

Precision

Digital Step Attenuator

ZFAT-51020

50Ω TTL Control, Pin Diode 10 to 1000 MHz

Maximum Ratings

| | |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 125°C |
| Input Power | 15 dBm |
| DC Voltage | 5.5 V |
| TTL | 5.5V |

Features

- wideband, 10 to 1000 MHz
- excellent step accuracy, 0.2 dB typ.
- small, shielded metal case

Applications

- base stations
- cellular
- test sets



CASE STYLE: SSS173

| Connectors | Model | Price | Qty. |
|----------------------|------------|---------|-------|
| SMA | ZFAT-51020 | \$89.95 | (1-9) |
| BRACKET (OPTION "B") | | \$2.50 | (1+) |

Digital Step Attenuator Electrical Specifications

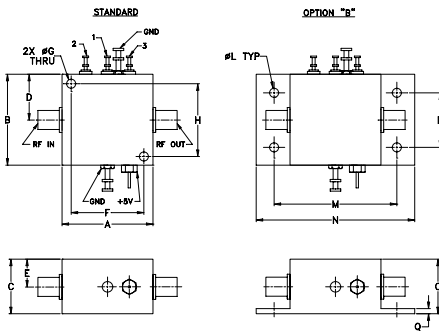
| MODEL NO. | FREQUENCY (MHz) | | PRIMARY ATTENUATION STEPS (dB) | | | ATTENUATION (dB) | | VSWR (:1) | | |
|------------|-----------------|-------|--------------------------------|--------|--------|-------------------|-----------------|-----------|-----|-----|
| | f_L | f_U | #1 | #2 | #3 | (1,1,1)** Nom. | (0,0,0) Max. | L | M | U |
| ZFAT-51020 | 10 | 1000 | 5±0.4 | 10±0.4 | 20±0.5 | 35.0 | 4.0 | 1.6 | 1.4 | 1.5 |

L=10 to 100 MHz M=100 to 500 MHz U=500 to 1000 MHz

** Total attenuation above thru-loss.

1. Step accuracy is specified for basic steps. For combination of steps accuracy is additive.
2. Thru-loss is minimum insertion loss with all attenuation elements bypassed (All TTL controls state are Low)

Outline Drawing



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H |
|-------|-------|-------|-------|-------|-------|------|-------|
| 1.25 | 1.25 | 0.75 | .63 | .38 | 1.000 | .125 | 1.000 |
| 31.75 | 31.75 | 19.05 | 16.00 | 9.65 | 25.40 | 3.18 | 25.40 |
| J | K | L | M | N | P | Q | wt |
| -- | -- | .125 | 1.688 | 2.18 | .75 | .07 | grams |
| -- | -- | 3.18 | 42.88 | 55.37 | 19.05 | 1.78 | 75 |

Additional Specifications

| | |
|---|---|
| DC Voltage | +5V |
| DC Current | 12mA max. |
| Switching Time (50% TTL to within specified accuracy of the next-selected attenuation step, and to within 0.1 dB of steady-state Thru-Loss) | 10μs typ., 15μs max., |
| TTL Input High Threshold | 2V min |
| TTL Input Low Threshold | 0.8V max. |
| TTL Toggle Rate | 50 kHz typ. |
| 1dB Compression | 0 dBm (10-100 MHz) +10 dBm (100-1000MHz) |

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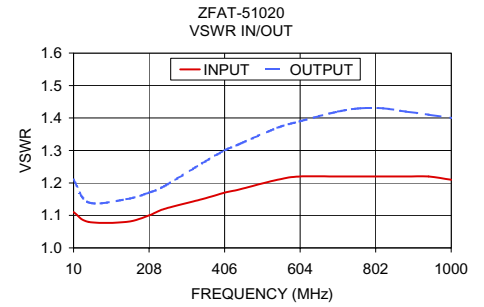
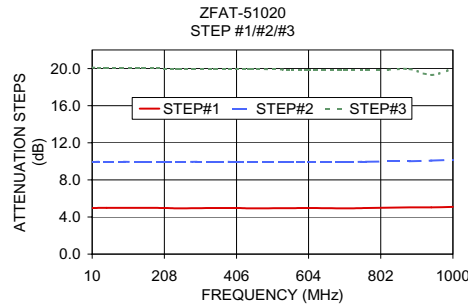
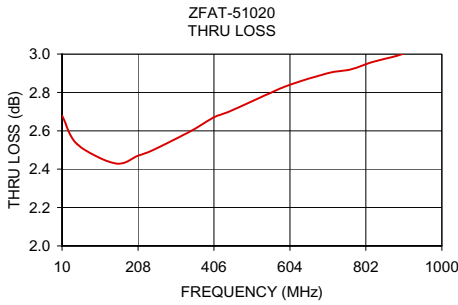


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RF/IF MICROWAVE COMPONENTS

REV. OR
M97802
ZFAT-51020
DJ/VV/CP
070606

ZFAT-51020



Step Attenuation at TTL Control State

| FREQ. (MHz) | 000 (dB) | 001 (dB) | 010 (dB) | 011 (dB) | 100 (dB) | 101 (dB) | 110 (dB) | 111 (dB) |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| 10.00 | 2.68 | 4.96 | 9.93 | 14.90 | 20.10 | 24.96 | 29.77 | 34.53 |
| 49.60 | 2.53 | 4.98 | 9.95 | 14.90 | 20.05 | 24.95 | 29.92 | 34.69 |
| 148.60 | 2.43 | 4.98 | 9.94 | 14.93 | 20.04 | 25.05 | 29.90 | 34.88 |
| 208.00 | 2.47 | 4.96 | 9.93 | 14.89 | 20.00 | 24.91 | 29.92 | 34.86 |
| 247.60 | 2.50 | 4.94 | 9.94 | 14.88 | 19.95 | 24.83 | 29.91 | 34.76 |
| 346.60 | 2.60 | 4.96 | 9.96 | 14.87 | 19.96 | 24.96 | 29.92 | 34.42 |
| 406.00 | 2.67 | 4.96 | 9.94 | 14.82 | 19.97 | 24.91 | 29.80 | 34.60 |
| 445.60 | 2.70 | 4.94 | 9.92 | 14.80 | 19.96 | 24.96 | 29.84 | 34.47 |
| 544.60 | 2.79 | 4.95 | 9.91 | 14.81 | 19.88 | 24.85 | 29.76 | 34.43 |
| 604.00 | 2.84 | 4.97 | 9.94 | 14.84 | 19.88 | 24.90 | 29.83 | 34.54 |
| 703.00 | 2.90 | 4.94 | 9.94 | 14.82 | 19.88 | 24.90 | 29.72 | 34.86 |
| 762.40 | 2.92 | 4.96 | 9.96 | 14.81 | 19.83 | 24.85 | 29.80 | 35.22 |
| 821.80 | 2.96 | 5.01 | 9.98 | 14.88 | 19.87 | 24.92 | 29.99 | 35.21 |
| 881.20 | 2.99 | 5.03 | 10.01 | 14.96 | 19.94 | 24.92 | 30.10 | 35.13 |
| 940.60 | 3.03 | 5.04 | 10.07 | 14.98 | 19.30 | 24.98 | 30.03 | 35.08 |
| 1000.00 | 3.06 | 5.09 | 10.16 | 15.08 | 20.00 | 25.28 | 29.95 | 35.55 |

INPUT VSWR

| FREQ. (MHz) | 001 | 010 | 011 | 100 | 101 | 110 | 111 |
|-------------|------|------|------|------|------|------|------|
| 10.00 | 1.11 | 1.15 | 1.09 | 1.20 | 1.10 | 1.14 | 1.09 |
| 49.60 | 1.08 | 1.10 | 1.06 | 1.13 | 1.07 | 1.10 | 1.06 |
| 148.60 | 1.08 | 1.10 | 1.06 | 1.12 | 1.07 | 1.10 | 1.06 |
| 208.00 | 1.10 | 1.12 | 1.08 | 1.15 | 1.09 | 1.12 | 1.08 |
| 247.60 | 1.12 | 1.14 | 1.09 | 1.17 | 1.10 | 1.13 | 1.09 |
| 346.60 | 1.15 | 1.18 | 1.12 | 1.21 | 1.13 | 1.18 | 1.12 |
| 406.00 | 1.17 | 1.21 | 1.14 | 1.24 | 1.16 | 1.20 | 1.14 |
| 445.60 | 1.18 | 1.22 | 1.16 | 1.26 | 1.17 | 1.22 | 1.16 |
| 544.60 | 1.21 | 1.26 | 1.19 | 1.30 | 1.20 | 1.25 | 1.19 |
| 604.00 | 1.22 | 1.28 | 1.21 | 1.32 | 1.22 | 1.27 | 1.21 |
| 703.00 | 1.22 | 1.30 | 1.23 | 1.35 | 1.24 | 1.30 | 1.21 |
| 762.40 | 1.22 | 1.31 | 1.25 | 1.36 | 1.25 | 1.31 | 1.25 |
| 821.80 | 1.22 | 1.32 | 1.26 | 1.36 | 1.26 | 1.32 | 1.27 |
| 881.20 | 1.22 | 1.32 | 1.27 | 1.37 | 1.27 | 1.33 | 1.28 |
| 940.60 | 1.22 | 1.32 | 1.28 | 1.36 | 1.27 | 1.33 | 1.29 |
| 1000.00 | 1.21 | 1.32 | 1.29 | 1.36 | 1.28 | 1.33 | 1.30 |

OUTPUT VSWR

| FREQ. (MHz) | 001 | 010 | 011 | 100 | 101 | 110 | 111 |
|-------------|------|------|------|------|------|------|------|
| 10.00 | 1.21 | 1.15 | 1.15 | 1.07 | 1.08 | 1.08 | 1.08 |
| 49.60 | 1.14 | 1.11 | 1.10 | 1.05 | 1.05 | 1.05 | 1.05 |
| 148.60 | 1.15 | 1.10 | 1.10 | 1.05 | 1.05 | 1.05 | 1.05 |
| 208.00 | 1.17 | 1.13 | 1.12 | 1.06 | 1.06 | 1.06 | 1.16 |
| 247.60 | 1.19 | 1.14 | 1.14 | 1.07 | 1.07 | 1.06 | 1.07 |
| 346.60 | 1.26 | 1.19 | 1.19 | 1.10 | 1.10 | 1.10 | 1.09 |
| 406.00 | 1.30 | 1.22 | 1.22 | 1.12 | 1.11 | 1.12 | 1.11 |
| 445.60 | 1.32 | 1.24 | 1.24 | 1.13 | 1.13 | 1.13 | 1.12 |
| 544.60 | 1.37 | 1.28 | 1.28 | 1.15 | 1.15 | 1.15 | 1.15 |
| 604.00 | 1.39 | 1.30 | 1.30 | 1.16 | 1.16 | 1.16 | 1.17 |
| 703.00 | 1.42 | 1.35 | 1.34 | 1.20 | 1.20 | 1.20 | 1.20 |
| 762.40 | 1.43 | 1.37 | 1.37 | 1.22 | 1.20 | 1.22 | 1.22 |
| 821.80 | 1.43 | 1.37 | 1.38 | 1.23 | 1.23 | 1.23 | 1.23 |
| 881.20 | 1.42 | 1.38 | 1.39 | 1.24 | 1.25 | 1.25 | 1.25 |
| 940.60 | 1.41 | 1.39 | 1.41 | 1.26 | 1.27 | 1.27 | 1.27 |
| 1000.00 | 1.40 | 1.40 | 1.42 | 1.27 | 1.27 | 1.28 | 1.28 |

* Step attenuation above thru-loss (TTL logic 000)



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