

Programmable Attenuator

ZVVA-3000

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	0.11	0.82	2.40	5.11	7.83	10.53	13.14	15.97	18.37	21.26	23.99	27.24
50	0.11	0.79	2.38	5.09	7.82	10.52	13.14	15.97	18.39	21.28	24.04	27.32
100	0.11	0.79	2.39	5.11	7.82	10.52	13.12	15.94	18.36	21.25	24.01	27.29
200	0.11	0.79	2.39	5.11	7.81	10.49	13.08	15.90	18.31	21.21	23.96	27.23
300	0.11	0.79	2.41	5.14	7.83	10.49	13.07	15.87	18.28	21.17	23.92	27.17
400	0.11	0.78	2.42	5.16	7.83	10.48	13.04	15.84	18.24	21.13	23.87	27.09
500	0.11	0.78	2.43	5.17	7.83	10.45	13.01	15.80	18.20	21.08	23.81	27.00
600	0.11	0.78	2.43	5.17	7.81	10.42	12.96	15.75	18.15	21.03	23.74	26.89
700	0.11	0.78	2.44	5.18	7.80	10.39	12.92	15.70	18.09	20.96	23.67	26.75
800	0.11	0.78	2.44	5.18	7.78	10.35	12.87	15.64	18.03	20.90	23.59	26.60
900	0.11	0.78	2.44	5.17	7.75	10.30	12.81	15.57	17.96	20.82	23.48	26.42
1000	0.11	0.78	2.43	5.14	7.70	10.23	12.73	15.49	17.87	20.72	23.36	26.21
1100	0.11	0.78	2.43	5.13	7.66	10.18	12.67	15.42	17.81	20.65	23.24	26.00
1200	0.11	0.78	2.43	5.12	7.64	10.14	12.62	15.38	17.76	20.58	23.14	25.79
1300	0.10	0.78	2.42	5.10	7.60	10.08	12.55	15.30	17.68	20.49	23.00	25.53
1400	0.10	0.77	2.40	5.06	7.54	10.01	12.47	15.21	17.58	20.36	22.80	25.20
1500	0.10	0.76	2.37	4.99	7.43	9.87	12.30	15.02	17.35	20.08	22.44	24.72
1600	0.10	0.76	2.35	4.93	7.34	9.77	12.19	14.91	17.25	19.98	22.32	24.52
1700	0.11	0.76	2.33	4.88	7.27	9.68	12.12	14.85	17.20	19.92	22.22	24.33
1800	0.11	0.76	2.31	4.83	7.20	9.61	12.04	14.78	17.14	19.84	22.08	24.07
1900	0.11	0.76	2.28	4.78	7.13	9.53	11.97	14.71	17.06	19.73	21.90	23.78
2000	0.11	0.75	2.26	4.73	7.06	9.45	11.89	14.63	16.98	19.62	21.71	23.48
2100	0.11	0.75	2.24	4.68	6.99	9.37	11.81	14.56	16.89	19.49	21.51	23.17
2200	0.11	0.75	2.22	4.63	6.92	9.30	11.73	14.48	16.81	19.36	21.31	22.86
2300	0.11	0.75	2.20	4.59	6.86	9.22	11.66	14.41	16.72	19.23	21.10	22.55
2400	0.12	0.74	2.19	4.55	6.80	9.15	11.59	14.33	16.63	19.09	20.88	22.23
2500	0.11	0.74	2.17	4.51	6.74	9.09	11.52	14.26	16.54	18.93	20.64	21.89
2600	0.11	0.74	2.16	4.48	6.70	9.03	11.45	14.18	16.44	18.76	20.37	21.52
2700	0.11	0.73	2.15	4.46	6.66	8.97	11.39	14.09	16.30	18.53	20.01	21.03
2800	0.11	0.73	2.13	4.40	6.55	8.82	11.18	13.81	15.91	17.97	19.30	20.20
2900	0.11	0.72	2.10	4.32	6.42	8.66	10.98	13.56	15.62	17.64	18.97	19.91
3000	0.11	0.72	2.10	4.33	6.43	8.66	11.00	13.60	15.66	17.68	19.00	19.95

Notes

- 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-Circuit's 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	-0.01	0.18	0.10	-0.11	-0.33	-0.53	-0.64	-0.97	-0.87	-1.25	-1.49	-2.24
50	-0.01	0.21	0.12	-0.09	-0.32	-0.52	-0.64	-0.97	-0.89	-1.28	-1.54	-2.32
100	-0.01	0.21	0.11	-0.11	-0.32	-0.52	-0.62	-0.94	-0.86	-1.25	-1.51	-2.29
200	-0.01	0.22	0.11	-0.11	-0.31	-0.49	-0.58	-0.90	-0.81	-1.21	-1.46	-2.23
300	-0.01	0.22	0.09	-0.14	-0.33	-0.49	-0.56	-0.87	-0.78	-1.17	-1.42	-2.17
400	-0.01	0.22	0.08	-0.16	-0.33	-0.48	-0.54	-0.84	-0.74	-1.13	-1.37	-2.08
500	0.00	0.22	0.07	-0.17	-0.32	-0.45	-0.51	-0.80	-0.70	-1.08	-1.31	-2.00
600	-0.01	0.22	0.07	-0.17	-0.31	-0.42	-0.46	-0.75	-0.65	-1.03	-1.24	-1.89
700	0.00	0.22	0.06	-0.18	-0.30	-0.39	-0.42	-0.70	-0.59	-0.96	-1.17	-1.75
800	-0.01	0.22	0.06	-0.18	-0.28	-0.35	-0.37	-0.64	-0.53	-0.90	-1.08	-1.60
900	0.00	0.22	0.06	-0.17	-0.25	-0.30	-0.31	-0.57	-0.46	-0.82	-0.98	-1.42
1000	-0.01	0.22	0.07	-0.14	-0.20	-0.23	-0.23	-0.49	-0.37	-0.72	-0.86	-1.21
1100	-0.01	0.22	0.07	-0.13	-0.16	-0.18	-0.17	-0.42	-0.31	-0.65	-0.74	-1.00
1200	-0.01	0.22	0.07	-0.12	-0.14	-0.14	-0.12	-0.38	-0.25	-0.58	-0.64	-0.79
1300	0.00	0.22	0.08	-0.10	-0.10	-0.08	-0.05	-0.30	-0.18	-0.49	-0.50	-0.53
1400	0.00	0.23	0.10	-0.06	-0.04	-0.01	0.03	-0.21	-0.08	-0.36	-0.30	-0.20
1500	0.00	0.24	0.14	0.01	0.07	0.13	0.20	-0.02	0.15	-0.08	0.06	0.28
1600	0.00	0.24	0.16	0.07	0.16	0.23	0.31	0.09	0.25	0.02	0.18	0.48
1700	-0.01	0.24	0.17	0.12	0.23	0.32	0.39	0.15	0.30	0.08	0.28	0.67
1800	-0.01	0.24	0.19	0.17	0.30	0.39	0.46	0.22	0.36	0.16	0.42	0.93
1900	-0.01	0.24	0.22	0.22	0.37	0.47	0.53	0.29	0.44	0.27	0.60	1.22
2000	-0.01	0.25	0.24	0.27	0.44	0.55	0.61	0.37	0.52	0.39	0.79	1.52
2100	-0.01	0.25	0.26	0.32	0.51	0.63	0.69	0.44	0.61	0.51	0.99	1.83
2200	-0.01	0.25	0.28	0.37	0.58	0.70	0.77	0.52	0.69	0.64	1.19	2.14
2300	-0.01	0.25	0.30	0.41	0.64	0.78	0.84	0.59	0.78	0.77	1.40	2.45
2400	-0.02	0.26	0.31	0.45	0.70	0.85	0.91	0.67	0.87	0.91	1.63	2.77
2500	-0.01	0.26	0.33	0.49	0.76	0.91	0.98	0.74	0.96	1.07	1.86	3.11
2600	-0.01	0.27	0.34	0.52	0.80	0.97	1.05	0.82	1.06	1.24	2.13	3.49
2700	-0.01	0.27	0.35	0.54	0.84	1.03	1.12	0.91	1.20	1.47	2.49	3.97
2800	-0.01	0.27	0.37	0.60	0.95	1.18	1.32	1.19	1.59	2.04	3.20	4.80
2900	-0.01	0.28	0.40	0.68	1.08	1.35	1.52	1.44	1.88	2.36	3.53	5.09
3000	-0.01	0.28	0.40	0.67	1.07	1.34	1.50	1.40	1.84	2.32	3.50	5.05

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Input VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.44	1.43	1.56	1.80	1.75	1.62	1.53	1.48	1.46	1.45	1.46	1.46
50	1.15	1.17	1.35	1.62	1.57	1.42	1.30	1.23	1.19	1.17	1.16	1.17
100	1.06	1.09	1.32	1.59	1.54	1.38	1.26	1.17	1.11	1.08	1.07	1.07
200	1.02	1.07	1.31	1.58	1.53	1.37	1.25	1.15	1.09	1.04	1.01	1.03
300	1.06	1.10	1.33	1.61	1.55	1.40	1.27	1.18	1.12	1.07	1.05	1.04
400	1.07	1.11	1.34	1.62	1.57	1.42	1.29	1.19	1.14	1.09	1.06	1.06
500	1.08	1.12	1.34	1.62	1.57	1.42	1.30	1.20	1.14	1.10	1.08	1.07
600	1.08	1.13	1.36	1.64	1.59	1.43	1.31	1.21	1.16	1.11	1.09	1.09
700	1.09	1.13	1.37	1.65	1.61	1.45	1.33	1.23	1.17	1.13	1.11	1.10
800	1.09	1.13	1.37	1.65	1.61	1.45	1.33	1.23	1.18	1.13	1.11	1.10
900	1.08	1.13	1.36	1.64	1.60	1.45	1.33	1.23	1.18	1.13	1.11	1.11
1000	1.08	1.14	1.38	1.66	1.61	1.46	1.34	1.24	1.18	1.14	1.11	1.10
1100	1.09	1.15	1.39	1.67	1.63	1.47	1.35	1.25	1.19	1.14	1.11	1.09
1200	1.09	1.15	1.40	1.68	1.63	1.48	1.36	1.25	1.19	1.14	1.11	1.09
1300	1.10	1.16	1.40	1.68	1.64	1.49	1.36	1.26	1.20	1.14	1.11	1.09
1400	1.11	1.17	1.40	1.68	1.64	1.49	1.36	1.26	1.19	1.14	1.10	1.08
1500	1.12	1.17	1.39	1.65	1.62	1.47	1.35	1.24	1.18	1.12	1.09	1.06
1600	1.12	1.17	1.38	1.63	1.59	1.45	1.33	1.23	1.16	1.11	1.07	1.04
1700	1.12	1.16	1.36	1.60	1.57	1.43	1.31	1.21	1.15	1.09	1.05	1.01
1800	1.12	1.16	1.35	1.57	1.54	1.41	1.29	1.20	1.14	1.08	1.04	1.01
1900	1.12	1.15	1.33	1.55	1.51	1.39	1.28	1.18	1.12	1.07	1.04	1.03
2000	1.11	1.14	1.31	1.52	1.49	1.37	1.26	1.17	1.12	1.07	1.04	1.05
2100	1.09	1.12	1.28	1.49	1.46	1.34	1.24	1.16	1.11	1.07	1.06	1.07
2200	1.07	1.10	1.26	1.45	1.43	1.32	1.22	1.14	1.10	1.07	1.07	1.10
2300	1.04	1.07	1.23	1.42	1.40	1.29	1.20	1.13	1.09	1.07	1.09	1.12
2400	1.01	1.05	1.21	1.39	1.37	1.27	1.18	1.11	1.08	1.08	1.10	1.14
2500	1.01	1.03	1.19	1.37	1.34	1.24	1.16	1.09	1.07	1.08	1.11	1.15
2600	1.04	1.04	1.17	1.34	1.32	1.23	1.14	1.08	1.06	1.09	1.12	1.17
2700	1.07	1.05	1.16	1.33	1.31	1.21	1.13	1.07	1.05	1.09	1.13	1.18
2800	1.09	1.07	1.16	1.31	1.29	1.20	1.11	1.05	1.05	1.10	1.14	1.19
2900	1.12	1.10	1.16	1.30	1.28	1.19	1.10	1.04	1.05	1.10	1.15	1.20
3000	1.13	1.11	1.17	1.30	1.28	1.19	1.11	1.04	1.05	1.10	1.15	1.19

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Output VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.44	1.44	1.56	1.80	1.76	1.62	1.54	1.49	1.47	1.46	1.46	1.47
50	1.16	1.17	1.36	1.62	1.57	1.42	1.31	1.23	1.19	1.17	1.16	1.17
100	1.06	1.09	1.32	1.59	1.54	1.38	1.26	1.17	1.12	1.08	1.07	1.07
200	1.01	1.07	1.30	1.58	1.52	1.37	1.25	1.15	1.09	1.04	1.00	1.03
300	1.05	1.08	1.32	1.59	1.54	1.39	1.27	1.17	1.11	1.06	1.04	1.04
400	1.06	1.10	1.33	1.61	1.56	1.41	1.28	1.19	1.13	1.08	1.06	1.05
500	1.06	1.10	1.33	1.61	1.57	1.41	1.29	1.19	1.14	1.09	1.07	1.07
600	1.07	1.11	1.34	1.62	1.58	1.42	1.30	1.20	1.15	1.11	1.09	1.08
700	1.07	1.12	1.35	1.64	1.60	1.44	1.32	1.22	1.16	1.12	1.10	1.09
800	1.07	1.12	1.36	1.64	1.60	1.45	1.32	1.23	1.17	1.13	1.10	1.09
900	1.05	1.10	1.34	1.62	1.58	1.43	1.31	1.21	1.16	1.12	1.10	1.09
1000	1.04	1.10	1.34	1.62	1.58	1.43	1.31	1.21	1.16	1.11	1.09	1.08
1100	1.04	1.11	1.35	1.63	1.59	1.44	1.32	1.22	1.16	1.11	1.09	1.08
1200	1.05	1.11	1.35	1.64	1.60	1.45	1.33	1.23	1.16	1.11	1.09	1.07
1300	1.06	1.11	1.35	1.63	1.60	1.45	1.33	1.22	1.16	1.11	1.08	1.06
1400	1.07	1.12	1.34	1.62	1.59	1.44	1.32	1.22	1.15	1.10	1.07	1.05
1500	1.08	1.12	1.33	1.60	1.56	1.42	1.30	1.20	1.14	1.08	1.05	1.04
1600	1.09	1.12	1.32	1.57	1.54	1.40	1.28	1.19	1.12	1.07	1.03	1.02
1700	1.10	1.13	1.31	1.55	1.52	1.39	1.27	1.17	1.11	1.05	1.01	1.02
1800	1.11	1.13	1.30	1.53	1.50	1.37	1.25	1.16	1.10	1.04	1.01	1.04
1900	1.11	1.12	1.28	1.50	1.47	1.35	1.24	1.15	1.09	1.04	1.04	1.06
2000	1.11	1.11	1.26	1.47	1.44	1.32	1.22	1.13	1.08	1.05	1.06	1.09
2100	1.10	1.10	1.23	1.43	1.41	1.29	1.19	1.11	1.07	1.06	1.08	1.12
2200	1.09	1.08	1.20	1.40	1.38	1.27	1.17	1.10	1.07	1.08	1.11	1.14
2300	1.08	1.06	1.17	1.36	1.34	1.24	1.15	1.08	1.07	1.09	1.13	1.17
2400	1.07	1.04	1.15	1.33	1.31	1.21	1.12	1.07	1.07	1.11	1.15	1.20
2500	1.08	1.04	1.12	1.30	1.28	1.19	1.10	1.06	1.08	1.13	1.17	1.22
2600	1.09	1.05	1.11	1.28	1.26	1.16	1.08	1.05	1.09	1.14	1.19	1.24
2700	1.11	1.07	1.10	1.26	1.24	1.15	1.06	1.05	1.09	1.15	1.21	1.26
2800	1.13	1.09	1.10	1.25	1.22	1.13	1.04	1.05	1.11	1.17	1.22	1.28
2900	1.16	1.12	1.10	1.23	1.21	1.11	1.03	1.06	1.12	1.19	1.24	1.30
3000	1.18	1.14	1.11	1.23	1.20	1.11	1.02	1.06	1.12	1.19	1.25	1.30

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ 0°C

FREQUENCY (MHz)	IP3 (dBm)
20	50.38
50	54.82
100	52.44
250	53.26
500	52.10
750	52.38
1000	51.46
1250	52.41
1500	52.14
1750	52.38
2000	52.47
2250	52.28
2500	52.50
2750	52.84
3000	51.15

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	0.12	0.96	2.45	5.11	7.89	10.63	13.23	15.98	18.26	20.91	23.34	26.12
50	0.12	0.94	2.43	5.09	7.88	10.63	13.23	15.98	18.27	20.93	23.37	26.17
100	0.12	0.94	2.45	5.12	7.90	10.63	13.22	15.96	18.24	20.90	23.34	26.14
200	0.12	0.94	2.45	5.13	7.89	10.61	13.19	15.92	18.20	20.86	23.30	26.09
300	0.12	0.94	2.46	5.13	7.88	10.59	13.16	15.89	18.17	20.82	23.25	26.03
400	0.12	0.93	2.46	5.14	7.88	10.57	13.13	15.86	18.13	20.78	23.21	25.97
500	0.12	0.93	2.47	5.15	7.87	10.55	13.10	15.82	18.09	20.74	23.16	25.90
600	0.12	0.93	2.47	5.15	7.86	10.52	13.06	15.77	18.05	20.69	23.11	25.82
700	0.12	0.93	2.48	5.16	7.85	10.49	13.02	15.73	18.00	20.64	23.05	25.72
800	0.12	0.93	2.49	5.16	7.83	10.45	12.97	15.67	17.94	20.58	22.97	25.60
900	0.12	0.93	2.49	5.16	7.80	10.41	12.92	15.61	17.88	20.51	22.89	25.46
1000	0.12	0.93	2.48	5.13	7.75	10.34	12.84	15.53	17.80	20.43	22.78	25.30
1100	0.12	0.94	2.47	5.11	7.72	10.29	12.78	15.48	17.74	20.36	22.69	25.13
1200	0.12	0.93	2.47	5.10	7.69	10.25	12.73	15.43	17.69	20.30	22.60	24.97
1300	0.11	0.93	2.46	5.07	7.64	10.19	12.67	15.36	17.62	20.21	22.48	24.76
1400	0.11	0.91	2.43	5.03	7.58	10.11	12.58	15.27	17.52	20.09	22.30	24.47
1500	0.11	0.91	2.40	4.96	7.48	9.98	12.43	15.10	17.32	19.85	22.00	24.08
1600	0.11	0.90	2.38	4.90	7.39	9.88	12.33	15.00	17.23	19.75	21.87	23.89
1700	0.12	0.90	2.36	4.86	7.32	9.81	12.26	14.93	17.17	19.69	21.78	23.73
1800	0.12	0.90	2.34	4.81	7.25	9.73	12.19	14.88	17.12	19.62	21.66	23.51
1900	0.12	0.90	2.32	4.76	7.19	9.66	12.12	14.81	17.05	19.52	21.51	23.27
2000	0.12	0.89	2.30	4.71	7.12	9.59	12.05	14.74	16.98	19.42	21.34	23.00
2100	0.12	0.89	2.28	4.66	7.06	9.52	11.97	14.67	16.90	19.30	21.16	22.73
2200	0.12	0.89	2.26	4.62	6.99	9.44	11.90	14.60	16.81	19.18	20.97	22.45
2300	0.13	0.88	2.24	4.58	6.93	9.38	11.84	14.53	16.74	19.06	20.79	22.18
2400	0.13	0.88	2.22	4.54	6.87	9.31	11.77	14.47	16.65	18.93	20.58	21.88
2500	0.13	0.87	2.21	4.50	6.82	9.25	11.71	14.40	16.56	18.78	20.36	21.57
2600	0.12	0.87	2.19	4.47	6.77	9.19	11.65	14.33	16.46	18.62	20.11	21.22
2700	0.13	0.87	2.18	4.44	6.73	9.13	11.57	14.23	16.32	18.37	19.75	20.74
2800	0.12	0.86	2.16	4.37	6.61	8.96	11.35	13.91	15.90	17.81	19.06	19.96
2900	0.12	0.85	2.13	4.31	6.51	8.84	11.20	13.75	15.71	17.59	18.85	19.78
3000	0.13	0.85	2.14	4.32	6.52	8.85	11.22	13.77	15.74	17.61	18.86	19.77

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	-0.02	0.04	0.05	-0.11	-0.39	-0.63	-0.73	-0.98	-0.76	-0.91	-0.84	-1.12
50	-0.02	0.06	0.07	-0.09	-0.38	-0.63	-0.73	-0.98	-0.77	-0.93	-0.87	-1.17
100	-0.02	0.06	0.05	-0.12	-0.40	-0.63	-0.72	-0.96	-0.74	-0.90	-0.84	-1.14
200	-0.02	0.06	0.05	-0.13	-0.39	-0.61	-0.69	-0.92	-0.70	-0.86	-0.80	-1.08
300	-0.02	0.07	0.04	-0.13	-0.38	-0.59	-0.66	-0.89	-0.67	-0.82	-0.75	-1.03
400	-0.02	0.07	0.04	-0.14	-0.38	-0.57	-0.63	-0.85	-0.63	-0.78	-0.71	-0.97
500	-0.02	0.07	0.03	-0.15	-0.37	-0.55	-0.60	-0.82	-0.59	-0.74	-0.66	-0.90
600	-0.02	0.07	0.03	-0.15	-0.36	-0.52	-0.56	-0.77	-0.55	-0.69	-0.61	-0.82
700	-0.02	0.07	0.02	-0.16	-0.34	-0.49	-0.52	-0.73	-0.50	-0.64	-0.55	-0.72
800	-0.02	0.07	0.01	-0.16	-0.33	-0.45	-0.47	-0.67	-0.44	-0.58	-0.47	-0.60
900	-0.02	0.07	0.01	-0.16	-0.30	-0.41	-0.42	-0.61	-0.38	-0.51	-0.39	-0.46
1000	-0.02	0.07	0.02	-0.13	-0.25	-0.34	-0.34	-0.53	-0.30	-0.43	-0.28	-0.30
1100	-0.02	0.07	0.03	-0.11	-0.22	-0.29	-0.28	-0.48	-0.24	-0.36	-0.19	-0.13
1200	-0.02	0.07	0.03	-0.09	-0.19	-0.25	-0.23	-0.43	-0.19	-0.30	-0.10	0.03
1300	-0.01	0.07	0.05	-0.07	-0.14	-0.19	-0.17	-0.36	-0.12	-0.21	0.02	0.24
1400	-0.01	0.09	0.07	-0.03	-0.08	-0.11	-0.08	-0.27	-0.02	-0.09	0.20	0.53
1500	-0.01	0.10	0.10	0.04	0.03	0.02	0.07	-0.10	0.18	0.15	0.50	0.92
1600	-0.01	0.10	0.12	0.10	0.11	0.12	0.17	0.01	0.27	0.25	0.63	1.11
1700	-0.02	0.10	0.14	0.15	0.18	0.19	0.24	0.07	0.33	0.31	0.72	1.27
1800	-0.02	0.10	0.16	0.19	0.25	0.27	0.31	0.12	0.38	0.38	0.84	1.49
1900	-0.02	0.10	0.18	0.24	0.31	0.34	0.38	0.19	0.45	0.48	0.99	1.73
2000	-0.02	0.11	0.20	0.29	0.38	0.41	0.45	0.26	0.52	0.58	1.16	2.00
2100	-0.02	0.11	0.22	0.34	0.45	0.48	0.53	0.33	0.60	0.70	1.34	2.27
2200	-0.02	0.12	0.24	0.39	0.51	0.56	0.60	0.40	0.69	0.82	1.53	2.55
2300	-0.03	0.12	0.26	0.43	0.57	0.63	0.66	0.47	0.76	0.94	1.72	2.83
2400	-0.03	0.12	0.28	0.47	0.63	0.69	0.73	0.53	0.85	1.08	1.92	3.12
2500	-0.03	0.13	0.29	0.50	0.68	0.75	0.79	0.60	0.94	1.22	2.14	3.43
2600	-0.02	0.13	0.31	0.53	0.73	0.81	0.85	0.68	1.04	1.38	2.39	3.78
2700	-0.03	0.14	0.32	0.56	0.77	0.87	0.93	0.77	1.18	1.63	2.75	4.26
2800	-0.02	0.14	0.34	0.63	0.89	1.04	1.15	1.09	1.60	2.19	3.44	5.04
2900	-0.02	0.15	0.37	0.69	0.99	1.16	1.30	1.26	1.79	2.41	3.65	5.22
3000	-0.03	0.15	0.36	0.68	0.98	1.16	1.28	1.23	1.76	2.39	3.64	5.23

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Input VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.43	1.42	1.53	1.74	1.69	1.57	1.50	1.46	1.44	1.44	1.44	1.45
50	1.15	1.16	1.33	1.57	1.51	1.37	1.27	1.20	1.17	1.16	1.16	1.16
100	1.05	1.09	1.30	1.54	1.49	1.34	1.23	1.14	1.10	1.07	1.06	1.07
200	1.01	1.08	1.29	1.54	1.49	1.34	1.22	1.13	1.08	1.03	1.01	1.03
300	1.03	1.09	1.30	1.55	1.49	1.35	1.23	1.14	1.09	1.04	1.03	1.04
400	1.05	1.10	1.31	1.56	1.50	1.36	1.24	1.15	1.10	1.06	1.05	1.05
500	1.07	1.11	1.32	1.56	1.51	1.37	1.25	1.17	1.12	1.08	1.07	1.07
600	1.07	1.12	1.33	1.58	1.53	1.38	1.27	1.18	1.13	1.09	1.08	1.07
700	1.07	1.13	1.34	1.59	1.54	1.40	1.28	1.19	1.14	1.11	1.09	1.08
800	1.08	1.14	1.35	1.60	1.55	1.41	1.29	1.20	1.15	1.12	1.10	1.09
900	1.06	1.13	1.34	1.59	1.54	1.40	1.29	1.20	1.15	1.11	1.10	1.09
1000	1.06	1.14	1.35	1.60	1.55	1.41	1.29	1.20	1.15	1.11	1.09	1.08
1100	1.06	1.14	1.36	1.61	1.56	1.42	1.30	1.21	1.16	1.11	1.09	1.07
1200	1.07	1.15	1.36	1.61	1.57	1.43	1.31	1.21	1.16	1.11	1.08	1.07
1300	1.08	1.15	1.37	1.61	1.57	1.43	1.31	1.22	1.16	1.11	1.08	1.06
1400	1.09	1.16	1.36	1.60	1.56	1.42	1.31	1.21	1.15	1.10	1.07	1.05
1500	1.10	1.16	1.35	1.58	1.54	1.41	1.29	1.20	1.14	1.09	1.06	1.03
1600	1.10	1.16	1.34	1.57	1.53	1.39	1.28	1.19	1.13	1.08	1.04	1.01
1700	1.11	1.16	1.33	1.55	1.51	1.38	1.27	1.18	1.12	1.07	1.04	1.01
1800	1.11	1.16	1.32	1.52	1.49	1.36	1.26	1.17	1.12	1.07	1.04	1.03
1900	1.11	1.15	1.31	1.50	1.47	1.35	1.24	1.16	1.11	1.06	1.04	1.05
2000	1.10	1.14	1.29	1.47	1.44	1.33	1.23	1.15	1.10	1.07	1.06	1.07
2100	1.08	1.12	1.26	1.44	1.41	1.31	1.21	1.14	1.10	1.07	1.07	1.09
2200	1.06	1.10	1.24	1.41	1.39	1.28	1.20	1.13	1.09	1.08	1.09	1.11
2300	1.04	1.08	1.21	1.38	1.36	1.26	1.18	1.11	1.09	1.09	1.10	1.13
2400	1.02	1.05	1.19	1.35	1.33	1.24	1.16	1.10	1.08	1.09	1.12	1.15
2500	1.02	1.03	1.17	1.33	1.31	1.22	1.14	1.09	1.08	1.10	1.13	1.16
2600	1.04	1.03	1.15	1.31	1.29	1.20	1.12	1.08	1.08	1.11	1.14	1.18
2700	1.07	1.04	1.14	1.29	1.27	1.18	1.11	1.06	1.07	1.11	1.15	1.19
2800	1.09	1.06	1.14	1.27	1.25	1.16	1.09	1.05	1.07	1.12	1.16	1.20
2900	1.12	1.09	1.14	1.26	1.24	1.15	1.08	1.05	1.07	1.12	1.16	1.21
3000	1.14	1.10	1.14	1.26	1.24	1.16	1.08	1.04	1.07	1.12	1.16	1.21

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Output VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.44	1.43	1.54	1.74	1.70	1.58	1.50	1.46	1.45	1.45	1.45	1.46
50	1.15	1.16	1.33	1.56	1.51	1.37	1.27	1.20	1.17	1.16	1.16	1.16
100	1.06	1.09	1.29	1.54	1.49	1.34	1.23	1.14	1.10	1.07	1.06	1.07
200	1.01	1.07	1.29	1.53	1.48	1.33	1.22	1.13	1.07	1.03	1.01	1.04
300	1.03	1.08	1.29	1.54	1.49	1.34	1.22	1.13	1.08	1.04	1.02	1.04
400	1.04	1.09	1.30	1.55	1.49	1.35	1.23	1.15	1.09	1.05	1.04	1.05
500	1.05	1.10	1.30	1.55	1.50	1.36	1.24	1.16	1.11	1.07	1.06	1.06
600	1.05	1.10	1.31	1.56	1.51	1.37	1.26	1.17	1.12	1.08	1.07	1.07
700	1.05	1.11	1.32	1.57	1.53	1.38	1.27	1.18	1.13	1.09	1.08	1.08
800	1.05	1.11	1.32	1.58	1.53	1.39	1.27	1.19	1.14	1.10	1.08	1.08
900	1.04	1.10	1.31	1.56	1.52	1.38	1.27	1.18	1.13	1.10	1.08	1.08
1000	1.03	1.10	1.32	1.57	1.53	1.39	1.27	1.18	1.13	1.09	1.07	1.07
1100	1.03	1.11	1.33	1.58	1.53	1.39	1.28	1.19	1.13	1.09	1.07	1.06
1200	1.04	1.11	1.33	1.58	1.54	1.40	1.28	1.19	1.13	1.09	1.06	1.05
1300	1.05	1.12	1.32	1.57	1.53	1.39	1.28	1.18	1.13	1.08	1.05	1.04
1400	1.06	1.12	1.32	1.56	1.52	1.39	1.27	1.18	1.12	1.07	1.04	1.03
1500	1.08	1.12	1.30	1.54	1.50	1.37	1.26	1.16	1.11	1.06	1.02	1.02
1600	1.09	1.12	1.29	1.52	1.48	1.35	1.24	1.15	1.10	1.04	1.01	1.03
1700	1.10	1.13	1.28	1.49	1.46	1.33	1.23	1.14	1.09	1.04	1.02	1.04
1800	1.11	1.12	1.27	1.47	1.44	1.32	1.21	1.13	1.08	1.04	1.04	1.06
1900	1.11	1.12	1.25	1.44	1.41	1.30	1.20	1.12	1.07	1.05	1.06	1.09
2000	1.11	1.11	1.23	1.41	1.39	1.27	1.18	1.11	1.07	1.06	1.08	1.11
2100	1.10	1.10	1.20	1.38	1.36	1.25	1.16	1.10	1.07	1.08	1.11	1.14
2200	1.10	1.08	1.18	1.35	1.33	1.23	1.14	1.09	1.08	1.10	1.13	1.16
2300	1.09	1.06	1.15	1.32	1.30	1.20	1.12	1.08	1.09	1.12	1.15	1.19
2400	1.09	1.05	1.13	1.29	1.27	1.18	1.10	1.08	1.10	1.14	1.17	1.21
2500	1.10	1.04	1.10	1.26	1.24	1.15	1.09	1.08	1.11	1.15	1.19	1.24
2600	1.11	1.05	1.08	1.24	1.22	1.13	1.07	1.07	1.12	1.17	1.21	1.26
2700	1.13	1.07	1.07	1.22	1.20	1.11	1.05	1.07	1.12	1.18	1.22	1.27
2800	1.14	1.09	1.07	1.21	1.18	1.09	1.03	1.08	1.13	1.19	1.24	1.29
2900	1.16	1.11	1.08	1.19	1.17	1.08	1.02	1.09	1.14	1.21	1.26	1.31
3000	1.18	1.13	1.10	1.19	1.16	1.08	1.02	1.08	1.14	1.21	1.26	1.31

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +25°C

FREQUENCY (MHz)	IP3 (dBm)
20	50.42
50	52.31
100	52.47
250	52.26
500	51.88
750	51.49
1000	51.42
1250	52.56
1500	51.74
1750	51.49
2000	52.31
2250	51.40
2500	52.36
2750	51.49
3000	51.32

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	0.11	0.82	2.40	5.11	7.83	10.53	13.14	15.97	18.37	21.26	23.99	27.24
50	0.11	0.79	2.38	5.09	7.82	10.52	13.14	15.97	18.39	21.28	24.04	27.32
100	0.11	0.79	2.39	5.11	7.82	10.52	13.12	15.94	18.36	21.25	24.01	27.29
200	0.11	0.79	2.39	5.11	7.81	10.49	13.08	15.90	18.31	21.21	23.96	27.23
300	0.11	0.79	2.41	5.14	7.83	10.49	13.07	15.87	18.28	21.17	23.92	27.17
400	0.11	0.78	2.42	5.16	7.83	10.48	13.04	15.84	18.24	21.13	23.87	27.09
500	0.11	0.78	2.43	5.17	7.83	10.45	13.01	15.80	18.20	21.08	23.81	27.00
600	0.11	0.78	2.43	5.17	7.81	10.42	12.96	15.75	18.15	21.03	23.74	26.89
700	0.11	0.78	2.44	5.18	7.80	10.39	12.92	15.70	18.09	20.96	23.67	26.75
800	0.11	0.78	2.44	5.18	7.78	10.35	12.87	15.64	18.03	20.90	23.59	26.60
900	0.11	0.78	2.44	5.17	7.75	10.30	12.81	15.57	17.96	20.82	23.48	26.42
1000	0.11	0.78	2.43	5.14	7.70	10.23	12.73	15.49	17.87	20.72	23.36	26.21
1100	0.11	0.78	2.43	5.13	7.66	10.18	12.67	15.42	17.81	20.65	23.24	26.00
1200	0.11	0.78	2.43	5.12	7.64	10.14	12.62	15.38	17.76	20.58	23.14	25.79
1300	0.10	0.78	2.42	5.10	7.60	10.08	12.55	15.30	17.68	20.49	23.00	25.53
1400	0.10	0.77	2.40	5.06	7.54	10.01	12.47	15.21	17.58	20.36	22.80	25.20
1500	0.10	0.76	2.37	4.99	7.43	9.87	12.30	15.02	17.35	20.08	22.44	24.72
1600	0.10	0.76	2.35	4.93	7.34	9.77	12.19	14.91	17.25	19.98	22.32	24.52
1700	0.11	0.76	2.33	4.88	7.27	9.68	12.12	14.85	17.20	19.92	22.22	24.33
1800	0.11	0.76	2.31	4.83	7.20	9.61	12.04	14.78	17.14	19.84	22.08	24.07
1900	0.11	0.76	2.28	4.78	7.13	9.53	11.97	14.71	17.06	19.73	21.90	23.78
2000	0.11	0.75	2.26	4.73	7.06	9.45	11.89	14.63	16.98	19.62	21.71	23.48
2100	0.11	0.75	2.24	4.68	6.99	9.37	11.81	14.56	16.89	19.49	21.51	23.17
2200	0.11	0.75	2.22	4.63	6.92	9.30	11.73	14.48	16.81	19.36	21.31	22.86
2300	0.11	0.75	2.20	4.59	6.86	9.22	11.66	14.41	16.72	19.23	21.10	22.55
2400	0.12	0.74	2.19	4.55	6.80	9.15	11.59	14.33	16.63	19.09	20.88	22.23
2500	0.11	0.74	2.17	4.51	6.74	9.09	11.52	14.26	16.54	18.93	20.64	21.89
2600	0.11	0.74	2.16	4.48	6.70	9.03	11.45	14.18	16.44	18.76	20.37	21.52
2700	0.11	0.73	2.15	4.46	6.66	8.97	11.39	14.09	16.30	18.53	20.01	21.03
2800	0.11	0.73	2.13	4.40	6.55	8.82	11.18	13.81	15.91	17.97	19.30	20.20
2900	0.11	0.72	2.10	4.32	6.42	8.66	10.98	13.56	15.62	17.64	18.97	19.91
3000	0.11	0.72	2.10	4.33	6.43	8.66	11.00	13.60	15.66	17.68	19.00	19.95

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	-0.03	-0.10	0.00	-0.11	-0.45	-0.73	-0.81	-0.98	-0.64	-0.60	-0.29	-0.22
50	-0.03	-0.09	0.01	-0.10	-0.44	-0.73	-0.81	-0.98	-0.65	-0.61	-0.31	-0.25
100	-0.03	-0.09	-0.01	-0.13	-0.46	-0.73	-0.80	-0.96	-0.62	-0.58	-0.28	-0.21
200	-0.03	-0.09	-0.02	-0.14	-0.46	-0.71	-0.77	-0.93	-0.59	-0.54	-0.24	-0.16
300	-0.03	-0.09	-0.01	-0.14	-0.45	-0.69	-0.74	-0.89	-0.55	-0.50	-0.20	-0.12
400	-0.03	-0.08	-0.01	-0.14	-0.43	-0.66	-0.71	-0.86	-0.52	-0.47	-0.16	-0.08
500	-0.03	-0.08	-0.02	-0.15	-0.43	-0.64	-0.68	-0.82	-0.48	-0.43	-0.12	-0.02
600	-0.03	-0.08	-0.02	-0.14	-0.41	-0.61	-0.64	-0.78	-0.44	-0.39	-0.08	0.04
700	-0.03	-0.08	-0.03	-0.14	-0.39	-0.58	-0.60	-0.74	-0.39	-0.34	-0.02	0.12
800	-0.03	-0.08	-0.03	-0.15	-0.38	-0.55	-0.56	-0.69	-0.35	-0.29	0.04	0.21
900	-0.03	-0.09	-0.03	-0.14	-0.34	-0.50	-0.50	-0.63	-0.28	-0.23	0.11	0.32
1000	-0.03	-0.08	-0.02	-0.11	-0.30	-0.44	-0.43	-0.56	-0.22	-0.16	0.20	0.45
1100	-0.03	-0.08	-0.02	-0.09	-0.26	-0.39	-0.38	-0.51	-0.16	-0.10	0.28	0.58
1200	-0.03	-0.08	-0.01	-0.08	-0.23	-0.35	-0.33	-0.46	-0.12	-0.04	0.36	0.71
1300	-0.02	-0.08	0.00	-0.05	-0.19	-0.29	-0.27	-0.40	-0.05	0.03	0.46	0.88
1400	-0.02	-0.06	0.02	-0.01	-0.13	-0.21	-0.19	-0.31	0.05	0.16	0.63	1.14
1500	-0.02	-0.05	0.05	0.05	-0.03	-0.10	-0.05	-0.16	0.21	0.35	0.87	1.45
1600	-0.02	-0.05	0.07	0.11	0.05	0.00	0.05	-0.06	0.31	0.45	1.00	1.63
1700	-0.03	-0.05	0.09	0.15	0.12	0.07	0.12	0.00	0.36	0.51	1.08	1.78
1800	-0.03	-0.04	0.11	0.20	0.18	0.14	0.18	0.05	0.40	0.57	1.19	1.96
1900	-0.03	-0.04	0.14	0.25	0.25	0.21	0.24	0.10	0.46	0.66	1.32	2.17
2000	-0.03	-0.03	0.16	0.30	0.31	0.28	0.31	0.17	0.53	0.75	1.47	2.39
2100	-0.04	-0.03	0.18	0.35	0.38	0.35	0.37	0.23	0.61	0.86	1.63	2.63
2200	-0.04	-0.02	0.20	0.39	0.44	0.42	0.44	0.30	0.68	0.97	1.79	2.88
2300	-0.04	-0.01	0.22	0.43	0.50	0.48	0.50	0.36	0.75	1.08	1.97	3.13
2400	-0.04	-0.01	0.24	0.47	0.56	0.55	0.56	0.42	0.83	1.20	2.15	3.39
2500	-0.04	0.00	0.25	0.51	0.61	0.60	0.62	0.49	0.92	1.34	2.35	3.68
2600	-0.04	0.00	0.27	0.54	0.66	0.66	0.68	0.55	1.01	1.49	2.58	4.00
2700	-0.04	0.01	0.28	0.57	0.71	0.73	0.76	0.67	1.18	1.75	2.96	4.49
2800	-0.04	0.02	0.31	0.65	0.84	0.91	1.00	0.98	1.59	2.29	3.59	5.20
2900	-0.04	0.02	0.33	0.69	0.91	0.99	1.10	1.10	1.72	2.43	3.73	5.32
3000	-0.04	0.02	0.32	0.68	0.90	0.99	1.08	1.08	1.70	2.43	3.75	5.35

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Input VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.42	1.42	1.51	1.69	1.64	1.53	1.47	1.44	1.43	1.43	1.44	1.44
50	1.14	1.16	1.30	1.51	1.46	1.33	1.24	1.18	1.16	1.15	1.15	1.16
100	1.05	1.09	1.28	1.49	1.44	1.30	1.20	1.12	1.08	1.06	1.06	1.07
200	1.02	1.08	1.27	1.50	1.44	1.30	1.20	1.11	1.06	1.02	1.01	1.04
300	1.03	1.08	1.27	1.49	1.44	1.30	1.20	1.11	1.06	1.02	1.02	1.04
400	1.04	1.10	1.28	1.50	1.45	1.31	1.20	1.12	1.08	1.04	1.04	1.05
500	1.06	1.11	1.29	1.51	1.45	1.32	1.21	1.13	1.09	1.06	1.06	1.07
600	1.06	1.11	1.30	1.52	1.47	1.33	1.22	1.14	1.10	1.07	1.06	1.07
700	1.06	1.12	1.31	1.53	1.48	1.34	1.24	1.16	1.11	1.08	1.07	1.08
800	1.06	1.13	1.32	1.54	1.49	1.35	1.25	1.17	1.12	1.09	1.08	1.08
900	1.05	1.13	1.31	1.53	1.49	1.35	1.25	1.17	1.12	1.09	1.08	1.08
1000	1.04	1.14	1.32	1.54	1.50	1.36	1.25	1.17	1.12	1.09	1.07	1.07
1100	1.05	1.14	1.33	1.55	1.51	1.37	1.26	1.18	1.13	1.09	1.07	1.06
1200	1.05	1.15	1.34	1.56	1.51	1.38	1.27	1.18	1.13	1.09	1.06	1.05
1300	1.06	1.15	1.34	1.56	1.51	1.38	1.27	1.18	1.13	1.09	1.06	1.04
1400	1.07	1.16	1.34	1.55	1.51	1.37	1.27	1.18	1.13	1.08	1.05	1.03
1500	1.08	1.16	1.33	1.53	1.49	1.36	1.26	1.17	1.12	1.07	1.04	1.02
1600	1.10	1.16	1.32	1.52	1.48	1.35	1.25	1.16	1.11	1.06	1.03	1.00
1700	1.10	1.16	1.31	1.50	1.46	1.34	1.24	1.16	1.11	1.06	1.03	1.02
1800	1.11	1.16	1.30	1.48	1.45	1.33	1.23	1.15	1.10	1.06	1.04	1.04
1900	1.11	1.16	1.29	1.46	1.43	1.31	1.22	1.15	1.10	1.07	1.06	1.07
2000	1.10	1.14	1.27	1.43	1.40	1.29	1.21	1.14	1.10	1.08	1.08	1.09
2100	1.09	1.12	1.24	1.40	1.37	1.27	1.19	1.13	1.10	1.09	1.09	1.11
2200	1.07	1.10	1.22	1.37	1.34	1.25	1.17	1.12	1.10	1.10	1.11	1.13
2300	1.05	1.08	1.19	1.34	1.32	1.23	1.16	1.11	1.10	1.11	1.13	1.15
2400	1.04	1.05	1.17	1.32	1.29	1.21	1.14	1.10	1.10	1.12	1.14	1.17
2500	1.04	1.03	1.15	1.29	1.27	1.19	1.12	1.09	1.10	1.13	1.15	1.18
2600	1.06	1.01	1.13	1.27	1.24	1.16	1.11	1.09	1.10	1.13	1.17	1.20
2700	1.08	1.03	1.12	1.25	1.23	1.15	1.09	1.08	1.10	1.14	1.17	1.21
2800	1.10	1.06	1.11	1.23	1.21	1.13	1.07	1.07	1.10	1.14	1.18	1.22
2900	1.13	1.08	1.11	1.22	1.20	1.12	1.07	1.07	1.10	1.15	1.19	1.23
3000	1.14	1.10	1.12	1.22	1.20	1.12	1.06	1.06	1.09	1.14	1.18	1.22

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Output VSWR (:1)											
	0.1 dB	1 dB	2.5 dB	5 dB	7.5 dB	10 dB	12.5 dB	15 dB	17.5 dB	20 dB	22.5 dB	25 dB
20	1.43	1.42	1.51	1.69	1.65	1.54	1.48	1.44	1.44	1.44	1.44	1.45
50	1.14	1.16	1.30	1.51	1.46	1.33	1.24	1.18	1.16	1.15	1.15	1.16
100	1.05	1.09	1.27	1.49	1.44	1.30	1.20	1.12	1.08	1.06	1.06	1.08
200	1.02	1.08	1.27	1.49	1.44	1.30	1.19	1.11	1.06	1.02	1.02	1.04
300	1.03	1.08	1.27	1.49	1.44	1.30	1.19	1.11	1.06	1.02	1.02	1.05
400	1.04	1.09	1.27	1.49	1.44	1.30	1.20	1.12	1.07	1.03	1.03	1.05
500	1.05	1.09	1.28	1.50	1.45	1.31	1.21	1.13	1.08	1.05	1.05	1.06
600	1.04	1.10	1.28	1.51	1.46	1.32	1.21	1.13	1.09	1.06	1.05	1.06
700	1.04	1.10	1.29	1.51	1.47	1.33	1.22	1.14	1.10	1.07	1.06	1.07
800	1.04	1.11	1.29	1.52	1.47	1.33	1.23	1.15	1.11	1.08	1.07	1.08
900	1.03	1.10	1.29	1.51	1.46	1.33	1.23	1.15	1.10	1.07	1.07	1.07
1000	1.01	1.10	1.29	1.51	1.47	1.34	1.23	1.15	1.10	1.07	1.06	1.06
1100	1.01	1.11	1.30	1.52	1.48	1.34	1.24	1.15	1.10	1.07	1.05	1.05
1200	1.02	1.11	1.30	1.52	1.48	1.35	1.24	1.15	1.10	1.06	1.04	1.04
1300	1.04	1.12	1.30	1.52	1.48	1.35	1.24	1.15	1.10	1.06	1.04	1.04
1400	1.06	1.12	1.29	1.51	1.47	1.34	1.23	1.15	1.10	1.05	1.02	1.03
1500	1.08	1.12	1.28	1.49	1.45	1.33	1.22	1.14	1.09	1.04	1.01	1.03
1600	1.09	1.13	1.27	1.47	1.43	1.31	1.21	1.13	1.08	1.03	1.01	1.04
1700	1.11	1.13	1.26	1.45	1.42	1.30	1.20	1.12	1.07	1.04	1.03	1.05
1800	1.12	1.13	1.25	1.43	1.40	1.28	1.19	1.11	1.07	1.05	1.06	1.08
1900	1.12	1.13	1.23	1.40	1.37	1.26	1.17	1.11	1.07	1.07	1.08	1.10
2000	1.12	1.12	1.21	1.38	1.35	1.24	1.16	1.10	1.08	1.09	1.10	1.13
2100	1.12	1.11	1.19	1.34	1.32	1.22	1.14	1.10	1.09	1.11	1.13	1.16
2200	1.12	1.09	1.16	1.31	1.29	1.20	1.13	1.10	1.10	1.13	1.15	1.18
2300	1.12	1.07	1.13	1.28	1.26	1.17	1.11	1.10	1.11	1.15	1.18	1.21
2400	1.12	1.06	1.11	1.25	1.23	1.15	1.10	1.10	1.13	1.17	1.20	1.24
2500	1.12	1.06	1.08	1.22	1.20	1.12	1.08	1.10	1.14	1.18	1.22	1.26
2600	1.13	1.06	1.06	1.20	1.18	1.10	1.07	1.10	1.15	1.20	1.24	1.28
2700	1.15	1.08	1.05	1.18	1.16	1.08	1.06	1.11	1.16	1.21	1.25	1.29
2800	1.17	1.10	1.05	1.16	1.14	1.06	1.05	1.11	1.17	1.23	1.27	1.32
2900	1.18	1.12	1.07	1.15	1.12	1.04	1.05	1.12	1.18	1.24	1.28	1.33
3000	1.20	1.14	1.09	1.15	1.12	1.04	1.04	1.12	1.18	1.24	1.28	1.33

Notes

- 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



Programmable Attenuator

ZVVA-3000

Typical Performance Data @ +50°C

FREQUENCY (MHz)	IP3 (dBm)
20	50.32
50	53.06
100	52.67
250	52.64
500	52.63
750	52.72
1000	52.06
1250	52.04
1500	52.68
1750	52.57
2000	52.32
2250	52.46
2500	52.21
2750	52.27
3000	49.53

Notes

- 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

