

High Power Bi-Directional Coupler

50Ω 7dB Coupling DC Pass 1200 to 2500 MHz

BDCA-7-25+



Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	0.25A
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

INPUT	1
OUTPUT	6
COUPLED (forward)	10
COUPLED (reverse)	5
GROUND	2,3,4,7,8,9

Features

- four-port coupler
- wideband, 1200 to 2500 MHz
- excellent VSWR, 1.05:1 typ. all ports
- good flatness, ± 0.3 dB typ.
- excellent power handling capability, 35W (2100 MHz)
- hermetically sealed
- minimal variation with temperature variation
- low profile, 0.052" height
- protected by US Patent 7,049,905
- DC current through input to output 0.25A Max. at 1.0 watt RF input power.

Applications

- PCS, PCN, UMTS
- ISM
- GPS
- defense

CASE STYLE: DZ944
PRICE: \$5.95 ea. QTY (10)

+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

Bi-Directional Coupler Electrical Specifications

FREQUENCY (MHz)	COUPLING (dB)		MAINLINE LOSS ¹ (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT ² (W)
	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.		
$f_c - f_u$								
1200-2500								
1200-1700	7.1 $\pm$ 0.8	$\pm$ 0.8	1.5	1.9	22	19	1.08	35
1700-2100	6.5 $\pm$ 0.5	$\pm$ 0.3	1.6	2.0	22	14	1.05	35
2100-2500	7.0 $\pm$ 0.8	$\pm$ 1.0	1.5	2.0	22	12	1.10	27

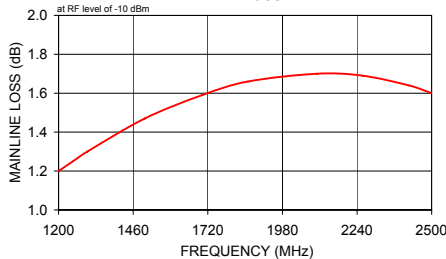
1. Includes theoretical power loss of 1.0 dB at 7 dB coupling.

2. Derate linearly 1/3 at 100°C

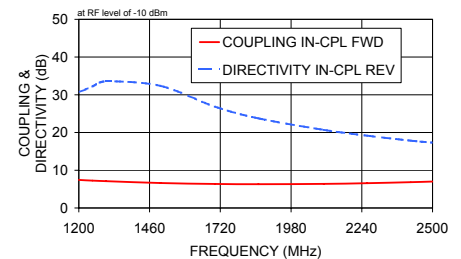
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB)		Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	In-Cpl Fwd	Out-Cpl Rev	Out-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd	Cpl Rev	
1200.00	1.20	7.44	7.44	28.71	30.67	33.76	38.52	34.05	31.62	
1250.00	1.25	7.25	7.26	28.83	32.19	34.26	41.86	36.87	33.16	
1300.00	1.30	7.10	7.09	28.92	33.55	34.75	58.50	42.17	34.02	
1500.00	1.47	6.62	6.62	26.70	32.36	29.75	32.95	35.05	30.66	
1700.00	1.59	6.36	6.37	23.78	26.87	25.23	26.63	27.37	25.76	
1860.00	1.66	6.30	6.30	21.94	23.76	23.19	23.89	24.17	23.22	
2100.00	1.70	6.39	6.38	19.67	20.71	21.34	21.69	21.28	20.95	
2260.00	1.69	6.57	6.56	18.53	19.15	20.76	21.18	20.21	20.12	
2420.00	1.64	6.84	6.84	17.58	17.85	20.67	21.04	19.83	19.80	
2500.00	1.60	7.01	7.00	17.10	17.32	20.88	21.37	19.63	19.70	

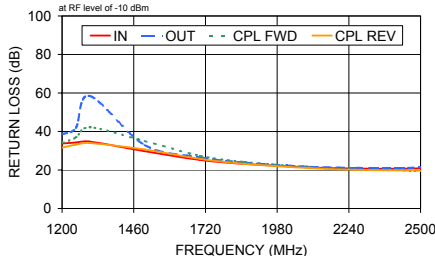
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MAINLINE LOSS



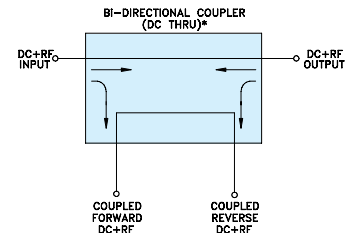
BDCA-7-25+
COUPLING & DIRECTIVITY



BDCA-7-25+
RETURN LOSS

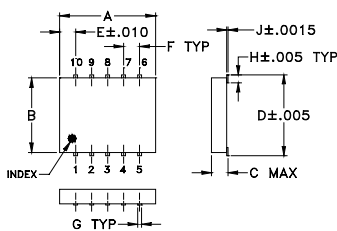


Electrical Schematic

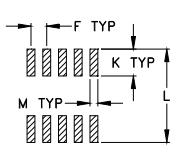


* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

Outline Drawing



PCB Land Pattern

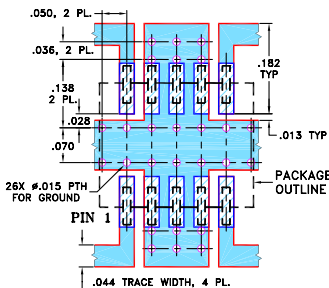


Suggested Layout,
Tolerance to be within ± 0.02

Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.30	.250	.052	.266	.050	.050	.012
7.62	6.35	1.32	6.76	1.27	1.27	0.30
H	J	K	L	M		wt
.029	.004	.085	.296	.030		grams
0.74	0.10	2.16	7.52	0.76		0.25

Demo Board MCL P/N: TB-115+ Suggested PCB Layout (PL-004)



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020 $\pm$.0015; 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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