

# High Power Bi-Directional Coupler

## BDCN-17-25+ BDCN-17-25

50Ω 17dB Coupling DC Pass 824 to 2525 MHz



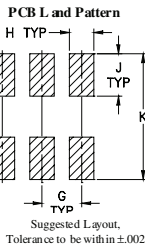
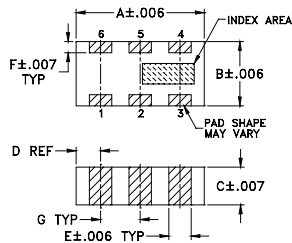
### Maximum Ratings

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

### Pin Connections

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

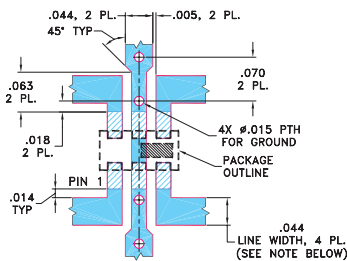
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F
.126	.063	.035	.024	.022	.011
3.20	1.60	0.89	0.61	0.56	0.28
G	H	J	K	wt	
.039	.024	.042	.123	grams	
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 RO4350B 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.  
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
▨ 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 power

### Applications

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

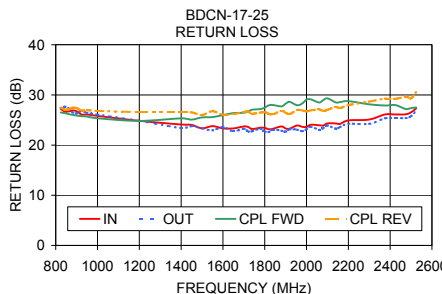
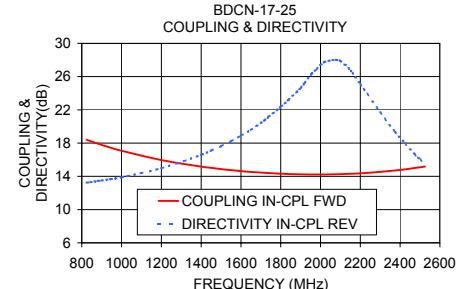
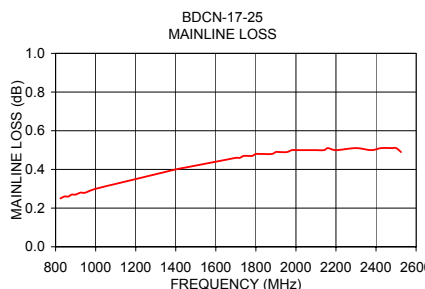
### Bi-Directional Coupler Electrical Specifications

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.		Typ.	Max.
$f_c - f_u$									
824-2525	16.8±2.0	±3.0	0.6	0.9	13	10	1.2	16	16
824-894	18.3±0.6	±0.6	0.3	0.8	13	10	1.2	16	16
880-960	17.6±0.6	±0.6	0.3	0.8	13	10	1.2	16	16
1710-1880	14.3±0.6	±0.4	0.5	0.9	22	17	1.2	16	16
1850-1990	14.3±0.6	±0.4	0.5	0.9	22	17	1.2	16	16
2110-2170	14.3±0.6	±0.5	0.5	0.9	25	20	1.2	16	16
2375-2525	15.0±0.6	±0.8	0.5	0.9	15	11	1.2	16	16

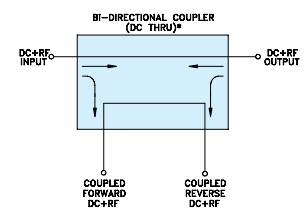
1. Includes theoretical power loss of 0.1 dB at 17 dB coupling.  
2. Derate linearly 8W at 100°C

### Typical Performance Data

Frequency (MHz)	Mainline Loss (dB)		Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	In-Cpl Fwd	In-Cpl Rev	Out-Cpl Rev	In-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd	Cpl Rev
824.00	0.25	18.40	18.40	13.19	13.24	27.22	27.34	26.50	27.52	27.52
1000.00	0.30	17.07	17.08	13.85	13.88	25.83	26.07	25.35	26.82	26.82
1500.00	0.42	14.87	14.88	17.67	17.63	23.35	23.34	25.52	25.99	25.99
1700.00	0.46	14.45	14.46	20.65	20.43	23.72	23.26	26.46	26.58	26.58
1800.00	0.48	14.32	14.33	22.72	22.36	23.44	22.72	27.48	26.58	26.58
1880.00	0.48	14.25	14.26	24.64	24.13	23.72	22.87	27.72	26.82	26.82
2000.00	0.50	14.22	14.23	27.94	27.40	23.63	23.17	29.06	26.72	26.72
2100.00	0.50	14.26	14.26	28.30	27.88	24.33	23.91	29.31	27.02	27.02
2300.00	0.51	14.54	14.53	21.69	21.71	25.09	24.22	28.13	28.67	28.67
2525.00	0.49	15.18	15.16	15.51	15.42	27.33	26.72	27.50	30.60	30.60



### Electrical Schematic



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

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