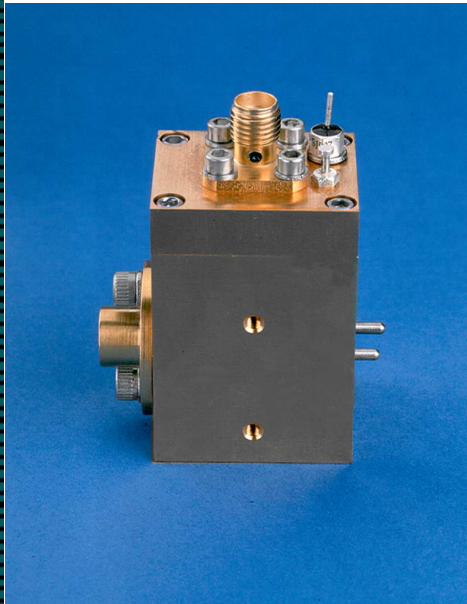


SERIES GDV

## VOLTAGE-CONTROLLED GUNN OSCILLATORS



### FEATURES:

- High output power available
- Excellent linearity

### APPLICATIONS:

- Test and instrumentation sources
- FMCW radar/transceivers
- Local oscillators with AFC or phase-locked operation
- Drivers for wideband amplifiers, multipliers, frequency extenders

### DESCRIPTION

Millitech series GDV voltage-controlled Gunn oscillators provide optimal electronic tuning characteristics by coupling a Gunn device to a tuning varactor. The combination of high power and wide tuning bandwidths are available to meet a broad range of applications. They provide electrical tuning up to  $\pm 500$  MHz.

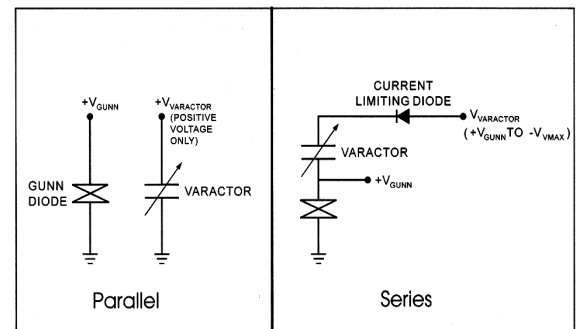
Series GDV oscillators are suitable as local oscillators or transmitter sources for many system applications. AM and FM noise levels are typically  $-130$  dBc/Hz and  $-100$  dBc/Hz respectively, 1 MHz from  $f_c$ . Linear frequency tuning characteristics can be obtained over a significant bandwidth, making these oscillators highly suitable for FMCW radars and similar applications. These varactor-tuned oscillators also have relatively low frequency drift with temperature. An optional proportionally-controlled heater is available to further improve the frequency stability with changes in ambient temperature.

Custom designs and configurations are available for special applications, including compliance with MIL standards and space qualifications.

Millitech offers two different design configurations for the series GDV voltage-controlled Gunn oscillator. Parallel-configured varactor tuning provides narrow tuning range, nominally  $\frac{1}{2}\%$  and higher power, with independent bias for the Gunn diode and the varactor diode for tuning voltages relative to ground. Integral isolators are required for parallel configuration.

Series-configured varactor tuning provides wide tuning range, nominally  $\pm 2\%$  with slightly lower power than the parallel configuration.

**Figure 1. Gunn Diode Bias Voltage Configurations**



## ELECTRICAL SPECIFICATIONS

Model Number	GDV-28	GDV-22	GDV-19	GDV-15	GDV-12	GDV-10					
Frequency Range (GHz)* <sup>1</sup>	26.5-40	33-40	40-50	40-50	50-60	50-60	60-75	60-75	75-90	75-90	90-100
Typical frequency stability (MHz/°C)	2	2	3	3	4	4	4	4	5	5	5
Typical power stability (dB/°C)	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
Narrow Tuning Version (±100 MHz)* <sup>2</sup>											
Available power (dBm) (min)	23	23	21	21	19	19	18	18	16	16	13
Moderate Tuning Version (±500 MHz)* <sup>2</sup>											
Available power (dBm) (min)	21	21	19	19	17	17	16	16	14	14	12

\*<sup>1</sup> - Center frequency tolerance ±100 unless otherwise specified.

\*<sup>2</sup> - Many combinations of mechanical tuning range and output power are possible. These versions are representative examples. Many requirements beyond these standard ranges can be met. Contact Millitech for more information.

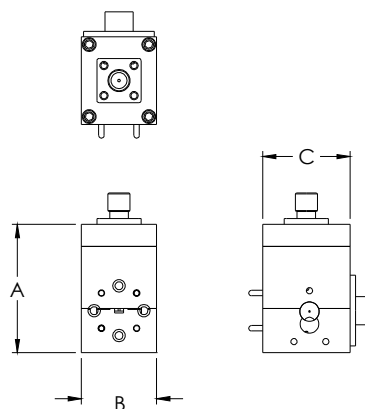
**NOTE: Please contact Millitech for a solution to your specific requirements.**

## MECHANICAL SPECIFICATIONS

Model #	GDV-28	GDV-22	GDV-19	GDV-15	GDV-12	GDV-10
A (in/mm)	1.53/38.9	1.63/41.4	1.53/38.9	1.45/36.8	1.45/36.8	1.45/36.8
B (in/mm)	1.13/28.7	1.13/28.7	1.13/28.7	0.85/21.6	0.85/21.6	0.85/21.6
C (in/mm)	0.75/19.0	0.75/19.0	0.75/19.0	0.99/25.1	0.99/25.1	0.99/25.1
Flange MIL.F-3922	/54-003*	/67B-006	/67B-007	/67B-008	/67B-009	/67B-010

\*With #4-40 threaded holes

## OUTLINE DRAWINGS\*



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

**Specify Model Number (and center frequency)**

**GDV-XX-AABBCD**

**XX** = Waveguide Band  
**WR** – number

**AA** = Total Tuning Range

**Examples:**

- 01** – 100 MHz ( $\pm 50$  MHz)
- 02** – 200 MHz ( $\pm 100$  MHz)
- 10** – 1GHz ( $\pm 500$  MHz)

**BB** = Minimum Power Output

**Examples:**

- 00** – 0 dBm
- 10** – 10 dBm
- 13** – 13 dBm
- 16** – 16 dBm

**C** = Special Options\*

- H** – proportionally-controlled heater (28V standard, 15V optional)
- I** – integral junction isolator
- M** – modulator/regulator
- N** – nonstandard, custom configuration (please specify requirements)

**D** = Regulator Options

- R** – external voltage regulator (standard)
- Ø** – no regulator

**\* Specify all that apply in alphabetical order. If no options desired, specify Ø.**

**Note:** Regulators will be attached unless specified. If no regulator is required, then the warranty would void if Gunn is damaged due to transient voltages.

**EXAMPLE:**

**To Order:** series GDV at 60 GHz in WR-15 with 1 GHz ( $\pm 500$  MHz) tuning, 10 dBm minimum output power with an integral junction isolator and regulator

**Specify:** GDV-15-1Ø10IR, center frequency 60 GHz