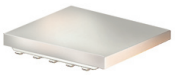
High Power

Bi-Directional Coupler

BDCA1-10-40+

50Ω 10dB Coupling DC Pass 1600 to 4000 MHz



CASE STYLE: DZ944
PRICE: $5.95 ea. QTY (10-49)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

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

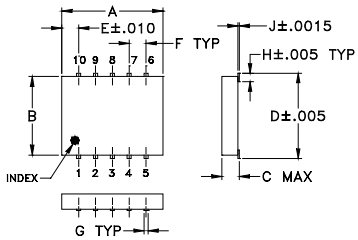
Features

- four-port
- wideband, 1600 to 4000 MHz
- excellent VSWR 1.2:1 typ. all ports
- good flatness, ±0.5 dB
- excellent power handling capability
- hermetically sealed
- minimal variation with temperature
- protected by US Patent 7,049,905
- DC current through input to output 0.25A Max. at 1.0 watt RF input power.

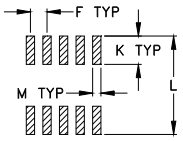
Applications

- wireless communication
- ISM, PCS
- mobile satellite

Outline Drawing



PCB Land Pattern



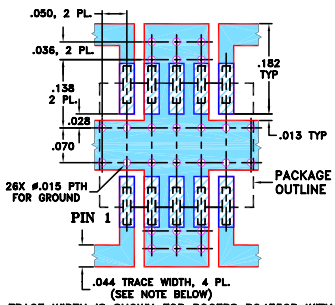
Suggested Layout,
Tolerance to be within ±.002

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 ± .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

Bi-Directional Coupler Electrical Specifications

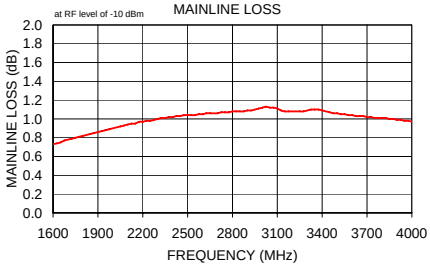
FREQUENCY (MHz)	COUPLING (dB)		MAINLINE LOSS[1] (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT[2] (W)
f_L-f_U	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.	Typ.	Max.
1600-4000								
1600-1800	10.1±0.7	±0.7	0.8	1.1	21	18	1.1	24
1800-2200	9.5±0.7	±0.8	1.0	1.3	20	17	1.1	20
2200-2900	9.1±0.5	±0.5	1.05	1.4	20	16	1.2	16
2900-3500	9.6±0.9	±1.0	1.15	1.4	22	16	1.2	14
3500-4000	10.8±1.0	±1.5	1.05	1.4	18	11	1.25	12

1. Includes theoretical coupled power loss of 0.46 dB at 10 dB coupling.
2. Derate linearly 1/3 at 100°C

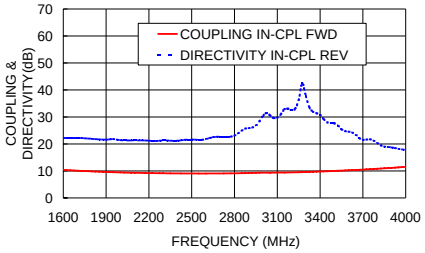
Typical Performance Data

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
1600.00	0.73	10.38	10.35	22.15	22.21	30.29	35.96	24.62	25.69
1800.00	0.82	9.83	9.82	21.29	21.91	29.24	37.69	28.63	33.72
2000.00	0.90	9.45	9.44	20.61	21.43	26.20	28.78	29.26	36.30
2200.00	0.97	9.22	9.21	20.25	21.19	23.61	24.59	26.38	28.57
2500.00	1.04	9.06	9.09	20.09	21.66	22.81	22.48	22.34	22.52
2900.00	1.09	9.23	9.17	21.21	25.85	24.12	23.79	21.32	21.84
3200.00	1.08	9.47	9.53	22.68	33.09	29.13	30.80	24.69	24.37
3500.00	1.06	10.01	10.17	24.81	27.65	36.17	32.26	28.32	28.37
3800.00	1.01	10.82	10.91	22.98	20.42	33.18	28.51	33.41	33.47
4000.00	0.97	11.51	11.60	20.98	17.71	31.77	26.97	27.56	32.91

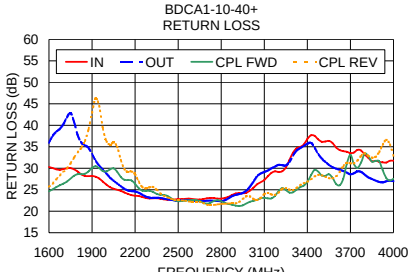
BDCA1-10-40+
MAINLINE LOSS



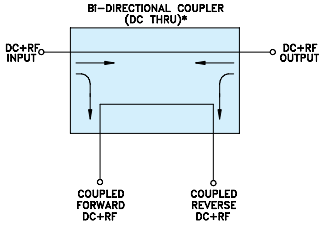
BDCA1-10-40+
COUPLING & DIRECTIVITY



BDCA1-10-40+
RETURN LOSS



Electrical Schematic



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

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. **2.** Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. **3.** The parts covered by this specification sheet 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.

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