
[Digital Driver Unit with Linearization for VCVA](#)
Analogue driver unit for VCVA also available



- Attenuation range up to 100 dB
- Low insertion losses
- High isolation
- Low switching time
- Fullband operation
- Low cost

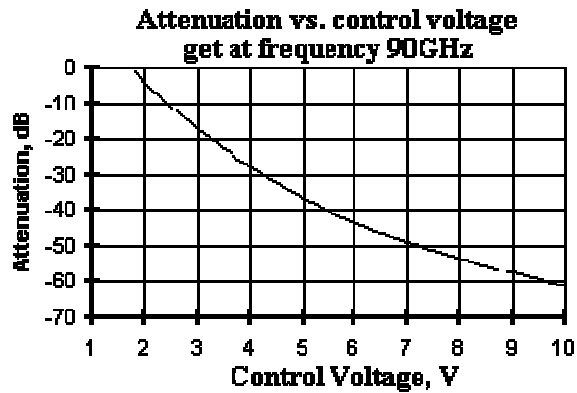
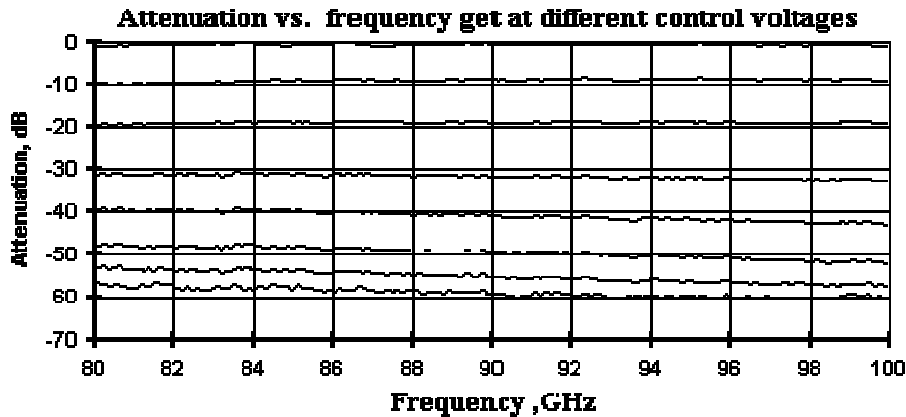
Applications

- Low cost alternative for p-i-n modulators and polarization attenuators
- AM of microwave signals.
- Power control
- Lock-in detection systems

Description

ELVA-1 Voltage-Controlled Variable Attenuators VCVA series is built on the base of PIN diodes as an active element. Modern technology allows to combine advantages of different types of attenuators and modulators in one device. Fullband operation, accuracy, typical 60 dB attenuation range and small insertion losses are comparable with specification for polarization attenuators. On the other hand a small switching time allows to use the device instead Faraday rotation ferrite modulators or ON/OFF type p-i-n modulators. The attenuators are designed as a gold or silver covered waveguide section and have a high

reliability. The basic unit is a current controlled attenuator. We propose also an external driver which provides a voltage-current conversion and a switching time up to the 25 μ sec. We supply each device with personal calibration characteristics. Typical characteristics for the VCVA-10 model are shown on two plots below: attenuation versus control voltage with fixed frequency and attenuation versus frequency with different control voltages.



Attenuation \Current dependencies for attenuators we offer from STOCK

| | | | | | |
|----------------------|----------------|----------------|----------------|----------------|----------------------|
| Model Number | VCVA-10 | VCVA-12 | VCVA-15 | VCVA-28 | Model Number |
| Frequency,GHz | 75-110 | 60-90 | 50-75 | 26,5-40 | Frequency,GHz |

| | | | | | |
|-----------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------------|
| Frequency Band | W | E | V | Ka | Frequency Band |
| Outline Drawing > | vcva10 | vcva12 | vcva15 | vcva28 | < Outline Drawing |

Electrical Specification

| MODEL NUMBER | VCVA-42 | VCVA-28 | VCVA-22 | VCVA-19 | VCVA-15 | VCVA-12 | VCVA-10 | VCVA-08 | VCVA-06 |
|--------------------------------------|---------------------|----------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|---------------------|
| Frequency Band and Range, GHz | K 18-26.5 | Ka 26.5-40 | Q 33-50 | U 40-60 | V 50-75 | E 60-90 | W 75-110 | F 90-140 | D 110-170 |

Wideband Version

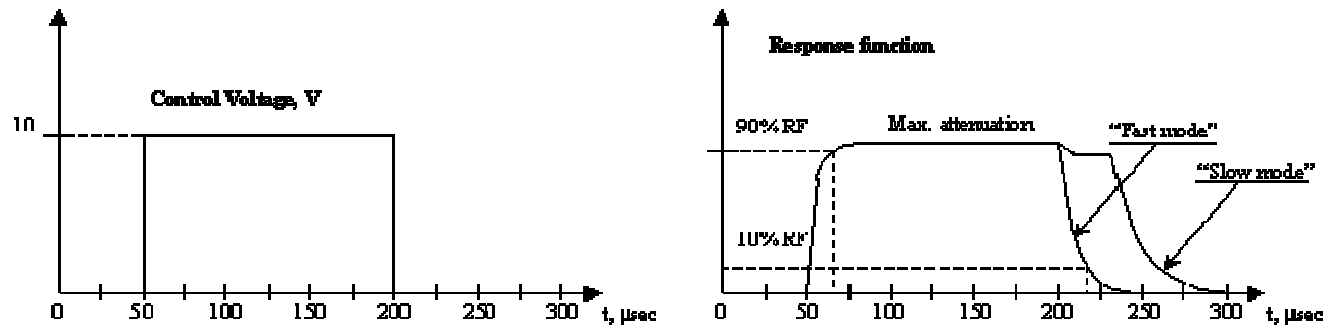
| | | | | | | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Bandwidth, % | 20 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Insertion Loss, dB (max) | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 |
| Isolation, dB (min) * | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Power Handling (peak), W (max) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Switching Time, μ sec *** | 100 | 50 | 50 | 50 | 50 | 50 | 25 | 25 | 25 |
| DC Bias Input, V/mA | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/150 -15/40** | +15/150 -15/40** | +15/150 -15/40** |
| Control Voltage, V | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 |

Fullband Version

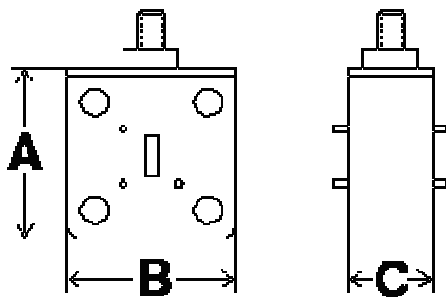
| | | | | | | | | | |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Bandwidth, % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Insertion Loss, dB (max) | 0.7 | 1.6 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 |
| Isolation, dB (min) * | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 45 |
| Power Handling (peak), W (max) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Switching Time, μ sec *** | 100 | 50 | 50 | 50 | 50 | 50 | 25 | 25 | 25 |
| DC Bias Input, V/mA | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/100 -15/40** | +15/150 -15/40** | +15/150 -15/40** | +15/150 -15/40** |
| Control Voltage, V | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 |

*The models with 60 dB Isolation are available upon request

**Negative DC Power Source is needed only in fast switching mode (see below)
 ***Guaranteed for Rise Time 0-90% RF and Fall Time 100-10% RF. Model with twice lower switching time are available upon request for the 50-170GHz frequency range.



Mechanical Specification



| MODEL NUMBER | VCVA-42 | VCVA-28 | VCVA-22 | VCVA-19 | VCVA-15 | VCVA-12 | VCVA-10 | VCVA-08 | VCVA-06 |
|-------------------------------|---------|---------|---------|---------|----------|---------|---------|---------|---------|
| A, mm | 35 | 40 | 20 | 20 | 37 | 37 | 30 | 18 | 18 |
| B, mm | 35 | 20 | 20 | 20 | 20 | 20 | 18 | 18 | 18 |
| C, mm | 40 | 11 | 20 | 20 | 15 | 10 | 10 | 8 | 8 |
| Weight, G | 60 | 50 | 40 | 40 | 30 | 25 | 25 | 20 | 20 |
| External Driver, mm (typical) | | | | | 70x30x70 | | | | |

Optionally each device may be supplied with a controller, that provides square- wave pulse or sinusoidal modulation with manually adjusted frequency and depth of modulation. Sinusoidal 10 dB modulation is provided with frequencies up to 10 kHz.

A card of Digital Analog Converter for PC microcomputer with software for the precision control of attenuator is available optionally. It allows to control the attenuation with 0.05dB step.

Digital Driver with serial RS-485 interface is available: [model DVC-RS-485/12](#)