

# Bi-Directional Coupler

# SYBD-10-63HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB)		(dB)		(dB)		(dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
1500	0.10	0.11	16.99	16.99	31.40	23.27	29.56	31.62	31.09	29.49
1600	0.14	0.14	16.58	16.60	27.84	21.64	30.61	33.27	31.44	29.55
1700	0.15	0.15	16.09	16.10	30.38	22.22	31.06	36.07	31.76	28.48
1800	0.18	0.18	15.76	15.78	27.73	21.02	32.41	40.69	31.07	27.92
1900	0.20	0.19	15.29	15.32	31.10	21.99	32.89	44.16	30.33	26.53
2000	0.21	0.23	15.05	15.07	28.08	20.78	32.04	39.54	28.72	25.87
2100	0.24	0.25	14.64	14.69	30.64	21.69	31.71	36.82	27.29	25.06
2200	0.26	0.27	14.36	14.41	29.99	21.38	30.20	33.67	26.16	24.41
2300	0.31	0.33	14.20	14.25	29.35	21.00	29.74	31.48	24.80	24.29
2400	0.30	0.31	13.88	13.89	31.60	21.47	29.29	31.67	25.01	23.89
2500	0.35	0.36	13.65	13.68	35.74	22.95	29.82	32.05	24.48	23.86
2600	0.35	0.36	13.45	13.48	34.03	22.72	30.14	32.66	25.04	24.14
2700	0.39	0.38	13.21	13.30	38.87	23.22	32.58	34.46	25.38	24.30
2800	0.39	0.40	12.95	12.99	55.61	25.26	35.35	36.78	25.92	25.16
2900	0.39	0.42	12.82	12.81	38.77	26.50	38.52	38.34	27.43	26.69
3000	0.40	0.43	12.62	12.64	33.80	27.25	38.02	36.54	28.92	27.72
3100	0.39	0.40	12.37	12.43	31.42	28.64	33.00	32.28	30.95	29.30
3200	0.40	0.41	12.20	12.24	28.41	29.39	29.43	28.63	34.00	30.80
3300	0.44	0.43	12.05	12.10	27.53	28.31	27.20	27.12	37.22	33.14
3400	0.46	0.46	11.90	11.93	25.67	26.79	25.32	25.45	39.27	33.92
3500	0.49	0.47	11.80	11.79	24.32	25.44	24.27	24.56	39.31	33.72
3600	0.52	0.50	11.62	11.65	23.02	23.77	23.83	24.15	36.78	32.51
3700	0.50	0.49	11.50	11.48	23.01	21.70	23.62	24.10	33.98	30.79
3800	0.52	0.51	11.33	11.38	21.82	21.09	23.78	24.10	30.71	28.33
3900	0.52	0.53	11.21	11.29	20.85	19.79	24.20	24.84	27.75	26.20
4000	0.55	0.57	11.14	11.16	20.30	18.86	25.23	25.65	25.33	24.23
4100	0.57	0.60	11.01	11.10	19.72	18.13	27.03	27.14	23.03	22.29
4200	0.59	0.62	10.94	11.01	19.81	17.59	29.53	28.81	21.14	20.49
4300	0.61	0.66	10.87	10.98	19.12	16.76	33.33	31.24	19.67	19.05
4400	0.62	0.70	10.82	10.95	19.00	16.65	39.46	35.16	18.51	18.01
4500	0.65	0.75	10.81	10.93	18.56	16.02	40.60	38.36	17.55	17.03
4600	0.55	0.66	10.64	10.76	19.00	15.93	32.96	35.62	16.90	16.41
4700	0.58	0.69	10.65	10.77	18.91	15.53	29.90	33.14	16.42	15.81
4800	0.58	0.73	10.63	10.74	18.68	15.11	27.17	29.85	16.03	15.48
4900	0.59	0.76	10.65	10.74	18.79	15.15	25.60	27.60	16.00	15.36
5000	0.65	0.78	10.67	10.77	18.67	14.70	23.94	26.26	15.94	15.24
5100	0.66	0.79	10.64	10.69	18.97	14.98	22.84	24.78	15.99	15.25
5200	0.70	0.80	10.60	10.70	18.28	14.82	21.73	23.62	16.17	15.53
5300	0.72	0.79	10.61	10.72	18.43	15.17	21.18	22.54	16.57	16.00
5400	0.71	0.79	10.61	10.61	19.39	15.50	20.71	21.54	16.77	16.04
5500	0.73	0.81	10.61	10.67	18.92	15.63	20.54	21.08	16.92	16.52
5600	0.76	0.82	10.60	10.63	18.44	15.78	20.30	20.47	17.13	16.52
5700	0.78	0.83	10.56	10.60	18.06	16.16	19.87	19.93	17.25	16.90
5800	0.80	0.84	10.58	10.61	17.83	16.38	19.83	19.64	17.39	16.81
5900	0.82	0.85	10.52	10.60	17.46	16.61	19.91	19.54	17.29	17.05
6000	0.86	0.87	10.51	10.61	16.97	17.16	19.63	19.41	17.31	16.96
6100	0.88	0.92	10.50	10.59	16.48	16.72	19.97	19.26	17.04	16.89
6200	0.90	0.93	10.55	10.60	15.78	16.95	20.06	19.23	16.92	16.80
6500	1.01	1.05	10.58	10.42	14.74	15.71	19.21	18.92	15.90	15.52
6750	1.16	1.24	10.66	10.61	12.73	15.03	17.96	17.59	15.07	14.68
7000	1.43	1.32	10.84	10.58	11.86	14.25	15.48	15.49	14.62	14.76
7500	2.01	1.47	11.03	11.22	11.10	12.87	11.53	11.37	17.19	17.21
8000	1.99	1.56	11.80	12.61	12.44	17.02	12.67	12.73	32.79	26.12

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# Bi-Directional Coupler

# SYBD-10-63HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -55°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB)		(dB)		(dB)		(dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
1500	0.01	0.07	16.93	16.92	29.90	23.00	29.40	30.66	30.54	29.19
1600	0.04	0.04	16.48	16.48	27.05	21.92	31.35	33.11	31.25	29.63
1700	0.05	0.04	16.00	16.01	29.18	21.83	32.93	38.40	30.80	27.48
1800	0.08	0.02	15.72	15.71	26.31	20.15	33.08	47.42	30.31	26.61
1900	0.09	0.02	15.21	15.22	29.76	21.88	33.04	48.79	31.23	26.09
2000	0.11	0.00	14.92	14.93	27.26	21.28	32.19	38.45	30.41	26.20
2100	0.13	0.03	14.54	14.58	29.08	21.53	31.29	35.26	26.26	23.76
2200	0.14	0.04	14.28	14.32	29.23	20.45	29.14	32.26	24.53	22.29
2300	0.18	0.07	14.14	14.11	28.13	20.75	28.60	30.62	24.48	23.28
2400	0.18	0.05	13.75	13.75	31.67	21.72	28.57	31.20	24.52	22.95
2500	0.23	0.10	13.50	13.45	41.11	23.36	29.61	31.95	23.95	22.88
2600	0.23	0.08	13.31	13.34	34.94	22.61	29.78	32.63	24.46	23.11
2700	0.28	0.10	13.05	13.09	46.26	22.63	30.75	31.84	24.30	23.00
2800	0.26	0.11	12.79	12.82	41.42	24.87	34.02	35.87	24.32	23.64
2900	0.24	0.13	12.65	12.65	34.57	26.96	49.41	42.81	26.23	26.24
3000	0.25	0.14	12.47	12.49	32.21	26.16	34.31	32.74	26.47	25.82
3100	0.25	0.10	12.19	12.26	29.54	26.20	30.39	29.23	26.54	25.74
3200	0.25	0.10	12.02	12.03	26.95	28.00	30.32	28.48	32.50	30.82
3300	0.28	0.10	11.86	11.87	26.64	27.88	29.61	28.60	38.77	35.22
3400	0.29	0.13	11.70	11.70	25.53	25.37	26.30	26.18	40.35	36.41
3500	0.32	0.13	11.62	11.57	24.77	23.02	24.78	24.67	35.46	31.29
3600	0.34	0.15	11.39	11.42	23.64	22.11	24.12	24.27	34.00	30.03
3700	0.33	0.14	11.29	11.25	23.03	20.42	24.02	24.17	31.61	28.82
3800	0.32	0.15	11.11	11.14	22.02	20.47	24.62	24.43	28.39	26.02
3900	0.34	0.16	10.98	11.04	20.88	19.53	24.59	24.98	26.90	25.36
4000	0.37	0.20	10.87	10.89	20.40	19.07	25.18	25.09	25.18	24.48
4100	0.37	0.21	10.76	10.85	19.41	18.29	26.70	26.09	22.26	21.64
4200	0.39	0.24	10.68	10.73	19.40	17.56	28.54	27.48	19.81	19.38
4300	0.41	0.26	10.63	10.71	18.68	17.20	30.63	28.58	18.42	18.06
4400	0.42	0.30	10.58	10.66	19.48	16.76	35.48	31.17	17.11	16.60
4500	0.44	0.34	10.51	10.62	19.41	16.38	50.78	34.02	16.80	16.11
4600	0.34	0.23	10.37	10.48	19.59	16.27	37.29	34.64	16.85	16.19
4700	0.35	0.25	10.36	10.41	19.23	16.10	32.39	34.57	16.75	16.09
4800	0.36	0.30	10.36	10.43	17.87	15.02	28.02	30.64	15.60	15.01
4900	0.39	0.32	10.35	10.40	18.12	14.96	25.77	27.87	14.97	14.49
5000	0.41	0.33	10.35	10.46	18.34	14.91	24.39	26.57	14.90	14.33
5100	0.40	0.31	10.30	10.33	19.47	15.13	23.06	24.73	15.54	14.80
5200	0.44	0.32	10.31	10.26	19.80	14.91	21.70	23.38	16.23	15.30
5300	0.46	0.32	10.23	10.34	18.81	15.06	20.96	22.33	16.21	15.56
5400	0.47	0.31	10.29	10.25	19.03	15.47	20.25	21.40	16.10	15.35
5500	0.48	0.32	10.32	10.33	18.58	15.27	20.00	20.68	15.91	15.43
5600	0.50	0.35	10.24	10.28	17.98	14.81	19.75	20.06	15.61	14.83
5700	0.53	0.34	10.21	10.27	17.18	15.67	19.50	19.96	16.08	15.51
5800	0.53	0.36	10.21	10.24	17.35	16.02	20.06	19.99	16.52	15.85
5900	0.53	0.33	10.14	10.25	17.77	16.48	20.54	20.21	16.58	16.26
6000	0.56	0.35	10.21	10.25	16.87	16.83	20.59	20.37	16.52	16.40
6100	0.59	0.40	10.16	10.19	16.31	16.45	20.87	19.84	15.81	16.06
6200	0.60	0.41	10.18	10.19	15.50	16.78	20.61	19.48	15.55	15.93
6500	0.68	0.49	10.18	10.02	14.83	15.72	18.98	18.67	15.03	14.81
6750	0.82	0.63	10.20	10.11	12.83	15.17	16.95	16.23	13.80	13.92
7000	1.04	0.63	10.34	10.07	12.17	14.18	14.62	14.37	14.68	14.50
7500	1.52	0.87	10.46	10.66	12.25	12.99	11.50	11.27	16.93	16.74
8000	1.57	0.84	11.18	12.06	12.20	17.45	12.32	12.49	30.32	26.43

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# Bi-Directional Coupler

# SYBD-10-63HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +100°C

FREQ. (MHz)	INSERTION LOSS (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
1500	0.14	0.19	17.05	17.05	33.37	23.43	30.85	33.56	30.95	29.50
1600	0.17	0.23	16.62	16.64	29.52	22.11	31.65	35.04	30.57	28.91
1700	0.20	0.24	16.13	16.14	31.72	22.84	31.81	37.04	31.20	28.51
1800	0.23	0.28	15.82	15.84	28.34	21.41	33.11	40.57	30.51	28.08
1900	0.25	0.30	15.36	15.38	32.85	22.56	33.84	44.84	29.40	26.41
2000	0.26	0.33	15.11	15.14	29.18	20.93	33.74	44.85	27.97	25.51
2100	0.30	0.36	14.71	14.76	31.42	21.97	34.27	41.64	27.70	25.64
2200	0.32	0.39	14.44	14.50	30.21	21.57	33.16	37.52	26.93	25.44
2300	0.37	0.45	14.25	14.29	27.56	20.61	33.68	35.01	25.07	25.06
2400	0.37	0.44	13.98	13.99	30.03	21.18	32.14	34.40	26.02	24.96
2500	0.42	0.48	13.69	13.73	32.91	22.84	31.85	33.90	25.42	24.75
2600	0.43	0.49	13.56	13.58	30.22	21.82	31.21	33.07	25.76	24.75
2700	0.48	0.51	13.31	13.37	34.56	22.51	33.84	34.54	25.95	24.94
2800	0.48	0.54	13.07	13.12	39.37	23.72	35.40	33.85	26.04	25.52
2900	0.47	0.56	12.91	12.93	43.22	23.82	35.49	34.80	26.71	25.75
3000	0.48	0.59	12.72	12.77	38.15	24.27	37.25	37.75	27.57	26.48
3100	0.46	0.57	12.53	12.57	35.61	25.86	34.70	35.16	29.31	27.60
3200	0.49	0.58	12.33	12.38	31.53	26.90	30.08	29.79	30.72	28.31
3300	0.54	0.61	12.17	12.24	30.20	26.54	27.28	27.87	31.01	28.74
3400	0.56	0.65	12.06	12.07	26.80	25.47	25.75	26.24	32.06	28.96
3500	0.58	0.67	11.94	11.95	24.81	25.69	24.69	25.04	34.02	30.07
3600	0.62	0.70	11.78	11.82	23.21	23.83	24.27	24.87	33.94	30.20
3700	0.62	0.69	11.67	11.67	22.70	21.74	24.35	25.37	31.95	29.16
3800	0.63	0.71	11.50	11.57	21.76	21.84	25.14	25.84	30.58	28.39
3900	0.64	0.74	11.38	11.48	21.03	20.01	25.55	26.91	27.96	26.11
4000	0.67	0.78	11.34	11.39	20.06	18.42	26.68	28.07	25.33	23.89
4100	0.70	0.82	11.23	11.31	19.81	17.75	28.17	29.44	23.43	22.40
4200	0.72	0.86	11.14	11.20	20.19	17.34	29.91	30.24	21.59	20.66
4300	0.75	0.89	11.04	11.16	19.17	16.72	35.00	32.84	20.22	19.30
4400	0.77	0.93	11.01	11.12	18.53	16.79	43.91	39.99	19.15	18.58
4500	0.80	0.99	11.01	11.11	17.86	16.08	40.57	62.43	18.11	17.58
4600	0.70	0.92	10.87	10.97	18.26	15.55	33.02	45.19	16.67	16.05
4700	0.73	0.97	10.85	10.95	18.56	15.52	31.07	39.56	16.21	15.59
4800	0.73	1.01	10.87	10.96	18.24	15.27	29.08	34.58	15.94	15.27
4900	0.74	1.03	10.87	10.97	18.50	15.00	27.54	30.58	16.05	15.14
5000	0.81	1.07	10.89	10.99	18.20	14.53	25.27	28.80	15.98	15.04
5100	0.82	1.10	10.89	11.01	17.77	14.77	24.21	26.76	15.81	15.18
5200	0.87	1.11	10.90	10.97	17.62	14.63	22.71	25.19	15.72	15.17
5300	0.89	1.10	10.86	11.00	17.33	14.69	22.00	23.42	16.17	15.71
5400	0.89	1.10	10.89	10.89	18.29	15.41	21.48	21.97	16.60	16.01
5500	0.92	1.11	10.87	10.97	17.73	15.33	20.82	20.86	17.12	16.98
5600	0.95	1.12	10.87	10.90	17.67	15.29	20.07	19.66	17.62	17.13
5700	0.99	1.15	10.84	10.90	17.55	15.76	19.17	18.80	17.62	17.43
5800	1.01	1.17	10.86	10.91	17.50	16.03	18.91	18.15	17.72	17.52
5900	1.03	1.18	10.80	10.86	17.19	16.76	18.70	17.97	17.58	17.49
6000	1.07	1.19	10.84	10.85	17.13	17.19	18.55	17.87	17.79	17.50
6100	1.12	1.25	10.78	10.89	16.24	16.69	18.99	18.11	17.52	17.29
6200	1.12	1.30	10.81	10.87	16.02	16.66	19.15	18.42	17.18	16.88
6500	1.26	1.44	10.91	10.77	14.66	16.11	19.47	19.02	16.27	15.54
6750	1.37	1.65	11.02	10.83	13.08	14.63	19.35	19.48	15.22	14.35
7000	1.71	1.78	11.34	10.92	11.80	14.07	16.73	16.90	14.67	14.56
7500	2.41	1.91	11.59	11.68	10.07	12.56	11.58	11.10	17.80	18.68
8000	2.32	2.10	12.33	13.31	12.17	17.43	12.74	12.48	31.41	24.46

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