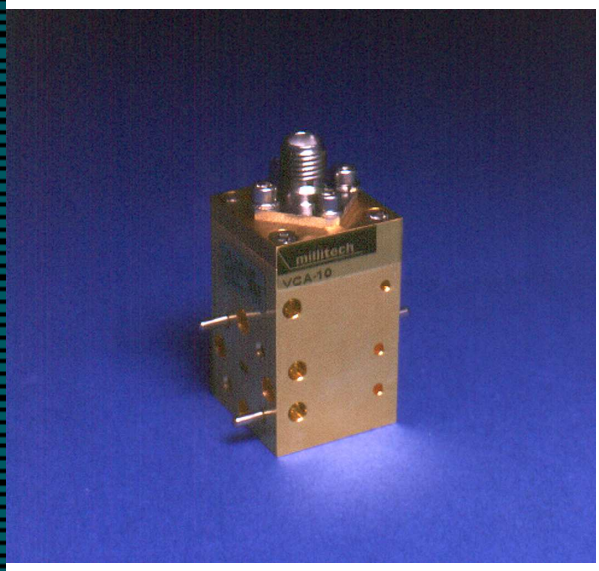
millitech®

Millimeter-Wave Technology & Solutions

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.

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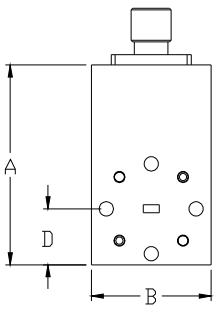
ELECTRICAL SPECIFICATIONS

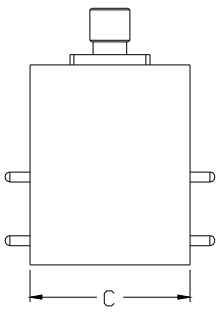
Model Number	VCA-42	VCA-28	VCA-22	VCA-19	VCA-15	VCA-12	VCA-10
Frequency band and range (GHz)	K 18-26.5	Ka 26.5-40	Q 33-50	U 40-60	V 50-75	E 60-90	W 75-100
Standard Attenuation Version with Driver							
Bandwidth (GHz)	6	10	10	10	10	10	10
Insertion loss (dB) (typ) at 0V*	1.4	1.7	1.7	2.0	2.2	2.2	2.2
Minimum 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.

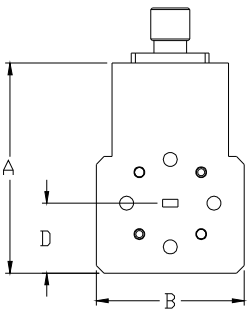
OUTLINE DRAWINGS*

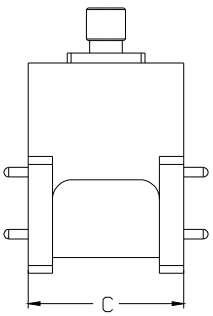
Series VCA-42/28/15/12/10/08





Series VCA-22/19





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

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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

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