

**Not recommended for new designs.**  
**Recommended replacement part: DAT-31R5A-SP+**  
**Digital Step Attenuator** **DAT-31R5-SP+**

**Typical Performance Data**

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

| FREQUENCY<br>(MHz) | STEP ATTENUATION* AT TTL CONTROL STATE<br>(dB) |                  |                  |                  |                  |                  |                 |                   |
|--------------------|------------------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | 000000<br>THRU LOSS                            | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 1.14                                           | 0.54             | 1.04             | 2.07             | 4.11             | 8.09             | 16.09           | 31.70             |
| 1                  | 1.14                                           | 0.54             | 1.04             | 2.07             | 4.10             | 8.08             | 16.08           | 31.71             |
| 5                  | 1.14                                           | 0.56             | 1.06             | 2.07             | 4.11             | 8.08             | 16.09           | 31.69             |
| 10                 | 1.15                                           | 0.55             | 1.04             | 2.09             | 4.11             | 8.10             | 16.09           | 31.71             |
| 50                 | 1.16                                           | 0.54             | 1.05             | 2.08             | 4.11             | 8.09             | 16.09           | 31.72             |
| 100                | 1.20                                           | 0.55             | 1.05             | 2.07             | 4.10             | 8.07             | 16.08           | 31.67             |
| 200                | 1.25                                           | 0.53             | 1.04             | 2.04             | 4.08             | 8.05             | 16.06           | 31.64             |
| 300                | 1.25                                           | 0.55             | 1.04             | 2.06             | 4.12             | 8.10             | 16.09           | 31.66             |
| 400                | 1.25                                           | 0.55             | 1.05             | 2.08             | 4.14             | 8.11             | 16.10           | 31.67             |
| 500                | 1.29                                           | 0.54             | 1.04             | 2.08             | 4.11             | 8.10             | 16.09           | 31.57             |
| 600                | 1.29                                           | 0.56             | 1.06             | 2.10             | 4.16             | 8.12             | 16.11           | 31.51             |
| 700                | 1.29                                           | 0.55             | 1.06             | 2.11             | 4.17             | 8.15             | 16.13           | 31.51             |
| 800                | 1.30                                           | 0.55             | 1.05             | 2.12             | 4.18             | 8.16             | 16.14           | 31.41             |
| 900                | 1.32                                           | 0.55             | 1.06             | 2.15             | 4.18             | 8.16             | 16.13           | 31.26             |
| 1000               | 1.37                                           | 0.56             | 1.07             | 2.14             | 4.18             | 8.14             | 16.12           | 31.16             |
| 1100               | 1.44                                           | 0.55             | 1.05             | 2.14             | 4.16             | 8.13             | 16.10           | 30.96             |
| 1200               | 1.48                                           | 0.56             | 1.05             | 2.13             | 4.16             | 8.14             | 16.08           | 30.86             |
| 1300               | 1.53                                           | 0.53             | 1.04             | 2.12             | 4.13             | 8.10             | 16.05           | 30.76             |
| 1400               | 1.58                                           | 0.54             | 1.06             | 2.12             | 4.15             | 8.09             | 16.03           | 30.54             |
| 1500               | 1.65                                           | 0.56             | 1.05             | 2.11             | 4.13             | 8.08             | 16.01           | 30.41             |
| 1600               | 1.68                                           | 0.54             | 1.05             | 2.13             | 4.12             | 8.11             | 15.99           | 30.22             |
| 1700               | 1.68                                           | 0.55             | 1.06             | 2.15             | 4.19             | 8.14             | 16.03           | 30.18             |
| 1800               | 1.71                                           | 0.55             | 1.06             | 2.18             | 4.20             | 8.14             | 16.02           | 30.00             |
| 1900               | 1.77                                           | 0.54             | 1.06             | 2.18             | 4.20             | 8.13             | 16.01           | 29.81             |
| 2000               | 1.84                                           | 0.53             | 1.05             | 2.15             | 4.20             | 8.12             | 16.03           | 29.77             |
| 2100               | 1.92                                           | 0.55             | 1.07             | 2.17             | 4.19             | 8.13             | 16.00           | 29.61             |
| 2200               | 2.01                                           | 0.56             | 1.07             | 2.15             | 4.20             | 8.11             | 16.00           | 29.44             |
| 2300               | 2.09                                           | 0.56             | 1.07             | 2.17             | 4.16             | 8.11             | 16.00           | 29.41             |
| 2400               | 2.20                                           | 0.55             | 1.06             | 2.18             | 4.17             | 8.11             | 16.01           | 28.96             |
| 2500               | 2.32                                           | 0.56             | 1.05             | 2.15             | 4.11             | 8.04             | 15.88           | 28.36             |
| 2600               | 2.31                                           | 0.58             | 1.06             | 2.20             | 4.15             | 8.04             | 15.83           | 28.14             |
| 2700               | 2.38                                           | 0.54             | 1.05             | 2.16             | 4.12             | 8.01             | 15.88           | 28.40             |
| 2800               | 2.51                                           | 0.57             | 1.06             | 2.17             | 4.14             | 8.02             | 15.86           | 28.18             |
| 2900               | 2.66                                           | 0.57             | 1.07             | 2.17             | 4.13             | 7.98             | 15.76           | 27.86             |
| 3000               | 2.77                                           | 0.57             | 1.05             | 2.18             | 4.10             | 7.93             | 15.63           | 27.29             |
| 3200               | 2.79                                           | 0.60             | 1.07             | 2.24             | 4.14             | 7.94             | 15.47           | 26.85             |
| 3400               | 3.08                                           | 0.58             | 1.05             | 2.19             | 4.08             | 7.83             | 15.39           | 27.05             |
| 3600               | 3.59                                           | 0.59             | 1.03             | 2.15             | 4.00             | 7.71             | 15.43           | 27.61             |
| 3800               | 4.45                                           | 0.63             | 1.04             | 2.09             | 3.93             | 7.69             | 15.66           | 28.24             |
| 4000               | 4.73                                           | 0.57             | 1.06             | 2.07             | 3.87             | 7.67             | 15.40           | 26.82             |

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

Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | INPUT RETURN LOSS AT TTL CONTROL STATE |                  |                  |                  |                  |                  |                 |                   |
|--------------------|----------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | (dB)                                   |                  |                  |                  |                  |                  |                 |                   |
|                    | 000000<br>0 dB                         | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 18.33                                  | 20.43            | 22.33            | 20.25            | 23.09            | 28.91            | 32.02           | 26.51             |
| 1                  | 18.35                                  | 20.45            | 22.35            | 20.27            | 23.11            | 28.94            | 32.03           | 26.52             |
| 5                  | 18.38                                  | 20.50            | 22.39            | 20.31            | 23.15            | 28.97            | 32.04           | 26.50             |
| 10                 | 18.37                                  | 20.48            | 22.38            | 20.30            | 23.14            | 28.99            | 32.01           | 26.49             |
| 50                 | 18.31                                  | 20.38            | 22.26            | 20.20            | 22.96            | 28.59            | 32.71           | 26.88             |
| 100                | 18.35                                  | 20.38            | 22.18            | 20.13            | 22.80            | 28.10            | 33.80           | 27.41             |
| 200                | 18.14                                  | 20.12            | 21.81            | 19.92            | 22.49            | 27.26            | 32.96           | 27.40             |
| 300                | 18.11                                  | 20.12            | 21.80            | 20.19            | 22.99            | 28.05            | 29.37           | 25.44             |
| 400                | 18.44                                  | 20.58            | 22.40            | 20.80            | 23.92            | 29.76            | 27.83           | 24.27             |
| 500                | 18.60                                  | 20.80            | 22.71            | 21.09            | 24.40            | 30.80            | 27.50           | 24.01             |
| 600                | 18.74                                  | 20.97            | 22.94            | 21.37            | 24.81            | 31.42            | 26.95           | 23.68             |
| 700                | 18.98                                  | 21.30            | 23.33            | 21.80            | 25.47            | 32.42            | 26.24           | 23.17             |
| 800                | 19.27                                  | 21.67            | 23.77            | 22.19            | 26.12            | 33.28            | 25.75           | 22.85             |
| 900                | 19.42                                  | 21.88            | 24.04            | 22.55            | 26.68            | 33.66            | 25.16           | 22.45             |
| 1000               | 19.68                                  | 22.25            | 24.52            | 23.10            | 27.63            | 34.38            | 24.44           | 21.93             |
| 1100               | 19.99                                  | 22.65            | 25.09            | 23.59            | 28.60            | 35.61            | 24.01           | 21.62             |
| 1200               | 20.14                                  | 22.86            | 25.39            | 23.88            | 29.31            | 36.53            | 23.74           | 21.43             |
| 1300               | 20.27                                  | 22.97            | 25.63            | 24.08            | 29.69            | 37.10            | 23.67           | 21.41             |
| 1400               | 20.22                                  | 22.93            | 25.51            | 24.10            | 29.66            | 36.67            | 23.73           | 21.50             |
| 1500               | 20.15                                  | 22.79            | 25.27            | 24.06            | 29.47            | 34.98            | 23.70           | 21.51             |
| 1600               | 20.35                                  | 23.08            | 25.60            | 24.52            | 30.45            | 33.94            | 23.19           | 21.15             |
| 1700               | 20.89                                  | 23.84            | 26.56            | 25.63            | 32.65            | 32.56            | 22.36           | 20.50             |
| 1800               | 21.25                                  | 24.40            | 27.23            | 26.52            | 34.87            | 31.08            | 21.65           | 19.97             |
| 1900               | 21.45                                  | 24.68            | 27.70            | 27.13            | 36.63            | 30.10            | 21.20           | 19.59             |
| 2000               | 22.04                                  | 25.55            | 28.88            | 28.40            | 41.63            | 28.76            | 20.50           | 19.05             |
| 2100               | 22.74                                  | 26.60            | 30.65            | 30.21            | 53.90            | 27.27            | 19.76           | 18.39             |
| 2200               | 23.55                                  | 27.70            | 33.27            | 31.92            | 40.38            | 25.98            | 19.03           | 17.77             |
| 2300               | 24.36                                  | 28.75            | 36.88            | 33.03            | 34.41            | 24.72            | 18.34           | 17.21             |
| 2400               | 25.31                                  | 29.15            | 41.85            | 31.62            | 30.37            | 23.50            | 17.66           | 16.65             |
| 2500               | 26.19                                  | 28.05            | 35.06            | 28.37            | 26.98            | 22.26            | 16.98           | 16.08             |
| 2600               | 26.82                                  | 26.40            | 29.58            | 25.44            | 24.14            | 20.94            | 16.30           | 15.52             |
| 2700               | 25.61                                  | 24.21            | 26.29            | 23.17            | 22.21            | 19.85            | 15.70           | 15.00             |
| 2800               | 23.76                                  | 22.02            | 23.50            | 21.06            | 20.43            | 18.78            | 15.14           | 14.55             |
| 2900               | 22.02                                  | 20.18            | 21.26            | 19.35            | 18.88            | 17.73            | 14.53           | 14.04             |
| 3000               | 20.56                                  | 18.85            | 19.68            | 18.06            | 17.66            | 16.80            | 13.97           | 13.55             |
| 3200               | 17.88                                  | 16.51            | 17.25            | 16.01            | 15.87            | 15.48            | 13.10           | 12.78             |
| 3400               | 15.69                                  | 14.66            | 15.40            | 14.43            | 14.52            | 14.50            | 12.49           | 12.29             |
| 3600               | 13.85                                  | 13.02            | 13.65            | 12.95            | 13.11            | 13.34            | 11.78           | 11.71             |
| 3800               | 13.35                                  | 12.58            | 12.99            | 12.34            | 12.38            | 12.52            | 11.19           | 11.21             |
| 4000               | 13.51                                  | 12.75            | 12.93            | 12.31            | 12.16            | 12.12            | 10.80           | 10.86             |



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Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | OUTPUT RETURN LOSS AT TTL CONTROL STATE<br>(dB) |        |        |        |        |        |        |         |
|--------------------|-------------------------------------------------|--------|--------|--------|--------|--------|--------|---------|
|                    | 000000                                          | 000001 | 000010 | 000100 | 001000 | 010000 | 100000 | 111111  |
|                    | 0 dB                                            | 0.5 dB | 1.0 dB | 2.0 dB | 4.0 dB | 8.0 dB | 16 dB  | 31.5 dB |
| 0.5                | 18.34                                           | 19.39  | 19.71  | 25.93  | 36.87  | 55.97  | 37.22  | 26.14   |
| 1                  | 18.35                                           | 19.38  | 19.71  | 25.90  | 36.71  | 54.75  | 37.00  | 26.22   |
| 5                  | 18.39                                           | 19.42  | 19.76  | 25.98  | 36.86  | 56.10  | 37.14  | 26.19   |
| 10                 | 18.37                                           | 19.42  | 19.74  | 25.95  | 36.82  | 55.59  | 37.14  | 26.20   |
| 50                 | 18.28                                           | 19.31  | 19.62  | 25.62  | 35.53  | 47.52  | 35.59  | 26.73   |
| 100                | 18.18                                           | 19.17  | 19.47  | 25.27  | 34.12  | 41.67  | 33.99  | 27.35   |
| 200                | 18.09                                           | 19.06  | 19.37  | 24.70  | 30.83  | 33.31  | 31.85  | 26.60   |
| 300                | 18.26                                           | 19.32  | 19.66  | 24.95  | 29.58  | 30.44  | 32.04  | 24.35   |
| 400                | 18.53                                           | 19.68  | 20.10  | 25.74  | 29.95  | 29.78  | 32.96  | 23.27   |
| 500                | 18.96                                           | 20.16  | 20.62  | 26.77  | 30.46  | 29.41  | 33.51  | 22.69   |
| 600                | 19.35                                           | 20.63  | 21.11  | 27.77  | 31.02  | 29.28  | 34.34  | 22.39   |
| 700                | 19.79                                           | 21.16  | 21.68  | 28.74  | 30.55  | 28.36  | 33.38  | 21.81   |
| 800                | 19.83                                           | 21.24  | 21.79  | 28.79  | 29.93  | 27.76  | 32.72  | 21.51   |
| 900                | 20.11                                           | 21.57  | 22.16  | 29.23  | 29.26  | 27.09  | 31.94  | 21.15   |
| 1000               | 20.31                                           | 21.82  | 22.45  | 29.71  | 28.93  | 26.63  | 31.19  | 20.84   |
| 1100               | 20.44                                           | 22.07  | 22.75  | 30.47  | 28.76  | 26.23  | 30.52  | 20.53   |
| 1200               | 20.60                                           | 22.22  | 22.98  | 31.38  | 28.97  | 26.21  | 30.33  | 20.39   |
| 1300               | 20.62                                           | 22.29  | 23.03  | 31.53  | 29.04  | 26.19  | 30.35  | 20.38   |
| 1400               | 20.66                                           | 22.35  | 23.12  | 31.35  | 28.50  | 25.74  | 29.84  | 20.18   |
| 1500               | 20.58                                           | 22.33  | 23.16  | 31.18  | 28.11  | 25.42  | 29.47  | 20.03   |
| 1600               | 20.37                                           | 22.14  | 22.95  | 30.52  | 27.79  | 25.13  | 29.24  | 19.91   |
| 1700               | 20.22                                           | 22.05  | 22.87  | 29.73  | 26.91  | 24.46  | 28.44  | 19.57   |
| 1800               | 20.38                                           | 22.33  | 23.21  | 29.70  | 26.20  | 23.77  | 27.41  | 19.17   |
| 1900               | 20.43                                           | 22.41  | 23.32  | 29.78  | 25.96  | 23.49  | 26.98  | 18.99   |
| 2000               | 20.15                                           | 22.13  | 23.05  | 28.79  | 25.48  | 23.15  | 26.79  | 18.90   |
| 2100               | 19.82                                           | 21.87  | 22.73  | 27.87  | 24.90  | 22.68  | 26.26  | 18.64   |
| 2200               | 20.03                                           | 22.17  | 23.09  | 28.03  | 24.53  | 22.18  | 25.52  | 18.28   |
| 2300               | 21.21                                           | 23.85  | 24.93  | 27.58  | 22.64  | 20.49  | 22.91  | 17.06   |
| 2400               | 21.75                                           | 24.70  | 25.76  | 26.32  | 21.47  | 19.45  | 21.53  | 16.34   |
| 2500               | 22.28                                           | 25.37  | 26.51  | 26.04  | 21.02  | 18.98  | 20.80  | 15.90   |
| 2600               | 23.95                                           | 27.70  | 29.94  | 28.70  | 21.49  | 19.06  | 20.26  | 15.63   |
| 2700               | 29.50                                           | 35.47  | 43.29  | 25.95  | 19.93  | 17.73  | 18.25  | 14.65   |
| 2800               | 36.14                                           | 35.07  | 34.27  | 23.69  | 18.86  | 16.86  | 17.19  | 14.06   |
| 2900               | 38.81                                           | 29.83  | 28.98  | 22.11  | 18.03  | 16.22  | 16.34  | 13.55   |
| 3000               | 32.44                                           | 27.24  | 26.94  | 21.73  | 17.93  | 16.11  | 16.04  | 13.37   |
| 3200               | 22.87                                           | 21.23  | 21.64  | 20.60  | 17.96  | 16.18  | 15.46  | 13.14   |
| 3400               | 17.97                                           | 17.14  | 17.60  | 18.35  | 17.48  | 16.21  | 14.97  | 13.17   |
| 3600               | 14.65                                           | 14.15  | 14.50  | 15.78  | 16.24  | 15.86  | 14.38  | 13.36   |
| 3800               | 13.72                                           | 13.19  | 13.42  | 14.67  | 15.34  | 15.48  | 14.08  | 13.83   |
| 4000               | 14.46                                           | 13.80  | 13.96  | 15.18  | 15.78  | 16.03  | 14.42  | 14.69   |



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**Not recommended for new designs.**  
**Recommended replacement part: DAT-31R5A-SP+**  
**Digital Step Attenuator** **DAT-31R5-SP+**

**Typical Performance Data**

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

| FREQUENCY<br>(MHz) | STEP ATTENUATION* AT TTL CONTROL STATE<br>(dB) |                  |                  |                  |                  |                  |                 |                   |
|--------------------|------------------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | 000000<br>THRU LOSS                            | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 1.31                                           | 0.53             | 1.02             | 2.04             | 4.04             | 7.98             | 15.94           | 31.40             |
| 1                  | 1.31                                           | 0.53             | 1.01             | 2.04             | 4.04             | 7.98             | 15.94           | 31.42             |
| 5                  | 1.32                                           | 0.52             | 1.01             | 2.04             | 4.05             | 7.97             | 15.94           | 31.40             |
| 10                 | 1.34                                           | 0.52             | 1.01             | 2.03             | 4.03             | 7.95             | 15.94           | 31.40             |
| 50                 | 1.34                                           | 0.52             | 1.01             | 2.03             | 4.03             | 7.96             | 15.94           | 31.38             |
| 100                | 1.37                                           | 0.54             | 1.03             | 2.03             | 4.05             | 7.96             | 15.95           | 31.41             |
| 200                | 1.42                                           | 0.53             | 1.01             | 2.04             | 4.03             | 7.95             | 15.95           | 31.36             |
| 300                | 1.47                                           | 0.52             | 1.01             | 2.02             | 4.03             | 7.95             | 15.92           | 31.34             |
| 400                | 1.50                                           | 0.52             | 1.01             | 2.02             | 4.03             | 7.97             | 15.93           | 31.35             |
| 500                | 1.54                                           | 0.51             | 1.00             | 2.02             | 4.03             | 7.96             | 15.92           | 31.22             |
| 600                | 1.57                                           | 0.51             | 1.01             | 2.03             | 4.04             | 7.97             | 15.92           | 31.20             |
| 700                | 1.55                                           | 0.52             | 1.03             | 2.07             | 4.10             | 8.01             | 15.95           | 31.17             |
| 800                | 1.58                                           | 0.52             | 1.01             | 2.07             | 4.07             | 8.01             | 15.93           | 31.12             |
| 900                | 1.61                                           | 0.52             | 1.01             | 2.08             | 4.08             | 8.02             | 15.94           | 30.99             |
| 1000               | 1.69                                           | 0.52             | 1.00             | 2.05             | 4.06             | 8.00             | 15.91           | 30.91             |
| 1100               | 1.73                                           | 0.53             | 1.02             | 2.07             | 4.08             | 8.02             | 15.91           | 30.81             |
| 1200               | 1.80                                           | 0.51             | 1.00             | 2.06             | 4.05             | 7.96             | 15.88           | 30.66             |
| 1300               | 1.84                                           | 0.52             | 1.01             | 2.06             | 4.08             | 7.97             | 15.90           | 30.59             |
| 1400               | 1.91                                           | 0.51             | 1.00             | 2.07             | 4.05             | 7.97             | 15.87           | 30.41             |
| 1500               | 1.98                                           | 0.52             | 1.03             | 2.07             | 4.04             | 7.95             | 15.86           | 30.23             |
| 1600               | 2.02                                           | 0.51             | 1.01             | 2.07             | 4.04             | 7.96             | 15.84           | 30.14             |
| 1700               | 2.02                                           | 0.52             | 1.03             | 2.09             | 4.08             | 7.98             | 15.88           | 30.14             |
| 1800               | 2.03                                           | 0.53             | 1.03             | 2.11             | 4.11             | 8.01             | 15.88           | 29.95             |
| 1900               | 2.12                                           | 0.52             | 1.02             | 2.11             | 4.08             | 7.98             | 15.84           | 29.85             |
| 2000               | 2.18                                           | 0.53             | 1.04             | 2.12             | 4.10             | 8.03             | 15.87           | 29.79             |
| 2100               | 2.29                                           | 0.54             | 1.02             | 2.12             | 4.10             | 8.00             | 15.85           | 29.74             |
| 2200               | 2.36                                           | 0.54             | 1.02             | 2.11             | 4.11             | 8.00             | 15.85           | 29.46             |
| 2300               | 2.44                                           | 0.56             | 1.04             | 2.13             | 4.11             | 8.00             | 15.90           | 29.50             |
| 2400               | 2.57                                           | 0.54             | 1.03             | 2.11             | 4.11             | 7.97             | 15.89           | 29.18             |
| 2500               | 2.67                                           | 0.56             | 1.03             | 2.12             | 4.05             | 7.92             | 15.78           | 28.49             |
| 2600               | 2.68                                           | 0.54             | 1.04             | 2.10             | 4.04             | 7.92             | 15.78           | 28.43             |
| 2700               | 2.76                                           | 0.55             | 1.04             | 2.15             | 4.05             | 7.92             | 15.81           | 28.67             |
| 2800               | 2.91                                           | 0.56             | 1.05             | 2.15             | 4.06             | 7.91             | 15.79           | 28.47             |
| 2900               | 3.07                                           | 0.57             | 1.01             | 2.12             | 4.03             | 7.87             | 15.69           | 28.05             |
| 3000               | 3.18                                           | 0.55             | 1.02             | 2.14             | 4.01             | 7.82             | 15.54           | 27.50             |
| 3200               | 3.22                                           | 0.57             | 1.03             | 2.17             | 4.05             | 7.78             | 15.32           | 26.85             |
| 3400               | 3.49                                           | 0.57             | 1.02             | 2.15             | 4.01             | 7.72             | 15.32           | 27.36             |
| 3600               | 4.05                                           | 0.58             | 1.02             | 2.15             | 3.94             | 7.67             | 15.48           | 28.22             |
| 3800               | 4.88                                           | 0.62             | 1.05             | 2.08             | 3.89             | 7.67             | 15.66           | 28.15             |
| 4000               | 5.12                                           | 0.63             | 1.05             | 2.07             | 3.87             | 7.63             | 15.36           | 27.25             |

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

Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | INPUT RETURN LOSS AT TTL CONTROL STATE |                  |                  |                  |                  |                  |                 |                   |
|--------------------|----------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | (dB)                                   |                  |                  |                  |                  |                  |                 |                   |
|                    | 000000<br>0 dB                         | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 17.19                                  | 18.71            | 20.00            | 17.89            | 19.34            | 21.76            | 31.23           | 48.35             |
| 1                  | 17.21                                  | 18.74            | 20.03            | 17.92            | 19.37            | 21.78            | 31.27           | 48.73             |
| 5                  | 17.24                                  | 18.77            | 20.08            | 17.96            | 19.40            | 21.82            | 31.31           | 49.33             |
| 10                 | 17.23                                  | 18.77            | 20.07            | 17.96            | 19.41            | 21.83            | 31.34           | 49.46             |
| 50                 | 17.22                                  | 18.74            | 20.03            | 17.94            | 19.40            | 21.81            | 31.26           | 48.03             |
| 100                | 17.28                                  | 18.79            | 20.07            | 18.01            | 19.47            | 21.91            | 31.49           | 46.94             |
| 200                | 17.32                                  | 18.86            | 20.14            | 18.08            | 19.58            | 22.02            | 31.71           | 43.53             |
| 300                | 17.42                                  | 18.96            | 20.27            | 18.23            | 19.73            | 22.25            | 32.18           | 41.74             |
| 400                | 17.58                                  | 19.13            | 20.45            | 18.44            | 19.98            | 22.56            | 32.85           | 39.50             |
| 500                | 17.73                                  | 19.31            | 20.65            | 18.65            | 20.24            | 22.89            | 33.89           | 38.16             |
| 600                | 17.92                                  | 19.54            | 20.89            | 18.90            | 20.54            | 23.28            | 35.01           | 36.87             |
| 700                | 18.04                                  | 19.65            | 21.03            | 19.11            | 20.83            | 23.71            | 36.42           | 35.73             |
| 800                | 18.20                                  | 19.86            | 21.27            | 19.38            | 21.15            | 24.15            | 38.09           | 34.79             |
| 900                | 18.35                                  | 20.04            | 21.46            | 19.60            | 21.44            | 24.54            | 39.71           | 34.04             |
| 1000               | 18.47                                  | 20.18            | 21.65            | 19.79            | 21.71            | 24.93            | 41.07           | 33.26             |
| 1100               | 18.58                                  | 20.30            | 21.73            | 19.98            | 21.94            | 25.27            | 41.67           | 32.68             |
| 1200               | 18.68                                  | 20.41            | 21.87            | 20.20            | 22.20            | 25.58            | 40.79           | 31.83             |
| 1300               | 18.81                                  | 20.55            | 22.00            | 20.40            | 22.48            | 25.91            | 39.31           | 31.11             |
| 1400               | 18.89                                  | 20.68            | 22.06            | 20.61            | 22.73            | 26.19            | 37.63           | 30.31             |
| 1500               | 18.94                                  | 20.74            | 22.08            | 20.77            | 22.94            | 26.30            | 36.10           | 29.70             |
| 1600               | 19.09                                  | 20.93            | 22.25            | 21.08            | 23.35            | 26.84            | 34.78           | 28.89             |
| 1700               | 19.42                                  | 21.34            | 22.71            | 21.68            | 24.16            | 27.75            | 32.56           | 27.54             |
| 1800               | 19.71                                  | 21.76            | 23.01            | 22.32            | 25.01            | 28.48            | 30.23           | 26.14             |
| 1900               | 19.86                                  | 22.03            | 23.18            | 22.85            | 25.81            | 29.09            | 28.61           | 25.07             |
| 2000               | 20.18                                  | 22.49            | 23.66            | 23.67            | 27.12            | 30.22            | 26.95           | 23.88             |
| 2100               | 20.61                                  | 23.19            | 24.38            | 24.78            | 29.00            | 31.28            | 25.25           | 22.69             |
| 2200               | 21.48                                  | 24.40            | 25.79            | 26.50            | 32.37            | 31.83            | 23.69           | 21.55             |
| 2300               | 22.52                                  | 25.94            | 27.76            | 28.58            | 38.38            | 30.91            | 22.36           | 20.49             |
| 2400               | 23.94                                  | 27.82            | 31.44            | 30.54            | 44.90            | 29.36            | 21.16           | 19.57             |
| 2500               | 25.82                                  | 29.31            | 39.32            | 30.13            | 33.16            | 27.17            | 20.05           | 18.72             |
| 2600               | 27.70                                  | 28.97            | 37.16            | 27.66            | 27.76            | 24.78            | 18.99           | 17.90             |
| 2700               | 27.05                                  | 26.04            | 29.93            | 24.59            | 24.47            | 22.84            | 18.02           | 17.15             |
| 2800               | 24.84                                  | 23.17            | 25.43            | 21.95            | 21.92            | 21.14            | 17.20           | 16.49             |
| 2900               | 22.76                                  | 21.03            | 22.60            | 19.98            | 19.99            | 19.66            | 16.39           | 15.87             |
| 3000               | 21.14                                  | 19.56            | 20.81            | 18.67            | 18.65            | 18.57            | 15.74           | 15.33             |
| 3200               | 18.48                                  | 17.25            | 18.36            | 16.69            | 16.83            | 17.11            | 14.81           | 14.55             |
| 3400               | 16.20                                  | 15.33            | 16.32            | 15.03            | 15.35            | 15.91            | 14.07           | 13.97             |
| 3600               | 14.59                                  | 13.86            | 14.68            | 13.69            | 14.01            | 14.69            | 13.29           | 13.35             |
| 3800               | 14.47                                  | 13.74            | 14.30            | 13.48            | 13.61            | 14.10            | 12.82           | 12.92             |
| 4000               | 14.95                                  | 14.23            | 14.53            | 13.74            | 13.68            | 13.87            | 12.48           | 12.62             |



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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-Circuit's 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).

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Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | OUTPUT RETURN LOSS AT TTL CONTROL STATE<br>(dB) |        |        |        |        |        |        |         |
|--------------------|-------------------------------------------------|--------|--------|--------|--------|--------|--------|---------|
|                    | 000000                                          | 000001 | 000010 | 000100 | 001000 | 010000 | 100000 | 111111  |
|                    | 0 dB                                            | 0.5 dB | 1.0 dB | 2.0 dB | 4.0 dB | 8.0 dB | 16 dB  | 31.5 dB |
| 0.5                | 17.19                                           | 17.82  | 17.87  | 22.01  | 25.94  | 26.67  | 23.39  | 57.71   |
| 1                  | 17.21                                           | 17.84  | 17.88  | 22.02  | 25.95  | 26.66  | 23.38  | 59.43   |
| 5                  | 17.23                                           | 17.87  | 17.92  | 22.06  | 25.98  | 26.69  | 23.42  | 58.27   |
| 10                 | 17.23                                           | 17.87  | 17.91  | 22.05  | 25.98  | 26.69  | 23.42  | 57.69   |
| 50                 | 17.23                                           | 17.87  | 17.92  | 22.02  | 25.90  | 26.59  | 23.37  | 49.43   |
| 100                | 17.23                                           | 17.88  | 17.92  | 22.03  | 25.92  | 26.69  | 23.46  | 43.61   |
| 200                | 17.32                                           | 17.97  | 18.04  | 22.16  | 26.03  | 26.76  | 23.66  | 37.86   |
| 300                | 17.49                                           | 18.16  | 18.21  | 22.38  | 26.25  | 26.98  | 24.01  | 34.57   |
| 400                | 17.67                                           | 18.34  | 18.42  | 22.63  | 26.45  | 27.19  | 24.38  | 32.42   |
| 500                | 17.92                                           | 18.62  | 18.70  | 23.01  | 26.80  | 27.54  | 24.89  | 30.92   |
| 600                | 18.20                                           | 18.93  | 19.03  | 23.48  | 27.37  | 28.08  | 25.52  | 30.06   |
| 700                | 18.66                                           | 19.44  | 19.55  | 24.19  | 28.08  | 28.71  | 26.62  | 28.55   |
| 800                | 18.81                                           | 19.60  | 19.74  | 24.41  | 28.13  | 28.74  | 27.10  | 27.80   |
| 900                | 19.02                                           | 19.83  | 19.99  | 24.74  | 28.39  | 28.92  | 27.72  | 27.24   |
| 1000               | 19.22                                           | 20.04  | 20.22  | 25.02  | 28.64  | 29.13  | 28.42  | 26.80   |
| 1100               | 19.28                                           | 20.17  | 20.33  | 25.21  | 28.62  | 29.18  | 28.97  | 26.47   |
| 1200               | 19.26                                           | 20.18  | 20.39  | 25.16  | 28.45  | 29.06  | 29.33  | 26.10   |
| 1300               | 19.17                                           | 20.10  | 20.33  | 24.98  | 28.03  | 28.64  | 29.60  | 25.73   |
| 1400               | 19.02                                           | 19.98  | 20.23  | 24.67  | 27.44  | 28.04  | 29.94  | 25.20   |
| 1500               | 18.76                                           | 19.78  | 20.09  | 24.28  | 26.78  | 27.38  | 30.12  | 24.68   |
| 1600               | 18.59                                           | 19.63  | 19.98  | 23.95  | 26.07  | 26.61  | 30.41  | 23.97   |
| 1700               | 18.46                                           | 19.56  | 19.89  | 23.56  | 25.24  | 25.67  | 30.64  | 23.14   |
| 1800               | 18.41                                           | 19.58  | 19.95  | 23.24  | 24.47  | 24.75  | 30.77  | 22.27   |
| 1900               | 18.35                                           | 19.61  | 19.97  | 22.97  | 23.72  | 23.83  | 30.66  | 21.40   |
| 2000               | 18.28                                           | 19.62  | 20.05  | 22.62  | 22.97  | 23.02  | 30.25  | 20.60   |
| 2100               | 18.40                                           | 19.81  | 20.26  | 22.64  | 22.68  | 22.55  | 30.15  | 19.98   |
| 2200               | 19.05                                           | 20.65  | 21.19  | 23.55  | 22.94  | 22.55  | 30.86  | 19.50   |
| 2300               | 19.95                                           | 21.90  | 22.48  | 23.79  | 22.04  | 21.32  | 27.67  | 18.22   |
| 2400               | 20.50                                           | 22.59  | 23.25  | 23.70  | 21.40  | 20.54  | 25.90  | 17.54   |
| 2500               | 21.11                                           | 23.35  | 24.14  | 24.32  | 21.50  | 20.44  | 25.23  | 17.24   |
| 2600               | 23.30                                           | 26.18  | 27.45  | 27.54  | 22.52  | 20.85  | 24.43  | 17.06   |
| 2700               | 27.87                                           | 33.39  | 36.98  | 27.31  | 21.47  | 19.67  | 21.64  | 16.16   |
| 2800               | 32.65                                           | 41.70  | 47.34  | 25.77  | 20.59  | 18.89  | 20.22  | 15.60   |
| 2900               | 40.06                                           | 34.93  | 34.23  | 24.48  | 19.93  | 18.28  | 19.13  | 15.14   |
| 3000               | 35.05                                           | 30.30  | 30.31  | 24.39  | 19.98  | 18.27  | 18.67  | 15.00   |
| 3200               | 23.60                                           | 22.12  | 22.56  | 22.98  | 20.21  | 18.50  | 17.58  | 14.86   |
| 3400               | 18.10                                           | 17.37  | 17.74  | 19.75  | 19.56  | 18.58  | 16.59  | 15.08   |
| 3600               | 14.93                                           | 14.47  | 14.72  | 16.79  | 17.84  | 17.97  | 15.60  | 15.58   |
| 3800               | 14.39                                           | 13.88  | 14.04  | 15.92  | 17.09  | 17.67  | 15.27  | 16.47   |
| 4000               | 15.36                                           | 14.73  | 14.87  | 16.89  | 18.12  | 18.84  | 15.85  | 18.11   |



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**Not recommended for new designs.**  
**Recommended replacement part: DAT-31R5A-SP+**  
**Digital Step Attenuator** **DAT-31R5-SP+**

**Typical Performance Data**

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

| FREQUENCY<br>(MHz) | STEP ATTENUATION* AT TTL CONTROL STATE<br>(dB) |                  |                  |                  |                  |                  |                 |                   |
|--------------------|------------------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | 000000<br>THRU LOSS                            | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 1.50                                           | 0.50             | 0.98             | 2.00             | 3.97             | 7.86             | 15.81           | 31.08             |
| 1                  | 1.50                                           | 0.51             | 0.98             | 1.99             | 3.97             | 7.86             | 15.80           | 31.10             |
| 5                  | 1.50                                           | 0.50             | 0.98             | 2.00             | 3.98             | 7.86             | 15.81           | 31.09             |
| 10                 | 1.52                                           | 0.50             | 0.98             | 1.99             | 3.96             | 7.85             | 15.80           | 31.10             |
| 50                 | 1.52                                           | 0.51             | 0.98             | 2.00             | 3.98             | 7.90             | 15.82           | 31.09             |
| 100                | 1.56                                           | 0.51             | 0.99             | 2.00             | 3.98             | 7.86             | 15.81           | 31.13             |
| 200                | 1.61                                           | 0.50             | 0.98             | 1.99             | 3.98             | 7.88             | 15.80           | 31.07             |
| 300                | 1.66                                           | 0.52             | 1.00             | 2.00             | 3.98             | 7.88             | 15.82           | 31.08             |
| 400                | 1.73                                           | 0.51             | 0.99             | 2.00             | 3.97             | 7.85             | 15.80           | 31.08             |
| 500                | 1.78                                           | 0.52             | 0.98             | 1.99             | 3.97             | 7.87             | 15.80           | 31.02             |
| 600                | 1.83                                           | 0.50             | 0.98             | 2.00             | 3.96             | 7.85             | 15.77           | 30.94             |
| 700                | 1.82                                           | 0.51             | 0.98             | 2.01             | 4.00             | 7.88             | 15.79           | 30.87             |
| 800                | 1.85                                           | 0.52             | 0.98             | 2.02             | 4.00             | 7.88             | 15.78           | 30.85             |
| 900                | 1.90                                           | 0.50             | 0.98             | 2.04             | 4.01             | 7.87             | 15.77           | 30.74             |
| 1000               | 1.97                                           | 0.52             | 1.00             | 2.04             | 4.00             | 7.87             | 15.76           | 30.69             |
| 1100               | 2.05                                           | 0.50             | 0.98             | 2.02             | 3.99             | 7.86             | 15.74           | 30.62             |
| 1200               | 2.11                                           | 0.52             | 0.99             | 2.03             | 3.98             | 7.85             | 15.74           | 30.55             |
| 1300               | 2.15                                           | 0.51             | 0.99             | 2.03             | 3.96             | 7.85             | 15.72           | 30.39             |
| 1400               | 2.23                                           | 0.50             | 0.99             | 2.02             | 3.97             | 7.81             | 15.72           | 30.26             |
| 1500               | 2.31                                           | 0.50             | 0.97             | 2.03             | 3.97             | 7.86             | 15.71           | 30.07             |
| 1600               | 2.34                                           | 0.51             | 0.99             | 2.05             | 3.99             | 7.85             | 15.69           | 29.98             |
| 1700               | 2.34                                           | 0.52             | 1.00             | 2.06             | 4.02             | 7.89             | 15.72           | 30.00             |
| 1800               | 2.37                                           | 0.50             | 0.98             | 2.05             | 4.04             | 7.86             | 15.71           | 29.89             |
| 1900               | 2.45                                           | 0.50             | 1.00             | 2.07             | 4.02             | 7.89             | 15.71           | 29.81             |
| 2000               | 2.53                                           | 0.51             | 1.02             | 2.08             | 4.03             | 7.87             | 15.72           | 29.73             |
| 2100               | 2.64                                           | 0.51             | 1.00             | 2.07             | 4.00             | 7.91             | 15.69           | 29.62             |
| 2200               | 2.70                                           | 0.53             | 1.01             | 2.09             | 4.03             | 7.90             | 15.73           | 29.50             |
| 2300               | 2.81                                           | 0.52             | 1.02             | 2.10             | 4.03             | 7.88             | 15.79           | 29.69             |
| 2400               | 2.90                                           | 0.55             | 1.02             | 2.10             | 4.04             | 7.89             | 15.79           | 29.30             |
| 2500               | 3.04                                           | 0.52             | 0.99             | 2.08             | 3.99             | 7.80             | 15.69           | 28.60             |
| 2600               | 3.04                                           | 0.54             | 1.02             | 2.09             | 4.00             | 7.82             | 15.71           | 28.82             |
| 2700               | 3.17                                           | 0.54             | 0.99             | 2.10             | 3.99             | 7.82             | 15.77           | 29.01             |
| 2800               | 3.31                                           | 0.55             | 1.02             | 2.11             | 3.98             | 7.81             | 15.74           | 28.71             |
| 2900               | 3.47                                           | 0.55             | 1.03             | 2.11             | 4.00             | 7.78             | 15.65           | 28.18             |
| 3000               | 3.56                                           | 0.58             | 1.03             | 2.11             | 3.98             | 7.74             | 15.49           | 27.60             |
| 3200               | 3.62                                           | 0.58             | 1.02             | 2.16             | 4.02             | 7.69             | 15.25           | 27.10             |
| 3400               | 3.93                                           | 0.59             | 1.00             | 2.14             | 3.94             | 7.62             | 15.28           | 27.56             |
| 3600               | 4.54                                           | 0.60             | 1.01             | 2.14             | 3.88             | 7.60             | 15.51           | 28.81             |
| 3800               | 5.34                                           | 0.59             | 0.97             | 2.04             | 3.80             | 7.58             | 15.54           | 28.17             |
| 4000               | 5.63                                           | 0.58             | 0.98             | 2.02             | 3.80             | 7.56             | 15.34           | 27.84             |

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

Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | INPUT RETURN LOSS AT TTL CONTROL STATE |                  |                  |                  |                  |                  |                 |                   |
|--------------------|----------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-------------------|
|                    | (dB)                                   |                  |                  |                  |                  |                  |                 |                   |
|                    | 000000<br>0 dB                         | 000001<br>0.5 dB | 000010<br>1.0 dB | 000100<br>2.0 dB | 001000<br>4.0 dB | 010000<br>8.0 dB | 100000<br>16 dB | 111111<br>31.5 dB |
| 0.5                | 16.17                                  | 17.33            | 18.26            | 16.17            | 16.96            | 18.27            | 22.74           | 26.39             |
| 1                  | 16.18                                  | 17.34            | 18.27            | 16.19            | 16.98            | 18.27            | 22.74           | 26.36             |
| 5                  | 16.21                                  | 17.38            | 18.31            | 16.22            | 17.00            | 18.30            | 22.76           | 26.42             |
| 10                 | 16.21                                  | 17.37            | 18.31            | 16.23            | 17.01            | 18.31            | 22.79           | 26.47             |
| 50                 | 16.19                                  | 17.36            | 18.30            | 16.25            | 17.06            | 18.38            | 22.91           | 26.62             |
| 100                | 16.28                                  | 17.47            | 18.45            | 16.40            | 17.24            | 18.65            | 23.39           | 27.34             |
| 200                | 16.46                                  | 17.68            | 18.68            | 16.62            | 17.52            | 19.03            | 24.02           | 28.34             |
| 300                | 16.59                                  | 17.77            | 18.78            | 16.68            | 17.53            | 18.95            | 23.77           | 27.86             |
| 400                | 16.69                                  | 17.84            | 18.81            | 16.68            | 17.45            | 18.78            | 23.33           | 27.10             |
| 500                | 16.76                                  | 17.88            | 18.84            | 16.73            | 17.46            | 18.74            | 23.18           | 26.74             |
| 600                | 16.91                                  | 18.04            | 18.99            | 16.88            | 17.62            | 18.86            | 23.35           | 26.86             |
| 700                | 17.04                                  | 18.17            | 19.13            | 17.06            | 17.80            | 19.08            | 23.66           | 27.22             |
| 800                | 17.23                                  | 18.36            | 19.31            | 17.26            | 18.01            | 19.28            | 23.97           | 27.51             |
| 900                | 17.33                                  | 18.47            | 19.41            | 17.41            | 18.16            | 19.44            | 24.19           | 27.69             |
| 1000               | 17.37                                  | 18.52            | 19.43            | 17.54            | 18.33            | 19.64            | 24.54           | 27.95             |
| 1100               | 17.42                                  | 18.59            | 19.47            | 17.71            | 18.55            | 19.87            | 24.95           | 28.29             |
| 1200               | 17.47                                  | 18.67            | 19.53            | 17.88            | 18.79            | 20.16            | 25.44           | 28.66             |
| 1300               | 17.54                                  | 18.75            | 19.58            | 18.08            | 19.02            | 20.44            | 25.93           | 28.95             |
| 1400               | 17.57                                  | 18.81            | 19.63            | 18.25            | 19.24            | 20.68            | 26.34           | 29.08             |
| 1500               | 17.55                                  | 18.80            | 19.58            | 18.36            | 19.38            | 20.84            | 26.65           | 29.08             |
| 1600               | 17.62                                  | 18.91            | 19.66            | 18.61            | 19.68            | 21.19            | 27.34           | 29.44             |
| 1700               | 17.83                                  | 19.17            | 19.89            | 19.01            | 20.16            | 21.72            | 28.23           | 29.56             |
| 1800               | 18.00                                  | 19.45            | 20.07            | 19.45            | 20.69            | 22.27            | 28.92           | 29.07             |
| 1900               | 18.14                                  | 19.64            | 20.22            | 19.86            | 21.23            | 22.83            | 29.53           | 28.49             |
| 2000               | 18.42                                  | 20.04            | 20.55            | 20.51            | 22.07            | 23.78            | 30.31           | 27.84             |
| 2100               | 18.83                                  | 20.62            | 21.11            | 21.37            | 23.22            | 25.04            | 30.27           | 26.69             |
| 2200               | 19.70                                  | 21.72            | 22.20            | 22.77            | 25.07            | 26.91            | 29.14           | 25.37             |
| 2300               | 20.71                                  | 23.13            | 23.61            | 24.46            | 27.56            | 29.25            | 27.47           | 24.05             |
| 2400               | 22.31                                  | 25.32            | 26.16            | 26.90            | 31.87            | 32.74            | 25.65           | 22.81             |
| 2500               | 24.82                                  | 28.50            | 31.28            | 29.52            | 37.58            | 34.48            | 23.85           | 21.60             |
| 2600               | 27.44                                  | 30.43            | 42.25            | 29.25            | 32.30            | 30.51            | 22.17           | 20.51             |
| 2700               | 27.93                                  | 27.71            | 34.90            | 25.88            | 26.85            | 26.75            | 20.67           | 19.47             |
| 2800               | 25.81                                  | 24.28            | 27.71            | 22.79            | 23.32            | 23.76            | 19.40           | 18.57             |
| 2900               | 23.45                                  | 21.82            | 23.98            | 20.62            | 21.01            | 21.65            | 18.31           | 17.71             |
| 3000               | 21.65                                  | 20.19            | 21.89            | 19.20            | 19.50            | 20.24            | 17.48           | 17.10             |
| 3200               | 18.83                                  | 17.75            | 19.20            | 17.15            | 17.53            | 18.47            | 16.37           | 16.21             |
| 3400               | 16.62                                  | 15.84            | 17.12            | 15.56            | 16.04            | 17.15            | 15.59           | 15.65             |
| 3600               | 15.42                                  | 14.73            | 15.78            | 14.55            | 14.97            | 16.09            | 14.87           | 15.08             |
| 3800               | 15.79                                  | 15.04            | 15.84            | 14.77            | 15.05            | 15.91            | 14.59           | 14.80             |
| 4000               | 16.67                                  | 15.94            | 16.37            | 15.43            | 15.44            | 15.91            | 14.35           | 14.58             |



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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-Circuit's 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/MC/Store/terms.jsp](http://www.minicircuits.com/MC/Store/terms.jsp).

For detailed performance specs  
& shopping online see web site

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Not recommended for new designs.

Recommended replacement part: DAT-31R5A-SP+  
**Digital Step Attenuator** **DAT-31R5-SP+**

*Typical Performance Data*

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

| FREQUENCY<br>(MHz) | OUTPUT RETURN LOSS AT TTL CONTROL STATE<br>(dB) |        |        |        |        |        |        |         |
|--------------------|-------------------------------------------------|--------|--------|--------|--------|--------|--------|---------|
|                    | 000000                                          | 000001 | 000010 | 000100 | 001000 | 010000 | 100000 | 111111  |
|                    | 0 dB                                            | 0.5 dB | 1.0 dB | 2.0 dB | 4.0 dB | 8.0 dB | 16 dB  | 31.5 dB |
| 0.5                | 16.17                                           | 16.55  | 16.44  | 19.54  | 21.68  | 21.36  | 18.81  | 27.92   |
| 1                  | 16.17                                           | 16.54  | 16.43  | 19.50  | 21.63  | 21.31  | 18.79  | 27.80   |
| 5                  | 16.22                                           | 16.59  | 16.47  | 19.55  | 21.69  | 21.35  | 18.81  | 27.83   |
| 10                 | 16.21                                           | 16.59  | 16.46  | 19.55  | 21.68  | 21.36  | 18.83  | 27.85   |
| 50                 | 16.25                                           | 16.62  | 16.51  | 19.60  | 21.76  | 21.44  | 18.91  | 27.96   |
| 100                | 16.37                                           | 16.78  | 16.68  | 19.86  | 22.12  | 21.86  | 19.27  | 28.90   |
| 200                | 16.62                                           | 17.02  | 16.94  | 20.25  | 22.65  | 22.45  | 19.73  | 30.21   |
| 300                | 16.63                                           | 17.04  | 16.95  | 20.18  | 22.51  | 22.22  | 19.52  | 29.51   |
| 400                | 16.72                                           | 17.08  | 16.98  | 20.15  | 22.29  | 21.91  | 19.30  | 28.34   |
| 500                | 16.97                                           | 17.34  | 17.21  | 20.37  | 22.42  | 21.96  | 19.38  | 27.88   |
| 600                | 17.24                                           | 17.61  | 17.47  | 20.67  | 22.71  | 22.18  | 19.60  | 27.96   |
| 700                | 17.61                                           | 17.98  | 17.83  | 21.09  | 23.11  | 22.59  | 20.00  | 28.05   |
| 800                | 17.60                                           | 17.98  | 17.85  | 21.03  | 22.97  | 22.43  | 20.00  | 27.31   |
| 900                | 17.71                                           | 18.09  | 17.98  | 21.09  | 22.92  | 22.42  | 20.15  | 26.77   |
| 1000               | 17.80                                           | 18.21  | 18.10  | 21.16  | 22.94  | 22.52  | 20.39  | 26.38   |
| 1100               | 17.80                                           | 18.26  | 18.18  | 21.16  | 22.88  | 22.56  | 20.66  | 25.97   |
| 1200               | 17.75                                           | 18.24  | 18.20  | 21.12  | 22.77  | 22.61  | 20.95  | 25.55   |
| 1300               | 17.63                                           | 18.18  | 18.18  | 20.97  | 22.62  | 22.54  | 21.21  | 25.13   |
| 1400               | 17.48                                           | 18.05  | 18.09  | 20.82  | 22.40  | 22.46  | 21.47  | 24.58   |
| 1500               | 17.28                                           | 17.90  | 17.98  | 20.57  | 22.09  | 22.23  | 21.68  | 23.96   |
| 1600               | 17.14                                           | 17.83  | 17.94  | 20.38  | 21.77  | 22.03  | 21.95  | 23.30   |
| 1700               | 17.07                                           | 17.81  | 17.93  | 20.23  | 21.44  | 21.77  | 22.23  | 22.56   |
| 1800               | 17.03                                           | 17.83  | 17.98  | 20.08  | 21.10  | 21.44  | 22.61  | 21.77   |
| 1900               | 16.98                                           | 17.86  | 18.02  | 19.89  | 20.70  | 21.06  | 22.95  | 20.97   |
| 2000               | 16.96                                           | 17.88  | 18.08  | 19.73  | 20.39  | 20.74  | 23.40  | 20.36   |
| 2100               | 17.12                                           | 18.13  | 18.37  | 19.93  | 20.44  | 20.79  | 24.30  | 20.03   |
| 2200               | 17.91                                           | 19.12  | 19.42  | 20.82  | 20.95  | 21.23  | 26.51  | 19.66   |
| 2300               | 18.55                                           | 19.94  | 20.28  | 21.03  | 20.55  | 20.64  | 27.37  | 18.60   |
| 2400               | 19.02                                           | 20.55  | 20.96  | 21.20  | 20.32  | 20.30  | 27.42  | 18.02   |
| 2500               | 19.72                                           | 21.35  | 21.83  | 22.07  | 20.85  | 20.65  | 28.72  | 17.97   |
| 2600               | 22.09                                           | 24.26  | 24.98  | 25.04  | 22.31  | 21.60  | 29.95  | 17.95   |
| 2700               | 25.75                                           | 29.56  | 30.84  | 26.50  | 22.11  | 21.00  | 25.97  | 17.22   |
| 2800               | 29.75                                           | 36.90  | 40.18  | 26.54  | 21.68  | 20.44  | 23.69  | 16.78   |
| 2900               | 34.97                                           | 43.00  | 44.78  | 25.93  | 21.27  | 19.97  | 22.17  | 16.39   |
| 3000               | 34.99                                           | 32.85  | 33.64  | 26.61  | 21.66  | 20.20  | 21.42  | 16.34   |
| 3200               | 23.83                                           | 22.53  | 22.96  | 25.37  | 22.57  | 20.97  | 19.65  | 16.51   |
| 3400               | 18.07                                           | 17.45  | 17.75  | 20.82  | 21.56  | 21.05  | 17.92  | 17.13   |
| 3600               | 15.19                                           | 14.75  | 14.97  | 17.68  | 19.36  | 20.02  | 16.48  | 18.08   |
| 3800               | 14.98                                           | 14.52  | 14.63  | 17.20  | 18.91  | 19.90  | 16.18  | 19.87   |
| 4000               | 15.84                                           | 15.30  | 15.42  | 18.16  | 20.18  | 21.36  | 16.77  | 22.98   |



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