

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=-40°C

FREQUENCY (MHz)	STEP ATTENUATION* AT TTL CONTROL STATE (dB)							
	000000 THRU LOSS	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	1.02	0.54	1.04	2.05	4.07	8.06	15.95	31.53
0.3	1.01	0.54	1.04	2.05	4.07	8.06	15.95	31.53
0.5	1.01	0.54	1.04	2.05	4.07	8.06	15.95	31.55
1	1.01	0.54	1.04	2.05	4.06	8.06	15.95	31.53
5	1.04	0.54	1.04	2.05	4.06	8.06	15.95	31.54
10	1.04	0.54	1.04	2.05	4.07	8.06	15.95	31.54
50	1.06	0.54	1.04	2.05	4.06	8.06	15.95	31.53
100	1.06	0.54	1.04	2.05	4.06	8.05	15.94	31.51
200	1.07	0.54	1.04	2.05	4.06	8.05	15.94	31.51
300	1.07	0.54	1.04	2.05	4.07	8.07	15.96	31.53
400	1.07	0.54	1.04	2.06	4.07	8.07	15.97	31.52
500	1.08	0.54	1.04	2.06	4.07	8.08	15.97	31.50
600	1.10	0.54	1.04	2.05	4.07	8.07	15.95	31.42
700	1.12	0.54	1.04	2.05	4.06	8.07	15.94	31.34
800	1.15	0.53	1.03	2.05	4.06	8.06	15.93	31.23
900	1.18	0.54	1.04	2.05	4.06	8.07	15.92	31.16
1000	1.20	0.53	1.03	2.05	4.06	8.07	15.93	31.14
1100	1.21	0.53	1.04	2.05	4.06	8.08	15.94	31.19
1200	1.23	0.53	1.03	2.05	4.06	8.08	15.96	31.32
1300	1.25	0.54	1.04	2.05	4.06	8.09	15.98	31.35
1400	1.27	0.54	1.04	2.05	4.07	8.11	16.02	31.47
1500	1.30	0.54	1.04	2.05	4.07	8.12	16.04	31.48
1600	1.32	0.54	1.05	2.05	4.07	8.13	16.07	31.50
1700	1.35	0.55	1.05	2.06	4.08	8.15	16.10	31.53
1800	1.36	0.55	1.06	2.07	4.09	8.17	16.12	31.50
1900	1.37	0.55	1.06	2.08	4.11	8.20	16.18	31.54
2000	1.38	0.56	1.07	2.09	4.13	8.24	16.23	31.57
2100	1.40	0.56	1.08	2.10	4.15	8.29	16.30	31.60
2200	1.42	0.57	1.09	2.12	4.17	8.34	16.36	31.54
2300	1.44	0.57	1.10	2.13	4.20	8.39	16.44	31.59
2400	1.45	0.58	1.11	2.15	4.23	8.45	16.53	31.71
2500	1.46	0.58	1.11	2.17	4.26	8.51	16.61	31.73
2600	1.48	0.58	1.12	2.18	4.28	8.57	16.69	31.71
2700	1.50	0.58	1.12	2.19	4.29	8.61	16.75	31.71
2800	1.52	0.58	1.11	2.19	4.29	8.63	16.78	31.57
2900	1.53	0.58	1.10	2.18	4.28	8.64	16.82	31.58
3000	1.53	0.57	1.09	2.16	4.26	8.64	16.82	31.47
3200	1.52	0.55	1.06	2.12	4.20	8.60	16.81	31.32
3400	1.55	0.54	1.03	2.08	4.15	8.55	16.74	30.70
3600	1.62	0.53	1.02	2.06	4.11	8.54	16.73	30.69
3800	1.70	0.53	1.02	2.05	4.10	8.55	16.75	30.42
4000	1.76	0.54	1.03	2.05	4.11	8.58	16.79	30.56
4200	1.77	0.54	1.04	2.07	4.13	8.65	16.94	30.90
4400	1.84	0.55	1.06	2.08	4.16	8.74	17.12	31.22
4600	1.89	0.57	1.08	2.12	4.22	8.91	17.49	31.88
4800	1.94	0.58	1.11	2.16	4.29	9.10	17.80	32.03
5000	1.97	0.59	1.11	2.20	4.38	9.33	18.25	32.07

* Step Attenuation above Thru Loss (TTL Logic 00000).



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 1 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=-40°C

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	18.70	20.45	22.20	20.39	21.81	26.16	38.97	30.72
0.3	18.80	20.55	22.31	20.47	21.89	26.27	38.82	30.69
0.5	18.80	20.56	22.31	20.48	21.90	26.27	38.72	30.70
1	18.94	20.69	22.48	20.59	22.01	26.36	38.57	30.65
5	18.96	20.72	22.49	20.62	22.04	26.39	38.60	30.67
10	18.94	20.70	22.47	20.61	22.01	26.36	38.83	30.73
50	18.79	20.48	22.20	20.36	21.70	25.77	41.37	31.90
100	18.66	20.29	21.89	20.09	21.28	24.94	48.61	34.24
200	18.49	20.08	21.64	19.98	21.22	24.98	42.33	32.95
300	18.80	20.50	22.19	20.52	21.99	26.46	37.70	30.23
400	18.73	20.46	22.19	20.52	22.06	26.69	37.35	30.37
500	18.07	19.69	21.29	19.80	21.27	25.47	39.41	32.49
600	17.94	19.49	21.01	19.53	20.86	24.68	43.99	35.00
700	17.92	19.43	20.87	19.38	20.62	24.32	46.66	36.16
800	17.63	19.05	20.41	19.00	20.20	23.67	42.47	36.79
900	17.38	18.71	19.95	18.67	19.83	23.21	38.20	33.50
1000	17.18	18.44	19.60	18.46	19.65	23.07	35.28	30.49
1100	17.06	18.27	19.37	18.32	19.51	22.96	33.39	28.73
1200	16.99	18.11	19.11	18.15	19.31	22.66	31.27	27.10
1300	16.84	17.87	18.76	17.97	19.15	22.46	28.95	25.13
1400	17.11	18.08	18.88	18.24	19.44	22.84	27.41	23.64
1500	17.22	18.11	18.83	18.36	19.64	23.14	26.57	22.85
1600	17.05	17.86	18.50	18.22	19.54	23.06	25.62	22.07
1700	16.78	17.51	18.07	18.00	19.38	22.83	24.38	21.12
1800	16.54	17.20	17.69	17.86	19.32	22.67	23.04	20.11
1900	16.46	17.08	17.51	17.88	19.43	22.55	21.73	19.13
2000	16.68	17.30	17.68	18.21	19.84	22.66	20.76	18.43
2100	16.95	17.57	17.92	18.58	20.26	22.67	19.97	17.87
2200	17.44	18.11	18.44	19.22	20.97	22.79	19.31	17.43
2300	18.14	18.92	19.26	20.16	22.03	23.02	18.77	17.10
2400	18.92	19.83	20.15	21.19	23.05	22.78	18.13	16.69
2500	20.05	21.17	21.46	22.64	24.27	22.24	17.42	16.19
2600	21.66	23.44	23.85	25.31	26.56	21.88	16.86	15.89
2700	23.19	26.74	28.39	30.19	30.56	21.69	16.55	15.82
2800	23.10	28.23	35.58	34.76	33.72	21.36	16.31	15.86
2900	22.00	26.36	32.67	30.42	30.45	20.85	16.11	15.89
3000	20.24	23.43	26.99	25.96	27.40	20.67	16.18	16.19
3200	17.62	19.74	21.82	21.32	23.25	20.50	16.63	17.23
3400	16.82	18.74	20.59	20.01	22.25	21.52	17.82	18.99
3600	17.70	19.78	21.80	20.74	23.30	23.76	19.45	21.01
3800	19.52	22.03	24.45	22.34	25.42	28.51	21.76	23.03
4000	23.23	25.84	27.13	24.79	27.87	34.56	23.01	21.36
4200	22.15	21.75	21.00	21.47	22.02	22.28	19.55	17.42
4400	18.02	17.21	16.55	17.36	17.27	16.71	15.33	13.97
4600	15.75	14.98	14.37	15.13	14.84	14.03	12.86	11.87
4800	14.99	14.07	13.38	14.03	13.42	12.20	11.03	10.36
5000	14.23	13.25	12.60	13.02	12.16	10.73	9.60	9.22



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 2 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=-40°C

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	18.39	19.16	19.48	25.13	30.34	39.65	34.63	30.00
0.3	18.47	19.24	19.56	25.21	30.48	39.92	34.75	29.93
0.5	18.52	19.29	19.62	25.30	30.56	39.93	34.84	29.97
1	18.64	19.41	19.73	25.45	30.77	40.43	35.11	29.87
5	18.77	19.53	19.84	25.61	30.97	40.70	35.17	29.91
10	18.77	19.54	19.84	25.61	30.97	40.60	35.01	29.94
50	18.79	19.54	19.82	25.50	30.55	39.10	34.12	30.58
100	18.72	19.42	19.68	25.06	29.51	36.03	32.19	32.28
200	18.53	19.23	19.50	24.59	28.56	33.91	31.69	30.98
300	18.55	19.30	19.62	24.86	29.01	34.58	33.55	28.74
400	19.16	19.96	20.27	26.06	30.66	36.28	36.09	27.49
500	19.90	20.71	21.02	27.51	32.92	40.21	40.24	27.33
600	20.10	20.82	21.06	27.37	32.31	41.13	37.40	28.53
700	20.00	20.67	20.86	26.61	30.36	36.38	34.81	28.65
800	20.30	20.87	21.00	26.42	29.45	34.55	34.04	28.29
900	20.16	20.68	20.79	25.64	28.11	32.71	33.08	27.85
1000	19.96	20.44	20.58	24.97	27.23	31.93	33.50	27.21
1100	19.70	20.18	20.35	24.58	26.89	32.09	34.09	27.23
1200	19.21	19.67	19.86	23.66	25.89	31.09	33.68	26.92
1300	18.65	19.13	19.37	22.90	25.17	30.65	34.25	26.59
1400	17.84	18.34	18.63	21.95	24.28	29.90	33.85	26.41
1500	17.14	17.63	17.94	21.01	23.23	28.47	32.62	25.71
1600	16.53	17.02	17.34	20.12	22.20	27.06	31.83	24.54
1700	15.90	16.38	16.74	19.24	21.18	25.70	30.83	23.26
1800	15.28	15.78	16.15	18.44	20.26	24.45	29.69	21.91
1900	14.90	15.42	15.83	17.97	19.69	23.59	28.62	20.77
2000	14.80	15.34	15.77	17.86	19.49	23.12	27.63	19.94
2100	14.79	15.36	15.80	17.85	19.36	22.65	26.41	19.20
2200	14.98	15.57	16.02	18.01	19.33	22.14	25.03	18.46
2300	15.42	16.05	16.50	18.45	19.50	21.68	23.65	17.78
2400	15.97	16.63	17.10	18.96	19.69	21.19	22.38	17.18
2500	16.76	17.50	17.99	19.80	20.05	20.75	21.21	16.66
2600	18.12	18.98	19.52	21.25	20.69	20.33	20.15	16.24
2700	19.93	21.07	21.71	23.43	21.55	20.00	19.28	15.95
2800	22.27	24.03	25.02	26.54	22.45	19.72	18.58	15.85
2900	23.55	26.16	27.92	30.17	23.36	19.63	18.16	15.96
3000	23.50	26.28	28.45	31.30	23.84	19.50	17.81	16.17
3200	21.33	23.14	24.36	26.81	23.97	19.59	17.64	17.00
3400	20.20	21.56	22.36	24.85	24.17	20.03	17.85	18.28
3600	20.15	21.33	21.90	25.46	25.86	21.19	18.53	20.18
3800	20.74	21.74	22.07	28.34	30.53	23.55	19.95	22.83
4000	21.34	21.97	22.11	31.13	39.69	28.84	22.61	24.83
4200	20.29	20.68	20.88	25.84	27.92	34.08	24.96	22.41
4400	18.90	19.28	19.59	22.38	23.38	27.62	23.92	19.46
4600	19.17	19.62	19.99	21.41	21.45	22.65	20.30	17.12
4800	20.99	21.71	22.23	22.37	21.07	19.86	17.46	15.70
5000	26.13	28.15	29.11	24.65	20.99	17.71	15.34	14.73



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 3 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+25°C

FREQUENCY (MHz)	STEP ATTENUATION* AT TTL CONTROL STATE (dB)							
	000000 THRU LOSS	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	1.13	0.52	1.02	2.01	4.01	7.95	15.86	31.31
0.3	1.12	0.52	1.02	2.02	4.01	7.95	15.86	31.33
0.5	1.12	0.52	1.02	2.01	4.01	7.95	15.86	31.31
1	1.12	0.52	1.02	2.01	4.00	7.95	15.85	31.30
5	1.15	0.52	1.02	2.01	4.01	7.95	15.86	31.32
10	1.15	0.52	1.02	2.01	4.01	7.95	15.86	31.33
50	1.16	0.52	1.02	2.01	4.01	7.95	15.86	31.32
100	1.16	0.52	1.02	2.01	4.00	7.95	15.86	31.32
200	1.16	0.52	1.02	2.01	4.01	7.95	15.86	31.31
300	1.17	0.52	1.02	2.01	4.01	7.95	15.87	31.30
400	1.18	0.52	1.02	2.01	4.00	7.95	15.86	31.29
500	1.19	0.52	1.01	2.01	4.00	7.95	15.87	31.28
600	1.21	0.52	1.01	2.01	4.00	7.95	15.86	31.23
700	1.22	0.52	1.01	2.01	4.00	7.96	15.86	31.17
800	1.24	0.52	1.01	2.01	4.00	7.96	15.85	31.09
900	1.26	0.52	1.01	2.01	4.00	7.96	15.85	31.03
1000	1.29	0.52	1.01	2.01	4.00	7.96	15.85	30.99
1100	1.31	0.52	1.01	2.01	4.00	7.96	15.86	31.03
1200	1.34	0.52	1.01	2.01	4.00	7.96	15.87	31.09
1300	1.36	0.52	1.01	2.00	3.99	7.97	15.88	31.15
1400	1.38	0.52	1.01	2.00	3.99	7.97	15.90	31.21
1500	1.41	0.52	1.01	2.00	3.99	7.98	15.92	31.27
1600	1.43	0.52	1.02	2.01	3.99	7.98	15.94	31.31
1700	1.46	0.53	1.02	2.01	4.00	8.00	15.97	31.35
1800	1.48	0.53	1.03	2.01	4.01	8.02	16.00	31.37
1900	1.50	0.53	1.03	2.02	4.02	8.04	16.04	31.42
2000	1.51	0.54	1.04	2.04	4.04	8.08	16.09	31.45
2100	1.53	0.54	1.05	2.05	4.06	8.13	16.16	31.47
2200	1.55	0.55	1.06	2.07	4.09	8.18	16.24	31.56
2300	1.56	0.55	1.06	2.09	4.12	8.24	16.32	31.60
2400	1.57	0.55	1.07	2.11	4.15	8.30	16.41	31.65
2500	1.58	0.56	1.08	2.12	4.17	8.36	16.50	31.71
2600	1.60	0.56	1.08	2.13	4.19	8.41	16.57	31.72
2700	1.62	0.56	1.07	2.13	4.19	8.44	16.63	31.74
2800	1.64	0.55	1.07	2.13	4.19	8.46	16.68	31.74
2900	1.65	0.55	1.06	2.11	4.17	8.47	16.71	31.68
3000	1.66	0.54	1.04	2.10	4.15	8.47	16.72	31.61
3200	1.64	0.53	1.02	2.06	4.10	8.44	16.72	31.36
3400	1.68	0.51	1.00	2.03	4.05	8.42	16.72	31.28
3600	1.75	0.51	0.99	2.01	4.03	8.42	16.73	31.07
3800	1.83	0.51	1.00	2.01	4.03	8.43	16.74	30.93
4000	1.88	0.52	1.01	2.02	4.04	8.46	16.79	30.99
4200	1.91	0.53	1.02	2.03	4.05	8.52	16.91	31.30
4400	1.99	0.54	1.03	2.05	4.09	8.63	17.16	32.01
4600	2.03	0.55	1.06	2.09	4.15	8.80	17.53	32.69
4800	2.07	0.57	1.08	2.13	4.23	9.01	17.94	33.18
5000	2.13	0.57	1.08	2.18	4.31	9.26	18.47	33.37

* Step Attenuation above Thru Loss (TTL Logic 00000).



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 4 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+25°C

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	17.82	19.06	20.23	18.29	18.75	20.59	28.02	33.40
0.3	17.91	19.15	20.29	18.36	18.81	20.65	28.07	33.48
0.5	17.92	19.15	20.30	18.35	18.82	20.63	28.03	33.42
1	18.04	19.27	20.44	18.45	18.90	20.70	28.10	33.51
5	18.05	19.29	20.45	18.47	18.92	20.72	28.13	33.48
10	18.04	19.28	20.43	18.47	18.90	20.71	28.06	33.41
50	17.97	19.19	20.33	18.40	18.83	20.62	27.79	32.90
100	18.00	19.21	20.36	18.42	18.85	20.62	27.72	32.77
200	17.83	19.01	20.14	18.26	18.71	20.45	27.23	31.96
300	17.74	18.90	20.00	18.15	18.58	20.26	26.67	31.08
400	17.64	18.77	19.83	18.01	18.40	20.01	26.03	30.08
500	17.41	18.51	19.52	17.78	18.16	19.71	25.37	29.19
600	17.25	18.32	19.29	17.57	17.92	19.44	24.78	28.21
700	17.07	18.08	19.01	17.34	17.68	19.10	24.13	27.18
800	16.96	17.93	18.82	17.18	17.47	18.86	23.66	26.27
900	16.83	17.75	18.57	17.00	17.28	18.64	23.29	25.51
1000	16.76	17.64	18.40	16.90	17.17	18.55	23.11	24.87
1100	16.70	17.50	18.20	16.82	17.10	18.51	23.01	24.30
1200	16.64	17.39	18.02	16.77	17.06	18.51	22.95	23.71
1300	16.45	17.12	17.68	16.62	16.99	18.52	22.91	23.13
1400	16.20	16.79	17.29	16.49	16.95	18.62	22.96	22.57
1500	15.93	16.46	16.90	16.37	16.96	18.82	23.13	22.10
1600	15.72	16.21	16.61	16.34	17.09	19.19	23.46	21.76
1700	15.50	15.96	16.33	16.31	17.23	19.62	23.80	21.44
1800	15.29	15.73	16.08	16.29	17.39	20.09	23.96	21.06
1900	15.15	15.58	15.91	16.33	17.60	20.61	23.86	20.61
2000	15.21	15.64	15.95	16.57	18.01	21.33	23.58	20.17
2100	15.52	15.98	16.27	17.06	18.70	22.33	23.15	19.77
2200	16.11	16.62	16.90	17.86	19.74	23.67	22.74	19.54
2300	16.90	17.49	17.78	18.90	21.04	25.12	22.19	19.34
2400	17.95	18.69	19.01	20.30	22.82	26.51	21.47	19.11
2500	19.44	20.51	20.92	22.40	25.62	27.55	20.72	18.90
2600	21.21	22.99	23.80	25.41	30.69	27.35	19.94	18.70
2700	22.39	25.44	27.76	28.42	43.15	26.12	19.34	18.69
2800	21.86	25.40	29.73	27.59	33.58	24.60	18.92	18.84
2900	20.56	23.55	27.18	24.85	27.74	23.39	18.71	19.17
3000	19.14	21.55	24.23	22.45	24.47	22.27	18.54	19.51
3200	17.03	18.79	20.57	19.35	20.81	20.50	18.29	20.34
3400	16.23	17.78	19.26	18.04	19.34	20.16	19.07	22.77
3600	17.08	18.69	20.17	18.51	19.71	21.35	20.95	27.05
3800	18.95	20.62	21.89	19.80	20.98	24.26	25.32	45.52
4000	20.43	21.16	21.24	20.60	21.87	28.31	41.13	25.50
4200	18.70	18.40	17.94	18.86	19.83	22.71	23.15	18.89
4400	15.94	15.47	15.00	16.13	16.62	17.34	16.91	14.80
4600	14.45	13.91	13.41	14.44	14.53	14.37	13.65	12.38
4800	14.01	13.29	12.71	13.54	13.20	12.33	11.42	10.69
5000	13.84	13.00	12.42	12.97	12.30	11.07	10.06	9.67



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 5 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+25°C

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	17.58	17.99	18.02	21.83	23.91	25.36	23.11	35.67
0.3	17.65	18.05	18.09	21.91	23.98	25.40	23.16	35.72
0.5	17.71	18.11	18.14	21.96	24.02	25.41	23.14	35.68
1	17.83	18.23	18.24	22.09	24.11	25.47	23.20	35.82
5	17.94	18.33	18.34	22.18	24.19	25.53	23.22	35.80
10	17.94	18.33	18.34	22.18	24.18	25.53	23.23	35.69
50	17.88	18.27	18.29	22.09	24.05	25.38	23.13	35.07
100	17.90	18.29	18.30	22.07	23.99	25.30	23.09	34.64
200	18.05	18.43	18.44	22.20	24.09	25.36	23.12	34.21
300	18.30	18.68	18.65	22.47	24.31	25.51	23.23	33.90
400	18.72	19.07	19.02	22.91	24.66	25.72	23.35	33.48
500	19.03	19.36	19.27	23.20	24.84	25.83	23.40	32.92
600	19.49	19.75	19.62	23.59	25.08	25.90	23.36	32.23
700	19.78	20.02	19.83	23.76	25.06	25.73	23.21	31.37
800	19.99	20.14	19.91	23.72	24.82	25.38	22.89	30.25
900	19.83	19.97	19.73	23.30	24.28	24.85	22.50	29.13
1000	19.45	19.53	19.33	22.61	23.52	24.17	22.03	27.90
1100	18.82	18.94	18.77	21.73	22.66	23.49	21.62	26.70
1200	18.18	18.28	18.17	20.84	21.78	22.84	21.29	25.52
1300	17.43	17.55	17.52	19.91	20.91	22.23	21.05	24.43
1400	16.60	16.77	16.80	18.95	20.02	21.66	20.94	23.40
1500	15.77	15.97	16.08	18.03	19.17	21.12	20.91	22.44
1600	15.04	15.29	15.45	17.23	18.45	20.71	21.07	21.59
1700	14.46	14.74	14.95	16.60	17.85	20.38	21.35	20.80
1800	14.01	14.32	14.57	16.11	17.39	20.18	21.83	20.12
1900	13.67	14.01	14.28	15.74	17.03	20.04	22.43	19.47
2000	13.51	13.88	14.18	15.57	16.85	20.05	23.17	18.93
2100	13.57	13.97	14.30	15.63	16.88	20.20	24.02	18.45
2200	13.92	14.34	14.68	15.95	17.14	20.48	24.76	18.05
2300	14.55	15.00	15.35	16.56	17.62	20.91	25.29	17.74
2400	15.44	15.92	16.28	17.43	18.30	21.36	25.17	17.49
2500	16.68	17.22	17.60	18.70	19.28	21.88	24.58	17.36
2600	18.43	19.07	19.48	20.57	20.62	22.39	23.66	17.34
2700	20.61	21.49	21.98	23.18	22.31	22.78	22.63	17.44
2800	23.11	24.51	25.25	26.96	24.23	22.91	21.61	17.67
2900	24.57	26.67	27.88	32.25	26.05	22.78	20.73	18.03
3000	23.90	25.93	27.13	35.65	27.45	22.57	20.04	18.58
3200	20.68	21.89	22.54	27.66	27.49	22.10	19.13	20.31
3400	19.20	20.09	20.46	24.98	26.80	22.21	18.97	23.37
3600	19.30	19.98	20.10	25.26	27.53	23.27	19.62	29.19
3800	20.31	20.67	20.53	26.23	27.89	25.71	21.39	35.49
4000	20.01	20.03	19.91	23.47	24.46	29.11	25.04	26.21
4200	18.22	18.27	18.37	20.14	21.10	29.17	33.85	21.39
4400	17.20	17.36	17.61	18.44	19.28	25.89	31.08	18.54
4600	17.63	17.89	18.23	18.27	18.78	22.98	22.79	16.78
4800	20.08	20.53	20.93	19.84	19.56	20.86	18.74	15.83
5000	27.64	29.04	29.62	23.23	20.95	18.85	16.13	15.38



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 6 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+105°C

FREQUENCY (MHz)	STEP ATTENUATION* AT TTL CONTROL STATE (dB)							
	000000 THRU LOSS	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	1.30	0.51	0.99	1.98	3.95	7.85	15.75	31.03
0.3	1.28	0.50	0.99	1.97	3.95	7.84	15.75	31.04
0.5	1.28	0.50	0.99	1.97	3.95	7.84	15.75	31.03
1	1.29	0.50	0.99	1.97	3.95	7.84	15.75	31.02
5	1.31	0.50	0.99	1.98	3.95	7.85	15.76	31.04
10	1.31	0.51	0.99	1.98	3.95	7.84	15.76	31.04
50	1.32	0.50	0.99	1.97	3.95	7.84	15.76	31.05
100	1.30	0.51	0.99	1.98	3.95	7.85	15.76	31.05
200	1.31	0.50	0.99	1.98	3.95	7.85	15.76	31.05
300	1.33	0.50	0.99	1.98	3.95	7.85	15.76	31.03
400	1.35	0.50	0.98	1.97	3.95	7.85	15.76	31.02
500	1.37	0.50	0.98	1.97	3.95	7.85	15.77	31.01
600	1.39	0.50	0.99	1.98	3.95	7.86	15.77	30.99
700	1.41	0.50	0.98	1.98	3.96	7.86	15.77	30.95
800	1.44	0.50	0.98	1.98	3.96	7.87	15.77	30.90
900	1.46	0.50	0.98	1.98	3.96	7.87	15.77	30.85
1000	1.49	0.50	0.98	1.98	3.96	7.87	15.77	30.83
1100	1.51	0.50	0.98	1.97	3.95	7.87	15.77	30.87
1200	1.54	0.50	0.99	1.98	3.95	7.87	15.78	30.91
1300	1.57	0.50	0.99	1.98	3.95	7.87	15.78	30.95
1400	1.59	0.50	0.99	1.98	3.94	7.87	15.80	31.04
1500	1.62	0.50	0.99	1.98	3.94	7.86	15.81	31.11
1600	1.65	0.50	0.99	1.97	3.93	7.87	15.82	31.14
1700	1.67	0.51	0.99	1.97	3.93	7.87	15.84	31.18
1800	1.70	0.51	1.00	1.98	3.93	7.89	15.87	31.29
1900	1.72	0.51	1.00	1.98	3.94	7.90	15.90	31.31
2000	1.73	0.51	1.01	1.99	3.95	7.93	15.94	31.33
2100	1.75	0.52	1.01	2.00	3.97	7.96	16.00	31.41
2200	1.77	0.52	1.02	2.01	3.99	8.00	16.06	31.47
2300	1.78	0.52	1.02	2.03	4.01	8.05	16.14	31.56
2400	1.79	0.53	1.03	2.04	4.03	8.10	16.22	31.62
2500	1.80	0.53	1.03	2.05	4.05	8.16	16.31	31.73
2600	1.82	0.53	1.03	2.06	4.07	8.20	16.38	31.79
2700	1.84	0.52	1.02	2.06	4.07	8.24	16.44	31.72
2800	1.86	0.52	1.02	2.06	4.07	8.27	16.51	31.81
2900	1.87	0.52	1.01	2.05	4.06	8.29	16.57	31.88
3000	1.87	0.51	1.00	2.04	4.05	8.30	16.60	31.88
3200	1.85	0.50	0.98	2.01	4.01	8.31	16.66	31.71
3400	1.90	0.49	0.96	1.99	3.98	8.30	16.67	31.63
3600	1.96	0.49	0.96	1.98	3.96	8.32	16.73	31.59
3800	2.04	0.49	0.97	1.98	3.96	8.34	16.75	31.40
4000	2.12	0.51	0.99	1.99	3.96	8.36	16.79	31.47
4200	2.18	0.51	0.99	1.99	3.96	8.39	16.88	32.09
4400	2.24	0.50	0.99	1.99	3.97	8.46	17.09	32.54
4600	2.28	0.51	1.01	2.02	4.01	8.59	17.38	33.26
4800	2.31	0.55	1.05	2.09	4.11	8.83	17.88	34.23
5000	2.39	0.56	1.05	2.15	4.22	9.13	18.55	34.45

* Step Attenuation above Thru Loss (TTL Logic 00000).



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 7 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+105°C

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	16.58	17.34	17.99	16.00	15.78	16.37	19.55	21.34
0.3	16.65	17.41	18.06	16.07	15.83	16.40	19.56	21.36
0.5	16.64	17.40	18.05	16.06	15.83	16.39	19.54	21.33
1	16.75	17.49	18.16	16.13	15.87	16.41	19.57	21.34
5	16.79	17.53	18.18	16.15	15.89	16.44	19.59	21.36
10	16.78	17.53	18.17	16.16	15.91	16.45	19.59	21.38
50	16.84	17.61	18.27	16.27	16.03	16.59	19.77	21.59
100	17.07	17.86	18.55	16.49	16.26	16.88	20.21	22.13
200	16.82	17.61	18.31	16.35	16.17	16.81	20.04	21.94
300	16.27	16.97	17.59	15.76	15.55	16.06	18.84	20.49
400	16.26	16.91	17.48	15.62	15.32	15.72	18.29	19.82
500	16.35	16.97	17.52	15.62	15.27	15.58	18.04	19.53
600	16.17	16.76	17.24	15.37	15.00	15.29	17.58	18.98
700	15.88	16.41	16.86	15.06	14.67	14.91	17.07	18.36
800	15.83	16.33	16.74	14.94	14.53	14.75	16.82	17.98
900	15.75	16.22	16.60	14.89	14.47	14.68	16.70	17.79
1000	15.61	16.02	16.36	14.76	14.38	14.64	16.65	17.62
1100	15.35	15.76	16.06	14.65	14.32	14.64	16.64	17.49
1200	15.25	15.60	15.89	14.63	14.37	14.76	16.82	17.52
1300	15.07	15.40	15.67	14.62	14.45	14.95	17.09	17.65
1400	14.83	15.14	15.40	14.57	14.53	15.18	17.41	17.77
1500	14.57	14.88	15.12	14.54	14.65	15.47	17.83	17.96
1600	14.42	14.73	14.96	14.60	14.86	15.88	18.43	18.29
1700	14.32	14.63	14.85	14.71	15.12	16.39	19.15	18.68
1800	14.32	14.64	14.86	14.91	15.49	17.04	20.08	19.20
1900	14.37	14.69	14.91	15.16	15.92	17.82	21.21	19.76
2000	14.53	14.86	15.07	15.50	16.46	18.75	22.55	20.35
2100	14.82	15.17	15.38	15.99	17.14	19.93	24.23	21.02
2200	15.30	15.69	15.89	16.65	18.02	21.43	26.34	21.78
2300	16.01	16.45	16.65	17.57	19.19	23.48	28.88	22.58
2400	16.99	17.51	17.73	18.79	20.76	26.52	31.02	23.37
2500	18.17	18.86	19.14	20.26	22.66	31.02	30.70	24.09
2600	19.43	20.45	20.90	21.87	24.82	38.20	28.43	24.75
2700	20.67	22.23	23.14	23.42	26.75	34.13	25.82	25.06
2800	21.18	23.36	25.18	23.90	26.63	27.86	23.42	24.82
2900	20.66	22.99	25.40	22.87	24.55	24.47	21.81	24.46
3000	19.44	21.49	23.71	21.17	22.30	22.27	20.72	24.28
3200	17.04	18.54	20.10	18.21	18.96	19.37	19.11	23.66
3400	15.92	17.19	18.41	16.73	17.30	17.99	18.41	23.32
3600	16.01	17.15	18.12	16.41	16.82	17.83	18.88	23.77
3800	16.99	17.91	18.50	16.93	17.22	18.67	20.51	23.98
4000	18.08	18.37	18.28	17.82	18.26	20.79	24.76	22.71
4200	16.70	16.42	16.00	16.93	17.70	20.55	24.11	18.77
4400	14.71	14.39	13.96	15.33	16.08	17.73	18.57	15.48
4600	13.10	12.77	12.36	13.64	14.10	14.64	14.51	12.81
4800	12.97	12.43	11.95	13.05	13.10	12.76	12.15	11.23
5000	12.89	12.23	11.75	12.47	12.12	11.21	10.38	9.99



REV. A
DAT-31R5A-PN+

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

6/13/2016
Page 8 of 9

Digital Step Attenuator

DAT-31R5A-PN+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=0 dBm, Vdd=+3V, Vss=-3.2V, TEMPERATURE=+105°C

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE (dB)							
	000000 0 dB	000001 0.5 dB	000010 1.0 dB	000100 2.0 dB	001000 4.0 dB	010000 8.0 dB	100000 16 dB	111111 31.5 dB
0.1	16.36	16.43	16.22	18.64	19.14	18.98	17.26	21.98
0.3	16.41	16.48	16.27	18.69	19.18	19.02	17.28	21.99
0.5	16.44	16.51	16.30	18.72	19.20	19.02	17.28	21.96
1	16.54	16.60	16.37	18.80	19.25	19.05	17.31	21.97
5	16.65	16.70	16.45	18.87	19.30	19.06	17.32	21.99
10	16.65	16.70	16.46	18.87	19.30	19.08	17.32	21.99
50	16.68	16.75	16.54	18.98	19.45	19.28	17.53	22.28
100	16.75	16.83	16.62	19.12	19.66	19.54	17.79	22.68
200	17.01	17.11	16.89	19.46	20.01	19.86	18.04	23.13
300	17.24	17.29	17.02	19.49	19.85	19.49	17.65	22.43
400	17.35	17.33	17.01	19.34	19.50	18.98	17.16	21.56
500	17.38	17.32	16.95	19.21	19.24	18.64	16.87	20.97
600	17.83	17.69	17.29	19.47	19.33	18.60	16.79	20.73
700	18.15	17.95	17.46	19.60	19.30	18.45	16.63	20.35
800	18.17	17.90	17.40	19.34	18.95	18.09	16.31	19.76
900	17.88	17.61	17.12	18.95	18.56	17.77	16.11	19.23
1000	17.51	17.26	16.82	18.47	18.14	17.50	15.94	18.81
1100	16.95	16.74	16.38	17.92	17.72	17.28	15.86	18.45
1200	16.34	16.19	15.90	17.31	17.26	17.06	15.81	18.13
1300	15.65	15.57	15.37	16.69	16.81	16.87	15.82	17.84
1400	14.99	14.97	14.86	16.09	16.37	16.72	15.91	17.57
1500	14.40	14.44	14.39	15.56	15.98	16.62	16.08	17.34
1600	13.92	14.01	14.03	15.14	15.69	16.64	16.38	17.22
1700	13.51	13.64	13.71	14.77	15.43	16.67	16.74	17.09
1800	13.20	13.36	13.48	14.50	15.24	16.78	17.22	17.00
1900	13.01	13.20	13.35	14.33	15.14	16.98	17.85	16.93
2000	12.98	13.20	13.38	14.30	15.16	17.31	18.68	16.92
2100	13.12	13.35	13.56	14.44	15.33	17.79	19.77	16.97
2200	13.47	13.73	13.94	14.77	15.67	18.46	21.18	17.08
2300	14.04	14.32	14.55	15.31	16.20	19.35	23.06	17.26
2400	14.89	15.18	15.42	16.11	16.96	20.51	25.61	17.52
2500	16.06	16.36	16.61	17.24	18.00	22.03	29.20	17.92
2600	17.61	17.94	18.18	18.75	19.39	24.00	33.89	18.42
2700	19.42	19.81	20.04	20.70	21.13	26.40	34.25	19.00
2800	21.55	22.07	22.31	23.39	23.48	29.41	29.88	19.78
2900	23.25	24.02	24.29	26.91	26.50	31.86	26.53	20.69
3000	23.99	25.02	25.28	32.82	31.23	31.37	24.03	21.84
3200	21.77	22.60	22.77	33.72	41.34	26.70	20.99	25.41
3400	19.95	20.50	20.50	27.03	29.09	23.85	19.49	33.43
3600	19.68	19.95	19.72	24.98	25.39	22.54	19.05	35.85
3800	20.00	19.91	19.50	23.31	22.96	22.20	19.59	26.08
4000	19.11	18.86	18.58	20.49	20.44	22.21	21.29	21.66
4200	17.13	17.05	17.07	17.87	18.30	22.20	24.83	19.09
4400	15.92	15.97	16.16	16.44	17.09	22.26	32.14	17.47
4600	15.84	15.99	16.30	16.11	16.81	22.61	31.68	16.49
4800	17.57	17.92	18.29	17.39	17.84	23.00	23.08	16.06
5000	22.86	23.47	23.90	20.57	20.14	21.83	18.65	16.02