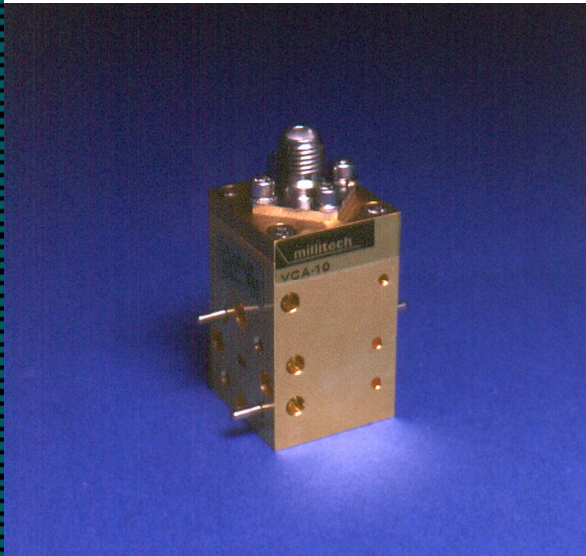


SERIES VCA
VOLTAGE-CONTROLLED VARIABLE ATTENUATORS

FEATURES:

- High attenuation range
- Broadband operation
- Low insertion loss

APPLICATIONS:

- Leveling loops
- Receiver protection
- Automated test equipment

DESCRIPTION

Millitech series VCA voltage-controlled variable attenuators cover the frequency range from 18 to 110 GHz. Full waveguide bandwidth performance is available up to 75 GHz (WR-15) with broadband operation beyond 75 GHz. Standard models offer attenuation levels from 30 dB at frequencies below 50 GHz, to 20 dB above 50 GHz.

If required, a higher attenuation range can be obtained at the expense of increased insertion loss. Millitech provides drivers for controlling the level of attenuation integrally to the attenuator. If a PIN switch is better suited for the application, Millitech offers a complete line of SPST, SPDT, and multi-throw PIN switches.

ELECTRICAL SPECIFICATIONS

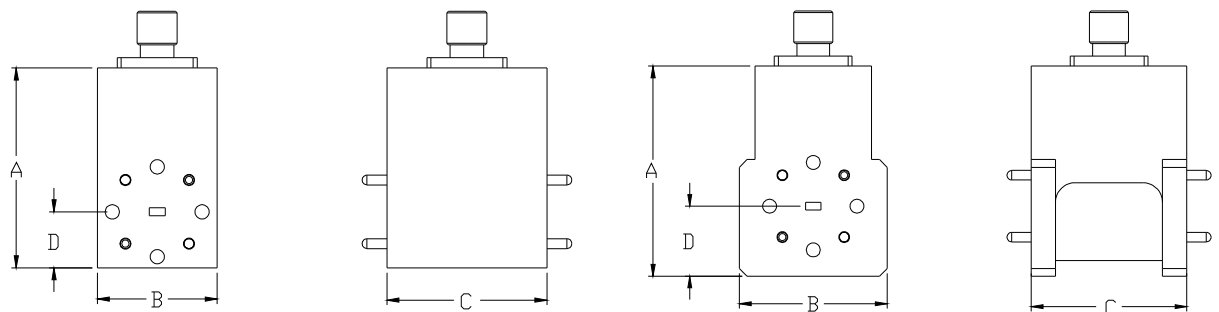
| Model Number | VCA-42 | VCA-28 | VCA-22 | VCA-19 | VCA-15 | VCA-12 | VCA-10 |
|---|--------------|---------------|------------|------------|------------|------------|-------------|
| Frequency band and range (GHz) | K 18-26.5 | Ka 26.5-40 | Q 33-50 | U 40-60 | V 50-75 | E 60-90 | W 75-110 |
| Standard Attenuation Version with Driver | | | | | | | |
| Bandwidth (GHz) | 6 | 10 | 10 | 10 | 10 | 10 | 10 |
| Insertion loss (dB) (typ) at 0V* | 1.4 | 1.7 | 1.7 | 2.0 | 2.2 | 2.2 | 2.2 |
| Minimum attenuation at +10V (dB) | 30 | 30 | 30 | 25 | 20 | 20 | 20 |
| VSWR (max)* | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 |
| Power handling (CW/peak, W) (max) | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 |
| DC bias input (V/mA) | ±12/20 | ±12/20 | ±12/20 | ±12/20 | ±12/20 | ±12/20 | ±12/20 |
| Control voltage (V) | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 |
| High Attenuation Version with Driver | | | | | | | |
| Bandwidth (GHz) (min) | 6 | 10 | 10 | 10 | 10 | 10 | 10 |
| Insertion loss (dB) (typ) at 0V* | 2.2 | 2.5 | 2.5 | 2.8 | 3.0 | 3.0 | 3.0 |
| Minimum attenuation at +10V (dB) | 40 | 40 | 40 | 35 | 30 | 30 | 25 |
| VSWR (max)* | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 | 2:1 |
| Power handling (CW/peak) (max) | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 | 0.5/10 |
| DC bias input (V/mA) | ±12/40 | ±12/40 | ±12/40 | ±12/40 | ±12/40 | ±12/40 | ±12/40 |
| Control voltage (V) | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 | 0-10 |

*Measured in PASS state only.

OUTLINE DRAWINGS*

Series VCA-42/28/15/12/10/08

Series VCA-22/19



*The outlines shown may not reflect the latest information. Please contact Millitech for current outline drawings.

MECHANICAL SPECIFICATIONS

| Model Number | VCA-42 | VCA-28 | VCA-22 | VCA-19 | VCA-15 | VCA-12 | VCA-10 |
|-------------------|------------|------------|------------|------------|------------|------------|------------|
| A (in/mm) | 1.40/35.56 | 1.39/35.31 | 1.70/43.18 | 1.70/43.18 | 1.25/31.75 | 1.25/31.75 | 1.25/31.75 |
| B (in/mm) | 0.88/22.4 | 0.75/19.1 | 1.13/28.7 | 1.13/28.7 | 0.75/19.1 | 0.75/19.1 | 0.75/19.1 |
| C (in/mm) | 1.90/48.26 | 1.38/35.05 | 1.21/30.73 | 1.20/30.48 | 1.00/25.4 | 1.00/25.4 | 0.75/19.1 |
| D (in/mm) | 0.58/14.6 | 0.38/9.5 | 0.56/14.3 | 0.56/14.3 | 0.38/9.5 | 0.38/9.5 | 0.38/9.5 |
| Flange MIL.F-3922 | /54-001* | /54-003* | /67B-006 | /67B-007 | /67B-008 | /67B-009 | /67B-010 |

* With #4-40 threaded holes.

HOW TO ORDER

| Specify Model Number VCA-XX-ABCDØ |
|---|
| XX = Waveguide Band WR – number (42, 28, 22, 19, 15, 12, or 10) |
| A = Flange Type R – round (WR-22 through WR-10 only) S – square (WR-42 and WR-28 only) |
| B = Driver I – internal driver (standard) W – without driver |
| C = Bandwidth N – please specify, see Electrical Specifications table for maximum bandwidth |
| D = Attenuation S – standard attenuation version H – high attenuation version |

EXAMPLE:

To Order: a narrowband VCA in WR-28 with a square flange, internal driver, standard attenuation, with center frequency 38 GHz and bandwidth ± 2.5 GHz

Specify: VCA-28-SINSØ, frequency range 38 GHz ± 2.5 GHz