

GaAs Digital Attenuator 31 dB, 5 - Bit, DC - 2 GHz

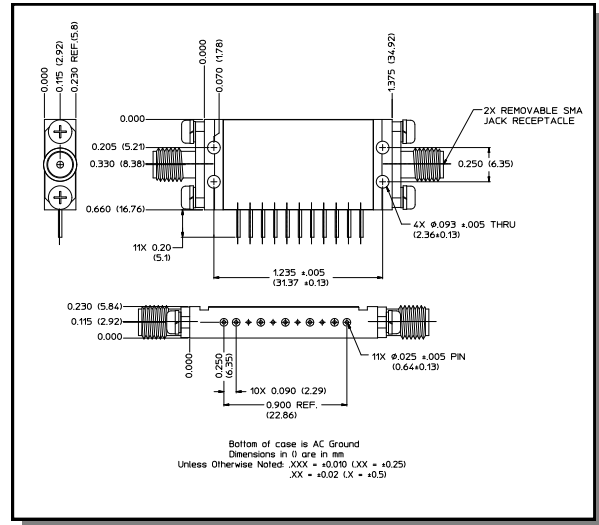
Rev. V4

Features

- n Attenuation 1 dB Steps to 31 dB
- n TTL Control Interface
- n Hermetic Connectorized Housing

Description

C-46



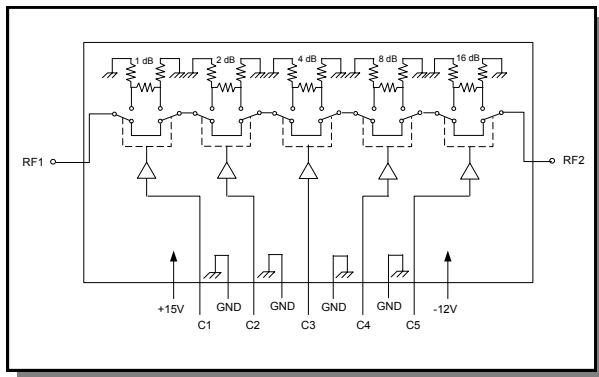
Electrical Specifications ¹: T_A = -55°C to +85°C

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
|-------------------------------------|--|---|-------|--|------------|----------------------------------|
| Nominal Attenuation ² | 1 dB Steps to 31 dB | | | | | |
| Attenuation Accuracy | | DC - 1.0 GHz 1.0 - 2.0 GHz | | ± (0.2 dB +2% of Atten Setting in dB) dB ± (0.2 dB +2% of Atten Setting in dB) dB | | |
| VSWR | | DC - .025 GHz .025 - 0.5 GHz 0.2 - 2.0 GHz 0.5 - 1.0 GHz | Ratio | — | — | 2.2:1 1.8:1 1.5:1 1.4:1 |
| Reference Insertion Loss | | DC - 0.5 GHz 0.5 - 1.0 GHz 1.0 - 2.0 GHz | dB | — | — | 5.5 6.0 6.5 |
| Impedance | — | — | Ohms | — | 50 | — |
| T _{on} T _{off} | 50% CTL to 90% RF 50% CTL to 10% RF | — | ns | — | 160 | — |
| Trise Tfall | 10% RF to 90% RF 90% RF to 10% RF | — | ns | — | 15 3 | — |
| Transients | Unfiltered | — | mV | — | 130 | — |
| 1 dB Compression | Input Power | 0.5 - 2.0 GHz 0.05 GHz | dBm | — | 28 | — |
| IP2 | Two-Tone Input Power up to +5 dBm | 0.5 - 2.0 GHz 0.05 GHz | dBm | — | +55 +45 | — |
| IP3 | Two-Tone Input Power up to +5 dBm | 0.5 - 2.0 GHz 0.05 GHz | dBm | — | +47 +28 | — |

Electrical Specifications ¹: T_A = -55°C to +85°C

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
|--------------|-----------------|-----------|-------|-----|-----|-----|
| Bias Power | +15 VDC | — | mA | — | — | 5 |
| | -12 VDC | — | mA | — | — | 3 |
| Vin Low (0) | 0.0 to 0.8V | — | μA | — | — | 1 |
| Vin High (1) | 2.4 to 5.0V | — | μA | — | — | 1 |

Functional Schematic (Top View)



Truth Table

| Control Input | | | | | Attenuation Setting |
|-----------------|----|----|----|----|----------------------|
| C1 | C2 | C3 | C4 | C5 | |
| 0 | 0 | 0 | 0 | 0 | Reference |
| 1 | 0 | 0 | 0 | 0 | 1 dB |
| 0 | 1 | 0 | 0 | 0 | 2 dB |
| 0 | 0 | 1 | 0 | 0 | 4 dB |
| 0 | 0 | 0 | 1 | 0 | 8 dB |
| 0 | 0 | 0 | 0 | 1 | 16 dB |
| Any Combination | | | | | Sum of Bits Selected |

Absolute Maximum Ratings ⁴

| Parameter | Absolute Maximum |
|--|---|
| Max Input Power 0.05 GHz 0.5 - 2.0 GHz | +27 dBm +32 dBm |
| Bias Voltage +15V Supply (V+) -12V Supply (V-) | -0.7V to +18V -15V to +0.7V |
| Control Voltage | (V-) -2V to (V+) +2V (or 30 mA, whichever comes first) |
| Operating Temperature | -55°C to +125°C |
| Storage Temperature | -65°C to +150°C |

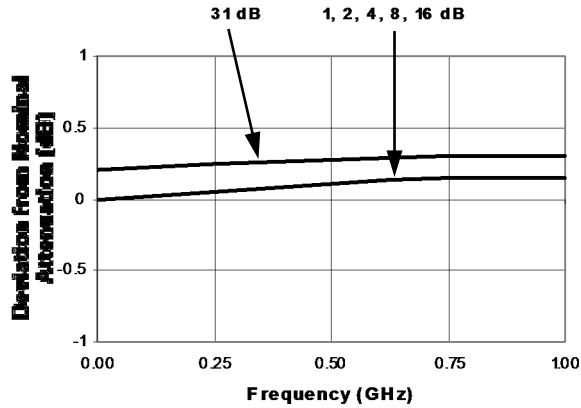
"1" = Logic High (TTL)

"0" = Logic Low (TTL)

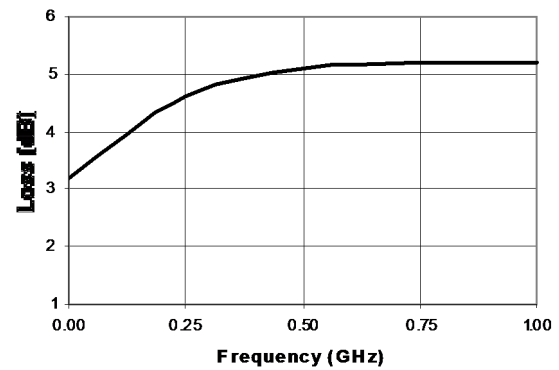
4. Operation of this device above any one of these parameters may cause permanent damage.

Typical Performance Curves

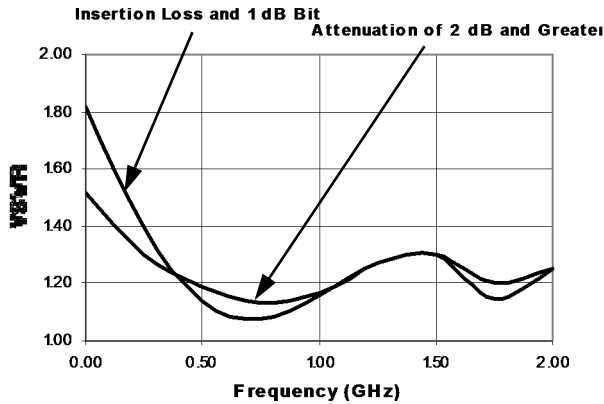
Attenuation Flatness vs. Frequency



Ref. Insertion Loss vs. Frequency



VSWR vs. Frequency



Ordering Information

| Part Number | Package |
|-------------|---------|
| AT-357 SMA | C-46 |

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