

# GaAs 30 dB IC Voltage Variable Dual Control Attenuator DC–6 GHz



AT006N3-01, AT006N3-10

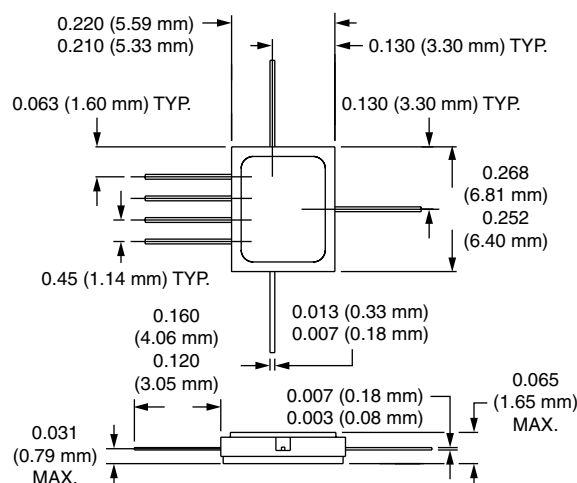
## Features

- Dual Control Voltages
- Low Insertion Loss
- 7 Lead Hermetic Package
- Capable of Meeting MIL-STD Requirements<sup>5</sup>

## Description

The AT006N3-01 is a GaAs IC FET non-reflective bridged “T” attenuator that provides over 30 dB of “matched” attenuation. This device has two independent bias controls which can be adjusted to obtain the desired attenuation under matched conditions. The AT006N3-10 is the gullwing version of this device for surface mount applications.

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## Electrical Specifications at 25°C

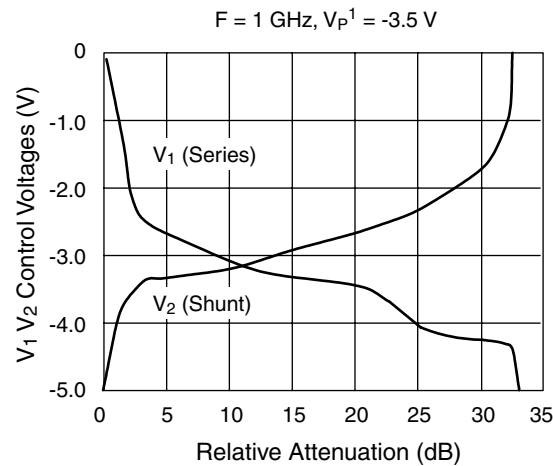
| Parameter <sup>1</sup>      | Frequency <sup>4</sup> | Min. | Typ.   | Max.  | Unit |
|-----------------------------|------------------------|------|--------|-------|------|
| Insertion Loss <sup>2</sup> | DC–1.0 GHz             |      | 0.8    | 1.0   | dB   |
|                             | DC–2.0 GHz             |      | 1.0    | 1.2   | dB   |
|                             | DC–4.0 GHz             |      | 1.2    | 1.4   | dB   |
|                             | DC–6.0 GHz             |      | 1.5    | 1.7   | dB   |
| Attenuation Range           | DC–1.0 GHz             | 30   | 35     |       | dB   |
|                             | DC–2.0 GHz             | 29   | 33     |       | dB   |
|                             | DC–4.0 GHz             | 26   | 30     |       | dB   |
|                             | DC–6.0 GHz             | 25   | 28     |       | dB   |
| VSWR (I/O)                  | DC–2.0 GHz             |      | 1.25:1 | 1.3:1 |      |
|                             | DC–4.0 GHz             |      | 1.40:1 | 1.5:1 |      |
|                             | DC–6.0 GHz             |      | 1.50:1 | 1.6:1 |      |

## Operating Characteristics at 25°C

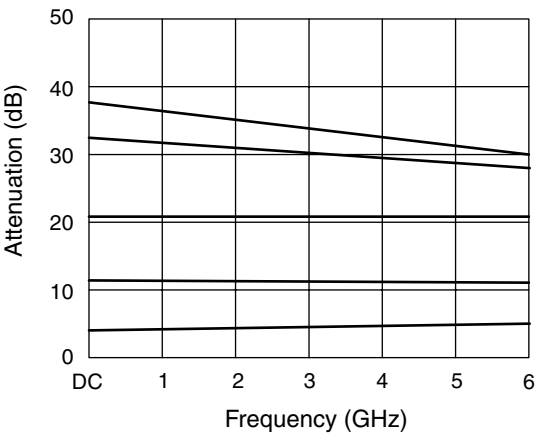
| Parameter                        | Condition                                                                            | Frequency             | Min. | Typ.    | Max. | Unit       |
|----------------------------------|--------------------------------------------------------------------------------------|-----------------------|------|---------|------|------------|
| Switching Characteristics        | Rise, Fall (10/90% or 90/10% RF)                                                     |                       |      | 7       |      | ns         |
|                                  | On, Off (50% CTL to 90/10% RF)                                                       |                       |      | 10      |      | ns         |
|                                  | Video Feedthru <sup>3</sup>                                                          |                       |      | 20      |      | mV         |
| Input Power for 1 dB Compression | For All Attenuation Levels                                                           | 0.5–6 GHz<br>0.05 GHz |      | 0<br>-3 |      | dBm<br>dBm |
| Control Voltages                 | V <sub>Low</sub> = 0 to -0.2 V @ 20 µA Max.<br>V <sub>High</sub> = -5 V @ 50 µA Max. |                       |      |         |      |            |

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.
4. DC = 300 kHz.
5. See Quality/Reliability section.

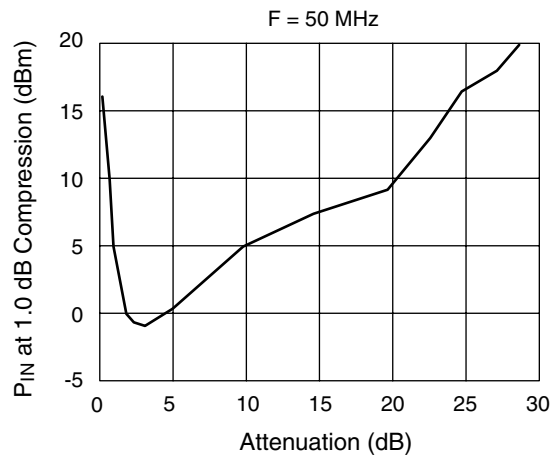
Typical Transfer Curve



Relative Attenuation vs. Control Voltages

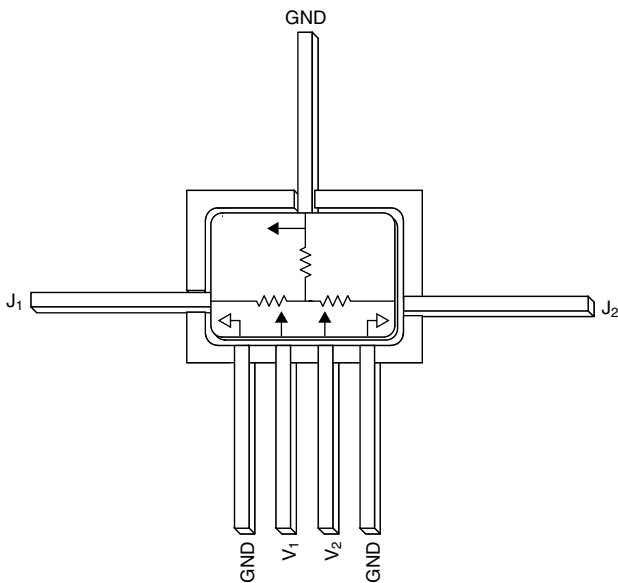


Attenuation (By State) vs. Frequency



Attenuation vs. 1.0 dB Compression Point

Pin Out



Absolute Maximum Ratings

| Characteristic                       | Value                            |
|--------------------------------------|----------------------------------|
| RF Input Power (RF In)               | 10 mW > 500 MHz<br>4 mW @ 50 MHz |
| Control Voltage ( $V_C$ )            | +0.2 V, -10 V                    |
| Operating Temperature ( $T_{OP}$ )   | -55°C to +125°C                  |
| Storage Temperature ( $T_{ST}$ )     | -65°C to +150°C                  |
| Thermal Resistance ( $\Theta_{JC}$ ) | 25°C/W                           |

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