

# High Power Bi-Directional Coupler

50Ω 17dB Coupling DC Pass 824 to 2525 MHz

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



CASE STYLE: FV1206-1  
PRICE: \$2.99 ea. QTY (20)  
\$2.11 ea. QTY (1000)

**+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, 500, 1000, 3000

### Maximum Ratings

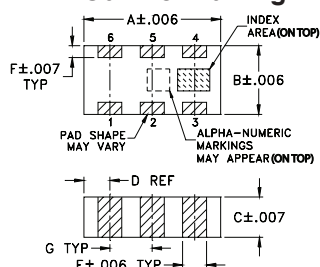
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Current	0.5A

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

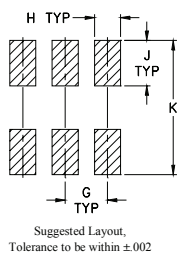
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern



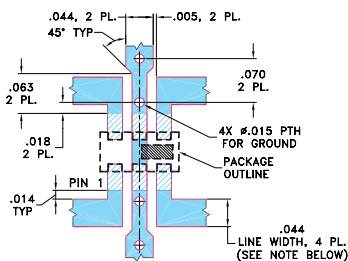
### Outline Dimensions (inch/mm)

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.  
■ DEMOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
■ DEMOTES 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

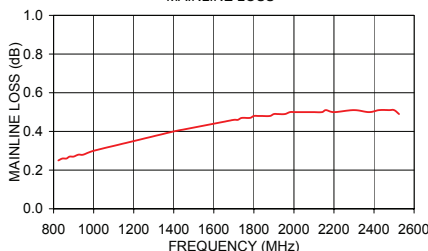
FREQUENCY (MHz)	COUPLING (dB)		MAINLINE LOSS <sup>1</sup> (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT <sup>2</sup> (W)
	Nom.	Max. Flatness	Typ.	Max.	Typ.	Min.		
$f_c - f_u$								
824-2525	16.8±2.0	±3.0	0.6	0.9	13	10	1.2	16
824-894	18.3±0.6	±0.6	0.3	0.8	13	10	1.2	16
880-960	17.6±0.6	±0.6	0.3	0.8	13	10	1.2	16
1710-1880	14.3±0.6	±0.4	0.5	0.9	22	17	1.2	16
1850-1990	14.3±0.6	±0.4	0.5	0.9	22	17	1.2	16
2110-2170	14.3±0.6	±0.5	0.5	0.9	25	20	1.2	16
2375-2525	15.0±0.6	±0.8	0.5	0.9	15	11	1.2	16

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

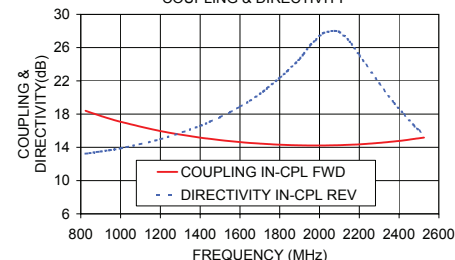
### Typical Performance Data

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

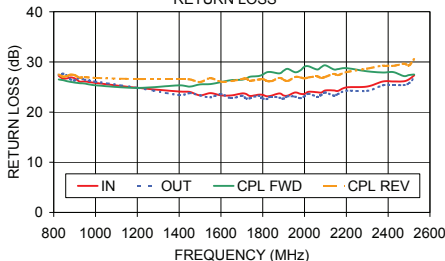
BDCN-17-25  
MAINLINE LOSS



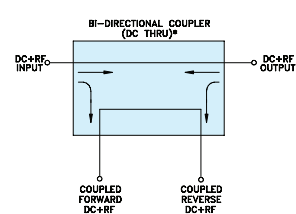
BDCN-17-25  
COUPLING & DIRECTIVITY



BDCN-17-25  
RETURN LOSS



### Electrical Schematic



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

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document 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](http://www.minicircuits.com/MCLStore/terms.jsp)



[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 35166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV. D  
M123210  
ED-10885/1  
BDCN-17-25  
AD/TD/CP/AM  
130226