Surface Mount

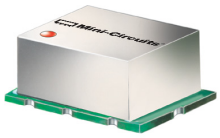
Bi-Directional Coupler

SYBDC-15-13HP+

50Ω 15 dB Coupling 100 to 1000 MHz 10 Watt

The Big Deal

- High power handling, 10W
- Full decade bandwidth
- Low mainline loss, 0.75 dB
- High directivity, 23 dB
- Excellent VSWR, 1.15:1



CASE STYLE: AH202-1

Product Overview

Mini-Circuits' SYBDC-15-13HP+ surface mount bi-directional coupler provides high power handling up to 10W and low mainline loss of 0.75 dB or better for applications from 100 to 1000 MHz. The coupler features core and wire construction mounted on an 8-lead printed laminate base with wraparound terminations for excellent solderability. The unit measures 0.38 x 0.50 x 0.25", accommodating dense circuit board layouts.

Key Features

Feature	Advantages
High power handling, 10W	Usable in many systems with high-power requirements
Low mainline loss, ≤0.75 dB	Provides excellent through-path signal power transmission.
Good directivity, 23 dB	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
Excellent VSWR, 1.15:1 (input/output/coupling)	Provides excellent matching in 50Ω systems with minimal signal reflection.
Small size, 0.38 x 0.50 x 0.25"	Provides high power capability while saving space in systems with tight layouts.

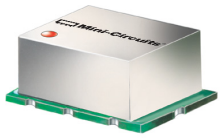
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Surface Mount

Bi-Directional Coupler

SYBDC-15-13HP+

50Ω 15 dB Coupling 100 to 1000 MHz 10 Watt



CASE STYLE: AH202-1

+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
13"	200

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

Pad Connections

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

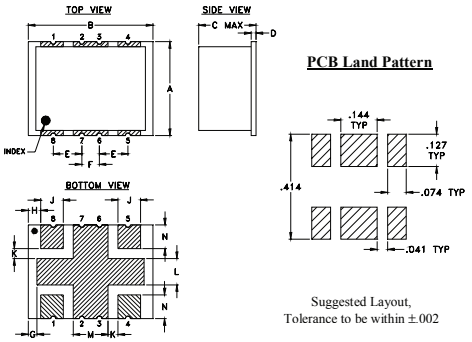
Features

- high directivity, 23 dB typ.
- wideband frequency, 100-1000 MHz
- excellent VSWR, 1.15:1 typ.

Applications

- VHF/UHF
- signal monitoring
- communications
- cellular
- military mobile

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.38	.50	.25	.020	.115	.070	.035
9.65	12.70	6.35	0.51	2.92	1.78	0.89

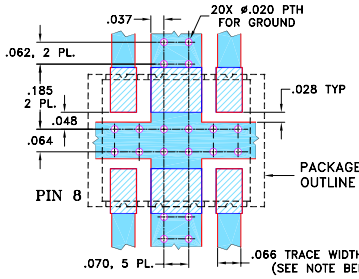
H	J	K	L	M	N	wt
.050	.090	.040	.105	.140	.095	grams
1.27	2.29	1.02	2.67	3.56	2.41	0.80

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		100		1000	MHz
Mainline Loss[1]	100-500	—	0.65	0.9	
	500-1000	—	0.75	1.1	
Nominal Coupling	100-1000	—	15.8±1.0	—	dB
Coupling Flatness (±)	100-500	—	0.3	0.5	dB
	100-1000	—	0.7	1.0	
Directivity	100-500	18	23	—	dB
	500-1000	15	20	—	
Return Loss (Input)	100-1000	18	21	—	dB
Return Loss (Output)	100-1000	18	22	—	dB
Return Loss (Coupling)	100-1000	18	22	—	dB
Input Power	100-1000	—	—	10	W

1. Mainline Loss includes theoretical power loss at coupled port.

Demo Board MCL P/N: TB-349
Suggested PCB Layout (PL-246)

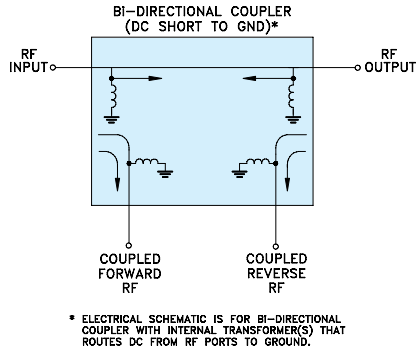


NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Schematic



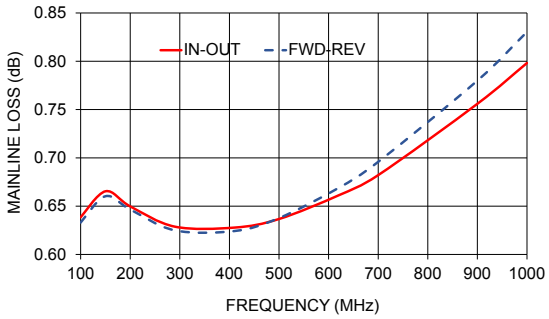
* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.

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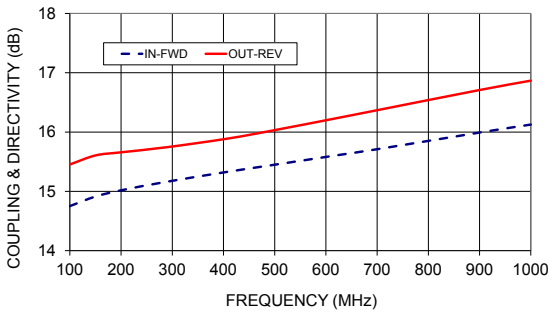
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
	In-Out	In-Cpl Fwd	Out-Cpl Rev	In-Cpl Rev	Out-Cpl Fwd	In	Out	Cpl Fwd	Cpl Rev
100	0.64	14.75	15.45	20.70	21.60	20.44	21.80	20.56	21.89
150	0.67	14.91	15.61	21.82	22.76	21.91	23.64	22.02	23.97
200	0.65	15.02	15.66	22.93	23.67	22.95	25.16	23.15	25.66
290	0.63	15.16	15.74	23.63	24.79	24.51	27.46	25.12	28.71
410	0.63	15.33	15.89	24.05	25.27	26.47	29.87	27.95	32.75
500	0.64	15.45	16.03	24.28	25.59	28.29	32.18	30.96	36.11
620	0.66	15.61	16.23	24.38	25.58	31.48	35.53	37.31	38.63
700	0.68	15.71	16.37	24.19	25.65	34.10	38.30	44.17	37.59
900	0.76	15.99	16.71	23.48	25.04	33.51	37.45	31.96	32.36
1000	0.80	16.13	16.87	23.11	24.80	30.00	35.32	28.45	30.78

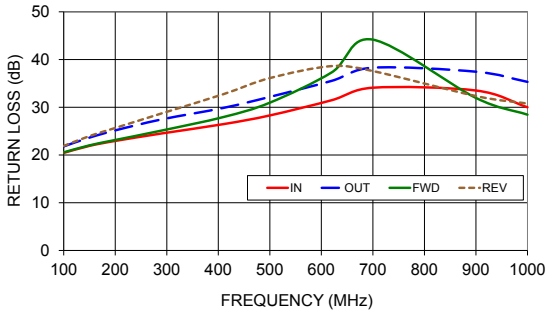
SYBDC-15-13HP+
MAINLINE LOSS



SYBDC-15-13HP+
COUPLING & DIRECTIVITY



SYBDC-15-13HP+
RETURN LOSS



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