High Power
Bi-Directional Coupler

BDCA1-6-11+

50Ω 6dB Coupling DC Pass 600 to 1100 MHz

CASE STYLE: DZ944

+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

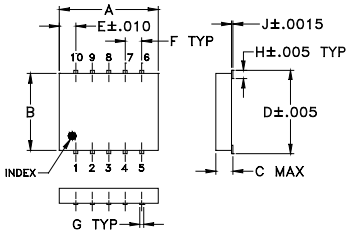
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	0.25A

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

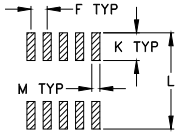
Pin Connections

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

Outline Drawing



PCB Land Pattern



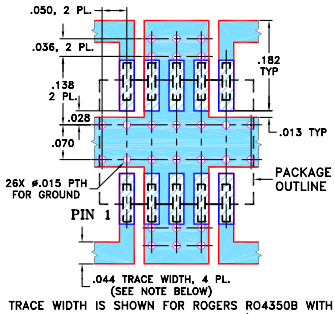
Suggested Layout,
Tolerance to be within ±.002

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

Features

- wideband, 600 to 1100 MHz
- excellent VSWR 1.1:1 typ. all ports
- excellent power handling capability, 42W (1 GHz)
- hermetically sealed
- low temperature variation
- protected by US Patent 7,049,905
- DC current through input to output 0.25A Max. at 1.0 watt RF input power.

Applications

- cellular
- CDMA
- ISM

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.
600-1100								
600-700	6.3±0.5	±0.5	1.5	1.8	23	20	1.05	50
700-1000	6.0±0.4	±0.3	1.8	2.0	27	19	1.08	42
1000-1100	6.3±0.5	±0.5	1.8	2.0	21	15	1.10	38

1. Includes theoretical power loss of 1.25 dB at 6 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
600.00	1.40	6.68	6.69	24.78	23.05	30.54	30.97	32.60	33.54
650.00	1.50	6.40	6.42	26.63	24.36	32.07	32.74	34.99	37.02
700.00	1.58	6.19	6.21	29.10	26.01	33.40	34.55	38.51	42.38
750.00	1.65	6.04	6.06	31.85	27.74	33.76	35.61	40.76	45.57
800.00	1.70	5.95	5.97	34.62	29.30	31.57	33.73	36.58	35.64
850.00	1.73	5.92	5.93	33.02	30.12	29.03	30.84	32.11	31.53
900.00	1.75	5.94	5.95	28.89	28.92	26.56	27.76	28.72	27.61
950.00	1.75	6.02	6.03	25.64	26.63	24.56	25.44	25.96	25.17
1000.00	1.73	6.16	6.17	22.95	24.09	22.83	23.43	23.48	22.80
1050.00	1.71	6.36	6.38	20.36	21.47	20.81	21.27	21.48	21.01
1100.00	1.67	6.64	6.66	18.23	19.16	19.25	19.61	19.68	19.22

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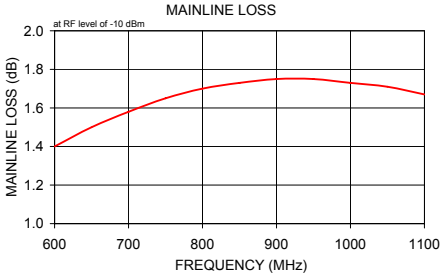
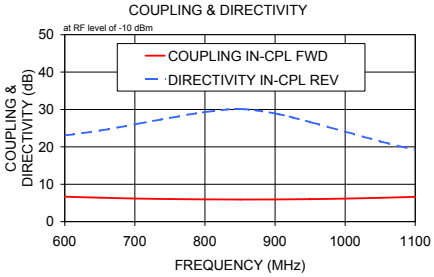
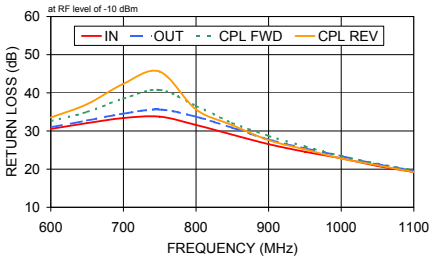
MAINLINE LOSS



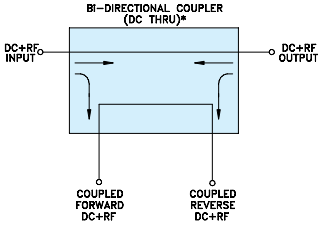
BDCA1-6-11+
COUPLING & DIRECTIVITY



BDCA1-6-11+
RETURN LOSS



Electrical Schematic



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

Notes

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