

# Voltage Variable Attenuator

# MVA-2000+

## Typical Performance Data

V CONTROL (V)	ATTENUATION @ 1000 MHz (dB)	
	@V+=3V	@V+=5V
	0.0	24.26
1.0	15.89	18.93
2.0	8.35	11.05
3.0	5.73	8.38
4.0	4.17	6.82
5.0	3.23	5.67
6.0	2.63	4.71
7.0	2.41	3.82
8.0	2.26	3.02
9.0	2.14	2.46
10.0	2.05	2.08
11.0	1.98	1.96
12.0	1.91	1.89

FREQ. (MHz)	ATTENUATION Vs. V CONTROL Vs. V+									
	(dB)									
	@V Control=0V		@V Control=1V		@V Control=3V		@V Control=6V		@V Control=12V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	55.55	58.51	16.78	19.71	5.57	8.03	2.51	4.33	1.73	1.72
20	52.61	55.69	16.70	19.66	5.55	8.04	2.49	4.33	1.71	1.71
50	47.86	50.94	16.62	19.63	5.54	8.08	2.49	4.35	1.72	1.71
100	43.17	46.23	16.59	19.58	5.54	8.07	2.47	4.38	1.71	1.71
150	40.01	43.10	16.51	19.56	5.51	8.09	2.48	4.39	1.72	1.71
200	37.72	40.76	16.52	19.54	5.54	8.09	2.49	4.39	1.73	1.73
300	34.39	37.49	16.45	19.49	5.55	8.12	2.51	4.43	1.74	1.73
400	31.97	35.07	16.38	19.43	5.58	8.18	2.53	4.48	1.77	1.77
500	30.11	33.19	16.32	19.37	5.59	8.20	2.55	4.51	1.80	1.79
600	28.55	31.65	16.25	19.27	5.62	8.22	2.56	4.53	1.83	1.82
700	27.24	30.33	16.15	19.20	5.65	8.27	2.58	4.58	1.86	1.84
800	26.08	29.17	16.04	19.12	5.66	8.32	2.60	4.63	1.88	1.86
900	25.05	28.13	15.92	18.99	5.68	8.36	2.60	4.68	1.90	1.88
1000	24.26	27.25	15.89	18.93	5.73	8.38	2.63	4.71	1.91	1.89
1100	23.47	26.43	15.83	18.82	5.77	8.41	2.65	4.75	1.93	1.92
1200	22.79	25.69	15.75	18.71	5.80	8.43	2.68	4.77	1.94	1.94
1300	22.12	24.99	15.65	18.59	5.82	8.48	2.70	4.81	1.96	1.97
1400	21.57	24.34	15.61	18.47	5.87	8.51	2.72	4.84	1.98	1.98
1500	21.03	23.74	15.54	18.36	5.93	8.55	2.75	4.89	2.01	2.01
1600	20.56	23.16	15.50	18.21	5.98	8.58	2.79	4.93	2.04	2.04
1700	20.01	22.58	15.36	18.04	6.00	8.63	2.81	4.99	2.07	2.06
1800	19.51	22.06	15.22	17.90	6.04	8.72	2.84	5.07	2.12	2.11
1900	19.02	21.54	15.06	17.77	6.08	8.82	2.85	5.17	2.16	2.13
2000	18.63	21.04	14.98	17.62	6.13	8.88	2.88	5.24	2.18	2.16
2100	18.22	20.58	14.88	17.49	6.18	8.98	2.90	5.34	2.20	2.20
2200	17.88	20.12	14.81	17.34	6.24	9.05	2.94	5.41	2.25	2.24
2300	17.49	19.66	14.73	17.24	6.31	9.18	2.96	5.53	2.27	2.27
2400	17.15	19.23	14.65	17.11	6.38	9.29	3.01	5.64	2.32	2.32
2500	16.86	18.83	14.63	16.98	6.49	9.44	3.05	5.78	2.38	2.37

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## Typical Performance Data

FREQ. (MHz)	INPUT RETURN LOSS Vs. V CONTROL Vs. V+									
	(dB)									
	@V Control=0V		@V Control=1V		@V Control=3V		@V Control=6V		@V Control=12V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	7.65	13.99	10.57	18.81	20.87	21.12	20.96	21.42	28.61	28.66
20	7.84	14.54	10.86	19.95	21.85	20.99	21.63	21.48	33.00	33.05
50	8.04	15.04	11.15	20.96	22.69	20.62	22.05	21.26	36.98	37.11
100	8.16	15.38	11.33	21.72	23.26	20.26	22.24	21.00	37.51	37.78
150	8.24	15.56	11.45	22.12	23.64	20.03	22.41	20.81	36.54	36.69
200	8.29	15.70	11.53	22.46	23.80	19.85	22.37	20.70	34.44	34.59
300	8.42	15.99	11.73	23.09	24.23	19.50	22.36	20.39	31.99	31.98
400	8.54	16.24	11.92	23.65	24.60	19.16	22.27	20.10	29.94	29.86
500	8.68	16.51	12.12	24.26	25.03	18.81	22.24	19.78	28.64	28.68
600	8.85	16.80	12.36	24.96	25.65	18.43	22.37	19.44	28.05	28.06
700	8.99	17.09	12.57	25.61	26.15	18.12	22.37	19.20	27.56	27.59
800	9.14	17.41	12.81	26.48	26.84	17.84	22.49	18.99	27.42	27.39
900	9.29	17.71	13.02	27.28	27.65	17.56	22.71	18.73	27.54	27.49
1000	9.41	17.96	13.23	28.08	28.48	17.37	23.00	18.64	28.13	27.97
1100	9.55	18.20	13.45	28.96	29.40	17.23	23.23	18.52	28.50	28.26
1200	9.67	18.39	13.62	29.70	30.34	17.09	23.51	18.44	29.07	28.79
1300	9.77	18.54	13.77	30.31	31.14	17.03	23.73	18.44	29.93	29.61
1400	9.86	18.61	13.92	30.80	31.63	17.01	23.74	18.44	30.41	30.13
1500	9.97	18.69	14.08	31.25	32.33	16.91	23.84	18.39	30.60	30.30
1600	10.05	18.69	14.17	31.25	32.52	16.94	23.90	18.46	31.46	31.16
1700	10.15	18.69	14.29	31.23	32.45	16.93	23.57	18.52	31.25	30.82
1800	10.26	18.69	14.44	31.00	33.09	16.85	23.55	18.46	30.58	30.24
1900	10.37	18.73	14.61	30.50	33.43	16.78	23.40	18.43	30.58	30.23
2000	10.49	18.74	14.80	29.97	33.80	16.66	23.09	18.40	30.08	29.84
2100	10.66	18.80	15.07	29.27	34.80	16.47	22.89	18.28	29.29	29.02
2200	10.86	18.88	15.37	28.42	36.05	16.26	22.77	18.12	29.01	28.78
2300	11.06	18.98	15.67	27.61	37.54	16.04	22.71	17.96	29.07	28.70
2400	11.34	19.20	16.14	26.68	40.57	15.74	22.65	17.75	29.01	28.64
2500	11.62	19.39	16.60	25.69	45.15	15.45	22.64	17.52	29.05	28.5

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## Typical Performance Data

FREQ. (MHz)	OUTPUT RETURN LOSS Vs. V CONTROL Vs. V+									
	(dB)									
	@V Control=0V		@V Control=2V		@V Control=3V		@V Control=6V		@V Control=12V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	8.42	16.05	14.39	27.51	17.40	23.45	20.81	23.95	28.47	28.51
20	8.65	16.88	14.78	30.82	17.93	23.59	21.47	24.35	32.85	32.86
50	8.86	17.56	15.18	32.82	18.38	23.24	21.88	24.26	36.75	36.76
100	8.99	17.97	15.39	32.75	18.62	22.88	22.02	24.03	36.93	37.08
150	9.05	18.17	15.53	32.37	18.81	22.68	22.12	23.84	35.57	35.61
200	9.12	18.38	15.65	31.51	18.93	22.36	22.13	23.51	33.79	33.93
300	9.24	18.68	15.91	30.15	19.24	21.89	22.22	23.02	31.27	31.19
400	9.40	19.04	16.22	28.66	19.60	21.36	22.22	22.42	29.13	29.10
500	9.56	19.36	16.52	27.45	19.92	20.87	22.25	21.88	27.75	27.74
600	9.71	19.71	16.88	26.48	20.34	20.42	22.43	21.48	27.24	27.19
700	9.89	20.18	17.27	25.41	20.86	19.91	22.68	20.99	26.73	26.68
800	10.05	20.56	17.61	24.58	21.27	19.50	22.78	20.65	26.29	26.20
900	10.19	20.91	17.95	23.97	21.74	19.19	23.03	20.40	26.35	26.23
1000	10.35	21.38	18.27	23.28	22.24	18.86	23.48	20.14	26.75	26.54
1100	10.45	21.57	18.51	22.89	22.56	18.65	23.59	20.04	26.70	26.49
1200	10.51	21.73	18.64	22.57	22.75	18.49	23.73	20.00	27.14	26.90
1300	10.61	21.98	18.82	22.15	23.10	18.32	24.11	19.92	27.86	27.59
1400	10.74	22.32	19.10	21.61	23.56	18.01	24.47	19.68	28.08	27.85
1500	10.79	22.23	19.17	21.48	23.60	17.97	24.35	19.74	28.22	27.92
1600	10.79	22.19	19.04	21.21	23.50	17.89	24.49	19.82	29.34	29.12
1700	10.97	22.64	19.49	20.62	24.28	17.52	25.05	19.42	29.12	28.72
1800	11.03	22.42	19.59	20.56	24.28	17.48	24.57	19.40	28.35	28.08
1900	11.11	22.52	19.70	20.24	24.55	17.32	24.88	19.33	28.85	28.45
2000	11.33	23.23	20.26	19.50	25.58	16.84	25.71	18.82	28.73	28.51
2100	11.54	23.54	20.82	19.07	26.59	16.51	26.01	18.42	27.87	27.56
2200	11.77	24.34	21.27	18.41	27.67	16.05	27.00	18.02	27.93	27.69
2300	11.93	25.02	21.57	17.85	28.53	15.66	28.17	17.68	28.17	27.70
2400	12.31	27.13	22.18	16.89	30.20	14.94	31.05	16.93	27.52	26.93
2500	12.65	28.95	22.58	16.20	30.88	14.45	34.10	16.37	26.71	25.90

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# MVA-2000+

## Typical Performance Data

FREQ. (MHz)	INPUT IP3 Vs. V CONTROL Vs. V+							
	(dBm)							
	@V Control=0V		@V Control=3V		@V Control=6V		@V Control=12V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	18.77	19.08	32.03	31.42	41.30	31.87	47.28	48.41
20	22.75	24.58	36.37	36.28	45.18	36.44	49.32	51.19
30	26.51	28.99	38.98	39.35	47.78	39.15	51.79	52.14
40	29.62	31.85	40.92	41.31	49.66	40.93	54.11	53.56
50	33.23	33.86	42.60	42.98	51.27	42.43	55.45	55.56
60	33.93	35.47	43.69	43.81	52.08	43.42	55.34	56.00
80	35.75	36.52	45.53	46.04	52.26	45.18	54.13	54.54
100	36.33	36.10	47.36	47.76	49.30	46.51	51.12	50.91
200	36.63	38.12	53.42	50.45	50.44	47.68	52.29	53.43
300	37.97	39.64	55.33	50.43	52.26	48.30	55.71	57.09
400	38.03	39.84	53.83	50.37	55.63	48.20	58.54	57.23
500	39.04	40.80	51.90	51.95	53.78	49.35	56.23	54.73
600	39.83	40.98	50.29	51.77	51.62	49.71	55.24	54.06
700	40.59	41.69	49.84	52.03	49.99	50.99	52.97	52.64
800	40.26	41.71	49.24	52.67	49.70	53.30	51.58	51.75
900	41.61	42.19	49.19	53.97	48.99	53.98	50.97	50.86
1000	41.85	42.56	50.43	56.61	49.97	55.32	52.63	52.64
1100	41.38	42.36	52.19	57.08	50.49	54.92	54.51	54.91
1200	41.64	42.67	54.87	55.73	52.06	53.71	57.28	57.33
1300	42.92	43.12	52.94	55.83	50.72	54.94	56.33	56.20
1400	42.28	42.85	57.17	52.53	53.02	51.56	56.78	55.97
1500	43.04	43.81	56.03	54.70	51.95	53.03	56.79	57.68
1600	43.84	44.30	55.64	55.35	51.29	53.50	55.53	57.59
1700	43.26	43.25	53.10	52.11	50.48	52.40	52.18	52.18
1800	43.96	43.86	53.79	52.05	50.20	53.47	52.06	53.04
1900	44.12	44.28	54.28	53.25	48.53	54.31	51.86	52.69
2000	44.30	45.04	55.00	55.44	49.43	54.72	52.67	53.12
2100	44.29	45.01	55.30	55.39	49.56	55.43	53.47	53.47
2200	45.08	45.68	55.19	54.13	49.70	55.48	54.41	54.88
2300	45.49	46.21	54.82	53.51	50.33	54.32	54.65	53.92
2400	45.64	45.96	55.35	54.24	50.78	55.55	54.82	53.87
2500	45.27	45.99	55.44	53.65	50.73	54.15	54.78	53.85

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## Typical Performance Data

FREQ. (MHz)	PHASE SHIFT Vs. V CONTROL Vs. V+									
	(deg)									
	@V Control=0V		@V Control=1V		@V Control=3V		@V Control=6V		@V Control=12V	
	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V	@V+=3V	@V+=5V
10	126.64	128.23	178.45	179.07	179.16	179.48	179.06	179.30	178.98	179.04
20	127.53	129.13	180.23	180.74	181.31	181.55	181.32	181.60	181.36	181.28
50	120.70	120.04	183.74	183.90	185.46	185.63	185.56	185.87	185.65	185.62
100	117.61	117.56	189.12	188.93	191.75	191.80	192.01	192.15	192.12	192.12
150	119.68	118.78	194.07	193.58	197.86	197.75	198.14	198.30	198.32	198.28
200	123.13	122.28	199.07	198.28	203.95	203.72	204.31	204.44	204.53	204.51
300	132.51	130.91	209.07	207.81	215.97	215.58	216.49	216.55	216.78	216.78
400	143.12	140.57	219.14	217.10	228.02	227.39	228.63	228.70	228.98	229.00
500	154.00	150.86	229.17	226.65	239.96	239.05	240.74	240.67	241.14	241.17
600	165.21	161.53	239.36	236.26	251.92	250.80	252.94	252.76	253.34	253.39
700	176.36	172.06	249.34	245.84	263.80	262.54	264.92	264.86	265.45	265.50
800	188.05	182.94	259.55	255.37	275.76	274.20	277.04	276.82	277.61	277.65
900	199.78	193.93	270.04	265.22	287.77	285.85	289.13	288.81	289.65	289.71
1000	211.79	205.01	280.62	274.92	299.79	297.43	301.30	300.70	301.83	301.99
1100	223.31	215.97	290.77	284.74	311.68	309.11	313.41	312.66	314.00	314.16
1200	235.15	227.04	301.26	294.53	323.65	320.76	325.55	324.61	326.20	326.38
1300	246.88	238.16	311.78	304.40	335.67	332.43	337.76	336.71	338.41	338.56
1400	258.82	249.17	322.55	314.44	347.71	343.90	349.99	348.50	350.61	350.75
1500	270.86	260.33	333.40	324.49	359.72	355.46	362.22	360.44	362.88	363.00
1600	282.51	271.48	343.83	334.41	371.75	367.13	374.44	372.39	375.12	375.22
1700	294.43	282.60	354.60	344.57	383.73	378.92	386.56	384.48	387.29	387.44
1800	305.96	293.75	365.37	354.89	395.65	390.66	398.79	396.58	399.50	399.72
1900	318.32	304.97	376.52	365.04	407.83	402.27	410.89	408.57	411.72	411.95
2000	330.21	316.27	387.50	375.41	419.81	413.89	423.17	420.49	423.95	424.17
2100	342.36	327.53	398.79	385.95	431.98	425.40	435.55	432.40	436.21	436.53
2200	354.54	338.91	409.95	396.20	444.10	436.92	447.81	444.31	448.49	448.84
2300	367.19	350.44	421.69	406.70	456.35	448.25	460.16	455.96	460.70	461.05
2400	379.27	361.69	432.74	417.29	468.46	459.85	472.54	467.94	473.05	473.41
2500	391.91	373.31	444.61	427.59	480.68	470.95	484.94	479.40	485.32	485.70