

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=-45degC

FREQUENCY (MHz)	STEP ATTENUATION* AT TTL CONTROL STATE (dB)						
	00000 THRU LOSS	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	1.15	1.04	2.08	4.11	8.08	16.10	31.21
1	1.14	1.05	2.07	4.13	8.11	16.10	31.19
5	1.14	1.06	2.09	4.12	8.11	16.11	31.20
10	1.15	1.06	2.10	4.12	8.11	16.12	31.20
50	1.17	1.04	2.08	4.12	8.11	16.11	31.15
100	1.20	1.05	2.07	4.11	8.07	16.10	31.16
200	1.23	1.05	2.08	4.09	8.07	16.09	31.16
300	1.25	1.05	2.08	4.11	8.08	16.10	31.14
400	1.26	1.05	2.09	4.10	8.10	16.12	31.13
500	1.29	1.05	2.07	4.12	8.09	16.11	31.04
600	1.31	1.04	2.09	4.12	8.10	16.10	31.00
700	1.29	1.06	2.11	4.15	8.15	16.14	31.01
800	1.31	1.05	2.12	4.16	8.15	16.13	30.95
900	1.32	1.07	2.14	4.17	8.18	16.14	30.90
1000	1.40	1.06	2.10	4.12	8.12	16.10	30.75
1100	1.44	1.07	2.13	4.14	8.13	16.09	30.64
1200	1.50	1.04	2.11	4.12	8.13	16.07	30.51
1300	1.53	1.05	2.13	4.15	8.12	16.06	30.47
1400	1.61	1.04	2.11	4.10	8.10	16.02	30.26
1500	1.67	1.04	2.11	4.10	8.08	16.00	30.07
1600	1.68	1.07	2.14	4.14	8.13	16.03	29.99
1700	1.70	1.06	2.15	4.16	8.14	16.02	29.90
1800	1.73	1.06	2.15	4.16	8.13	16.04	29.80
1900	1.80	1.06	2.16	4.15	8.08	16.01	29.67
2000	1.85	1.05	2.14	4.20	8.13	16.02	29.60
2100	1.93	1.06	2.16	4.16	8.11	15.99	29.47
2200	2.00	1.07	2.17	4.17	8.14	16.03	29.43
2300	2.08	1.04	2.13	4.15	8.07	16.02	29.37
2400	2.15	1.08	2.15	4.15	8.12	16.06	29.15
2500	2.26	1.06	2.14	4.11	8.07	15.99	28.61
2600	2.27	1.08	2.15	4.12	8.06	15.93	28.25
2700	2.31	1.07	2.18	4.14	8.04	15.97	28.50
2800	2.45	1.06	2.17	4.13	8.04	16.00	28.42
2900	2.60	1.06	2.16	4.11	8.02	15.94	28.07
3000	2.72	1.08	2.17	4.11	7.98	15.78	27.35
3200	2.79	1.11	2.22	4.11	7.95	15.60	26.90
3400	3.05	1.06	2.18	4.06	7.84	15.51	27.01
3600	3.53	1.05	2.15	3.99	7.77	15.55	27.60
3800	4.15	1.05	2.13	3.96	7.81	15.83	28.13
4000	4.29	1.09	2.10	3.92	7.77	15.60	27.18

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



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

REV. OR  
DAT-31-SP+  
110525  
Page 1 of 9

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=-45degC

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE						
	(dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	18.35	22.46	20.34	23.23	29.32	31.25	27.22
1	18.37	22.49	20.37	23.25	29.37	31.24	27.23
5	18.41	22.55	20.40	23.29	29.41	31.26	27.21
10	18.39	22.53	20.40	23.29	29.40	31.26	27.23
50	18.32	22.37	20.25	23.06	28.89	32.01	27.72
100	18.30	22.25	20.15	22.84	28.27	33.22	28.43
200	18.28	22.08	20.09	22.67	27.68	32.69	28.34
300	18.52	22.50	20.64	23.54	29.11	29.05	25.97
400	19.03	23.46	21.44	24.78	31.82	27.55	24.80
500	19.30	23.94	21.81	25.38	33.53	27.28	24.59
600	19.64	24.51	22.24	26.01	35.10	26.73	24.19
700	20.10	25.26	22.84	26.91	38.22	26.04	23.68
800	20.48	25.92	23.28	27.55	41.70	25.67	23.42
900	20.74	26.38	23.62	28.08	45.67	25.28	23.18
1000	21.05	26.94	23.97	28.65	50.13	24.78	22.82
1100	21.07	26.92	23.93	28.42	42.57	24.70	22.81
1200	20.77	26.26	23.50	27.68	39.67	24.88	23.06
1300	20.43	25.65	23.11	27.04	38.00	25.27	23.39
1400	20.02	24.94	22.68	26.46	36.91	25.95	23.99
1500	19.49	24.02	22.21	25.91	36.03	26.83	24.68
1600	19.09	23.42	21.95	25.60	35.56	27.14	24.87
1700	19.02	23.32	22.08	25.92	36.95	26.70	24.54
1800	18.79	23.00	22.11	26.18	36.83	26.41	24.23
1900	18.57	22.70	22.14	26.33	35.64	25.82	23.72
2000	18.72	23.01	22.66	27.35	35.28	24.63	22.79
2100	18.96	23.44	23.34	28.68	34.08	23.43	21.78
2200	19.38	24.18	24.41	30.77	31.73	22.19	20.73
2300	20.11	25.43	26.13	34.19	28.90	20.84	19.62
2400	21.29	27.83	28.99	42.20	26.61	19.53	18.45
2500	23.04	32.77	32.35	37.46	24.67	18.36	17.44
2600	25.73	43.49	31.70	29.23	22.68	17.31	16.53
2700	26.36	26.16	23.28	22.08	19.35	15.46	14.94
2800	20.74	19.50	18.14	17.65	16.50	13.75	13.45
2900	16.82	16.14	15.23	15.16	14.74	12.63	12.47
3000	12.95	12.70	12.14	12.29	12.52	11.23	11.29
3200	14.03	13.28	12.72	12.55	12.48	10.97	11.11
3400	27.51	25.09	23.54	21.13	18.27	13.36	13.04
3600	20.73	28.11	28.43	25.49	19.04	13.24	12.64
3800	15.05	15.71	15.61	16.57	15.57	11.75	11.49
4000	8.43	8.75	8.87	9.63	10.04	7.89	7.66



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=-45degC

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE						
	(dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	18.35	19.77	26.14	37.74	63.05	38.96	25.69
1	18.37	19.78	26.13	37.71	72.12	38.86	25.74
5	18.40	19.84	26.20	37.89	63.77	39.03	25.71
10	18.38	19.82	26.19	37.82	64.34	38.98	25.73
50	18.28	19.67	25.80	36.29	51.42	37.04	26.24
100	18.16	19.49	25.40	34.75	44.76	35.07	26.94
200	18.07	19.36	24.93	32.15	36.00	33.32	26.90
300	18.11	19.56	25.18	31.45	33.30	34.85	25.08
400	18.24	19.81	25.86	32.74	33.42	37.72	24.23
500	18.47	20.08	26.49	34.13	33.68	40.40	23.94
600	18.59	20.25	26.93	35.36	34.13	44.75	23.87
700	18.77	20.47	27.39	35.85	33.53	45.93	23.53
800	18.63	20.32	27.03	34.74	32.84	44.68	23.52
900	18.73	20.45	27.14	33.81	31.83	42.92	23.24
1000	18.75	20.50	27.19	33.08	30.96	41.65	23.01
1100	18.89	20.67	27.44	32.27	29.93	39.37	22.66
1200	19.23	21.06	28.00	31.62	28.95	37.37	22.18
1300	19.54	21.40	28.42	30.73	28.13	35.93	21.85
1400	19.88	21.83	28.82	29.32	26.87	33.74	21.28
1500	20.35	22.46	29.18	27.92	25.71	31.69	20.65
1600	20.80	23.06	29.55	27.01	24.82	30.16	20.10
1700	21.35	23.86	29.58	25.97	23.95	28.62	19.53
1800	22.08	24.89	29.56	25.01	23.07	27.15	18.97
1900	22.63	25.81	29.25	24.33	22.52	26.19	18.57
2000	22.86	26.28	28.97	23.97	22.18	25.60	18.35
2100	22.88	26.47	28.74	23.71	21.92	25.13	18.15
2200	23.32	27.29	28.96	23.47	21.67	24.46	17.90
2300	24.58	29.70	26.80	21.74	20.14	22.27	16.80
2400	24.85	30.19	25.70	20.89	19.35	21.17	16.24
2500	25.24	31.18	25.36	20.53	18.94	20.46	15.88
2600	26.79	35.89	27.81	21.36	19.32	20.18	15.86
2700	33.64	30.50	24.15	19.49	17.60	17.47	14.65
2800	27.91	25.67	22.92	19.11	17.15	16.50	14.19
2900	20.72	20.88	22.22	20.06	17.96	16.46	14.48
3000	14.74	15.02	17.45	19.19	18.96	16.40	15.72
3200	16.29	16.04	18.25	19.61	19.69	17.13	17.12
3400	19.78	17.98	18.55	17.50	16.67	15.08	14.83
3600	19.05	17.29	17.72	16.67	15.68	14.26	13.75
3800	13.53	12.48	12.39	11.72	10.80	9.35	9.49
4000	9.80	10.22	11.35	12.60	12.66	10.59	11.11



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

Digital Step Attenuator

DAT-31-SP+

Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+25degC

Table with 8 columns: FREQUENCY (MHz), STEP ATTENUATION\* AT TTL CONTROL STATE (dB), and seven attenuation levels (00000 THRU LOSS, 00001 1 dB, 00010 2.0 dB, 00100 4.0 dB, 01000 8.0 dB, 10000 16.0 dB, 11111 31 dB). Rows range from 0.5 MHz to 4000 MHz.

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



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at minicircuits.com

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+25degC

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE (dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	17.24	20.17	18.05	19.56	22.11	32.70	43.95
1	17.28	20.19	18.08	19.59	22.16	32.79	44.22
5	17.31	20.24	18.12	19.63	22.20	32.85	44.41
10	17.30	20.23	18.12	19.62	22.21	32.87	44.46
50	17.26	20.19	18.09	19.60	22.17	32.70	43.86
100	17.32	20.26	18.15	19.66	22.26	32.87	43.85
200	17.46	20.41	18.29	19.81	22.42	33.28	43.90
300	17.69	20.70	18.56	20.12	22.79	34.47	44.63
400	18.02	21.11	18.90	20.50	23.27	36.27	44.52
500	18.36	21.55	19.24	20.87	23.74	38.39	43.76
600	18.72	22.03	19.60	21.25	24.23	40.83	42.28
700	18.97	22.36	19.87	21.55	24.65	43.62	40.38
800	19.23	22.67	20.11	21.82	25.03	43.52	38.87
900	19.36	22.83	20.23	21.96	25.21	40.78	37.92
1000	19.42	22.87	20.26	21.97	25.20	38.80	37.52
1100	19.33	22.71	20.20	21.85	25.03	37.17	37.84
1200	19.16	22.45	20.06	21.70	24.83	36.50	38.62
1300	18.95	22.12	19.90	21.53	24.56	36.33	40.64
1400	18.66	21.69	19.73	21.34	24.31	36.48	44.61
1500	18.29	21.15	19.49	21.09	23.96	36.68	57.74
1600	17.97	20.74	19.31	20.96	23.84	36.94	51.80
1700	17.82	20.56	19.40	21.14	24.06	39.22	41.85
1800	17.64	20.31	19.46	21.33	24.27	39.63	35.73
1900	17.43	20.05	19.55	21.49	24.47	36.78	32.21
2000	17.42	20.05	19.86	22.00	25.08	33.82	29.45
2100	17.52	20.25	20.38	22.78	25.90	30.53	26.96
2200	18.01	20.90	21.37	24.15	27.08	27.67	24.82
2300	18.77	21.93	22.76	26.11	28.17	25.29	22.99
2400	20.02	23.84	25.00	29.53	29.11	23.33	21.44
2500	22.14	27.43	28.84	38.12	28.74	21.58	20.08
2600	25.48	35.49	33.65	38.13	26.47	20.00	18.84
2700	28.78	41.22	29.50	28.57	23.96	18.59	17.71
2800	27.81	28.16	24.26	23.72	21.61	17.37	16.70
2900	23.91	23.08	20.78	20.54	19.59	16.26	15.84
3000	21.01	20.26	18.58	18.48	18.06	15.35	15.08
3200	17.32	16.98	15.77	15.88	16.04	14.06	14.01
3400	14.87	14.85	13.88	14.15	14.61	13.16	13.26
3600	13.60	13.59	12.77	13.01	13.59	12.45	12.71
3800	13.98	13.80	13.03	13.15	13.60	12.35	12.64
4000	15.65	15.04	14.19	14.06	14.26	12.62	12.90



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

REV. OR  
DAT-31-SP+  
110525  
Page 5 of 9

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+25degC

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE						
	(dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	17.24	17.97	22.25	26.40	27.38	24.00	45.36
1	17.26	18.00	22.27	26.42	27.39	24.03	45.39
5	17.29	18.04	22.34	26.49	27.45	24.07	45.11
10	17.29	18.04	22.33	26.47	27.44	24.08	45.18
50	17.26	18.01	22.25	26.36	27.33	24.03	45.64
100	17.24	17.99	22.22	26.33	27.33	24.04	44.59
200	17.28	18.04	22.28	26.33	27.35	24.09	41.24
300	17.33	18.11	22.35	26.41	27.49	24.27	38.78
400	17.34	18.12	22.36	26.41	27.51	24.38	37.09
500	17.39	18.19	22.45	26.46	27.55	24.52	35.58
600	17.44	18.26	22.49	26.51	27.56	24.60	34.91
700	17.69	18.53	22.87	26.94	28.00	25.08	32.93
800	17.64	18.49	22.76	26.68	27.60	25.05	31.71
900	17.76	18.59	22.86	26.60	27.39	25.14	30.52
1000	17.86	18.72	22.98	26.53	27.24	25.29	29.47
1100	17.99	18.87	23.07	26.41	26.99	25.49	28.35
1200	18.16	19.04	23.20	26.23	26.61	25.72	27.25
1300	18.33	19.24	23.28	25.92	26.21	26.01	26.16
1400	18.52	19.49	23.40	25.61	25.74	26.47	25.02
1500	18.71	19.76	23.48	25.20	25.26	27.02	24.02
1600	18.98	20.12	23.64	24.79	24.80	27.76	23.06
1700	19.32	20.60	23.76	24.32	24.24	28.52	22.14
1800	19.69	21.12	23.80	23.76	23.63	29.22	21.30
1900	19.96	21.59	23.69	23.18	23.05	29.67	20.53
2000	20.24	22.05	23.57	22.69	22.57	30.08	19.94
2100	20.56	22.60	23.79	22.57	22.38	30.57	19.50
2200	21.59	24.13	24.86	22.85	22.50	30.82	19.11
2300	22.45	25.62	24.50	21.84	21.36	27.34	18.07
2400	23.03	26.57	24.47	21.52	20.87	25.79	17.62
2500	23.50	27.60	25.13	21.69	20.87	25.06	17.48
2600	25.53	31.18	28.95	23.15	21.70	24.11	17.60
2700	29.71	36.70	28.59	22.36	20.68	21.57	16.88
2800	31.20	32.90	27.78	22.00	20.22	20.42	16.59
2900	31.00	29.98	26.80	21.63	19.80	19.58	16.29
3000	27.39	27.09	27.20	22.18	20.10	19.28	16.36
3200	20.91	21.23	25.28	23.62	21.27	18.77	16.76
3400	17.00	17.35	21.07	23.11	22.08	18.20	17.57
3600	15.06	15.24	18.42	21.05	21.77	17.61	18.60
3800	15.63	15.56	18.62	21.11	22.21	17.90	19.98
4000	16.81	16.62	19.90	22.66	23.99	18.81	21.38



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

REV. OR  
DAT-31-SP+

110525

Page 6 of 9

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+85degC

FREQUENCY (MHz)	STEP ATTENUATION* AT TTL CONTROL STATE						
	00000 THRU LOSS	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	1.48	1.00	2.01	4.00	7.87	15.83	30.61
1	1.49	0.99	1.99	3.96	7.87	15.82	30.59
5	1.49	0.99	2.00	3.98	7.88	15.82	30.63
10	1.51	1.00	2.00	3.98	7.86	15.82	30.64
50	1.52	0.99	2.00	3.98	7.87	15.83	30.65
100	1.57	0.96	1.98	3.96	7.87	15.81	30.61
200	1.61	0.99	1.98	3.98	7.87	15.82	30.64
300	1.67	0.99	1.99	3.97	7.86	15.82	30.57
400	1.73	1.00	1.99	3.97	7.86	15.80	30.55
500	1.80	0.98	1.98	3.96	7.84	15.79	30.47
600	1.84	0.97	1.99	3.95	7.86	15.78	30.45
700	1.83	0.97	2.01	3.97	7.87	15.80	30.48
800	1.86	0.97	2.00	3.97	7.88	15.79	30.44
900	1.91	0.98	2.03	3.98	7.86	15.78	30.32
1000	1.99	0.97	2.01	3.98	7.85	15.76	30.18
1100	2.05	0.99	2.02	3.99	7.85	15.78	30.24
1200	2.12	1.00	2.02	3.97	7.84	15.76	30.17
1300	2.16	0.99	2.03	3.98	7.88	15.76	30.05
1400	2.24	0.99	2.03	3.98	7.87	15.73	29.98
1500	2.33	0.98	2.02	3.98	7.84	15.72	29.84
1600	2.36	0.97	2.03	3.98	7.85	15.71	29.79
1700	2.39	0.96	2.05	4.01	7.87	15.72	29.73
1800	2.39	0.99	2.06	4.03	7.89	15.73	29.62
1900	2.47	0.99	2.07	4.00	7.88	15.71	29.60
2000	2.54	1.00	2.08	4.02	7.87	15.71	29.39
2100	2.66	0.98	2.06	4.00	7.85	15.68	29.35
2200	2.70	1.00	2.08	4.01	7.88	15.73	29.50
2300	2.77	1.00	2.07	4.03	7.89	15.80	29.58
2400	2.87	1.02	2.09	4.00	7.87	15.79	29.23
2500	2.97	1.00	2.07	3.98	7.83	15.75	28.80
2600	3.00	1.00	2.06	3.96	7.82	15.75	28.75
2700	3.27	1.01	2.08	3.94	7.80	15.84	28.97
2800	3.56	1.01	2.10	3.91	7.72	15.57	27.61
2900	3.63	0.99	2.09	3.93	7.67	15.33	27.05
3000	4.43	1.01	2.10	3.89	7.63	15.52	28.47
3200	5.16	1.03	2.06	3.87	7.69	15.55	28.29
3400	4.41	1.12	2.20	4.06	7.68	14.60	22.31
3600	4.67	1.27	2.40	4.25	7.85	15.00	23.08
3800	5.66	1.37	2.39	4.04	7.58	15.02	22.87
4000	7.01	1.25	2.26	3.76	7.11	14.66	21.97

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



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+85degC

FREQUENCY (MHz)	INPUT RETURN LOSS AT TTL CONTROL STATE (dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	16.20	18.35	16.26	17.07	18.43	23.07	25.55
1	16.22	18.37	16.28	17.09	18.44	23.07	25.54
5	16.26	18.42	16.31	17.12	18.46	23.09	25.58
10	16.24	18.41	16.31	17.12	18.48	23.10	25.60
50	16.23	18.42	16.34	17.16	18.55	23.24	25.77
100	16.35	18.58	16.51	17.39	18.83	23.76	26.45
200	16.58	18.88	16.77	17.69	19.24	24.45	27.42
300	16.72	18.96	16.81	17.66	19.14	24.12	26.89
400	16.90	19.09	16.87	17.64	19.00	23.71	26.31
500	17.18	19.35	17.06	17.78	19.08	23.71	26.27
600	17.53	19.73	17.33	18.02	19.29	23.98	26.59
700	17.75	19.98	17.53	18.20	19.46	24.17	26.85
800	17.96	20.19	17.68	18.32	19.56	24.24	26.88
900	18.08	20.28	17.80	18.41	19.62	24.25	26.87
1000	18.14	20.30	17.87	18.48	19.69	24.29	26.95
1100	18.08	20.21	17.89	18.50	19.71	24.30	26.87
1200	17.90	19.98	17.83	18.48	19.68	24.27	26.80
1300	17.65	19.70	17.71	18.38	19.61	24.16	26.63
1400	17.33	19.30	17.55	18.25	19.48	24.00	26.28
1500	16.95	18.81	17.32	18.07	19.30	23.74	25.77
1600	16.62	18.43	17.19	17.97	19.24	23.72	25.63
1700	16.45	18.23	17.21	18.07	19.39	24.02	25.75
1800	16.26	17.98	17.24	18.17	19.50	24.33	25.67
1900	16.05	17.77	17.29	18.31	19.68	24.65	25.56
2000	16.06	17.77	17.59	18.72	20.16	25.37	25.73
2100	16.20	17.96	18.06	19.35	20.84	26.16	25.62
2200	16.74	18.59	18.99	20.45	21.94	26.96	25.29
2300	17.52	19.53	20.25	21.93	23.35	26.97	24.50
2400	18.89	21.20	22.26	24.41	25.46	26.34	23.55
2500	21.20	24.23	25.73	28.98	28.30	24.90	22.37
2600	24.64	29.20	31.45	41.24	29.93	23.09	21.16
2700	29.60	31.02	25.50	25.82	24.56	19.63	18.75
2800	21.53	21.19	19.14	19.38	19.74	17.04	16.80
2900	17.69	17.70	16.21	16.54	17.26	15.47	15.54
3000	14.24	14.49	13.41	13.73	14.64	13.69	14.15
3200	17.57	17.11	15.89	15.77	16.25	14.41	14.90
3400	24.51	33.15	31.74	32.47	29.20	19.15	18.83
3600	22.98	35.51	36.27	30.11	22.38	16.05	15.24
3800	15.88	16.23	15.25	15.84	15.88	12.70	12.59
4000	8.82	9.31	9.04	9.70	10.47	8.88	8.78



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).



Not recommended for new designs.

Recommended replacement part: DAT-31A-SP+

# Digital Step Attenuator

# DAT-31-SP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER=-10dBm, Vdd=+3V, TEMPERATURE=+85degC

FREQUENCY (MHz)	OUTPUT RETURN LOSS AT TTL CONTROL STATE						
	(dB)						
	00000 0 dB	00001 1 dB	00010 2.0 dB	00100 4.0 dB	01000 8.0 dB	10000 16.0 dB	11111 31 dB
0.5	16.20	16.50	19.65	21.87	21.60	19.03	28.54
1	16.21	16.50	19.65	21.84	21.59	19.02	28.47
5	16.26	16.55	19.70	21.89	21.63	19.06	28.53
10	16.25	16.55	19.69	21.88	21.62	19.06	28.51
50	16.25	16.55	19.71	21.91	21.68	19.14	28.62
100	16.33	16.68	19.92	22.25	22.08	19.45	29.54
200	16.48	16.85	20.18	22.64	22.50	19.79	30.67
300	16.42	16.74	19.94	22.25	22.10	19.44	29.54
400	16.36	16.63	19.72	21.83	21.57	19.03	28.13
500	16.40	16.63	19.67	21.68	21.37	18.87	27.43
600	16.42	16.66	19.66	21.59	21.27	18.83	27.00
700	16.61	16.84	19.84	21.75	21.40	18.96	26.94
800	16.54	16.76	19.66	21.43	21.08	18.78	26.00
900	16.58	16.81	19.63	21.31	20.92	18.77	25.29
1000	16.67	16.91	19.66	21.24	20.84	18.88	24.76
1100	16.74	17.02	19.69	21.17	20.82	19.05	24.22
1200	16.87	17.18	19.80	21.14	20.81	19.30	23.74
1300	17.00	17.37	19.87	21.14	20.85	19.59	23.24
1400	17.16	17.58	20.00	21.15	20.89	19.97	22.77
1500	17.29	17.79	20.04	21.03	20.85	20.35	22.23
1600	17.51	18.09	20.19	20.99	20.87	20.87	21.70
1700	17.76	18.45	20.35	20.94	20.87	21.45	21.20
1800	18.06	18.86	20.47	20.87	20.84	22.20	20.67
1900	18.29	19.25	20.51	20.67	20.77	22.97	20.15
2000	18.52	19.64	20.58	20.60	20.80	23.99	19.86
2100	18.92	20.25	21.04	20.91	21.22	25.67	19.80
2200	19.90	21.61	22.04	21.48	21.82	29.06	19.64
2300	20.49	22.59	22.13	21.14	21.44	30.82	18.83
2400	21.02	23.44	22.50	21.14	21.39	31.61	18.56
2500	21.58	24.28	23.55	21.85	22.01	33.36	18.70
2600	23.76	27.33	27.30	23.91	23.56	31.28	19.07
2700	28.94	32.61	31.39	24.30	22.94	24.12	18.36
2800	26.50	27.20	33.42	25.49	23.41	22.29	18.40
2900	20.60	20.96	27.83	28.57	25.76	20.96	19.31
3000	15.31	15.41	19.16	22.66	24.52	18.34	22.66
3200	17.29	17.12	21.22	25.35	28.32	19.74	28.51
3400	32.79	26.60	27.53	23.33	22.47	20.73	18.75
3600	20.47	17.81	18.30	17.01	16.32	14.25	14.84
3800	14.29	13.38	14.09	13.78	12.94	10.65	11.44
4000	9.49	9.76	11.27	12.71	13.17	10.52	13.01



ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).