

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = 0°C.

Freq. (GHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.46	5.08	10.53	15.69	20.65	25.38	31.25	32.53
0.10	0.46	5.09	10.53	15.70	20.67	25.40	31.27	32.55
0.50	0.47	5.11	10.54	15.72	20.69	25.42	31.30	32.58
2.00	0.49	5.17	10.55	15.77	20.77	25.51	31.38	32.67
3.50	0.50	5.20	10.57	15.81	20.83	25.59	31.44	32.73
5.00	0.51	5.22	10.58	15.84	20.88	25.67	31.50	32.79
6.50	0.52	5.27	10.60	15.89	20.98	25.79	31.61	32.90
8.00	0.50	5.26	10.57	15.88	21.01	25.83	31.65	32.95
9.50	0.45	5.13	10.49	15.76	20.91	25.72	31.57	32.86
11.00	0.38	4.98	10.46	15.64	20.78	25.58	31.46	32.75
12.50	0.33	4.95	10.61	15.67	20.80	25.61	31.52	32.79
14.00	0.30	4.95	10.75	15.71	20.85	25.70	31.58	32.84
15.50	0.31	4.80	10.59	15.49	20.67	25.64	31.45	32.69
17.00	0.35	4.69	10.34	15.24	20.51	25.62	31.28	32.51
18.50	0.39	4.78	10.37	15.30	20.66	25.83	31.35	32.56
20.00	0.37	4.82	10.45	15.38	20.77	25.95	31.43	32.63
21.50	0.36	4.81	10.49	15.40	20.82	26.01	31.45	32.65
23.00	0.36	4.80	10.51	15.39	20.85	26.06	31.44	32.62
24.50	0.36	4.78	10.54	15.39	20.89	26.11	31.40	32.55
26.25	0.34	4.74	10.55	15.37	20.89	26.06	31.29	32.40
28.00	0.34	4.65	10.48	15.27	20.81	25.94	31.07	32.13
29.75	0.35	4.60	10.47	15.23	20.78	25.85	30.83	31.84
31.50	0.37	4.51	10.38	15.10	20.66	25.74	30.55	31.52
33.25	0.44	4.55	10.60	15.21	20.87	26.22	30.80	31.76
35.00	0.43	4.52	10.81	15.31	21.09	26.64	31.08	32.07
36.75	0.36	4.43	10.71	15.23	21.07	26.53	31.08	32.08
38.50	0.33	4.60	10.80	15.50	21.38	26.65	31.41	32.41
40.00	0.34	4.65	10.85	15.63	21.59	26.83	31.66	32.63
41.50	0.35	4.69	10.90	15.74	21.79	27.00	31.83	32.80
43.00	0.36	4.73	10.97	15.85	22.00	27.14	31.97	32.88
44.50	0.35	4.68	10.97	15.77	21.97	27.04	31.62	32.48
46.00	0.34	4.63	10.90	15.61	21.82	26.87	31.31	32.14
47.50	0.33	4.74	11.04	15.81	22.14	27.25	31.84	32.69
49.00	0.34	4.96	11.30	16.22	22.62	27.61	32.32	33.17
50.50	0.35	5.06	11.41	16.39	22.84	27.78	32.56	33.39
52.00	0.36	5.23	11.67	16.70	23.30	28.41	33.46	34.36
53.50	0.37	5.40	12.03	17.24	24.01	29.14	34.60	35.50
55.00	0.34	5.17	11.98	17.27	24.12	29.17	34.88	35.79
56.50	0.31	4.94	11.88	17.17	24.07	29.10	34.99	35.92
58.00	0.30	4.91	11.98	17.21	24.15	29.20	35.17	36.07
59.50	0.30	5.06	12.19	17.33	24.33	29.50	35.43	36.29
61.00	0.30	5.12	12.24	17.33	24.47	29.92	35.94	36.89
62.50	0.30	5.06	12.25	17.30	24.60	30.24	36.15	37.06
64.00	0.29	4.87	12.36	17.28	24.69	30.49	36.28	37.15
65.50	0.26	4.68	12.54	17.32	24.75	30.59	36.44	37.33
67.00	0.23	4.96	13.02	17.78	25.16	31.09	37.19	37.92

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = 0°C.

Freq. (GHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.04	-0.08	-0.53	-0.69	-0.65	-0.38	-1.25	-1.03
0.10	0.04	-0.09	-0.53	-0.70	-0.67	-0.40	-1.27	-1.05
0.50	0.03	-0.11	-0.54	-0.72	-0.69	-0.42	-1.30	-1.08
2.00	0.01	-0.17	-0.55	-0.77	-0.77	-0.51	-1.38	-1.17
3.50	0.00	-0.20	-0.57	-0.81	-0.83	-0.59	-1.44	-1.23
5.00	-0.01	-0.22	-0.58	-0.84	-0.88	-0.67	-1.50	-1.29
6.50	-0.02	-0.27	-0.60	-0.89	-0.98	-0.79	-1.61	-1.40
8.00	0.00	-0.26	-0.57	-0.88	-1.01	-0.83	-1.65	-1.45
9.50	0.05	-0.13	-0.49	-0.76	-0.91	-0.72	-1.57	-1.36
11.00	0.12	0.02	-0.46	-0.64	-0.78	-0.58	-1.46	-1.25
12.50	0.17	0.05	-0.61	-0.67	-0.80	-0.61	-1.52	-1.29
14.00	0.20	0.05	-0.75	-0.71	-0.85	-0.70	-1.58	-1.34
15.50	0.19	0.20	-0.59	-0.49	-0.67	-0.64	-1.45	-1.19
17.00	0.15	0.31	-0.34	-0.24	-0.51	-0.62	-1.28	-1.01
18.50	0.11	0.22	-0.37	-0.30	-0.66	-0.83	-1.35	-1.06
20.00	0.13	0.18	-0.45	-0.38	-0.77	-0.95	-1.43	-1.13
21.50	0.14	0.19	-0.49	-0.40	-0.82	-1.01	-1.45	-1.15
23.00	0.14	0.20	-0.51	-0.39	-0.85	-1.06	-1.44	-1.12
24.50	0.14	0.22	-0.54	-0.39	-0.89	-1.11	-1.40	-1.05
26.25	0.16	0.26	-0.55	-0.37	-0.89	-1.06	-1.29	-0.90
28.00	0.16	0.35	-0.48	-0.27	-0.81	-0.94	-1.07	-0.63
29.75	0.15	0.40	-0.47	-0.23	-0.78	-0.85	-0.83	-0.34
31.50	0.13	0.49	-0.38	-0.10	-0.66	-0.74	-0.55	-0.02
33.25	0.06	0.45	-0.60	-0.21	-0.87	-1.22	-0.80	-0.26
35.00	0.07	0.48	-0.81	-0.31	-1.09	-1.64	-1.08	-0.57
36.75	0.14	0.57	-0.71	-0.23	-1.07	-1.53	-1.08	-0.58
38.50	0.17	0.40	-0.80	-0.50	-1.38	-1.65	-1.41	-0.91
40.00	0.16	0.35	-0.85	-0.63	-1.59	-1.83	-1.66	-1.13
41.50	0.15	0.31	-0.90	-0.74	-1.79	-2.00	-1.83	-1.30
43.00	0.14	0.27	-0.97	-0.85	-2.00	-2.14	-1.97	-1.38
44.50	0.15	0.32	-0.97	-0.77	-1.97	-2.04	-1.62	-0.98
46.00	0.16	0.37	-0.90	-0.61	-1.82	-1.87	-1.31	-0.64
47.50	0.17	0.26	-1.04	-0.81	-2.14	-2.25	-1.84	-1.19
49.00	0.16	0.04	-1.30	-1.22	-2.62	-2.61	-2.32	-1.67
50.50	0.15	-0.06	-1.41	-1.39	-2.84	-2.78	-2.56	-1.89
52.00	0.14	-0.23	-1.67	-1.70	-3.30	-3.41	-3.46	-2.86
53.50	0.13	-0.40	-2.03	-2.24	-4.01	-4.14	-4.60	-4.00
55.00	0.16	-0.17	-1.98	-2.27	-4.12	-4.17	-4.88	-4.29
56.50	0.19	0.06	-1.88	-2.17	-4.07	-4.10	-4.99	-4.42
58.00	0.20	0.09	-1.98	-2.21	-4.15	-4.20	-5.17	-4.57
59.50	0.20	-0.06	-2.19	-2.33	-4.33	-4.50	-5.43	-4.79
61.00	0.20	-0.12	-2.24	-2.33	-4.47	-4.92	-5.94	-5.39
62.50	0.20	-0.06	-2.25	-2.30	-4.60	-5.24	-6.15	-5.56
64.00	0.21	0.13	-2.36	-2.28	-4.69	-5.49	-6.28	-5.65
65.50	0.24	0.32	-2.54	-2.32	-4.75	-5.59	-6.44	-5.83
67.00	0.27	0.04	-3.02	-2.78	-5.16	-6.09	-7.19	-6.42

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = 0°C.

Freq. (GHz)	Return Loss In (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-22.53	-48.23	-49.18	-34.64	-31.29	-27.19	-41.54	-31.59
0.10	-21.71	-42.44	-43.76	-35.77	-32.06	-27.69	-43.20	-32.39
0.50	-20.66	-31.94	-33.76	-32.51	-30.44	-27.17	-34.37	-30.72
2.00	-19.65	-24.61	-25.80	-24.17	-23.21	-21.83	-24.99	-23.39
3.50	-22.89	-24.06	-24.16	-21.89	-20.96	-19.67	-22.71	-21.07
5.00	-27.47	-23.12	-22.45	-20.29	-19.52	-18.30	-21.02	-19.53
6.50	-30.64	-21.49	-20.17	-18.43	-17.87	-16.79	-19.03	-17.80
8.00	-19.43	-18.98	-17.91	-16.80	-16.53	-15.57	-17.38	-16.38
9.50	-14.12	-16.18	-15.82	-15.42	-15.46	-14.69	-16.02	-15.28
11.00	-12.29	-14.63	-14.39	-14.44	-14.72	-14.22	-14.96	-14.54
12.50	-13.93	-15.10	-13.98	-14.13	-14.47	-14.33	-14.38	-14.32
14.00	-17.66	-16.13	-14.11	-14.27	-14.51	-14.83	-14.15	-14.45
15.50	-13.76	-14.69	-14.39	-14.79	-14.87	-15.69	-14.36	-15.00
17.00	-11.51	-13.59	-15.53	-16.32	-16.27	-17.36	-15.77	-16.62
18.50	-14.17	-15.89	-19.03	-19.88	-19.59	-20.50	-19.09	-20.02
20.00	-18.07	-19.47	-24.08	-25.06	-24.38	-24.95	-23.61	-24.82
21.50	-19.36	-21.02	-26.35	-27.79	-26.95	-27.73	-25.67	-27.47
23.00	-19.20	-21.10	-26.04	-27.51	-26.81	-27.74	-25.36	-27.24
24.50	-20.03	-22.26	-27.41	-29.02	-28.25	-28.83	-26.38	-28.45
26.25	-19.13	-22.30	-25.66	-27.32	-27.02	-30.00	-25.17	-27.67
28.00	-14.44	-17.08	-19.06	-19.91	-19.83	-20.67	-18.90	-19.94
29.75	-12.86	-15.26	-16.88	-17.51	-17.50	-17.72	-16.72	-17.40
31.50	-10.61	-12.30	-13.36	-13.75	-13.78	-13.77	-13.23	-13.61
33.25	-9.45	-9.65	-10.09	-10.15	-10.12	-9.92	-9.82	-9.93
35.00	-7.91	-8.08	-8.75	-8.69	-8.64	-8.39	-8.53	-8.49
36.75	-6.68	-7.36	-8.81	-8.79	-8.76	-8.56	-8.88	-8.73
38.50	-8.84	-9.14	-11.20	-11.11	-11.03	-10.90	-11.46	-11.18
40.00	-10.58	-10.49	-13.17	-13.00	-12.84	-12.73	-13.41	-13.07
41.50	-10.87	-10.41	-13.27	-13.05	-12.85	-12.81	-13.47	-13.14
43.00	-11.63	-10.97	-14.41	-14.14	-13.86	-13.88	-14.61	-14.24
44.50	-9.61	-9.46	-12.92	-12.81	-12.57	-12.58	-13.07	-12.85
46.00	-7.26	-7.23	-9.73	-9.67	-9.50	-9.57	-9.90	-9.75
47.50	-6.58	-6.26	-8.05	-7.97	-7.82	-7.93	-8.22	-8.08
49.00	-7.78	-6.79	-8.15	-8.01	-7.84	-7.97	-8.27	-8.12
50.50	-8.26	-7.00	-8.24	-8.07	-7.88	-8.01	-8.30	-8.15
52.00	-7.00	-5.68	-6.28	-6.14	-6.00	-6.09	-6.29	-6.19
53.50	-6.87	-5.31	-5.04	-4.91	-4.80	-4.86	-5.00	-4.93
55.00	-6.83	-5.97	-5.03	-4.91	-4.83	-4.86	-4.99	-4.92
56.50	-6.85	-6.99	-5.51	-5.43	-5.39	-5.38	-5.51	-5.44
58.00	-7.95	-8.84	-6.67	-6.65	-6.66	-6.59	-6.70	-6.63
59.50	-11.38	-12.37	-8.78	-8.77	-8.85	-8.70	-8.81	-8.72
61.00	-15.50	-15.84	-10.98	-10.94	-11.04	-10.85	-11.03	-10.90
62.50	-14.22	-14.02	-11.22	-11.15	-11.13	-11.01	-11.28	-11.14
64.00	-9.33	-9.27	-7.81	-7.75	-7.70	-7.64	-7.80	-7.72
65.50	-5.76	-6.05	-5.03	-5.01	-5.01	-4.95	-5.02	-4.98
67.00	-4.44	-4.53	-3.69	-3.70	-3.74	-3.67	-3.71	-3.68

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = 0°C.

Freq. (GHz)	Return Loss Out (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-21.85	-38.20	-14.63	-31.61	-29.84	-36.96	-29.41	-29.23
0.10	-21.63	-38.31	-14.68	-31.52	-29.94	-36.69	-29.49	-29.32
0.50	-20.43	-31.40	-14.60	-29.09	-28.63	-30.87	-28.33	-28.20
2.00	-19.65	-23.66	-15.87	-26.15	-22.09	-22.08	-21.96	-21.90
3.50	-22.67	-23.00	-18.29	-26.83	-20.29	-20.45	-20.13	-20.07
5.00	-25.75	-22.36	-20.32	-25.34	-19.20	-19.41	-19.01	-18.96
6.50	-37.02	-20.59	-23.46	-22.35	-17.66	-18.00	-17.47	-17.44
8.00	-23.57	-17.85	-23.40	-19.14	-16.12	-17.21	-15.95	-15.93
9.50	-16.61	-15.37	-17.81	-16.54	-15.07	-17.37	-14.95	-14.94
11.00	-14.60	-13.89	-13.72	-14.31	-14.26	-18.05	-14.21	-14.22
12.50	-17.70	-14.55	-11.85	-13.34	-14.36	-19.03	-14.37	-14.39
14.00	-19.76	-15.74	-10.86	-12.77	-14.53	-17.59	-14.60	-14.63
15.50	-11.64	-14.65	-10.61	-12.94	-15.12	-15.02	-15.28	-15.30
17.00	-9.22	-13.65	-11.74	-14.60	-16.58	-13.38	-16.80	-16.80
18.50	-10.90	-16.67	-15.68	-19.86	-20.73	-14.15	-20.78	-20.74
20.00	-13.24	-21.40	-20.12	-26.94	-27.81	-16.17	-27.27	-27.18
21.50	-13.99	-22.63	-21.43	-25.78	-38.45	-17.75	-37.71	-37.45
23.00	-13.68	-20.68	-21.25	-23.94	-31.45	-17.10	-31.96	-31.87
24.50	-14.40	-21.36	-23.79	-25.50	-33.04	-16.78	-32.66	-32.52
26.25	-14.98	-20.76	-26.23	-22.75	-32.12	-19.10	-34.59	-34.76
28.00	-12.05	-15.81	-20.13	-18.74	-21.79	-16.55	-22.17	-22.16
29.75	-11.75	-14.96	-18.94	-18.34	-19.86	-14.55	-19.94	-19.92
31.50	-10.71	-12.80	-14.90	-15.24	-15.45	-11.72	-15.39	-15.37
33.25	-12.10	-12.52	-11.05	-12.60	-11.87	-8.60	-11.70	-11.69
35.00	-12.41	-13.37	-9.24	-11.64	-10.63	-7.49	-10.45	-10.44
36.75	-10.05	-12.56	-9.03	-11.82	-11.05	-8.09	-10.95	-10.95
38.50	-13.06	-15.53	-11.92	-15.30	-14.84	-11.36	-14.88	-14.89
40.00	-16.36	-19.51	-14.32	-19.53	-18.97	-13.42	-19.08	-19.10
41.50	-17.53	-21.63	-15.24	-22.19	-21.39	-14.15	-21.55	-21.57
43.00	-19.70	-32.46	-16.31	-31.29	-27.51	-14.80	-27.22	-27.22
44.50	-14.40	-22.02	-12.75	-19.70	-18.59	-11.77	-18.35	-18.35
46.00	-10.29	-14.79	-10.22	-14.61	-13.99	-9.58	-13.94	-13.94
47.50	-8.88	-11.81	-9.13	-12.12	-11.67	-8.53	-11.70	-11.71
49.00	-10.34	-12.20	-10.14	-12.42	-11.89	-9.20	-11.97	-11.98
50.50	-11.68	-13.28	-11.25	-13.46	-12.77	-9.87	-12.84	-12.85
52.00	-10.25	-10.57	-9.45	-10.54	-10.01	-8.17	-10.07	-10.08
53.50	-9.87	-8.86	-8.80	-8.64	-8.26	-7.63	-8.32	-8.32
55.00	-8.52	-8.26	-9.20	-8.33	-8.11	-8.51	-8.16	-8.16
56.50	-7.64	-8.11	-9.69	-8.61	-8.63	-10.16	-8.67	-8.67
58.00	-8.02	-8.51	-10.20	-9.18	-9.55	-12.59	-9.58	-9.58
59.50	-11.29	-10.87	-12.39	-11.23	-12.16	-17.62	-12.17	-12.16
61.00	-17.71	-15.22	-16.62	-14.82	-16.64	-23.70	-16.58	-16.58
62.50	-24.58	-26.39	-29.32	-24.06	-28.22	-19.69	-27.87	-27.85
64.00	-12.56	-17.57	-15.91	-18.93	-17.01	-13.41	-17.10	-17.11
65.50	-7.04	-9.40	-8.99	-10.19	-10.21	-10.30	-10.26	-10.26
67.00	-5.80	-6.94	-6.74	-7.39	-7.82	-8.93	-7.85	-7.85

## Typical Performance Data

Test Conditions: @ Temperature = 0°C.

Freq. (GHz)	I. Loss (dB)
0.01	-1.25
0.10	-1.29
0.50	-1.37
2.00	-1.45
3.50	-1.54
5.00	-1.64
6.50	-1.74
8.00	-1.92
9.50	-2.23
11.00	-2.55
12.50	-2.68
14.00	-2.81
15.50	-3.12
17.00	-3.34
18.50	-3.25
20.00	-3.24
21.50	-3.36
23.00	-3.52
24.50	-3.66
26.25	-3.85
28.00	-4.16
29.75	-4.37
31.50	-4.82
33.25	-5.30
35.00	-5.61
36.75	-5.84
38.50	-5.45
40.00	-5.34
41.50	-5.43
43.00	-5.54
44.50	-6.03
46.00	-6.78
47.50	-7.18
49.00	-6.95
50.50	-6.99
52.00	-7.65
53.50	-8.06
55.00	-8.15
56.50	-8.24
58.00	-8.14
59.50	-7.45
61.00	-7.19
62.50	-7.51
64.00	-8.61
65.50	-10.35
67.00	-11.02

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +25°C.

Freq. (GHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.47	5.05	10.43	15.55	20.45	25.13	30.91	32.21
0.10	0.47	5.07	10.43	15.56	20.46	25.14	30.94	32.23
0.50	0.47	5.08	10.43	15.58	20.48	25.17	30.97	32.26
2.00	0.50	5.14	10.45	15.64	20.57	25.26	31.06	32.35
3.50	0.51	5.18	10.47	15.68	20.63	25.34	31.12	32.42
5.00	0.51	5.20	10.49	15.71	20.68	25.42	31.18	32.48
6.50	0.52	5.24	10.51	15.76	20.77	25.52	31.28	32.58
8.00	0.50	5.23	10.48	15.75	20.81	25.57	31.33	32.63
9.50	0.44	5.10	10.39	15.62	20.69	25.45	31.23	32.53
11.00	0.38	4.96	10.37	15.51	20.57	25.32	31.14	32.43
12.50	0.33	4.92	10.51	15.53	20.59	25.35	31.19	32.46
14.00	0.30	4.92	10.66	15.58	20.64	25.44	31.26	32.51
15.50	0.31	4.78	10.50	15.36	20.47	25.38	31.13	32.37
17.00	0.35	4.66	10.26	15.11	20.31	25.35	30.96	32.19
18.50	0.39	4.74	10.27	15.16	20.43	25.56	31.02	32.24
20.00	0.38	4.79	10.37	15.26	20.58	25.71	31.14	32.34
21.50	0.36	4.79	10.42	15.28	20.63	25.76	31.16	32.35
23.00	0.36	4.77	10.43	15.27	20.66	25.82	31.16	32.33
24.50	0.36	4.75	10.46	15.27	20.70	25.86	31.13	32.28
26.25	0.34	4.70	10.45	15.23	20.68	25.80	30.99	32.10
28.00	0.34	4.64	10.42	15.17	20.64	25.72	30.80	31.87
29.75	0.35	4.58	10.40	15.12	20.60	25.61	30.56	31.57
31.50	0.38	4.48	10.31	14.99	20.49	25.52	30.30	31.26
33.25	0.44	4.53	10.54	15.11	20.71	25.99	30.55	31.51
35.00	0.43	4.50	10.74	15.21	20.92	26.40	30.83	31.82
36.75	0.36	4.42	10.64	15.15	20.92	26.30	30.84	31.84
38.50	0.34	4.57	10.73	15.39	21.21	26.43	31.16	32.15
40.00	0.34	4.64	10.79	15.53	21.43	26.60	31.38	32.37
41.50	0.35	4.68	10.85	15.65	21.64	26.75	31.58	32.52
43.00	0.35	4.72	10.92	15.75	21.83	26.88	31.68	32.57
44.50	0.35	4.68	10.92	15.69	21.81	26.79	31.33	32.17
46.00	0.34	4.63	10.87	15.54	21.68	26.66	31.08	31.89
47.50	0.33	4.74	11.00	15.75	22.00	27.03	31.59	32.44
49.00	0.34	4.95	11.25	16.13	22.44	27.36	32.06	32.89
50.50	0.35	5.07	11.40	16.34	22.71	27.60	32.36	33.19
52.00	0.36	5.23	11.64	16.65	23.18	28.22	33.29	34.19
53.50	0.37	5.36	11.96	17.12	23.81	28.91	34.33	35.25
55.00	0.34	5.15	11.94	17.20	23.96	28.98	34.72	35.64
56.50	0.31	4.91	11.84	17.09	23.89	28.89	34.85	35.75
58.00	0.29	4.89	11.94	17.12	23.98	29.02	34.94	35.88
59.50	0.29	5.01	12.14	17.24	24.15	29.31	35.26	36.13
61.00	0.30	5.11	12.25	17.31	24.36	29.75	35.82	36.72
62.50	0.29	5.04	12.24	17.24	24.46	30.07	35.99	36.85
64.00	0.29	4.84	12.35	17.22	24.54	30.31	36.09	36.97
65.50	0.25	4.68	12.52	17.27	24.60	30.38	36.29	37.23
67.00	0.23	4.97	13.01	17.74	25.03	31.04	37.05	37.94

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +25°C.

Freq. (GHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.03	-0.05	-0.43	-0.55	-0.45	-0.13	-0.91	-0.71
0.10	0.03	-0.07	-0.43	-0.56	-0.46	-0.14	-0.94	-0.73
0.50	0.03	-0.08	-0.43	-0.58	-0.48	-0.17	-0.97	-0.76
2.00	0.00	-0.14	-0.45	-0.64	-0.57	-0.26	-1.06	-0.85
3.50	-0.01	-0.18	-0.47	-0.68	-0.63	-0.34	-1.12	-0.92
5.00	-0.01	-0.20	-0.49	-0.71	-0.68	-0.42	-1.18	-0.98
6.50	-0.02	-0.24	-0.51	-0.76	-0.77	-0.52	-1.28	-1.08
8.00	0.00	-0.23	-0.48	-0.75	-0.81	-0.57	-1.33	-1.13
9.50	0.06	-0.10	-0.39	-0.62	-0.69	-0.45	-1.23	-1.03
11.00	0.12	0.04	-0.37	-0.51	-0.57	-0.32	-1.14	-0.93
12.50	0.17	0.08	-0.51	-0.53	-0.59	-0.35	-1.19	-0.96
14.00	0.20	0.08	-0.66	-0.58	-0.64	-0.44	-1.26	-1.01
15.50	0.19	0.22	-0.50	-0.36	-0.47	-0.38	-1.13	-0.87
17.00	0.15	0.34	-0.26	-0.11	-0.31	-0.35	-0.96	-0.69
18.50	0.11	0.26	-0.27	-0.16	-0.43	-0.56	-1.02	-0.74
20.00	0.12	0.21	-0.37	-0.26	-0.58	-0.71	-1.14	-0.84
21.50	0.14	0.21	-0.42	-0.28	-0.63	-0.76	-1.16	-0.85
23.00	0.14	0.23	-0.43	-0.27	-0.66	-0.82	-1.16	-0.83
24.50	0.14	0.25	-0.46	-0.27	-0.70	-0.86	-1.13	-0.78
26.25	0.16	0.30	-0.45	-0.23	-0.68	-0.80	-0.99	-0.60
28.00	0.16	0.36	-0.42	-0.17	-0.64	-0.72	-0.80	-0.37
29.75	0.15	0.42	-0.40	-0.12	-0.60	-0.61	-0.56	-0.07
31.50	0.12	0.52	-0.31	0.01	-0.49	-0.52	-0.30	0.24
33.25	0.06	0.47	-0.54	-0.11	-0.71	-0.99	-0.55	-0.01
35.00	0.07	0.50	-0.74	-0.21	-0.92	-1.40	-0.83	-0.32
36.75	0.14	0.58	-0.64	-0.15	-0.92	-1.30	-0.84	-0.34
38.50	0.16	0.43	-0.73	-0.39	-1.21	-1.43	-1.16	-0.65
40.00	0.16	0.36	-0.79	-0.53	-1.43	-1.60	-1.38	-0.87
41.50	0.15	0.32	-0.85	-0.65	-1.64	-1.75	-1.58	-1.02
43.00	0.15	0.28	-0.92	-0.75	-1.83	-1.88	-1.68	-1.07
44.50	0.15	0.32	-0.92	-0.69	-1.81	-1.79	-1.33	-0.67
46.00	0.16	0.37	-0.87	-0.54	-1.68	-1.66	-1.08	-0.39
47.50	0.17	0.26	-1.00	-0.75	-2.00	-2.03	-1.59	-0.94
49.00	0.16	0.05	-1.25	-1.13	-2.44	-2.36	-2.06	-1.39
50.50	0.15	-0.07	-1.40	-1.34	-2.71	-2.60	-2.36	-1.69
52.00	0.14	-0.23	-1.64	-1.65	-3.18	-3.22	-3.29	-2.69
53.50	0.13	-0.36	-1.96	-2.12	-3.81	-3.91	-4.33	-3.75
55.00	0.16	-0.15	-1.94	-2.20	-3.96	-3.98	-4.72	-4.14
56.50	0.19	0.09	-1.84	-2.09	-3.89	-3.89	-4.85	-4.25
58.00	0.21	0.11	-1.94	-2.12	-3.98	-4.02	-4.94	-4.38
59.50	0.21	-0.01	-2.14	-2.24	-4.15	-4.31	-5.26	-4.63
61.00	0.20	-0.11	-2.25	-2.31	-4.36	-4.75	-5.82	-5.22
62.50	0.21	-0.04	-2.24	-2.24	-4.46	-5.07	-5.99	-5.35
64.00	0.21	0.16	-2.35	-2.22	-4.54	-5.31	-6.09	-5.47
65.50	0.25	0.32	-2.52	-2.27	-4.60	-5.38	-6.29	-5.73
67.00	0.27	0.03	-3.01	-2.74	-5.03	-6.04	-7.05	-6.44

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +25°C.

Freq. (GHz)	Return Loss In (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-21.75	-41.83	-44.48	-36.30	-32.59	-27.84	-45.59	-32.70
0.10	-21.18	-38.53	-41.01	-36.51	-32.78	-28.03	-43.88	-32.91
0.50	-20.27	-31.48	-33.42	-33.06	-31.11	-27.61	-34.55	-31.26
2.00	-19.43	-24.91	-26.03	-24.48	-23.57	-22.12	-25.27	-23.68
3.50	-22.56	-24.56	-24.39	-22.06	-21.16	-19.81	-22.88	-21.20
5.00	-27.53	-24.05	-22.95	-20.65	-19.89	-18.59	-21.45	-19.85
6.50	-28.73	-22.35	-20.78	-18.92	-18.38	-17.22	-19.60	-18.27
8.00	-19.30	-19.34	-18.24	-17.11	-16.86	-15.85	-17.74	-16.68
9.50	-14.20	-16.40	-16.12	-15.74	-15.80	-15.01	-16.37	-15.60
11.00	-12.60	-14.92	-14.73	-14.79	-15.07	-14.57	-15.31	-14.89
12.50	-13.80	-15.00	-14.06	-14.23	-14.55	-14.43	-14.48	-14.42
14.00	-17.22	-15.78	-13.99	-14.15	-14.36	-14.71	-14.02	-14.34
15.50	-13.70	-14.54	-14.22	-14.62	-14.69	-15.50	-14.20	-14.83
17.00	-11.51	-13.50	-15.16	-15.91	-15.87	-16.91	-15.38	-16.19
18.50	-13.69	-15.43	-18.14	-18.93	-18.70	-19.57	-18.20	-19.07
20.00	-17.89	-19.24	-23.14	-23.97	-23.39	-23.91	-22.63	-23.71
21.50	-19.11	-20.79	-25.25	-26.53	-25.86	-26.77	-24.61	-26.27
23.00	-18.96	-20.78	-24.87	-26.08	-25.51	-26.29	-24.18	-25.76
24.50	-20.00	-22.25	-26.52	-28.05	-27.44	-28.39	-25.60	-27.63
26.25	-17.86	-20.78	-23.60	-24.94	-24.70	-26.47	-23.18	-25.04
28.00	-14.71	-17.34	-19.21	-20.02	-19.93	-20.56	-18.93	-19.91
29.75	-12.89	-15.27	-16.70	-17.29	-17.28	-17.45	-16.47	-17.11
31.50	-10.67	-12.27	-13.21	-13.57	-13.60	-13.56	-13.06	-13.42
33.25	-9.46	-9.66	-10.06	-10.11	-10.10	-9.91	-9.81	-9.92
35.00	-7.75	-7.95	-8.60	-8.54	-8.50	-8.27	-8.41	-8.37
36.75	-6.87	-7.52	-8.94	-8.92	-8.88	-8.69	-9.01	-8.86
38.50	-8.80	-9.13	-11.15	-11.07	-10.98	-10.85	-11.38	-11.11
40.00	-10.38	-10.29	-12.78	-12.61	-12.46	-12.37	-13.00	-12.68
41.50	-10.90	-10.46	-13.22	-13.01	-12.80	-12.77	-13.42	-13.09
43.00	-11.23	-10.68	-13.87	-13.65	-13.39	-13.41	-14.07	-13.74
44.50	-9.68	-9.49	-12.69	-12.57	-12.34	-12.38	-12.86	-12.64
46.00	-7.49	-7.44	-9.84	-9.77	-9.59	-9.67	-10.00	-9.85
47.50	-6.91	-6.57	-8.31	-8.22	-8.06	-8.17	-8.46	-8.32
49.00	-7.80	-6.89	-8.21	-8.07	-7.89	-8.01	-8.30	-8.15
50.50	-8.17	-6.93	-7.97	-7.82	-7.64	-7.76	-8.03	-7.89
52.00	-7.42	-6.03	-6.50	-6.36	-6.22	-6.31	-6.52	-6.41
53.50	-7.05	-5.55	-5.28	-5.14	-5.04	-5.09	-5.24	-5.16
55.00	-6.73	-5.95	-5.06	-4.95	-4.87	-4.89	-5.01	-4.94
56.50	-7.01	-7.21	-5.75	-5.68	-5.64	-5.62	-5.74	-5.67
58.00	-8.29	-9.08	-6.96	-6.93	-6.94	-6.88	-6.98	-6.91
59.50	-10.64	-11.54	-8.41	-8.41	-8.49	-8.35	-8.46	-8.38
61.00	-15.36	-15.77	-10.92	-10.90	-11.03	-10.82	-10.97	-10.86
62.50	-14.49	-14.23	-11.60	-11.52	-11.49	-11.36	-11.64	-11.49
64.00	-9.11	-9.11	-7.71	-7.66	-7.62	-7.55	-7.70	-7.63
65.50	-6.02	-6.33	-5.28	-5.28	-5.29	-5.22	-5.29	-5.25
67.00	-5.02	-5.11	-4.23	-4.25	-4.29	-4.22	-4.26	-4.23



# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +25°C.

Freq. (GHz)	Return Loss Out (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-21.12	-40.87	-14.39	-30.83	-30.42	-40.50	-29.91	-29.71
0.10	-20.95	-39.31	-14.48	-30.95	-30.19	-38.71	-29.70	-29.52
0.50	-19.94	-31.85	-14.41	-28.78	-29.03	-31.55	-28.69	-28.55
2.00	-19.40	-23.94	-15.67	-26.28	-22.31	-22.43	-22.16	-22.09
3.50	-22.40	-23.04	-18.15	-26.70	-20.25	-20.58	-20.07	-20.01
5.00	-26.41	-22.58	-20.21	-25.55	-19.28	-19.82	-19.09	-19.04
6.50	-35.05	-20.94	-22.80	-22.80	-17.95	-18.53	-17.75	-17.71
8.00	-23.52	-18.04	-22.89	-19.37	-16.32	-17.62	-16.15	-16.13
9.50	-16.59	-15.49	-17.42	-16.64	-15.27	-17.89	-15.16	-15.15
11.00	-15.04	-14.29	-13.89	-14.69	-14.69	-18.77	-14.64	-14.65
12.50	-17.55	-14.59	-11.92	-13.43	-14.45	-19.06	-14.46	-14.48
14.00	-19.59	-15.66	-10.83	-12.74	-14.49	-17.33	-14.58	-14.60
15.50	-11.79	-14.74	-10.67	-13.01	-15.18	-14.95	-15.35	-15.37
17.00	-9.37	-13.83	-11.82	-14.70	-16.74	-13.58	-16.96	-16.96
18.50	-10.67	-16.18	-15.22	-19.12	-20.15	-14.05	-20.23	-20.20
20.00	-13.37	-21.41	-20.19	-27.02	-27.34	-16.19	-26.81	-26.72
21.50	-14.02	-22.39	-21.21	-25.65	-36.05	-17.71	-35.64	-35.43
23.00	-13.76	-20.76	-21.32	-24.25	-31.11	-17.08	-31.33	-31.22
24.50	-14.62	-21.55	-23.94	-25.34	-34.42	-17.26	-34.35	-34.19
26.25	-14.29	-19.67	-24.07	-22.32	-29.83	-18.41	-31.16	-31.16
28.00	-12.59	-16.57	-21.06	-19.77	-23.07	-16.67	-23.39	-23.37
29.75	-11.76	-14.89	-18.71	-18.14	-19.58	-14.58	-19.62	-19.61
31.50	-10.79	-12.86	-14.73	-15.20	-15.31	-11.63	-15.24	-15.23
33.25	-12.24	-12.67	-11.16	-12.73	-11.97	-8.74	-11.82	-11.81
35.00	-12.33	-13.32	-9.29	-11.64	-10.63	-7.60	-10.47	-10.46
36.75	-10.43	-12.98	-9.44	-12.26	-11.47	-8.48	-11.37	-11.37
38.50	-13.02	-15.56	-11.94	-15.29	-14.78	-11.33	-14.79	-14.80
40.00	-16.06	-19.04	-14.29	-19.06	-18.53	-13.46	-18.62	-18.63
41.50	-17.70	-22.04	-15.52	-22.53	-21.68	-14.42	-21.82	-21.84
43.00	-18.71	-29.73	-16.02	-28.62	-25.63	-14.61	-25.46	-25.47
44.50	-14.55	-22.17	-13.09	-20.11	-18.90	-12.09	-18.67	-18.67
46.00	-10.45	-14.75	-10.38	-14.59	-13.96	-9.73	-13.90	-13.90
47.50	-9.23	-12.10	-9.46	-12.39	-11.91	-8.83	-11.94	-11.94
49.00	-10.34	-12.19	-10.17	-12.39	-11.87	-9.25	-11.94	-11.94
50.50	-11.35	-12.53	-10.89	-12.66	-12.06	-9.63	-12.14	-12.14
52.00	-10.89	-10.90	-10.01	-10.86	-10.35	-8.71	-10.42	-10.42
53.50	-10.25	-9.24	-9.23	-9.04	-8.67	-8.08	-8.73	-8.73
55.00	-8.59	-8.37	-9.28	-8.43	-8.23	-8.68	-8.27	-8.27
56.50	-7.82	-8.34	-9.92	-8.85	-8.90	-10.55	-8.94	-8.94
58.00	-8.65	-9.20	-10.94	-9.90	-10.29	-13.42	-10.32	-10.32
59.50	-10.91	-10.80	-12.31	-11.27	-12.12	-17.09	-12.13	-12.13
61.00	-16.78	-14.48	-15.67	-14.17	-15.77	-21.58	-15.73	-15.73
62.50	-25.20	-30.47	-32.94	-26.15	-28.19	-19.20	-27.82	-27.82
64.00	-12.24	-16.89	-15.53	-18.22	-16.75	-13.87	-16.86	-16.86
65.50	-7.47	-9.79	-9.44	-10.62	-10.74	-11.05	-10.79	-10.79
67.00	-6.31	-7.40	-7.20	-7.83	-8.29	-9.45	-8.32	-8.32

## Typical Performance Data

Test Conditions: @ Temperature = +25°C.

Freq. (GHz)	I. Loss (dB)
0.01	-1.30
0.10	-1.35
0.50	-1.44
2.00	-1.54
3.50	-1.63
5.00	-1.73
6.50	-1.84
8.00	-2.03
9.50	-2.36
11.00	-2.66
12.50	-2.84
14.00	-2.97
15.50	-3.29
17.00	-3.52
18.50	-3.46
20.00	-3.41
21.50	-3.54
23.00	-3.70
24.50	-3.84
26.25	-4.07
28.00	-4.33
29.75	-4.58
31.50	-5.05
33.25	-5.54
35.00	-5.89
36.75	-6.06
38.50	-5.72
40.00	-5.62
41.50	-5.69
43.00	-5.85
44.50	-6.31
46.00	-7.04
47.50	-7.39
49.00	-7.27
50.50	-7.38
52.00	-7.88
53.50	-8.31
55.00	-8.57
56.50	-8.62
58.00	-8.38
59.50	-7.88
61.00	-7.57
62.50	-7.89
64.00	-9.13
65.50	-10.65
67.00	-11.25

# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +50°C.

Freq. (GHz)	Attenuation relative to Insertion Loss (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.47	5.02	10.32	15.40	20.23	24.88	30.63	31.92
0.10	0.47	5.04	10.32	15.43	20.26	24.91	30.65	31.94
0.50	0.48	5.05	10.33	15.44	20.28	24.93	30.67	31.97
2.00	0.50	5.11	10.35	15.50	20.37	25.03	30.76	32.06
3.50	0.51	5.16	10.37	15.55	20.44	25.11	30.83	32.13
5.00	0.51	5.18	10.39	15.57	20.49	25.18	30.89	32.19
6.50	0.52	5.21	10.40	15.62	20.57	25.29	30.99	32.29
8.00	0.50	5.20	10.37	15.61	20.60	25.32	31.03	32.33
9.50	0.44	5.06	10.28	15.48	20.48	25.20	30.93	32.23
11.00	0.38	4.93	10.27	15.36	20.36	25.08	30.84	32.13
12.50	0.33	4.88	10.39	15.38	20.37	25.09	30.88	32.15
14.00	0.30	4.88	10.54	15.43	20.42	25.18	30.94	32.20
15.50	0.31	4.74	10.40	15.22	20.25	25.13	30.82	32.06
17.00	0.35	4.63	10.16	14.98	20.11	25.12	30.68	31.91
18.50	0.38	4.70	10.18	15.03	20.24	25.31	30.74	31.96
20.00	0.37	4.75	10.27	15.12	20.37	25.45	30.84	32.05
21.50	0.36	4.75	10.31	15.14	20.42	25.51	30.88	32.07
23.00	0.36	4.73	10.34	15.14	20.47	25.58	30.89	32.07
24.50	0.35	4.72	10.37	15.15	20.51	25.63	30.87	32.03
26.25	0.34	4.66	10.36	15.11	20.49	25.57	30.74	31.85
28.00	0.34	4.59	10.32	15.04	20.44	25.49	30.55	31.62
29.75	0.35	4.54	10.31	15.00	20.42	25.40	30.33	31.35
31.50	0.38	4.45	10.24	14.88	20.31	25.31	30.08	31.05
33.25	0.44	4.49	10.45	14.99	20.53	25.78	30.33	31.29
35.00	0.43	4.47	10.65	15.10	20.75	26.18	30.62	31.60
36.75	0.35	4.40	10.57	15.05	20.75	26.09	30.64	31.62
38.50	0.34	4.53	10.65	15.27	21.03	26.20	30.91	31.91
40.00	0.35	4.60	10.70	15.41	21.24	26.36	31.13	32.10
41.50	0.35	4.66	10.78	15.54	21.46	26.52	31.30	32.24
43.00	0.35	4.69	10.84	15.64	21.64	26.63	31.39	32.28
44.50	0.35	4.65	10.84	15.57	21.62	26.54	31.06	31.88
46.00	0.34	4.60	10.78	15.42	21.49	26.42	30.80	31.60
47.50	0.33	4.71	10.93	15.63	21.80	26.79	31.31	32.16
49.00	0.33	4.92	11.17	16.01	22.25	27.13	31.80	32.59
50.50	0.35	5.04	11.31	16.22	22.50	27.34	32.07	32.90
52.00	0.36	5.20	11.57	16.55	22.99	27.99	33.00	33.91
53.50	0.36	5.32	11.89	17.01	23.62	28.67	34.07	34.99
55.00	0.34	5.10	11.86	17.07	23.76	28.75	34.45	35.35
56.50	0.31	4.87	11.77	16.96	23.70	28.68	34.58	35.47
58.00	0.30	4.86	11.87	17.00	23.79	28.80	34.71	35.62
59.50	0.29	4.96	12.08	17.13	23.97	29.10	35.03	35.87
61.00	0.29	5.06	12.17	17.19	24.17	29.55	35.57	36.46
62.50	0.29	5.00	12.16	17.12	24.27	29.85	35.76	36.63
64.00	0.28	4.81	12.30	17.14	24.39	30.10	35.88	36.78
65.50	0.25	4.65	12.47	17.18	24.44	30.17	36.11	36.94
67.00	0.23	4.92	12.93	17.61	24.85	30.69	36.74	37.52

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# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +50°C.

Freq. (GHz)	Attenuation accuracy relative to nominal attenuation setting (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	0.03	-0.02	-0.32	-0.40	-0.23	0.12	-0.63	-0.42
0.10	0.03	-0.04	-0.32	-0.43	-0.26	0.09	-0.65	-0.44
0.50	0.02	-0.05	-0.33	-0.44	-0.28	0.07	-0.67	-0.47
2.00	0.00	-0.11	-0.35	-0.50	-0.37	-0.03	-0.76	-0.56
3.50	-0.01	-0.16	-0.37	-0.55	-0.44	-0.11	-0.83	-0.63
5.00	-0.01	-0.18	-0.39	-0.57	-0.49	-0.18	-0.89	-0.69
6.50	-0.02	-0.21	-0.40	-0.62	-0.57	-0.29	-0.99	-0.79
8.00	0.00	-0.20	-0.37	-0.61	-0.60	-0.32	-1.03	-0.83
9.50	0.06	-0.06	-0.28	-0.48	-0.48	-0.20	-0.93	-0.73
11.00	0.12	0.07	-0.27	-0.36	-0.36	-0.08	-0.84	-0.63
12.50	0.17	0.12	-0.39	-0.38	-0.37	-0.09	-0.88	-0.65
14.00	0.20	0.12	-0.54	-0.43	-0.42	-0.18	-0.94	-0.70
15.50	0.19	0.26	-0.40	-0.22	-0.25	-0.13	-0.82	-0.56
17.00	0.15	0.37	-0.16	0.02	-0.11	-0.12	-0.68	-0.41
18.50	0.12	0.30	-0.18	-0.03	-0.24	-0.31	-0.74	-0.46
20.00	0.13	0.25	-0.27	-0.12	-0.37	-0.45	-0.84	-0.55
21.50	0.14	0.25	-0.31	-0.14	-0.42	-0.51	-0.88	-0.57
23.00	0.14	0.27	-0.34	-0.14	-0.47	-0.58	-0.89	-0.57
24.50	0.15	0.28	-0.37	-0.15	-0.51	-0.63	-0.87	-0.53
26.25	0.16	0.34	-0.36	-0.11	-0.49	-0.57	-0.74	-0.35
28.00	0.16	0.41	-0.32	-0.04	-0.44	-0.49	-0.55	-0.12
29.75	0.15	0.46	-0.31	0.00	-0.42	-0.40	-0.33	0.15
31.50	0.12	0.55	-0.24	0.12	-0.31	-0.31	-0.08	0.45
33.25	0.06	0.51	-0.45	0.01	-0.53	-0.78	-0.33	0.21
35.00	0.07	0.53	-0.65	-0.10	-0.75	-1.18	-0.62	-0.10
36.75	0.15	0.60	-0.57	-0.05	-0.75	-1.09	-0.64	-0.12
38.50	0.16	0.47	-0.65	-0.27	-1.03	-1.20	-0.91	-0.41
40.00	0.15	0.40	-0.70	-0.41	-1.24	-1.36	-1.13	-0.60
41.50	0.15	0.34	-0.78	-0.54	-1.46	-1.52	-1.30	-0.74
43.00	0.15	0.31	-0.84	-0.64	-1.64	-1.63	-1.39	-0.78
44.50	0.15	0.35	-0.84	-0.57	-1.62	-1.54	-1.06	-0.38
46.00	0.16	0.40	-0.78	-0.42	-1.49	-1.42	-0.80	-0.10
47.50	0.17	0.29	-0.93	-0.63	-1.80	-1.79	-1.31	-0.66
49.00	0.17	0.08	-1.17	-1.01	-2.25	-2.13	-1.80	-1.09
50.50	0.15	-0.04	-1.31	-1.22	-2.50	-2.34	-2.07	-1.40
52.00	0.14	-0.20	-1.57	-1.55	-2.99	-2.99	-3.00	-2.41
53.50	0.14	-0.32	-1.89	-2.01	-3.62	-3.67	-4.07	-3.49
55.00	0.16	-0.10	-1.86	-2.07	-3.76	-3.75	-4.45	-3.85
56.50	0.19	0.13	-1.77	-1.96	-3.70	-3.68	-4.58	-3.97
58.00	0.20	0.14	-1.87	-2.00	-3.79	-3.80	-4.71	-4.12
59.50	0.21	0.04	-2.08	-2.13	-3.97	-4.10	-5.03	-4.37
61.00	0.21	-0.06	-2.17	-2.19	-4.17	-4.55	-5.57	-4.96
62.50	0.21	0.00	-2.16	-2.12	-4.27	-4.85	-5.76	-5.13
64.00	0.22	0.19	-2.30	-2.14	-4.39	-5.10	-5.88	-5.28
65.50	0.25	0.35	-2.47	-2.18	-4.44	-5.17	-6.11	-5.44
67.00	0.27	0.08	-2.93	-2.61	-4.85	-5.69	-6.74	-6.02

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# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +50°C.

Freq. (GHz)	Return Loss In (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-21.13	-37.10	-40.53	-38.21	-33.97	-28.51	-50.56	-33.86
0.10	-20.56	-35.25	-38.33	-38.08	-34.04	-28.65	-44.27	-33.91
0.50	-19.71	-30.31	-32.47	-33.54	-31.87	-28.21	-34.27	-31.89
2.00	-19.04	-24.91	-26.05	-24.65	-23.79	-22.32	-25.38	-23.85
3.50	-22.25	-25.06	-24.63	-22.22	-21.34	-19.93	-23.06	-21.33
5.00	-26.94	-24.76	-23.30	-20.88	-20.13	-18.76	-21.71	-20.05
6.50	-27.81	-22.96	-21.12	-19.17	-18.64	-17.41	-19.87	-18.48
8.00	-19.17	-19.63	-18.47	-17.30	-17.06	-16.02	-17.95	-16.86
9.50	-14.25	-16.55	-16.30	-15.93	-16.01	-15.19	-16.58	-15.79
11.00	-12.73	-15.07	-14.94	-15.00	-15.29	-14.79	-15.54	-15.11
12.50	-13.86	-15.04	-14.21	-14.38	-14.70	-14.60	-14.64	-14.59
14.00	-16.90	-15.60	-13.97	-14.15	-14.35	-14.71	-14.02	-14.34
15.50	-13.63	-14.38	-14.11	-14.51	-14.56	-15.38	-14.09	-14.73
17.00	-11.54	-13.48	-15.06	-15.81	-15.76	-16.79	-15.28	-16.09
18.50	-13.75	-15.48	-18.02	-18.81	-18.60	-19.48	-18.08	-18.96
20.00	-17.54	-18.98	-22.47	-23.32	-22.83	-23.45	-22.06	-23.14
21.50	-18.80	-20.43	-24.31	-25.42	-24.85	-25.61	-23.70	-25.15
23.00	-19.03	-20.83	-24.58	-25.64	-25.10	-25.60	-23.82	-25.22
24.50	-20.30	-22.67	-26.76	-28.33	-27.73	-28.57	-25.80	-27.85
26.25	-17.72	-20.57	-22.97	-24.23	-24.03	-25.74	-22.60	-24.35
28.00	-14.40	-16.99	-18.72	-19.49	-19.42	-19.95	-18.46	-19.37
29.75	-12.93	-15.25	-16.59	-17.16	-17.16	-17.29	-16.35	-16.97
31.50	-10.71	-12.26	-13.13	-13.48	-13.52	-13.47	-12.98	-13.33
33.25	-9.43	-9.64	-10.02	-10.07	-10.07	-9.87	-9.78	-9.89
35.00	-7.77	-7.95	-8.59	-8.53	-8.49	-8.26	-8.40	-8.36
36.75	-6.99	-7.61	-9.02	-9.00	-8.96	-8.77	-9.10	-8.95
38.50	-8.91	-9.24	-11.28	-11.19	-11.11	-10.98	-11.50	-11.23
40.00	-10.18	-10.12	-12.52	-12.36	-12.22	-12.12	-12.73	-12.42
41.50	-10.80	-10.34	-12.93	-12.72	-12.52	-12.50	-13.14	-12.81
43.00	-11.50	-10.90	-14.05	-13.81	-13.54	-13.57	-14.26	-13.92
44.50	-9.83	-9.66	-12.86	-12.73	-12.49	-12.53	-13.03	-12.80
46.00	-7.48	-7.44	-9.76	-9.70	-9.52	-9.59	-9.92	-9.77
47.50	-6.86	-6.54	-8.22	-8.13	-7.97	-8.07	-8.36	-8.22
49.00	-7.91	-6.99	-8.25	-8.11	-7.93	-8.05	-8.35	-8.20
50.50	-8.30	-7.08	-8.11	-7.95	-7.77	-7.89	-8.17	-8.03
52.00	-7.41	-6.07	-6.52	-6.39	-6.25	-6.34	-6.54	-6.44
53.50	-7.02	-5.57	-5.29	-5.15	-5.05	-5.10	-5.25	-5.17
55.00	-6.80	-6.05	-5.14	-5.03	-4.95	-4.97	-5.09	-5.02
56.50	-7.29	-7.48	-5.99	-5.92	-5.88	-5.85	-5.97	-5.90
58.00	-8.53	-9.28	-7.21	-7.18	-7.19	-7.12	-7.23	-7.16
59.50	-10.41	-11.20	-8.31	-8.30	-8.38	-8.25	-8.36	-8.28
61.00	-15.34	-15.68	-10.84	-10.82	-10.97	-10.75	-10.89	-10.79
62.50	-15.08	-14.82	-12.19	-12.10	-12.07	-11.93	-12.22	-12.07
64.00	-9.04	-9.03	-7.73	-7.68	-7.65	-7.58	-7.73	-7.66
65.50	-6.07	-6.36	-5.31	-5.31	-5.33	-5.25	-5.32	-5.28
67.00	-5.19	-5.27	-4.38	-4.39	-4.44	-4.36	-4.40	-4.37

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# Programmable Attenuator

## Typical Performance Data

Test Conditions: @ Temperature = +50°C.

Freq. (GHz)	Return Loss Out (dB)							
	0.5 dB	5 dB	10 dB	15 dB	20 dB	25 dB	30 dB	31.5 dB
0.01	-20.53	-42.88	-14.20	-30.22	-30.90	-44.57	-30.32	-30.11
0.10	-20.31	-40.46	-14.29	-30.36	-30.58	-40.75	-30.02	-29.82
0.50	-19.40	-31.85	-14.22	-28.35	-29.31	-31.73	-28.94	-28.79
2.00	-19.04	-23.97	-15.47	-26.09	-22.33	-22.53	-22.17	-22.10
3.50	-22.19	-23.19	-18.00	-26.79	-20.26	-20.77	-20.07	-20.01
5.00	-26.04	-22.85	-19.92	-25.84	-19.40	-20.13	-19.19	-19.14
6.50	-33.12	-21.15	-22.37	-23.03	-18.06	-18.80	-17.86	-17.82
8.00	-23.33	-18.09	-22.51	-19.44	-16.38	-17.85	-16.21	-16.18
9.50	-16.69	-15.59	-17.31	-16.74	-15.38	-18.19	-15.26	-15.26
11.00	-15.14	-14.38	-13.84	-14.75	-14.78	-18.98	-14.73	-14.74
12.50	-17.47	-14.66	-11.91	-13.50	-14.56	-19.16	-14.58	-14.60
14.00	-19.43	-15.70	-10.84	-12.80	-14.58	-17.28	-14.66	-14.69
15.50	-11.86	-14.76	-10.64	-13.03	-15.21	-14.88	-15.38	-15.40
17.00	-9.43	-13.83	-11.77	-14.68	-16.69	-13.50	-16.91	-16.91
18.50	-10.79	-16.33	-15.27	-19.26	-20.32	-14.15	-20.40	-20.37
20.00	-13.26	-21.10	-19.76	-26.29	-27.28	-16.24	-26.86	-26.77
21.50	-13.94	-22.15	-20.96	-25.70	-34.10	-17.51	-33.66	-33.48
23.00	-13.93	-21.02	-21.42	-24.68	-31.15	-17.02	-31.09	-30.97
24.50	-14.76	-21.81	-23.96	-25.59	-34.82	-17.32	-34.53	-34.36
26.25	-14.37	-19.83	-24.07	-22.34	-30.14	-18.72	-31.62	-31.64
28.00	-12.41	-16.25	-20.36	-19.30	-22.35	-16.56	-22.63	-22.61
29.75	-11.73	-14.85	-18.32	-18.04	-19.28	-14.31	-19.29	-19.26
31.50	-10.89	-13.02	-14.75	-15.36	-15.40	-11.61	-15.31	-15.30
33.25	-12.39	-12.86	-11.30	-12.90	-12.10	-8.83	-11.95	-11.94
35.00	-12.49	-13.49	-9.46	-11.81	-10.78	-7.73	-10.61	-10.61
36.75	-10.53	-13.00	-9.50	-12.26	-11.46	-8.53	-11.36	-11.37
38.50	-13.19	-15.63	-12.08	-15.36	-14.84	-11.45	-14.85	-14.85
40.00	-15.96	-18.98	-14.34	-19.02	-18.47	-13.50	-18.55	-18.56
41.50	-17.55	-21.59	-15.53	-22.01	-21.25	-14.47	-21.41	-21.42
43.00	-19.26	-29.67	-16.42	-29.13	-26.10	-14.95	-26.00	-26.02
44.50	-14.81	-22.47	-13.29	-20.27	-19.02	-12.23	-18.77	-18.76
46.00	-10.50	-14.73	-10.45	-14.58	-13.94	-9.78	-13.87	-13.87
47.50	-9.16	-11.90	-9.39	-12.18	-11.72	-8.77	-11.74	-11.74
49.00	-10.33	-12.00	-10.15	-12.19	-11.70	-9.26	-11.77	-11.77
50.50	-11.54	-12.63	-11.10	-12.77	-12.19	-9.86	-12.28	-12.28
52.00	-10.99	-10.94	-10.09	-10.89	-10.40	-8.82	-10.47	-10.47
53.50	-10.30	-9.27	-9.29	-9.06	-8.71	-8.18	-8.76	-8.76
55.00	-8.66	-8.45	-9.38	-8.52	-8.33	-8.83	-8.37	-8.37
56.50	-7.92	-8.41	-9.97	-8.91	-8.97	-10.62	-9.00	-8.99
58.00	-8.67	-9.20	-10.88	-9.87	-10.26	-13.34	-10.28	-10.28
59.50	-11.02	-10.96	-12.48	-11.45	-12.33	-17.27	-12.34	-12.34
61.00	-16.96	-14.81	-16.05	-14.54	-16.21	-22.19	-16.18	-16.18
62.50	-24.84	-28.21	-32.21	-25.89	-29.64	-20.17	-29.23	-29.23
64.00	-12.64	-17.52	-16.17	-18.99	-17.46	-14.49	-17.58	-17.58
65.50	-7.63	-10.00	-9.68	-10.87	-10.98	-11.30	-11.04	-11.04
67.00	-6.42	-7.48	-7.28	-7.91	-8.36	-9.48	-8.39	-8.39

**NOTES:**

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- 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 <https://www.minicircuits.com/terms/viewterm.html>



## Typical Performance Data

Test Conditions: @ Temperature = +50°C.

Freq. (GHz)	I. Loss (dB)
0.01	-1.37
0.10	-1.42
0.50	-1.51
2.00	-1.61
3.50	-1.70
5.00	-1.81
6.50	-1.92
8.00	-2.11
9.50	-2.44
11.00	-2.75
12.50	-2.93
14.00	-3.08
15.50	-3.39
17.00	-3.61
18.50	-3.55
20.00	-3.53
21.50	-3.65
23.00	-3.80
24.50	-3.94
26.25	-4.18
28.00	-4.47
29.75	-4.70
31.50	-5.17
33.25	-5.67
35.00	-6.01
36.75	-6.16
38.50	-5.85
40.00	-5.78
41.50	-5.84
43.00	-5.96
44.50	-6.45
46.00	-7.21
47.50	-7.57
49.00	-7.41
50.50	-7.53
52.00	-8.06
53.50	-8.49
55.00	-8.69
56.50	-8.74
58.00	-8.57
59.50	-8.09
61.00	-7.76
62.50	-8.11
64.00	-9.36
65.50	-10.81
67.00	-11.39

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