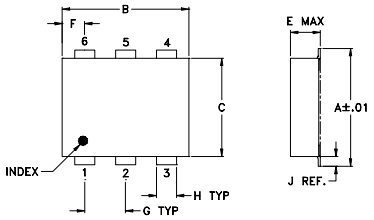
Features

- power handling up to 4 Watt.
- low mainline loss, 0.20 dB typ.
- high directivity, 25 dB typ.
- excellent VSWR, 1.2:1 typ.
- aqueous washable

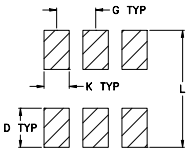
Applications

- cable tv
- VHF/UHF receivers
- cellular

Outline Drawing



PCB Land Pattern



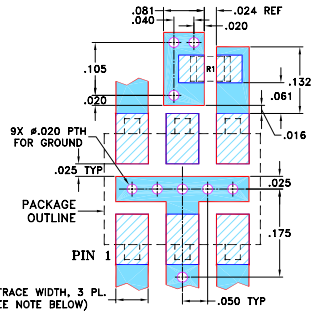
Suggested Layout,
Tolerance to be within ±.002

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)



RESISTOR R1: 49.9 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

Electrical Specifications at 25°C

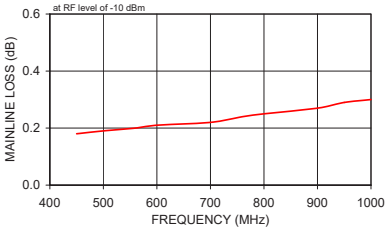
Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		450	—	1000	MHz
Mainline Loss (above theoretical 0.05 dB)	450 700 1000	— — —	0.2 0.2 0.3	0.3 0.4 0.5	dB
Coupling	450-1000 450 700 1000	 19.0 18.4 17.0	19.7 20.7 20.0 19.0	 22.2 21.6 21.0	dB
Coupling Flatness(±)	450-700 700-1000	— —	0.4 0.5	0.6 0.7	dB
Directivity	450 700 1000	18 16 13	22 20 18	— — —	dB
Return Loss (Input)	450 700 1000	20 19 16	24 25 23	— — —	dB
Return Loss (Output)	450 700 100	20 18 15	24 25 23	— — —	dB
Return Loss (Coupling)	450 700 1000	18 17 14	21 20 18	— — —	dB
Input Power[1]	450-1000			4.0	W

1. Maximum input power with 2:1 VSWR (maximum) load at output port.

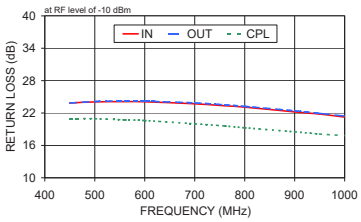
Typical Performance Data

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
450.00	0.18	20.98	27.72	23.85	23.86	20.98
500.00	0.19	20.87	27.19	24.06	24.14	20.94
560.00	0.20	20.72	26.86	24.11	24.24	20.73
600.00	0.21	20.63	26.88	24.09	24.19	20.61
700.00	0.22	20.38	26.45	23.71	23.87	20.01
760.00	0.24	20.23	25.91	23.35	23.52	19.59
800.00	0.25	20.10	25.41	23.09	23.23	19.26
900.00	0.27	19.81	24.46	22.21	22.40	18.51
950.00	0.29	19.67	23.94	21.81	21.94	18.11
1000.00	0.30	19.52	23.40	21.25	21.43	17.82

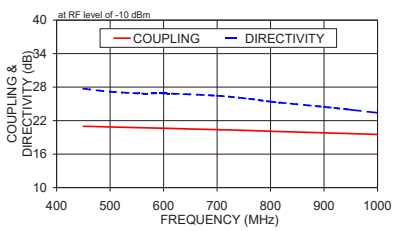
ADC-20-13+
MAINLINE LOSS



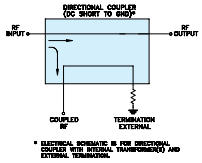
ADC-20-13+
RETURN LOSS



ADC-20-13+
COUPLING & DIRECTIVITY



Electrical Schematic



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

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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