

Programmable Attenuator RUDAT-13G-60

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.37	10.05	15.68	20.28	30.41	39.19	49.39	59.87
20	0.39	10.12	15.76	20.37	30.50	39.24	49.47	59.85
50	0.42	10.20	15.83	20.46	30.57	39.33	49.45	59.23
100	0.43	10.23	15.86	20.48	30.61	39.39	49.49	59.29
200	0.43	10.24	15.87	20.48	30.61	39.38	49.51	59.31
500	0.41	10.19	15.78	20.44	30.53	39.32	49.45	59.28
750	0.37	10.07	15.62	20.32	30.39	39.19	49.33	59.15
1000	0.33	9.93	15.43	20.18	30.22	39.04	49.17	58.97
1500	0.27	9.75	15.16	19.99	30.00	38.85	48.97	58.81
2000	0.26	9.76	15.18	20.01	30.04	38.91	49.04	58.91
2500	0.32	9.93	15.43	20.20	30.32	39.19	49.33	59.19
3000	0.37	10.02	15.62	20.30	30.53	39.39	49.54	59.40
3500	0.38	9.97	15.60	20.23	30.52	39.39	49.58	59.48
4000	0.32	9.73	15.33	19.99	30.28	39.22	49.37	59.29
4500	0.25	9.54	15.03	19.79	30.03	39.09	49.24	59.24
5000	0.20	9.44	14.85	19.71	29.91	39.06	49.18	59.21
5500	0.18	9.44	14.81	19.72	29.92	39.14	49.30	59.43
6000	0.19	9.50	14.92	19.79	30.07	39.38	49.55	59.82
6500	0.23	9.63	15.13	19.94	30.31	39.67	49.91	60.30
7000	0.28	9.75	15.35	20.10	30.61	40.01	50.30	60.79
7500	0.32	9.91	15.56	20.32	30.90	40.33	50.74	61.34
8000	0.30	9.81	15.46	20.26	30.94	40.39	50.93	61.61
8500	0.24	9.64	15.22	20.09	30.79	40.27	50.84	61.50
9000	0.20	9.51	15.08	19.93	30.68	40.10	50.73	61.10
9500	0.23	9.51	15.12	19.91	30.69	40.04	50.67	60.82
10000	0.28	9.35	15.04	19.69	30.51	39.81	50.35	60.26
10500	0.29	9.12	14.82	19.38	30.18	39.44	49.91	59.66
11000	0.25	9.00	14.65	19.19	29.91	39.25	49.53	59.23
11500	0.21	9.11	14.65	19.28	29.86	39.30	49.44	59.10
12000	0.17	9.15	14.56	19.31	29.71	39.29	49.14	58.87
12500	0.12	9.14	14.37	19.26	29.46	39.12	48.85	58.48
13000	0.06	9.03	14.14	19.09	29.11	38.77	48.49	58.17

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

RUDAT-13G-60

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.13	-0.05	-0.68	-0.28	-0.41	0.81	0.61	0.13
20	0.11	-0.12	-0.76	-0.37	-0.50	0.76	0.53	0.15
50	0.08	-0.20	-0.83	-0.46	-0.57	0.67	0.55	0.77
100	0.07	-0.23	-0.86	-0.48	-0.60	0.61	0.51	0.71
200	0.07	-0.24	-0.86	-0.48	-0.61	0.62	0.49	0.69
500	0.09	-0.19	-0.78	-0.44	-0.53	0.68	0.55	0.72
750	0.13	-0.07	-0.62	-0.32	-0.39	0.81	0.67	0.85
1000	0.17	0.07	-0.43	-0.18	-0.22	0.96	0.83	1.03
1500	0.23	0.25	-0.16	0.01	0.00	1.15	1.04	1.19
2000	0.24	0.24	-0.18	-0.01	-0.04	1.09	0.96	1.10
2500	0.18	0.07	-0.43	-0.19	-0.32	0.81	0.67	0.81
3000	0.13	-0.02	-0.62	-0.30	-0.53	0.61	0.46	0.60
3500	0.12	0.03	-0.60	-0.23	-0.52	0.61	0.42	0.52
4000	0.18	0.27	-0.33	0.01	-0.28	0.78	0.63	0.71
4500	0.25	0.47	-0.03	0.21	-0.03	0.92	0.76	0.76
5000	0.30	0.56	0.15	0.29	0.09	0.94	0.82	0.79
5500	0.32	0.56	0.19	0.28	0.08	0.86	0.70	0.57
6000	0.31	0.50	0.08	0.21	-0.07	0.63	0.45	0.18
6500	0.27	0.37	-0.13	0.06	-0.31	0.33	0.10	-0.29
7000	0.22	0.25	-0.35	-0.10	-0.61	-0.01	-0.30	-0.78
7500	0.18	0.09	-0.56	-0.32	-0.90	-0.33	-0.74	-1.34
8000	0.20	0.19	-0.46	-0.26	-0.94	-0.39	-0.93	-1.61
8500	0.26	0.36	-0.22	-0.09	-0.79	-0.27	-0.84	-1.50
9000	0.30	0.49	-0.08	0.07	-0.68	-0.10	-0.73	-1.10
9500	0.27	0.49	-0.12	0.09	-0.69	-0.04	-0.67	-0.82
10000	0.22	0.65	-0.04	0.31	-0.51	0.19	-0.35	-0.26
10500	0.21	0.88	0.18	0.62	-0.18	0.56	0.09	0.34
11000	0.25	1.00	0.35	0.81	0.09	0.75	0.47	0.77
11500	0.29	0.89	0.35	0.72	0.14	0.70	0.56	0.90
12000	0.33	0.85	0.44	0.69	0.29	0.71	0.86	1.13
12500	0.38	0.86	0.63	0.74	0.54	0.88	1.15	1.52
13000	0.44	0.97	0.86	0.91	0.89	1.23	1.51	1.83

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 RUDAT-13G-60

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.22	1.64	1.52	1.43	1.41	1.11	1.10	1.10
20	2.19	1.63	1.52	1.43	1.40	1.11	1.10	1.10
50	2.05	1.60	1.49	1.41	1.39	1.11	1.10	1.10
100	2.01	1.59	1.49	1.41	1.39	1.11	1.11	1.11
200	1.98	1.59	1.49	1.42	1.40	1.12	1.12	1.12
500	1.84	1.53	1.45	1.39	1.38	1.11	1.11	1.11
750	1.70	1.49	1.43	1.38	1.37	1.11	1.11	1.11
1000	1.55	1.45	1.41	1.36	1.36	1.11	1.10	1.10
1500	1.33	1.39	1.38	1.35	1.36	1.10	1.10	1.10
2000	1.34	1.39	1.37	1.34	1.36	1.10	1.10	1.10
2500	1.53	1.43	1.40	1.35	1.36	1.10	1.10	1.10
3000	1.73	1.50	1.44	1.38	1.37	1.12	1.11	1.11
3500	1.80	1.55	1.48	1.41	1.40	1.14	1.14	1.14
4000	1.66	1.53	1.48	1.42	1.41	1.17	1.16	1.16
4500	1.44	1.47	1.45	1.41	1.42	1.19	1.18	1.18
5000	1.28	1.41	1.43	1.39	1.42	1.20	1.20	1.20
5500	1.31	1.41	1.44	1.39	1.42	1.22	1.22	1.22
6000	1.46	1.45	1.47	1.39	1.41	1.25	1.24	1.24
6500	1.59	1.49	1.47	1.38	1.38	1.27	1.27	1.27
7000	1.58	1.45	1.42	1.33	1.32	1.28	1.28	1.28
7500	1.40	1.33	1.32	1.25	1.24	1.29	1.29	1.29
8000	1.16	1.16	1.18	1.15	1.15	1.31	1.31	1.31
8500	1.10	1.01	1.04	1.08	1.09	1.32	1.32	1.32
9000	1.19	1.14	1.10	1.16	1.15	1.33	1.33	1.33
9500	1.34	1.29	1.26	1.28	1.28	1.34	1.34	1.34
10000	1.65	1.46	1.42	1.40	1.40	1.34	1.34	1.34
10500	1.85	1.62	1.57	1.50	1.49	1.32	1.32	1.32
11000	1.75	1.67	1.63	1.55	1.53	1.29	1.29	1.29
11500	1.49	1.58	1.60	1.51	1.52	1.26	1.26	1.26
12000	1.27	1.45	1.52	1.44	1.47	1.28	1.28	1.28
12500	1.27	1.38	1.45	1.38	1.41	1.35	1.35	1.35
13000	1.46	1.38	1.40	1.35	1.35	1.45	1.45	1.45

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 RUDAT-13G-60

Typical Performance Data @ 0°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.09	1.20	1.37	1.17	1.52	1.42	1.23	1.19
20	2.06	1.19	1.36	1.17	1.50	1.41	1.22	1.19
50	2.00	1.18	1.35	1.16	1.48	1.40	1.21	1.19
100	1.97	1.18	1.35	1.16	1.48	1.40	1.21	1.19
200	1.95	1.18	1.35	1.17	1.49	1.41	1.22	1.20
500	1.82	1.15	1.33	1.15	1.46	1.38	1.20	1.18
750	1.68	1.14	1.33	1.14	1.45	1.38	1.19	1.17
1000	1.55	1.12	1.33	1.13	1.45	1.37	1.19	1.17
1500	1.35	1.11	1.32	1.13	1.44	1.36	1.18	1.17
2000	1.35	1.10	1.31	1.12	1.41	1.34	1.17	1.16
2500	1.54	1.12	1.31	1.12	1.41	1.35	1.18	1.16
3000	1.78	1.18	1.34	1.16	1.44	1.39	1.21	1.20
3500	1.76	1.15	1.29	1.13	1.40	1.35	1.18	1.17
4000	1.67	1.17	1.33	1.17	1.43	1.39	1.21	1.22
4500	1.44	1.12	1.30	1.15	1.40	1.37	1.19	1.22
5000	1.28	1.12	1.31	1.17	1.40	1.39	1.21	1.25
5500	1.21	1.11	1.27	1.16	1.36	1.36	1.18	1.24
6000	1.35	1.19	1.31	1.21	1.39	1.41	1.22	1.30
6500	1.41	1.19	1.22	1.19	1.30	1.34	1.15	1.26
7000	1.56	1.25	1.27	1.25	1.34	1.39	1.20	1.33
7500	1.35	1.26	1.19	1.28	1.21	1.29	1.18	1.33
8000	1.20	1.15	1.08	1.18	1.11	1.18	1.09	1.22
8500	1.05	1.27	1.14	1.30	1.10	1.15	1.23	1.29
9000	1.18	1.26	1.21	1.26	1.18	1.10	1.28	1.17
9500	1.28	1.29	1.29	1.29	1.24	1.16	1.34	1.18
10000	1.74	1.45	1.51	1.38	1.45	1.37	1.48	1.27
10500	1.85	1.41	1.47	1.30	1.42	1.37	1.41	1.23
11000	1.99	1.52	1.61	1.42	1.61	1.59	1.52	1.41
11500	1.52	1.26	1.38	1.24	1.44	1.49	1.30	1.34
12000	1.37	1.23	1.37	1.26	1.46	1.54	1.31	1.41
12500	1.20	1.31	1.32	1.40	1.47	1.58	1.32	1.58
13000	1.25	1.28	1.16	1.30	1.24	1.33	1.19	1.39

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 RUDAT-13G-60

Typical Performance Data @ 0°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P _{IN} =0 dBm (dB)	Insertion Loss @P _{IN} =+23 dBm (dB)
10	22.51	4.72	5.77
50	35.25	4.15	4.23
100	39.19	5.09	5.13
200	40.40	5.14	5.16
500	40.47	4.99	5.07
1000	40.42	5.00	5.06
2000	40.02	6.02	6.10
3000	39.31	5.89	5.99
4000	40.12	6.80	6.81
5000	40.59	7.82	7.84
6000	41.17	7.90	7.89
7000	39.04	7.75	7.72
8000	40.40	7.96	7.94
9000	39.07	8.62	8.80
10000	40.46	9.05	9.19
11000	41.03	9.64	9.84
12000	41.37	10.28	10.46
13000	41.17	11.18	11.32

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 RUDAT-13G-60

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.34	10.18	15.85	20.47	30.67	39.47	49.69	59.85
20	0.38	10.25	15.91	20.54	30.76	39.50	49.76	59.87
50	0.42	10.33	16.00	20.64	30.85	39.60	49.76	59.61
100	0.44	10.37	16.04	20.68	30.90	39.66	49.84	59.69
200	0.45	10.39	16.05	20.70	30.92	39.68	49.87	59.69
500	0.43	10.32	15.95	20.63	30.84	39.60	49.79	59.66
750	0.40	10.22	15.80	20.52	30.70	39.49	49.67	59.54
1000	0.36	10.10	15.63	20.40	30.55	39.33	49.54	59.39
1500	0.31	9.93	15.38	20.22	30.35	39.16	49.35	59.22
2000	0.31	9.94	15.40	20.25	30.40	39.24	49.43	59.28
2500	0.36	10.09	15.64	20.42	30.66	39.48	49.69	59.58
3000	0.40	10.19	15.82	20.51	30.86	39.69	49.91	59.81
3500	0.41	10.09	15.77	20.41	30.81	39.66	49.90	59.80
4000	0.36	9.88	15.51	20.18	30.59	39.51	49.71	59.63
4500	0.30	9.71	15.25	20.02	30.37	39.39	49.60	59.59
5000	0.25	9.64	15.10	19.96	30.28	39.39	49.59	59.68
5500	0.24	9.65	15.07	19.98	30.30	39.49	49.70	59.85
6000	0.25	9.71	15.16	20.05	30.42	39.69	49.93	60.22
6500	0.29	9.81	15.35	20.17	30.65	39.96	50.26	60.66
7000	0.34	9.96	15.59	20.36	30.95	40.31	50.69	61.21
7500	0.37	10.06	15.75	20.51	31.22	40.62	51.07	61.72
8000	0.35	10.00	15.68	20.50	31.28	40.70	51.29	61.98
8500	0.30	9.81	15.44	20.30	31.12	40.54	51.18	61.85
9000	0.26	9.71	15.31	20.17	31.03	40.37	51.08	61.48
9500	0.29	9.71	15.36	20.14	31.03	40.31	50.98	61.11
10000	0.34	9.53	15.26	19.91	30.83	40.04	50.69	60.61
10500	0.34	9.27	15.00	19.56	30.45	39.66	50.17	59.95
11000	0.31	9.21	14.88	19.43	30.23	39.50	49.85	59.57
11500	0.28	9.31	14.88	19.52	30.18	39.58	49.72	59.37
12000	0.24	9.41	14.82	19.60	30.07	39.58	49.50	59.16
12500	0.19	9.36	14.61	19.50	29.77	39.33	49.11	58.78
13000	0.13	9.24	14.38	19.33	29.41	38.96	48.72	58.37

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

RUDAT-13G-60

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.16	-0.18	-0.85	-0.47	-0.67	0.53	0.31	0.15
20	0.12	-0.24	-0.91	-0.54	-0.76	0.51	0.24	0.13
50	0.08	-0.32	-0.99	-0.64	-0.85	0.40	0.24	0.39
100	0.06	-0.37	-1.04	-0.68	-0.90	0.34	0.16	0.31
200	0.05	-0.39	-1.05	-0.69	-0.92	0.33	0.13	0.31
500	0.07	-0.32	-0.95	-0.63	-0.84	0.40	0.21	0.34
750	0.11	-0.22	-0.80	-0.52	-0.70	0.51	0.33	0.46
1000	0.14	-0.10	-0.63	-0.40	-0.55	0.67	0.46	0.62
1500	0.19	0.07	-0.38	-0.22	-0.34	0.84	0.65	0.78
2000	0.19	0.06	-0.40	-0.25	-0.40	0.76	0.57	0.72
2500	0.15	-0.09	-0.64	-0.42	-0.66	0.52	0.31	0.42
3000	0.10	-0.19	-0.82	-0.51	-0.86	0.31	0.09	0.19
3500	0.09	-0.09	-0.77	-0.41	-0.81	0.34	0.10	0.20
4000	0.14	0.12	-0.51	-0.18	-0.59	0.49	0.29	0.38
4500	0.20	0.29	-0.25	-0.02	-0.37	0.61	0.40	0.41
5000	0.25	0.36	-0.10	0.04	-0.28	0.61	0.41	0.32
5500	0.26	0.35	-0.07	0.02	-0.30	0.51	0.30	0.15
6000	0.25	0.29	-0.16	-0.05	-0.42	0.31	0.07	-0.22
6500	0.21	0.19	-0.35	-0.17	-0.65	0.04	-0.26	-0.66
7000	0.17	0.04	-0.59	-0.36	-0.95	-0.31	-0.69	-1.21
7500	0.13	-0.06	-0.75	-0.51	-1.22	-0.62	-1.07	-1.72
8000	0.15	0.00	-0.68	-0.50	-1.28	-0.70	-1.29	-1.98
8500	0.20	0.19	-0.44	-0.30	-1.12	-0.54	-1.18	-1.85
9000	0.24	0.29	-0.31	-0.17	-1.03	-0.37	-1.08	-1.48
9500	0.21	0.30	-0.36	-0.14	-1.03	-0.31	-0.98	-1.11
10000	0.16	0.47	-0.26	0.09	-0.83	-0.03	-0.69	-0.61
10500	0.16	0.73	0.00	0.44	-0.45	0.34	-0.17	0.05
11000	0.19	0.79	0.12	0.57	-0.23	0.50	0.15	0.43
11500	0.22	0.69	0.12	0.48	-0.18	0.42	0.28	0.63
12000	0.26	0.59	0.18	0.40	-0.07	0.42	0.50	0.84
12500	0.31	0.64	0.39	0.50	0.23	0.67	0.89	1.22
13000	0.37	0.76	0.62	0.67	0.59	1.04	1.28	1.63

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 RUDAT-13G-60

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.08	1.61	1.50	1.42	1.39	1.10	1.10	1.10
20	2.05	1.60	1.49	1.41	1.38	1.10	1.10	1.10
50	1.99	1.58	1.47	1.40	1.38	1.10	1.10	1.10
100	1.96	1.57	1.47	1.39	1.37	1.10	1.10	1.10
200	1.93	1.56	1.46	1.39	1.37	1.10	1.10	1.10
500	1.81	1.52	1.44	1.38	1.37	1.10	1.10	1.10
750	1.68	1.49	1.42	1.37	1.36	1.10	1.10	1.10
1000	1.54	1.45	1.40	1.36	1.36	1.10	1.10	1.10
1500	1.31	1.38	1.37	1.34	1.35	1.10	1.09	1.09
2000	1.32	1.38	1.37	1.33	1.34	1.09	1.09	1.09
2500	1.52	1.43	1.40	1.35	1.35	1.10	1.10	1.10
3000	1.73	1.50	1.44	1.38	1.37	1.12	1.12	1.12
3500	1.77	1.54	1.47	1.40	1.39	1.14	1.14	1.14
4000	1.63	1.53	1.48	1.42	1.42	1.18	1.17	1.17
4500	1.44	1.48	1.47	1.42	1.43	1.20	1.19	1.19
5000	1.30	1.43	1.46	1.42	1.44	1.22	1.22	1.22
5500	1.32	1.42	1.45	1.40	1.43	1.23	1.23	1.23
6000	1.47	1.46	1.48	1.40	1.41	1.25	1.25	1.25
6500	1.58	1.48	1.47	1.37	1.37	1.26	1.26	1.26
7000	1.57	1.44	1.42	1.32	1.31	1.27	1.27	1.27
7500	1.40	1.33	1.33	1.25	1.25	1.29	1.29	1.29
8000	1.15	1.16	1.18	1.14	1.14	1.29	1.29	1.29
8500	1.10	1.01	1.04	1.07	1.07	1.30	1.31	1.31
9000	1.18	1.14	1.10	1.15	1.14	1.32	1.33	1.33
9500	1.33	1.28	1.25	1.27	1.26	1.33	1.33	1.33
10000	1.66	1.46	1.42	1.40	1.39	1.34	1.34	1.34
10500	1.86	1.62	1.57	1.51	1.49	1.33	1.32	1.32
11000	1.70	1.64	1.61	1.52	1.51	1.27	1.27	1.27
11500	1.48	1.59	1.61	1.52	1.53	1.27	1.27	1.27
12000	1.26	1.44	1.51	1.43	1.46	1.27	1.27	1.27
12500	1.27	1.38	1.45	1.37	1.40	1.34	1.34	1.34
13000	1.48	1.40	1.42	1.36	1.37	1.45	1.45	1.45

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 RUDAT-13G-60

Typical Performance Data @ +25°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.05	1.19	1.36	1.17	1.49	1.41	1.22	1.19
20	2.02	1.19	1.35	1.17	1.48	1.40	1.22	1.19
50	1.97	1.18	1.34	1.16	1.46	1.39	1.20	1.18
100	1.93	1.17	1.33	1.15	1.45	1.39	1.20	1.18
200	1.90	1.16	1.33	1.15	1.45	1.38	1.20	1.18
500	1.80	1.15	1.33	1.15	1.44	1.38	1.19	1.17
750	1.67	1.14	1.32	1.14	1.44	1.37	1.19	1.17
1000	1.54	1.12	1.32	1.13	1.43	1.37	1.18	1.17
1500	1.33	1.10	1.30	1.12	1.41	1.35	1.17	1.16
2000	1.35	1.10	1.30	1.12	1.40	1.34	1.17	1.16
2500	1.54	1.13	1.31	1.13	1.40	1.35	1.18	1.17
3000	1.74	1.16	1.32	1.15	1.41	1.36	1.19	1.18
3500	1.77	1.17	1.32	1.16	1.41	1.37	1.20	1.20
4000	1.64	1.17	1.32	1.18	1.42	1.39	1.21	1.23
4500	1.44	1.14	1.32	1.17	1.41	1.40	1.21	1.24
5000	1.28	1.14	1.32	1.18	1.41	1.40	1.22	1.26
5500	1.24	1.15	1.31	1.19	1.40	1.41	1.22	1.28
6000	1.32	1.18	1.28	1.20	1.37	1.39	1.20	1.29
6500	1.46	1.22	1.27	1.23	1.34	1.38	1.19	1.30
7000	1.51	1.23	1.23	1.24	1.28	1.35	1.16	1.30
7500	1.40	1.22	1.19	1.24	1.22	1.30	1.15	1.30
8000	1.16	1.19	1.11	1.23	1.12	1.20	1.14	1.26
8500	1.05	1.21	1.09	1.24	1.06	1.11	1.18	1.23
9000	1.13	1.25	1.18	1.26	1.14	1.07	1.27	1.19
9500	1.31	1.32	1.32	1.31	1.28	1.19	1.37	1.20
10000	1.70	1.42	1.47	1.35	1.41	1.33	1.45	1.25
10500	1.95	1.47	1.54	1.37	1.49	1.44	1.47	1.30
11000	1.89	1.46	1.55	1.36	1.54	1.54	1.46	1.37
11500	1.59	1.32	1.44	1.29	1.49	1.54	1.37	1.39
12000	1.30	1.22	1.35	1.29	1.46	1.56	1.30	1.46
12500	1.12	1.23	1.24	1.30	1.38	1.48	1.24	1.47
13000	1.31	1.34	1.23	1.37	1.31	1.39	1.26	1.46

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 RUDAT-13G-60

Typical Performance Data @ +25°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P _{IN} =0 dBm (dB)	Insertion Loss @P _{IN} =+23 dBm (dB)
10	22.82	4.72	5.77
50	35.45	4.15	4.23
100	40.17	5.09	5.13
200	41.87	5.14	5.16
500	41.14	4.99	5.07
1000	40.40	5.00	5.06
2000	40.16	6.02	6.10
3000	40.24	5.89	5.99
4000	41.09	6.80	6.81
5000	40.72	7.82	7.84
6000	41.30	7.90	7.89
7000	41.01	7.75	7.72
8000	40.39	7.96	7.94
9000	40.70	8.62	8.80
10000	41.45	9.05	9.19
11000	42.67	9.64	9.84
12000	43.88	10.28	10.46
13000	42.61	11.18	11.32

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 RUDAT-13G-60

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.45	10.33	16.00	20.62	30.90	39.60	49.92	60.01
20	0.47	10.38	16.05	20.68	30.95	39.63	49.95	60.02
50	0.49	10.44	16.11	20.76	31.02	39.73	49.89	59.72
100	0.50	10.47	16.14	20.79	31.06	39.77	49.96	59.82
200	0.50	10.49	16.16	20.81	31.08	39.79	49.99	59.82
500	0.48	10.41	16.04	20.72	30.97	39.69	49.90	59.76
750	0.45	10.30	15.90	20.62	30.85	39.57	49.77	59.64
1000	0.42	10.19	15.73	20.50	30.69	39.44	49.65	59.52
1500	0.37	10.02	15.49	20.33	30.49	39.26	49.47	59.34
2000	0.37	10.04	15.51	20.35	30.54	39.33	49.55	59.43
2500	0.42	10.20	15.74	20.52	30.80	39.60	49.82	59.74
3000	0.46	10.27	15.91	20.61	30.99	39.77	50.00	59.91
3500	0.46	10.17	15.85	20.50	30.94	39.74	50.00	59.94
4000	0.41	9.94	15.57	20.24	30.69	39.55	49.77	59.70
4500	0.36	9.80	15.34	20.11	30.50	39.46	49.68	59.64
5000	0.32	9.74	15.21	20.07	30.42	39.49	49.67	59.75
5500	0.31	9.75	15.17	20.08	30.43	39.59	49.80	59.96
6000	0.32	9.80	15.26	20.14	30.54	39.77	50.02	60.30
6500	0.35	9.92	15.45	20.28	30.77	40.05	50.38	60.83
7000	0.39	10.05	15.68	20.45	31.08	40.38	50.79	61.33
7500	0.42	10.16	15.85	20.62	31.35	40.72	51.17	61.79
8000	0.40	10.06	15.75	20.55	31.37	40.74	51.33	62.02
8500	0.35	9.89	15.52	20.38	31.22	40.59	51.24	61.86
9000	0.32	9.79	15.40	20.25	31.12	40.44	51.12	61.55
9500	0.35	9.78	15.44	20.22	31.13	40.35	51.06	61.19
10000	0.39	9.61	15.34	19.99	30.92	40.10	50.71	60.59
10500	0.39	9.36	15.09	19.64	30.55	39.70	50.25	59.99
11000	0.37	9.30	14.97	19.51	30.32	39.58	49.89	59.56
11500	0.34	9.42	14.99	19.64	30.29	39.66	49.78	59.42
12000	0.30	9.50	14.90	19.69	30.14	39.62	49.54	59.22
12500	0.25	9.46	14.70	19.60	29.86	39.38	49.13	58.82
13000	0.19	9.34	14.47	19.40	29.47	38.99	48.73	58.42

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

RUDAT-13G-60

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	0.05	-0.33	-1.00	-0.62	-0.90	0.40	0.08	-0.01
20	0.03	-0.38	-1.05	-0.68	-0.95	0.37	0.05	-0.02
50	0.01	-0.44	-1.11	-0.76	-1.02	0.28	0.11	0.28
100	0.00	-0.47	-1.14	-0.79	-1.06	0.23	0.04	0.18
200	0.00	-0.49	-1.16	-0.81	-1.08	0.21	0.01	0.18
500	0.02	-0.40	-1.04	-0.72	-0.97	0.31	0.10	0.24
750	0.05	-0.30	-0.90	-0.62	-0.84	0.44	0.23	0.36
1000	0.08	-0.19	-0.73	-0.50	-0.69	0.56	0.35	0.48
1500	0.13	-0.02	-0.48	-0.33	-0.49	0.74	0.53	0.66
2000	0.13	-0.04	-0.51	-0.35	-0.54	0.67	0.45	0.57
2500	0.08	-0.19	-0.74	-0.52	-0.80	0.40	0.18	0.26
3000	0.04	-0.27	-0.91	-0.61	-0.99	0.23	0.00	0.09
3500	0.04	-0.17	-0.85	-0.50	-0.93	0.26	0.00	0.06
4000	0.09	0.06	-0.57	-0.24	-0.69	0.45	0.23	0.30
4500	0.14	0.20	-0.34	-0.10	-0.50	0.54	0.32	0.36
5000	0.18	0.26	-0.21	-0.07	-0.42	0.51	0.33	0.26
5500	0.19	0.25	-0.17	-0.08	-0.43	0.41	0.20	0.04
6000	0.18	0.20	-0.26	-0.14	-0.54	0.23	-0.02	-0.29
6500	0.15	0.08	-0.45	-0.28	-0.77	-0.05	-0.38	-0.83
7000	0.11	-0.05	-0.68	-0.45	-1.08	-0.38	-0.79	-1.33
7500	0.08	-0.16	-0.85	-0.62	-1.35	-0.72	-1.17	-1.79
8000	0.10	-0.06	-0.75	-0.55	-1.37	-0.74	-1.33	-2.02
8500	0.15	0.11	-0.52	-0.38	-1.22	-0.59	-1.24	-1.86
9000	0.18	0.21	-0.40	-0.25	-1.12	-0.44	-1.12	-1.55
9500	0.15	0.22	-0.44	-0.22	-1.13	-0.35	-1.06	-1.19
10000	0.11	0.39	-0.34	0.01	-0.92	-0.10	-0.71	-0.59
10500	0.11	0.64	-0.09	0.36	-0.55	0.30	-0.25	0.01
11000	0.13	0.70	0.03	0.49	-0.32	0.42	0.11	0.44
11500	0.16	0.58	0.01	0.36	-0.29	0.34	0.22	0.58
12000	0.20	0.50	0.10	0.31	-0.14	0.38	0.46	0.78
12500	0.25	0.54	0.30	0.40	0.14	0.62	0.87	1.18
13000	0.31	0.67	0.53	0.60	0.53	1.01	1.27	1.58

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 RUDAT-13G-60

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Input VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.12	1.62	1.51	1.42	1.39	1.10	1.09	1.09
20	2.10	1.62	1.50	1.41	1.39	1.10	1.09	1.09
50	2.00	1.58	1.47	1.40	1.37	1.10	1.09	1.09
100	1.96	1.56	1.46	1.39	1.37	1.10	1.09	1.09
200	1.92	1.55	1.45	1.38	1.36	1.09	1.09	1.09
500	1.81	1.52	1.44	1.38	1.36	1.10	1.10	1.10
750	1.68	1.49	1.42	1.37	1.36	1.10	1.10	1.10
1000	1.54	1.45	1.41	1.36	1.36	1.10	1.10	1.10
1500	1.31	1.38	1.37	1.34	1.35	1.10	1.09	1.09
2000	1.32	1.38	1.37	1.33	1.34	1.09	1.09	1.09
2500	1.52	1.42	1.39	1.34	1.35	1.10	1.09	1.09
3000	1.72	1.49	1.44	1.37	1.36	1.11	1.11	1.11
3500	1.77	1.54	1.47	1.41	1.39	1.14	1.14	1.14
4000	1.64	1.54	1.49	1.43	1.42	1.18	1.17	1.17
4500	1.45	1.50	1.49	1.44	1.45	1.21	1.21	1.21
5000	1.31	1.45	1.47	1.43	1.46	1.23	1.23	1.23
5500	1.33	1.44	1.47	1.42	1.44	1.24	1.24	1.24
6000	1.47	1.47	1.48	1.41	1.42	1.25	1.25	1.25
6500	1.58	1.49	1.47	1.38	1.37	1.26	1.26	1.26
7000	1.58	1.46	1.43	1.33	1.32	1.28	1.28	1.28
7500	1.39	1.32	1.31	1.24	1.23	1.28	1.28	1.28
8000	1.15	1.15	1.18	1.14	1.14	1.29	1.30	1.30
8500	1.11	1.02	1.03	1.07	1.07	1.30	1.30	1.30
9000	1.19	1.14	1.10	1.15	1.14	1.31	1.31	1.31
9500	1.34	1.28	1.25	1.27	1.26	1.32	1.33	1.33
10000	1.65	1.45	1.42	1.39	1.38	1.32	1.32	1.32
10500	1.82	1.60	1.55	1.48	1.46	1.30	1.30	1.30
11000	1.70	1.64	1.61	1.52	1.51	1.27	1.27	1.27
11500	1.43	1.55	1.56	1.48	1.48	1.24	1.23	1.23
12000	1.25	1.43	1.50	1.42	1.45	1.26	1.26	1.26
12500	1.24	1.35	1.42	1.35	1.38	1.31	1.31	1.31
13000	1.43	1.36	1.37	1.32	1.32	1.39	1.39	1.39

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 RUDAT-13G-60

Typical Performance Data @ +50°C

FREQUENCY (MHz)	Output VSWR (:1)							
	0.5 dB	10 dB	15 dB	20 dB	30 dB	40 dB	50 dB	60 dB
15	2.05	1.19	1.36	1.17	1.48	1.40	1.22	1.18
20	2.02	1.19	1.35	1.16	1.47	1.40	1.21	1.18
50	1.96	1.17	1.34	1.16	1.45	1.39	1.20	1.18
100	1.93	1.16	1.33	1.15	1.44	1.38	1.19	1.17
200	1.90	1.15	1.32	1.14	1.43	1.37	1.19	1.17
500	1.80	1.16	1.33	1.15	1.44	1.38	1.19	1.18
750	1.68	1.14	1.33	1.14	1.44	1.38	1.19	1.17
1000	1.53	1.13	1.32	1.14	1.43	1.37	1.18	1.17
1500	1.33	1.10	1.31	1.12	1.41	1.35	1.17	1.16
2000	1.35	1.11	1.30	1.12	1.39	1.34	1.17	1.16
2500	1.53	1.12	1.30	1.12	1.39	1.34	1.17	1.15
3000	1.75	1.17	1.32	1.16	1.41	1.37	1.20	1.19
3500	1.74	1.15	1.29	1.14	1.38	1.35	1.18	1.18
4000	1.66	1.19	1.35	1.19	1.44	1.41	1.23	1.24
4500	1.44	1.15	1.32	1.18	1.41	1.40	1.22	1.24
5000	1.32	1.16	1.35	1.20	1.43	1.43	1.24	1.28
5500	1.24	1.16	1.32	1.20	1.40	1.41	1.22	1.28
6000	1.37	1.21	1.33	1.23	1.41	1.44	1.24	1.32
6500	1.44	1.23	1.24	1.23	1.30	1.36	1.17	1.30
7000	1.53	1.22	1.23	1.21	1.29	1.35	1.16	1.28
7500	1.38	1.25	1.20	1.27	1.22	1.30	1.17	1.32
8000	1.20	1.12	1.06	1.16	1.08	1.15	1.08	1.18
8500	1.01	1.22	1.10	1.25	1.08	1.15	1.17	1.25
9000	1.16	1.26	1.21	1.27	1.17	1.09	1.28	1.18
9500	1.26	1.26	1.26	1.25	1.21	1.13	1.30	1.16
10000	1.72	1.46	1.51	1.40	1.44	1.36	1.50	1.29
10500	1.87	1.41	1.48	1.31	1.44	1.40	1.41	1.26
11000	1.93	1.49	1.57	1.39	1.55	1.54	1.49	1.37
11500	1.55	1.31	1.44	1.31	1.51	1.58	1.37	1.44
12000	1.27	1.15	1.27	1.19	1.36	1.44	1.22	1.35
12500	1.18	1.28	1.32	1.37	1.45	1.57	1.31	1.54
13000	1.30	1.32	1.18	1.33	1.21	1.27	1.22	1.36

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/MCStore/terms.jsp



Programmable Attenuator RUDAT-13G-60

Typical Performance Data @ +50°C

FREQUENCY (MHz)	IP3 (dBm)	Insertion Loss @P _{IN} =0 dBm (dB)	Insertion Loss @P _{IN} =+23 dBm (dB)
10	23.09	4.66	5.62
50	36.23	4.11	4.19
100	40.78	4.97	4.99
200	41.20	5.03	5.04
500	41.01	4.90	4.94
1000	41.00	4.92	4.94
2000	41.04	5.97	5.99
3000	41.24	5.95	6.01
4000	40.52	6.94	6.95
5000	40.89	7.75	7.75
6000	42.00	7.81	7.79
7000	41.63	7.71	7.68
8000	41.11	7.91	7.89
9000	41.49	8.85	8.88
10000	42.27	9.11	9.27
11000	41.26	10.00	10.14
12000	41.44	10.41	10.58
13000	42.10	10.98	11.16

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

