



SURFACE MOUNT

Bi-Directional Coupler

ADCB-20-82+

Mini-Circuits

50Ω 20dB Coupling 1 to 800 MHz

THE BIG DEAL

- Very Flat Coupling, 0.2 dB
- Very Low Loss, 0.3 dB
- Small Size
- Aqueous washable
- Protected by US Patents, 6,133,525 & 6,140,887



Generic photo used for illustration purposes only

CASE STYLE: CD636

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

APPLICATIONS

- Cable TV
- Communications

PRODUCT OVERVIEW

ADCB-20-82+ is a surface mount, bi-directional coupler, operating over a wide frequency range, 1-800 MHz housed in a small case measuring 0.31" x 0.27" x 0.16" (7.9 mm x 6.9 mm x 4.1 mm). It uses square cores and a unique patented circuit design to achieve very flat coupling making it ideal for use in wideband applications.

KEY FEATURES

Feature	Advantages
Wide Bandwidth: 1-800 MHz	Ideal for use in CATV and instrumentation applications.
Very Flat Coupling: ± 0.2 dB	Coupled port output is flat over frequency range eliminating need for compensation circuits.
Very Low Loss: 0.3 dB typ.	When used at the output of the amplifiers, low loss minimizes the gain reduction and temperature rise of surrounding components, thus preserving performance and improving reliability.
Bi-Directional	ADCB has two coupled ports; one to sample power traveling from in-out port & the other for sampling power traveling from out to In-Port. Ideal for use in instrumentation applications for measuring ratio of the two powers (return loss).
High Directivity: 16-24 dB typ. to 400 MHz 15-24 dB typ. to 800 MHz	Minimizes the undesired power entering the coupled ports due to imperfect source and load impedances resulting in improved system performance.
Excellent Return Loss: 20-40 dB typ. to 400 MHz	Excellent Return loss of ADCB minimizes interaction effects with adjacent circuits and resulting gain ripple.





ELECTRICAL SPECIFICATIONS¹ AT 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1		800	MHz
Mainline Loss ¹ (above theoretical 0.05 dB)	1	—	0.2	0.4	dB
	400	—	0.3	0.6	
	800	—	0.6	0.9	
Coupling	1-800		20.2		dB
	1	19.5	20.2	20.9	
	400	19.5	20.4	21.6	
	800	18.5	20.2	21.8	
Coupling Flatness(±)	1-400	—	0.2	0.6	dB
	400-800	—	0.2	0.7	
Directivity	1	15	20	—	dB
	400	14	24.4	—	
	800	10	15	—	
Return Loss (Input)	1	21	28	—	dB
	400	15	21	—	
	800	11	16	—	
Return Loss (Output)	1	21	27	—	dB
	400	15	22	—	
	800	11	17	—	
Return Loss (Coupled)	1	18	24	—	dB
	400	14	19	—	
	800	11	15	—	
Input Power	1-10	—	—	0.5	W
	10-800	—	—	1.0	

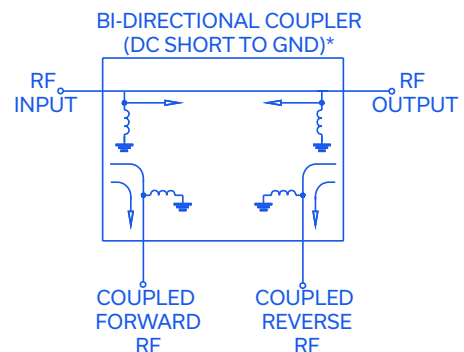
1. Mainline loss includes theoretical power loss at coupled port.

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.

ELECTRICAL SCHEMATIC



*Electrical schematic is for Bi-Directional coupler with internal transformer(s)

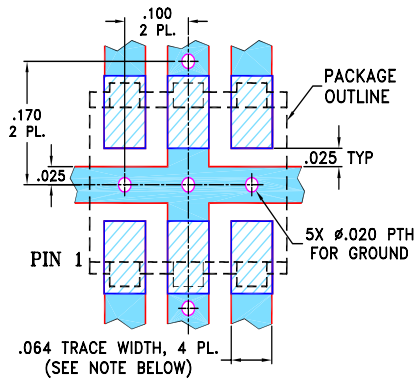


PIN CONNECTIONS

INPUT	1
OUTPUT	6
COUPLED (FORWARD)	3
COUPLED (REVERSE)	4
GROUND	2, 5

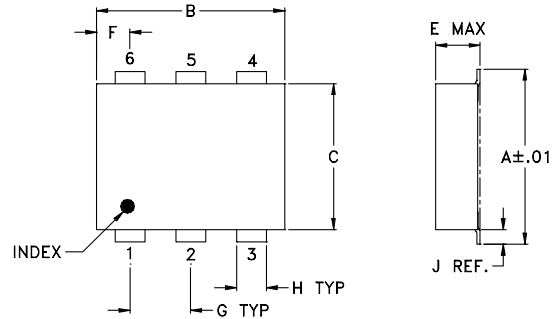
PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-211
SUGGESTED PCB LAYOUT (PL-097)

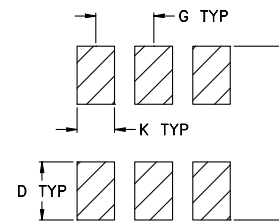


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.030 \pm .002$; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DRAWING



PBC Land Pattern



Suggested Layout

OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.162	.055	.100
6.91	7.87	5.59	2.54	4.11	1.40	2.54
H	J	K	L			wt
.030	.026	.065	.300			grams
0.76	0.66	1.65	7.62			0.25

TAPE & REEL INFORMATION: F34