

# Dual-Directional Coupler

# ZDDC-50-521+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = -55°C

FREQ. (MHz)	INSERTION LOSS (dB) In - Out	COUPLING (dB)		DIRECTIVITY (dB) In - Rev	RETURN LOSS (dB)			
		In - Fwd	Out - Rev		In	Out	Rev	Fwd
10	0.00	55.20	55.24	23.39	50.50	49.67	11.19	11.21
20	0.00	51.10	51.15	23.33	45.16	44.08	7.40	7.42
30	0.00	50.04	50.09	23.52	42.33	41.11	6.61	6.63
50	0.00	50.21	50.30	23.68	39.48	38.40	7.49	7.55
75	0.01	50.82	50.88	24.37	38.12	37.55	9.23	9.29
100	0.01	51.04	51.09	24.89	37.88	37.78	10.68	10.72
125	0.01	51.02	51.05	25.44	38.94	38.68	11.85	11.84
150	0.01	50.90	50.91	25.78	42.27	40.86	12.78	12.72
175	0.01	50.75	50.75	26.36	50.43	43.05	13.53	13.41
200	0.02	50.64	50.60	27.01	57.32	42.03	14.04	13.93
225	0.02	50.56	50.53	26.99	56.80	40.02	14.34	14.28
250	0.03	50.52	50.48	26.65	49.42	38.24	14.52	14.52
275	0.03	50.53	50.51	27.37	44.97	36.91	14.69	14.71
300	0.04	50.60	50.55	29.37	41.26	35.68	14.81	14.83
325	0.04	50.70	50.64	29.28	37.10	33.77	14.88	14.90
350	0.05	50.85	50.78	29.03	34.02	31.64	14.94	14.94
375	0.06	50.99	50.94	31.91	32.23	30.05	15.05	15.04
400	0.06	51.17	51.10	37.80	31.04	28.94	15.19	15.14
425	0.07	51.33	51.27	35.01	29.62	28.00	15.31	15.24
450	0.08	51.52	51.46	37.05	28.08	27.12	15.38	15.30
475	0.09	51.65	51.61	39.12	27.00	26.37	15.50	15.40
500	0.10	51.74	51.75	31.24	26.40	25.83	15.69	15.51
520	0.10	51.79	51.81	28.91	26.06	25.42	15.83	15.57
550	0.11	51.78	51.81	26.37	25.40	24.87	16.01	15.61
575	0.13	51.65	51.72	24.24	24.93	24.53	16.19	15.68
600	0.13	51.44	51.57	23.27	24.86	24.42	16.42	15.81
625	0.14	51.13	51.30	21.75	25.07	24.54	16.64	15.95
650	0.15	50.73	50.89	20.49	25.45	24.78	16.81	16.05
675	0.16	50.25	50.45	20.14	25.91	25.09	16.99	16.19
700	0.16	49.70	49.93	19.82	26.49	25.40	17.24	16.40
725	0.17	49.09	49.34	18.98	27.05	25.63	17.50	16.62
750	0.18	48.47	48.69	18.79	27.38	25.87	17.74	16.77
775	0.19	47.83	48.05	19.09	27.83	26.35	17.98	16.88
800	0.20	47.15	47.41	18.77	28.67	27.13	18.29	17.03
825	0.20	46.48	46.74	18.12	29.84	28.16	18.61	17.19
850	0.21	45.84	46.04	18.82	30.82	29.20	18.90	17.30
875	0.22	45.18	45.39	19.31	31.65	30.34	19.15	17.37
900	0.23	44.54	44.77	18.15	32.70	31.89	19.46	17.45
925	0.24	43.90	44.14	17.94	34.35	33.48	19.77	17.55
950	0.25	43.29	43.50	18.93	36.11	34.62	20.06	17.64
975	0.25	42.70	42.89	18.92	37.78	35.48	20.35	17.71
1000	0.26	42.13	42.32	17.95	39.96	36.52	20.66	17.79
1025	0.27	41.53	41.76	17.81	42.91	36.28	21.04	17.88
1050	0.28	40.98	41.18	18.55	45.63	34.31	21.43	17.95
1100	0.29	39.96	40.13	18.37	46.48	31.72	22.32	18.09
1150	0.31	38.93	39.12	17.57	41.91	29.71	23.38	18.08
1200	0.33	38.05	38.19	18.35	38.26	27.92	24.76	18.14
1250	0.34	37.11	37.30	16.52	34.29	26.78	26.41	18.22
1300	0.37	36.38	36.48	17.62	31.05	25.46	28.62	18.34
1350	0.37	35.50	35.69	15.48	28.50	24.72	30.87	18.43
1400	0.40	34.88	34.99	16.86	26.77	23.82	29.00	18.56
1450	0.39	34.07	34.29	14.07	25.58	23.05	24.28	18.72
1500	0.43	33.51	33.71	15.99	24.31	22.31	19.35	18.79
1550	0.41	32.75	33.08	12.90	23.81	21.89	14.90	18.81

**Notes**

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

# ZDDC-50-521+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +25°C

FREQ. (MHz)	INSERTION LOSS (dB) In - Out	COUPLING (dB)		DIRECTIVITY (dB) In - Rev	RETURN LOSS (dB)			
		In - Fwd	Out - Rev		In	Out	Rev	Fwd
10	0.00	55.30	55.35	23.16	60.78	59.28	11.22	11.25
20	0.00	51.18	51.23	22.95	54.35	52.93	7.48	7.50
30	0.01	50.07	50.13	23.14	50.43	49.01	6.70	6.70
50	0.01	50.22	50.28	23.01	45.58	44.32	7.64	7.59
75	0.01	50.80	50.86	23.48	41.70	41.33	9.41	9.33
100	0.02	51.03	51.09	23.67	39.24	39.67	10.81	10.69
125	0.02	51.03	51.03	23.83	37.47	38.05	11.85	11.69
150	0.03	50.91	50.93	24.05	35.87	36.08	12.60	12.42
175	0.03	50.77	50.77	24.27	34.59	34.43	13.19	12.97
200	0.04	50.65	50.62	25.18	33.79	33.48	13.63	13.39
225	0.04	50.58	50.52	25.62	33.30	33.11	14.00	13.72
250	0.05	50.54	50.51	25.11	32.62	32.55	14.28	14.00
275	0.06	50.56	50.49	26.15	31.66	31.65	14.52	14.23
300	0.06	50.63	50.55	27.94	30.82	30.90	14.72	14.42
325	0.07	50.72	50.64	27.71	30.40	30.54	14.90	14.59
350	0.08	50.86	50.77	27.16	30.18	30.24	15.08	14.77
375	0.09	51.01	50.93	29.23	29.73	29.55	15.23	14.92
400	0.09	51.19	51.10	31.67	29.08	28.73	15.39	15.06
425	0.10	51.35	51.27	29.97	28.66	28.26	15.55	15.19
450	0.11	51.54	51.45	29.78	28.46	28.30	15.70	15.33
475	0.12	51.67	51.61	31.37	28.20	28.35	15.84	15.47
500	0.13	51.77	51.74	28.40	27.87	28.03	15.98	15.60
520	0.13	51.82	51.77	26.68	27.71	27.60	16.09	15.71
550	0.14	51.78	51.79	25.14	27.82	27.13	16.27	15.90
575	0.16	51.67	51.72	23.42	27.87	27.05	16.41	16.04
600	0.16	51.44	51.56	22.64	27.56	27.07	16.55	16.17
625	0.17	51.11	51.25	21.45	27.25	27.01	16.69	16.32
650	0.19	50.73	50.85	20.15	27.34	27.01	16.85	16.48
675	0.19	50.25	50.40	19.85	27.82	27.14	17.00	16.65
700	0.20	49.69	49.89	19.82	28.06	27.28	17.14	16.81
725	0.22	49.09	49.30	19.17	27.87	27.35	17.28	16.97
750	0.23	48.45	48.65	18.69	27.66	27.38	17.43	17.16
775	0.24	47.82	48.01	19.12	27.97	27.57	17.58	17.35
800	0.24	47.16	47.37	19.06	28.63	28.02	17.72	17.53
825	0.26	46.47	46.71	18.46	29.23	28.54	17.85	17.72
850	0.27	45.84	46.02	18.75	29.55	28.94	18.00	17.94
875	0.28	45.19	45.36	19.77	29.94	29.34	18.12	18.16
900	0.28	44.55	44.75	19.26	30.65	29.94	18.25	18.37
925	0.29	43.92	44.12	18.79	31.62	30.90	18.38	18.58
950	0.31	43.32	43.49	19.85	32.64	32.00	18.50	18.84
975	0.32	42.73	42.88	20.95	33.80	32.85	18.62	19.13
1000	0.32	42.16	42.31	20.52	35.36	33.56	18.71	19.38
1025	0.33	41.59	41.76	20.25	37.53	34.54	18.81	19.63
1050	0.34	41.05	41.18	20.88	39.95	35.43	18.90	19.90
1100	0.36	40.03	40.13	24.29	43.44	34.22	19.04	20.57
1150	0.38	39.03	39.14	22.31	39.20	33.35	19.16	21.25
1200	0.40	38.16	38.20	33.38	35.45	30.24	19.21	21.99
1250	0.41	37.27	37.34	24.92	32.11	28.38	19.26	22.79
1300	0.43	36.55	36.49	34.00	29.31	26.55	19.26	23.50
1350	0.44	35.75	35.75	33.73	27.62	25.08	19.25	23.94
1400	0.47	35.20	35.00	23.82	25.80	24.22	19.17	23.64
1450	0.47	34.50	34.35	23.99	24.95	23.05	19.10	22.24
1500	0.49	34.06	33.69	17.84	24.17	22.54	19.00	19.97
1550	0.48	33.40	33.10	15.06	23.47	21.55	18.90	17.18

**Notes**

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# Dual-Directional Coupler

# ZDDC-50-521+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =+5 dBm @Temperature = +105°C

FREQ. (MHz)	INSERTION LOSS (dB) In - Out	COUPLING (dB)		DIRECTIVITY (dB) In - Rev	RETURN LOSS (dB)			
		In - Fwd	Out - Rev		In	Out	Rev	Fwd
10	0.00	55.43	55.47	22.94	69.86	68.71	11.21	11.23
20	0.00	51.25	51.29	23.02	62.39	62.03	7.54	7.56
30	0.01	50.08	50.12	23.16	58.51	57.24	6.76	6.76
50	0.01	50.16	50.23	22.99	54.95	51.52	7.70	7.70
75	0.01	50.75	50.80	22.87	66.09	48.19	9.50	9.51
100	0.01	50.98	51.02	22.64	48.01	44.31	10.85	10.90
125	0.02	50.96	51.01	22.88	39.56	38.81	11.78	11.87
150	0.02	50.87	50.89	23.06	35.31	34.76	12.41	12.54
175	0.03	50.74	50.75	23.44	32.97	32.16	12.90	13.02
200	0.03	50.63	50.60	24.11	31.11	30.25	13.26	13.35
225	0.04	50.56	50.52	25.07	29.45	28.81	13.56	13.62
250	0.05	50.51	50.49	25.24	28.28	27.82	13.81	13.86
275	0.06	50.55	50.50	26.04	27.67	27.27	14.09	14.10
300	0.06	50.60	50.55	28.96	27.37	26.99	14.35	14.31
325	0.07	50.68	50.63	30.36	27.12	26.67	14.56	14.50
350	0.07	50.82	50.77	30.24	26.98	26.32	14.75	14.67
375	0.08	50.97	50.93	32.33	27.03	26.07	14.94	14.86
400	0.09	51.12	51.08	42.14	27.13	25.97	15.13	15.03
425	0.09	51.29	51.25	43.64	27.08	25.95	15.31	15.19
450	0.10	51.47	51.42	46.40	26.86	25.92	15.46	15.32
475	0.11	51.58	51.58	36.40	26.69	25.85	15.60	15.47
500	0.12	51.67	51.70	30.20	26.71	25.80	15.76	15.61
520	0.12	51.71	51.75	28.33	26.80	25.71	15.89	15.71
550	0.14	51.68	51.73	26.14	26.80	25.62	16.10	15.82
575	0.15	51.53	51.65	24.30	26.65	25.59	16.26	15.93
600	0.16	51.31	51.47	23.34	26.60	25.58	16.45	16.07
625	0.17	50.99	51.18	22.12	26.70	25.70	16.64	16.20
650	0.18	50.57	50.77	20.86	26.98	25.95	16.85	16.31
675	0.19	50.10	50.31	20.66	27.36	26.33	17.05	16.42
700	0.19	49.55	49.80	20.35	27.74	26.67	17.26	16.57
725	0.20	48.94	49.20	19.41	28.03	26.84	17.49	16.73
750	0.21	48.31	48.55	19.25	28.27	27.01	17.73	16.85
775	0.22	47.67	47.90	19.59	28.72	27.46	17.96	16.94
800	0.23	47.01	47.26	19.22	29.49	28.22	18.21	17.06
825	0.24	46.34	46.59	18.46	30.44	29.10	18.46	17.22
850	0.25	45.70	45.91	19.01	31.26	29.86	18.71	17.37
875	0.26	45.04	45.26	19.62	31.99	30.75	18.96	17.49
900	0.26	44.41	44.63	18.62	32.80	31.98	19.26	17.59
925	0.27	43.77	44.02	18.25	33.98	33.24	19.56	17.70
950	0.29	43.16	43.37	19.30	35.35	34.21	19.86	17.82
975	0.29	42.58	42.77	19.47	37.13	35.18	20.15	17.94
1000	0.30	42.01	42.20	18.47	39.35	36.65	20.47	18.01
1025	0.31	41.43	41.65	18.18	42.16	37.50	20.81	18.09
1050	0.32	40.88	41.07	18.81	45.95	36.27	21.17	18.20
1100	0.34	39.87	40.04	18.83	46.29	34.22	21.94	18.44
1150	0.35	38.84	39.03	17.72	38.40	31.79	22.82	18.54
1200	0.38	37.97	38.10	18.94	35.15	29.31	23.83	18.72
1250	0.38	37.04	37.22	16.51	32.48	27.53	24.90	18.86
1300	0.41	36.30	36.41	18.29	30.21	25.78	25.81	18.97
1350	0.42	35.44	35.63	15.52	28.43	24.92	26.08	19.02
1400	0.44	34.81	34.94	17.43	27.17	23.95	24.51	19.08
1450	0.44	34.02	34.24	14.20	26.34	23.26	21.41	19.21
1500	0.46	33.45	33.66	16.33	25.14	22.55	17.64	19.23
1550	0.45	32.72	33.04	13.00	24.69	22.14	13.77	19.20

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