High Power

Bi-Directional Coupler

BDCA1-7-33+

50Ω 7dB Coupling DC Pass 1600 to 3300 MHz

CASE STYLE: DZ944
PRICE: $3.95 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

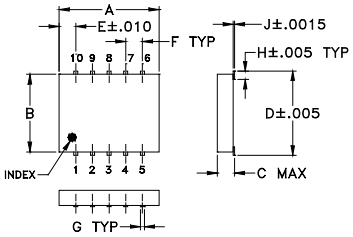
Features

- wideband, 1600 to 3300 MHz
- excellent VSWR 1.1:1 typ.
- excellent power handling capability
- hermetically sealed
- low profile
- protected by US Patent 7,049,905
- DC current through input to output 0.25A Max. at 1.0 watt RF input power.

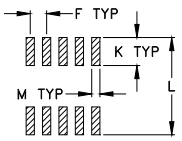
Applications

- defense communication
- wireless communication
- ISM
- mobile satellite

Outline Drawing



PCB Land Pattern



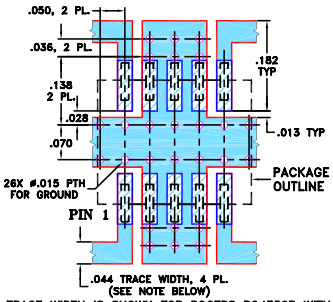
Suggested Layout,
Tolerance to be within ±.002

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

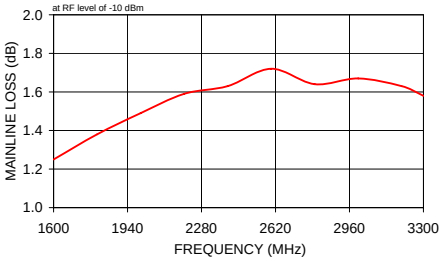
FREQUENCY (MHz)	COUPLING (dB)		MAINLINE LOSS[1] (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT[2] (W)
f_L-f_U	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.	Typ.	Max.
1600-3300								
1600-2200	7.0±0.6	±1.0	1.6	1.9	27	22	1.10	32
2200-2700	6.5±0.5	±0.3	1.6	1.9	23	18	1.15	32
2700-3300	7.1±0.5	±0.7	1.6	1.9	21	17	1.15	24

1. Includes theoretical coupled power loss of 1.0 dB at 7 dB coupling.
2. Derate linearly 1/3 at 100°C

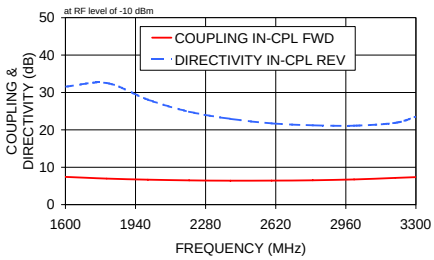
Typical Performance Data

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
1600.00	1.25	7.42	7.42	29.58	31.57	30.85	32.38	33.94	28.53
1800.00	1.38	6.97	6.98	35.58	32.54	40.89	54.99	45.06	30.53
2000.00	1.49	6.67	6.68	32.37	28.09	36.34	32.22	36.75	32.19
2200.00	1.59	6.49	6.51	27.61	24.86	28.93	26.79	32.27	33.17
2400.00	1.63	6.41	6.43	24.83	22.95	25.58	24.18	30.95	32.97
2600.00	1.72	6.43	6.47	23.19	21.73	24.33	23.26	31.89	31.67
2800.00	1.64	6.50	6.57	22.30	21.21	24.79	23.63	34.98	29.98
3000.00	1.67	6.74	6.83	22.07	21.12	27.56	25.80	44.47	29.03
3200.00	1.63	7.15	7.20	22.20	21.87	31.40	28.60	38.15	28.84
3300.00	1.58	7.35	7.52	24.60	23.52	33.20	31.52	36.12	29.36

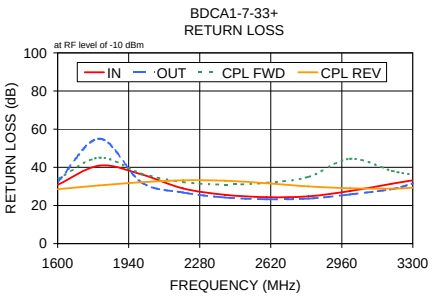
BDCA1-7-33+
MAINLINE LOSS



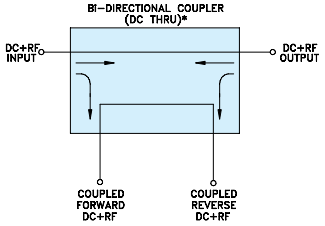
BDCA1-7-33+
COUPLING & DIRECTIVITY



BDCA1-7-33+
RETURN LOSS



Electrical Schematic



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

For detailed performance specs & shopping online see web site

REV. E
M119986
ED-10880/5
BDCA1-7-33+
LC/TD/CP/AM
090903