

# High Power Bi-Directional Coupler

50Ω 15dB Coupling DC Pass 824 to 2525 MHz

**BDCN-15-25+**  
**BDCN-15-25**



## Maximum Ratings

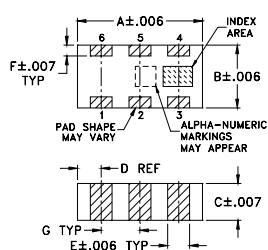
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	0.5A

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

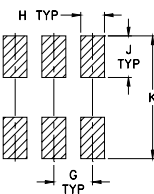
## Pin Connections

INPUT	1
OUTPUT	4
COUPLED (forward)	6
COUPLED (reverse)	3
GROUND	2,5

## Outline Drawing



### PCB Land Pattern

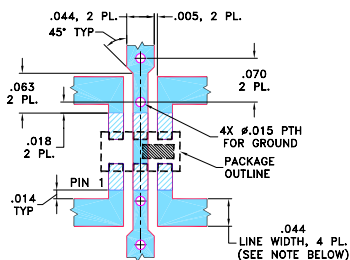


Suggested Layout, Tolerance to be within ±0.02

## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	wt
.126	.063	.035	.024	.022	.011	.039	.024	.042	.123	grams
3.20	1.60	0.89	0.61	0.56	0.28	0.99	0.61	1.07	3.12	.020

## Demo Board MCL P/N: TB-255+ Suggested PCB Layout (PL-131)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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.  
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Features

- four-port coupler
- wideband, 824 to 2525 MHz
- excellent VSWR, 1.2:1 typ., all ports
- ultra small size, hermetically sealed
- minimal variation with temperature variation
- protected by US Patent 7,049,905
- DC Current through input to output 0.5A Max. at 1.0 watt RF input.

## Applications

- UMTS
- CDMA
- PCS
- ISM
- GPS
- DCS
- TDMA

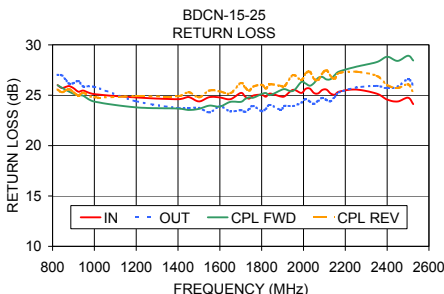
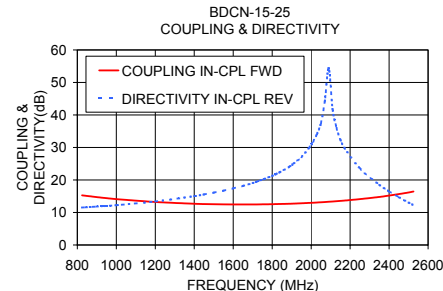
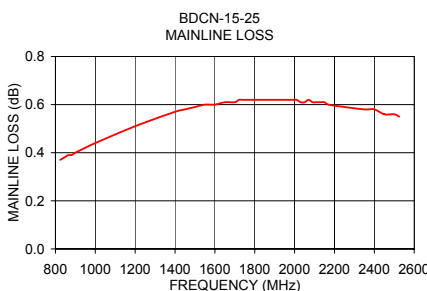
## Bi-Directional Coupler Electrical Specifications

FREQUENCY (MHz)	COUPLING (dB)		MAINLINE LOSS <sup>1</sup> (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT <sup>2</sup> (W)
	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.		
$f_c - f_u$	14.5±2.0	±3.0	0.6	0.9	13	8	1.2	16
824-894	15.0±0.6	±0.6	0.4	0.8	12	8	1.2	16
880-960	14.5±0.6	±0.6	0.5	0.9	13	8	1.2	16
1710-1880	12.5±0.6	±0.4	0.6	0.9	22	16	1.2	16
1850-1990	12.6±0.6	±0.4	0.5	0.9	22	16	1.2	16
2110-2170	13.3±0.6	±0.5	0.6	1.0	22	16	1.2	16
2375-2525	15.5±0.6	±1.5	0.6	1.0	12	8	1.2	16

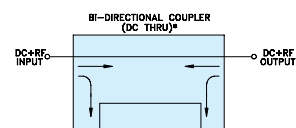
1. Includes theoretical power loss of 0.14 dB at 15 dB coupling.  
2. Derate linearly 8W at 100°C

## 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
824	0.37	15.28	15.27	11.53	11.52	26.01	27.03	25.99	25.58
1000	0.44	14.11	14.11	12.25	12.24	25.11	25.83	24.37	24.79
1500	0.59	12.54	12.55	16.08	16.10	24.39	23.75	23.65	24.79
1700	0.61	12.47	12.47	19.01	19.05	25.23	23.52	24.34	26.21
1840	0.62	12.61	12.61	22.34	22.42	25.17	24.04	25.02	26.08
1990	0.62	12.94	12.93	29.95	29.96	25.23	24.26	26.32	26.52
2070	0.62	13.21	13.20	45.18	45.15	25.18	24.44	26.72	26.51
2170	0.60	13.65	13.63	29.61	29.91	25.36	25.28	27.35	27.20
2350	0.58	14.78	14.74	18.39	18.50	25.16	25.93	28.29	26.93
2525	0.55	16.45	16.40	12.11	12.23	24.12	25.98	28.45	25.25



## Electrical Schematic



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

For detailed performance specs & shopping online see web site



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