MECHANICALLY-TUNED GUNN OSCILLATORS

FEATURES:

- High output power
- Excellent stability
- Low AM and FM noise
- Excellent reliability
- 26 to 100 GHz
- Bias tunable for AFC and phase-locked operation

APPLICATIONS:

- Test and instrumentation sources
- Drivers for multipliers
- Local oscillators for radar, radiometer, and telecommunication transmitters and receivers

DESCRIPTION

Millitech series GDM mechanically-tuned Gunn oscillators are specially designed to provide highly repeatable mechanical tuning characteristics by means of a micrometer drive. High power output can be achieved with minimal power variation over the entire tuning range. The micrometer-driven tuning mechanism allows convenient, reliable, and rapid frequency adjustment. Depending upon tuning requirements, one or two micrometers may be provided. On certain models, recessed screw tuners are provided for frequency tuning.

The standard configuration provides linear regulation for the Gunn diode bias. Option B is available to provide bias voltage tuning of output frequency with only a nominal variation in RF output power. This allows them to be used for both phase-locked or frequency-locked sources. Also, for FMCW radars or similar applications, the bias tuning may provide a convenient means of producing a frequency sweep with good linearity. Extra care must be exercised when this option is used, however, since bias adjustments are being applied directly to the Gunn diode. Series GDM oscillators are available with an optional proportionally-controlled heater to further improve the frequency stability with changes in ambient temperature. The proportional heater option is optimized to achieve better than 1 MHz/°C stability. An optional isolator is strongly recommended to minimize load pulling effects.

For many applications, series GDV varactor-tuned Gunn diode oscillators can be used instead of bias-tuned units. For higher power or amplifier applications, see series AMP power amplifiers.

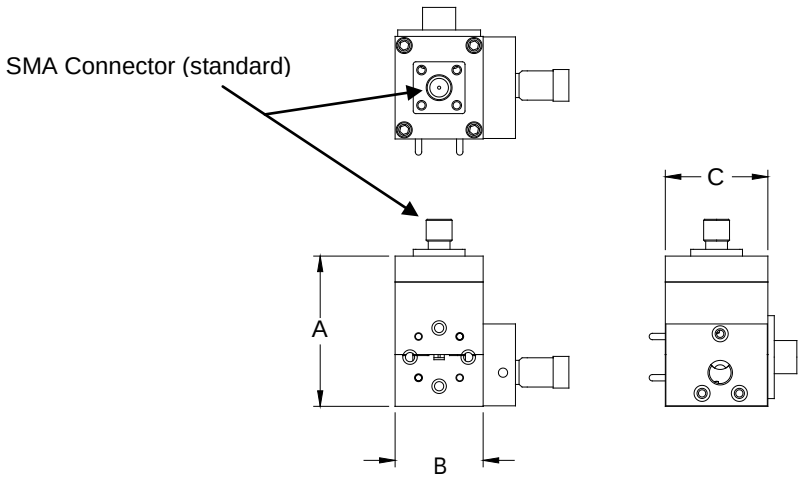
ELECTRICAL SPECIFICATIONS

Model Number	GDM-28	GDM-22	GDM-19		GDM-15		GDM-12		GDM-10	
Frequency range (GHz)[*1]	26.5-40	33-50	40-50	50-60	50-60	60-75	60-75	75-90	75-90	90-100
Typical DC supply (V/mA) [*6]	5/1000	5/1000	5/1000	5/1000	5/1000	5/1000	5/1000	5/1000	5/1000	5/1000
Typical frequency stability (MHz/°C)	2	3	3	3	3	4	4	5	5	5
Typical power stability (dB/°C)	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.04	-0.04	-0.04
Standard Version (±1% tuning or less)[*2, *3]										
Available power (dBm) (min)	25	24	23	18	18	17	17	17	17	16
Maximum Tuning Version [*2]										
Available power (dBm) (min)	20	19	19	17	17	17	16	16	16	10
Tuning bandwidth (GHz)[*5]	4	4	4	4	4	4	4	4	4	4

*1 – Center frequency tolerance ±100 MHz unless otherwise specified.
*2 – 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.
*3 – Power output and tuning range are critically dependent on the actual center frequency in this frequency range.
*4 – Please contact Millitech for details.
*5 – Please contact Millitech for wider tuning options.
*6 – Gunn Voltage is determined at test and can vary from 4.0 to 6.0V. Optional voltage regulator is available.

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

OUTLINE DRAWINGS



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

Model Number	GDM-28	GDM-22	GDM-19	GDM-15	GDM-12	GDM-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*	/6B-006	/6B-007	/6B-008	/6B-009	/6B-010

MECHANICAL SPECIFICATIONS

*With #4-40 threaded holes.

HOW TO ORDER

Specify Model Number (and center frequency) **GDM-XX-AABBCD**
XX = Waveguide Band **WR** – number
AA = Total Tuning Range **Examples:** **00** – fixed frequency (no tuner) **01** – 100 MHz (±50 MHz) **02** – 200 MHz (±100 MHz) **10** – 1 GHz (±500 MHz) **30** – 3 GHz (±1500 MHz)
BB = Minimum Power Output (at room temperature before isolator) **Examples:** **10** – 10 dBm **13** – 13 dBm **15** – 15 dBm **20** – 20 dBm
C = Special Options* **B** – bias tuning (caution: not supplied with a regulator) **H** – proportionally-controlled heater (28V standard, 15V optional) **I** – integral junction isolator, required below 75 GHz (JFD series) **F** – integral Faraday isolator, for >2 GHz only (FBI series) **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, as is the case for options J or B.

EXAMPLE:

To Order: Series GDM at 90 GHz in WR-10 with 1 GHz (±500 MHz) tuning, 103 dBm minimum output power with an integral junction isolator and regulator

Specify: GDM-1Ø-1Ø10IR, center frequency 90 GHz