

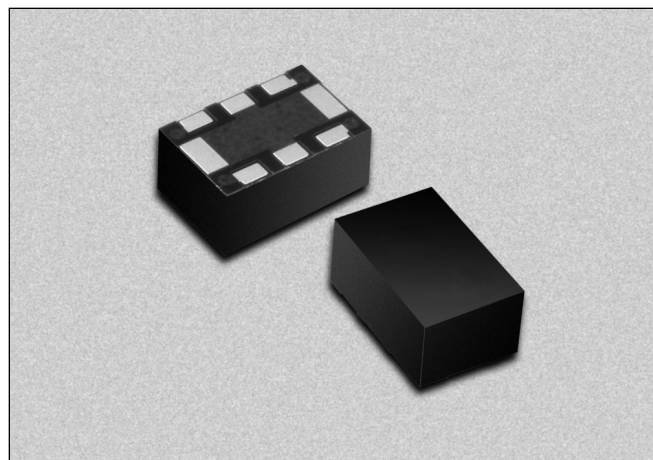
HIP3™ Variable Attenuator for DCS and PCS Base Stations



AV132-315

Features

- 23 dB Attenuation Range
- 1.5 dB Insertion Loss, 1.5 SWR
- 0–12 V Control Voltage
- 43 dBm IP3
- Small Footprint LGA Package
- Designed for DCS/PCS Base Station Applications



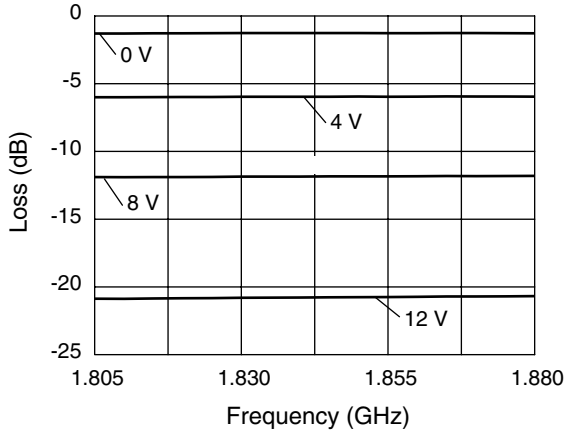
Description

The AV132-315 is a voltage controlled variable attenuator from Alpha's series of HIP3™ components. It is specifically designed and specified for use as a wide dynamic range low distortion attenuator for DCS and PCS base station applications centered at 1837.5 MHz and 1960 MHz. The AV132-315 employs a monolithic quadrature hybrid and a pair of silicon PIN diodes to achieve the specified low distortion performance. It operates from 0–12 V with 1.6 mA typical control current at maximum attenuation. The AV132-315 is packaged in a small outline LGA (Land Grid Array) surface mount package with the internal elements affixed to an organic BT substrate.

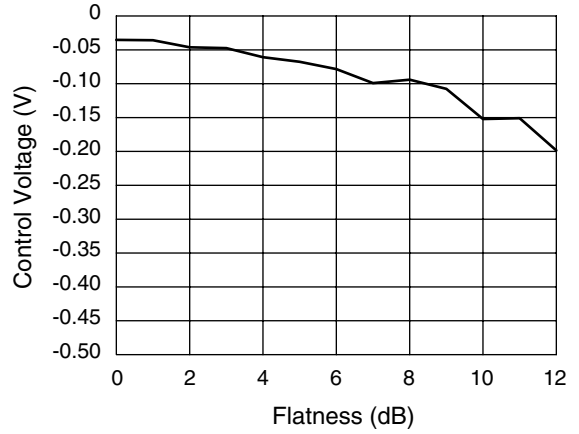
Electrical Specifications at 25°C

| Parameter | Condition | Min. | Typ. | Max. | Unit |
|---------------------------------|----------------------------|------|------|------|------|
| DCS Frequency Range (BW) | | 1805 | | 1870 | MHz |
| PCS Frequency Range (BW) | $F_O \pm 30.0$ MHz | 1930 | | 1990 | MHz |
| Control Voltage (C_V) Range | | 0 | | 12 | V |
| Insertion Loss in BW | $C_V = 0$ V | | | 1.5 | dB |
| Attenuation Range | At F_O , $C_V = 12$ V | 23 | | | dB |
| VSWR in BW | | | | 1.5 | |
| IP3 | 1900/1905 MHz, $C_V = 0$ V | 43 | | | dBm |
| IM3 | 8 dBm | | | -70 | dBc |

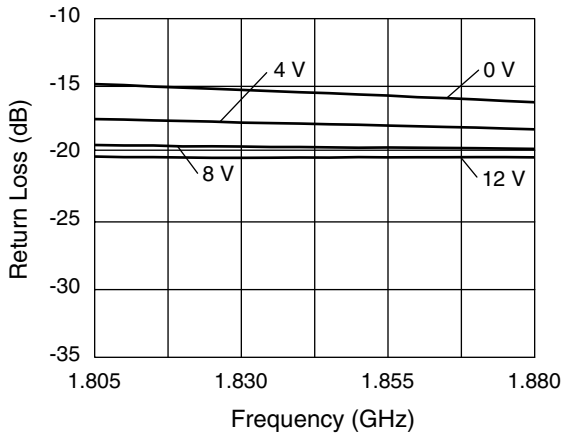
Typical Performance Data



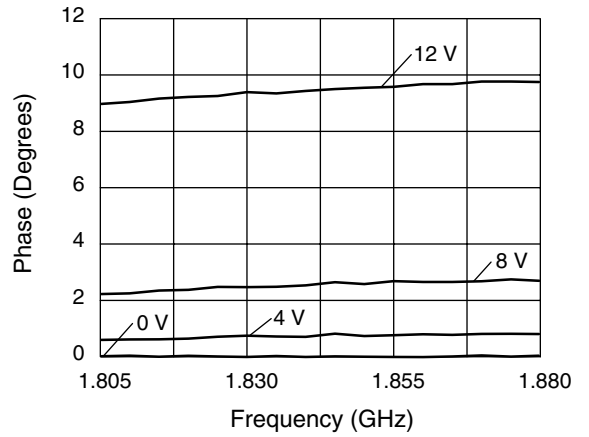
Insertion Loss vs. Frequency and Control Voltage — DCS Band



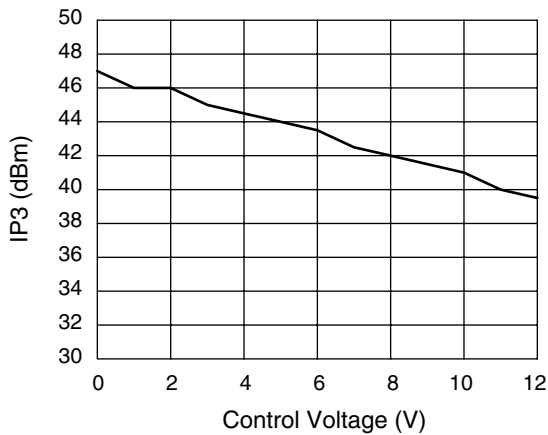
Insertion Loss Flatness vs. Control Voltage — DCS Band



Input/Output Return Loss vs. Frequency and Control Voltage — DCS Band

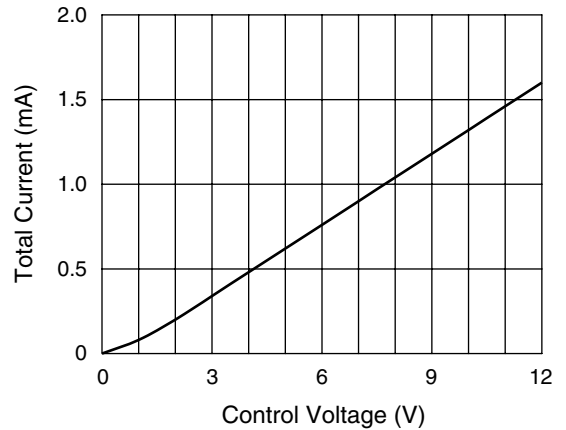


Phase vs. Frequency and Control Voltage — DCS Band

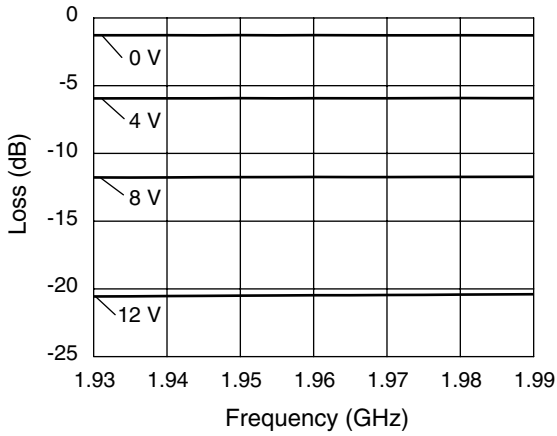


IP3 vs. Control Voltage

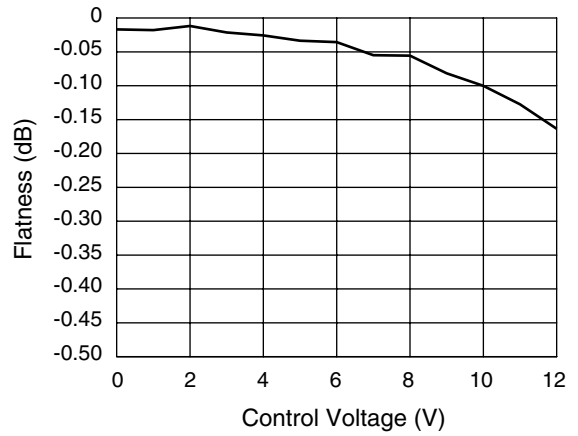
RF₁ = 1.900 GHz, RF₂ = 1.905 GHz @ 8 dBm



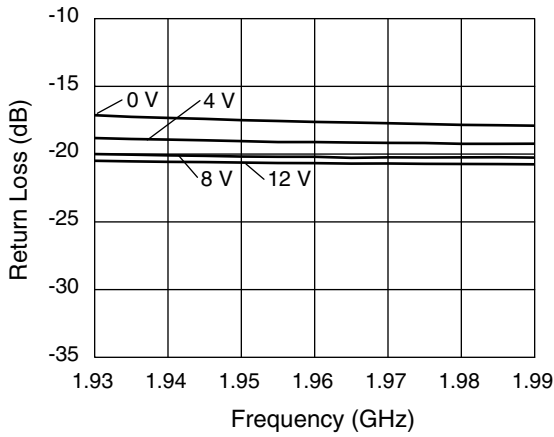
Total Current vs. Control Voltage



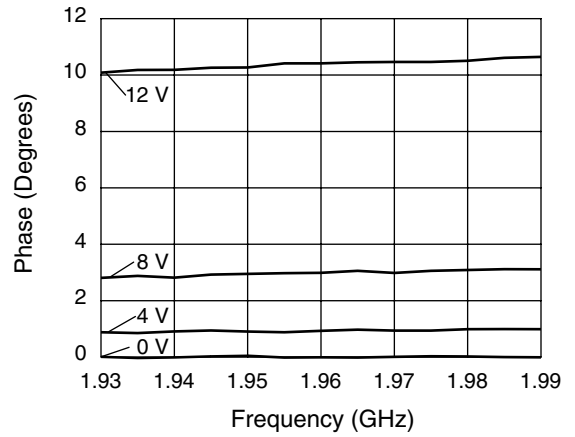
Insertion Loss vs. Frequency and Control Voltage — PCS Band



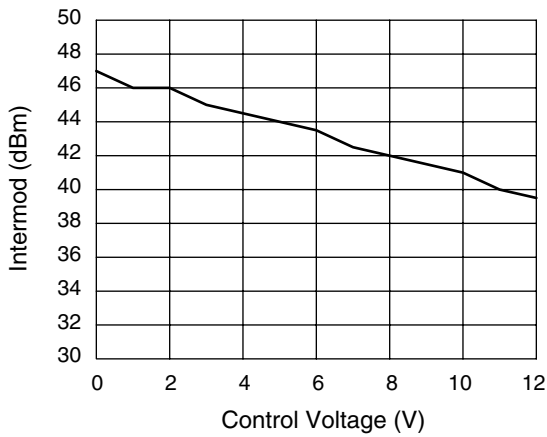
Insertion Loss Flatness vs. Control Voltage — PCS Band



Input/Output Return Loss vs. Frequency and Control Voltage — PCS Band

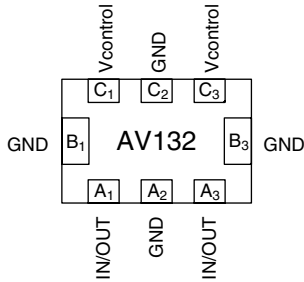


Phase vs. Frequency and Control Voltage — PCS Band



**3rd Order Intermod vs. Control Voltage
RF₁ = 1.900 GHz, RF₂ = 1.905 GHz @ 8 dBm**

Pin Out (Bottom View)



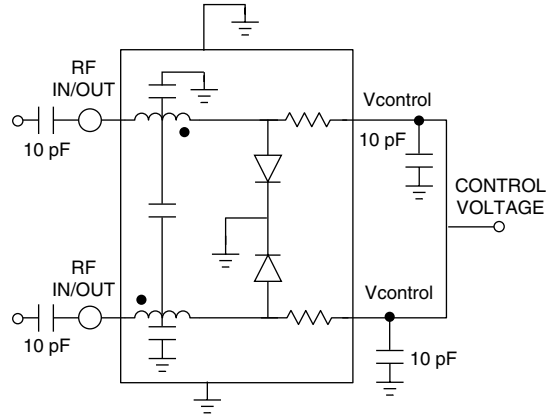
| Terminal No. | Terminal Name |
|----------------|---------------|
| A ₁ | IN/OUT |
| A ₂ | GND |
| A ₃ | IN/OUT |
| B ₁ | GND |
| B ₃ | GND |
| C ₁ | Vcontrol |
| C ₂ | GND |
| C ₃ | Vcontrol |

Absolute Maximum Ratings

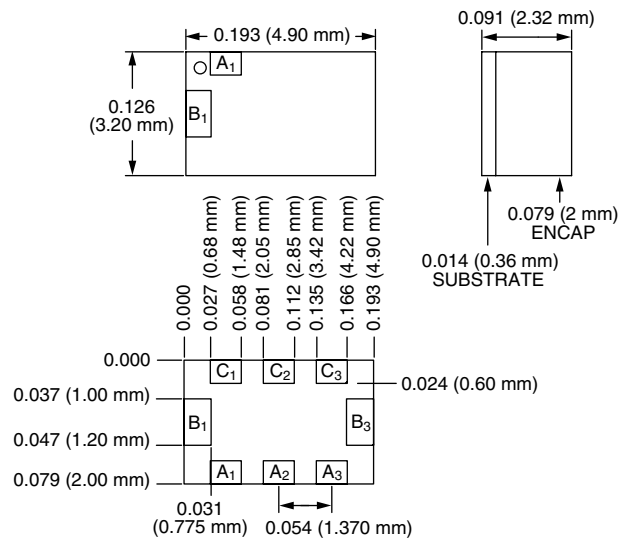
| Characteristic | Value |
|-------------------------------|----------------------------------|
| RF Input Power | 0.5 W CW, 4 W @ 12.5% Duty Cycle |
| Control Voltage | 15 V |
| Control Current | 50 mA Each Diode |
| Operating Temperature | -40 to +85°C |
| Storage Temperature | -40 to +85°C |
| Maximum Reverse Diode Voltage | -10 V |
| Electrostatic Discharge | +125 V |

Note: Operating this device above any of these parameters may cause irreversible damage.

Connection Diagram



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