

# GT Series PIN Diode Attenuators



## Description:

The GT-0618 Series PIN Diode Attenuator is an 8/10 bit digitally controlled voltage variable attenuator optimized for minimum insertion loss while maintaining maximum attenuation range. Using new linearization techniques and state-of-the-art manufacturing practices, this attenuator family has unsurpassed attenuation linearity over temperature. Linearization over temperature is achieved using the latest microcontroller architecture.

With the highest performance density and most compact package available, this product family is ideally suited for high performance ESM, ECM, Instrumentation, Simulation and Synthesizer applications.

## Features:

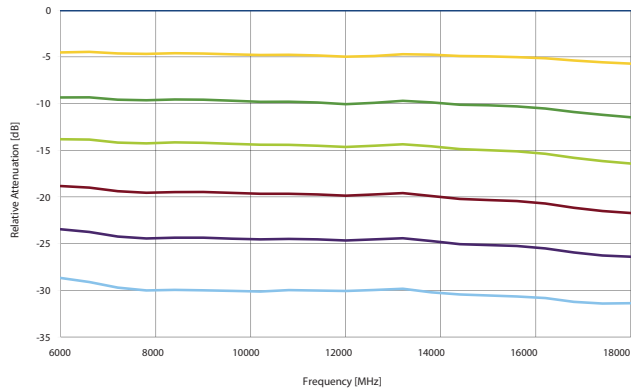
- Covers 6-18 GHz Frequency Range
- Unsurpassed Attenuation Linearity over Frequency and Temperature.
- 8 or 10 bit Control
- Smooth transition between states.
- Available in 32 or 64 dB Attenuation Range
- Remotely programmable parallel or serial interface.

## Specifications:

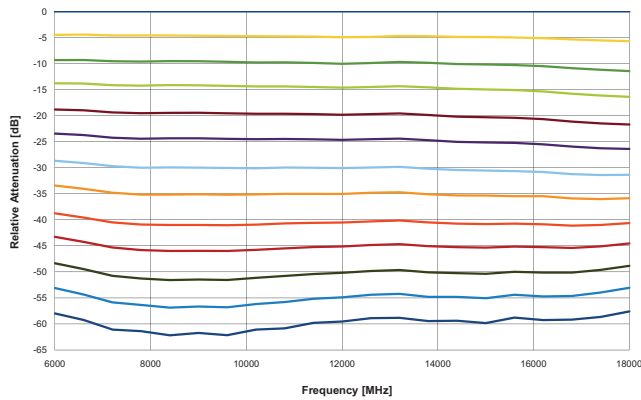
| PARAMETER                              | MODEL: GT-0618-32  | MODEL: GT-0618-64   | COMMENTS   |
|--|--|---|--|
| Frequency Range                        | 6-18 GHz   | 6-18 GHz  |  |
| Attenuation Range                      | 0-32 dB  | 0-64 dB   |  |
| Step Size (LSB)                        | 0.125 dB   | 0.250 dB  |  |
| Number of Bits                         | 8 or 10  | 8 or 10   | 8 is standard  |
| Attenuation Accuracy                   | +/-0.15 dB or +/- 1.5% whichever is greater              | +/-0.15 dB or +/-1.5% whichever is greater                        | Mean Attenuation Accuracy (Note)   |
| Attenuation Flatness                   | +/-2.25 dB   | +/-2.25 dB to 32 dB<br>+/-3.00 dB to 50 dB<br>+/-3.75 dB to 64 dB | Deviation from Mean Attenuation (Note)   |
| Attenuation Stability over Temperature | +/- 0.02 dB/°C   | +/-0.02 dB/°C   | Operating temperature range  |
| Insertion Loss                         | 3.3 dB   | 3.3 dB  |  |
| VSWR                                   | 2.0:1  | 2.0:1   |  |
| P1dB Compression Point                 | +10 dBm  | +10 dBm   |  |
| Operating Temperature Range            | -30 to +70°C   | -30 to +70°C  | Other temperature ranges available   |
| Storage Temperature Range              | -55 to +125°C  | -55 to +125°C   | Other temperature ranges available   |
| Switching Speed                        | 2.5 μsec   | 2.5 μsec  | Other options available:contact factory  |
| Control                                | 8 bits command<br>1 Strobe line<br>Positive edge latched | 8 bits command<br>1 Strobe line<br>Positive edge latched          | 10 bits optional<br>Free-run optional<br>Other options available:contact factory |
| Logic Levels                           | TTL/HMOS   | TTL/HMOS  |  |
| DC Supply                              | +/-5 VDC +/-5%   | +/-5 VDC +/-5%  | +5V @ +275 mA; -5V @ -50 mA  |
| RF Connectors                          | SMA(F)   | SMA(F)  |  |
| Control/DC Connector                   | Micro-D 21 Pin   | Micro-D 21 Pin  |  |
| Mechanical                             | Refer to O/L   | Refer to O/L  |  |

Note: Mean Attenuation = Average of maximum and minimum values over the frequency range at constant command.

## GT-0618-32 ATTENUATION RESPONSE OVER FREQUENCY



## GT-0618-64 ATTENUATION RESPONSE OVER FREQUENCY

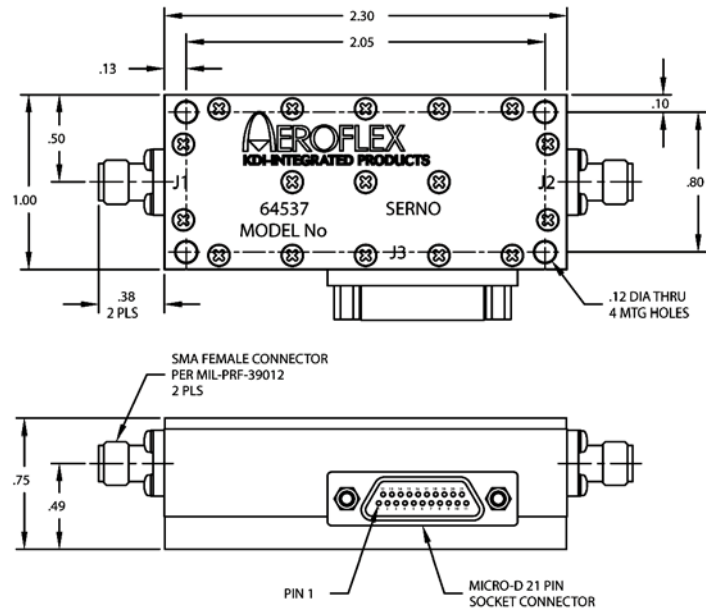


## CONNECTOR WIRING CHART

| J3 | FUNCTION | J3 | FUNCTION           |
|----|----------|----|--------------------|
| 1  | RETURN   | 12 | b9 (10 bit option) |
| 2  | STROBE   | 13 | N/C                |
| 3  | b0       | 14 | N/C                |
| 4  | b1       | 15 | +5 Volts           |
| 5  | b2       | 16 | RETURN             |
| 6  | b3       | 17 | -5 Volts           |
| 7  | b4       | 18 | N/C                |
| 8  | b5       | 19 | RETURN             |
| 9  | b6       | 20 | N/C                |
| 10 | b7       | 21 | N/C                |
| 11 | N/C      |    |                    |

Note: PINS N/C denote no connection in application.

## GT OUTLINE



## CONTROL LOGIC TABLE

| Bit Size | 0.25 | 0.5 | 1 | 2 | 4 | 8 | 16 | 32 |                 |
|----------|------|-----|---|---|---|---|----|----|-----------------|
| Logic    | 0    | 0   | 0 | 0 | 0 | 0 | 0  | 0  | Ref. (Ins Loss) |
| Logic    | 0    | 0   | 0 | 1 | 0 | 1 | 0  | 0  | 10 dB           |
| Logic    | 0    | 0   | 0 | 0 | 1 | 0 | 1  | 0  | 20 dB           |
| Logic    | 0    | 0   | 0 | 1 | 1 | 1 | 1  | 0  | 30 dB           |
| Logic    | 0    | 0   | 0 | 0 | 0 | 1 | 0  | 1  | 40 dB           |
| Logic    | 0    | 0   | 0 | 1 | 0 | 0 | 1  | 1  | 50 dB           |
| Logic    | 0    | 0   | 0 | 0 | 1 | 1 | 1  | 1  | 60 dB           |
| Logic    | 1    | 1   | 1 | 1 | 1 | 1 | 1  | 1  | 63.75 dB        |

Note: Least Sig Bit for 32 dB unit is .125 dB. Most Sig Bit is 16 dB.

## Ordering Key:

GT-0618 - Attenuation Range(dB) - #Bits - Trigger  
 Range= 32 or 64  
 #Bits= 8 Standard (leave blank) or 10  
 Trigger= Strobe (leave blank) or F (Free-run)

ex: GT-0618 -64      6-18 GHz, 64 dB Range, 8 bits, Strobed  
 GT-0618 -64-F    6-18 GHz, 64 dB Range, 8 bits, Free-run (No Strobe)  
 GT-0618 -32-10-F 6-18 GHz, 32 dB Range, 10 bits, Free-run (No Strobe)

## Application Note:

Refer to AN-GT-0618 For Application Information

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