

DESCRIPTION

The HGM and HGV series Gunn Oscillators cover the range from 7 – 110 GHz. A wide variety of designs provide the user with a solution for most applications. Units are available with mechanical and/or electrical tuning, providing many possible tuning configurations. Superior frequency and power stability are achieved using cavity design and diode selection. Heaters can be provided to achieve greater frequency stability.

GaAs and InP Gunns are used depending on the frequency and performance requirements. Cavity designs are mated with the proper Gunn diode to maximize performance.

Gunn oscillators are used as sources for mixer LO's, to drive multipliers, transmitters, and radars. Options include voltage regulators, heaters, isolators, heat sinks, and micrometer tuners.



Applications

- Transmitters
- Local Oscillators
- Transceivers
- Radar Sources

Features

- Low Phase Noise
- High Frequency Stability
- High Output Power
- Rugged Construction

Mechanically-Tuned Gunn Oscillators							
Waveguide	Center Frequency Range (GHz)	Typical Tuning Range ⁵ (MHz)	Standard Flange	Power Max (mW) (Note 5)	Frequency Stability (MHz/°C) (typ)	Bias Voltage (typ)	Bias Current Amps (typ)
WR – 90 / 112	7.00 – 12.4	200	UG–39/U	140	-0.5	10.5	0.7
WR – 62	12.4 – 18.0	1000	UG–419/U	40	-0.7	8.0	0.5
WR – 42	18.0 – 26.5	1000	UG–595/U	40	-0.8	7.5	0.4
WR – 28/22	26.5 – 40.0	500	UG–599/U	50	-0.9	7.0	0.4
WR – 22/19	40.0 – 45.0	500	UG–599/U	50	-0.9	5.0	0.5
WR – 22/19	45.0 – 50.0	500	UG–599/U	50	-1.0	5.0	0.4
WR – 19/15	50.0 – 55.0	1000	UG–599/U	50	-1.8	4.5	0.8
WR – 19/15	55.0 – 60.0	1000	UG–599/U	50	-2.5	4.0	0.8
WR – 15/12	60.0 – 65.0	1000	UG–385/U	50	-3.0	3.5	0.8
WR – 15/12	65.0 – 70.0	1000	UG–385/U	50	-3.2	3.5	0.8
WR – 12	70.0 – 75.0	1000	UG–387/U	40	-3.5	3.5	0.8
WR – 12/10	75.0 – 80.0	1000	UG–387/U-M	40	-4.0	4.0	0.8
WR – 12/10	80.0 – 85.0	1000	UG–387/U-M	40	-4.0	5.0	0.8
WR – 12/10	85.0 – 90.0	1000	UG–387/U-M	40	-4.5	5.0	0.7
WR – 12/10	90.0 – 95.0	1000	UG–387/U-M	40	-5.0	5.0	0.7
WR – 12/10	95.0 – 100.0	1000	UG–387/U-M	10	-6.0	4.0	0.7
WR – 12/10	100.0 – 110.0	Consult Factory	UG–387/U-M	Consult Factory			

Notes:

1. Specifications @ 35°C T_{CASE}. Specifications subject to change without notice.
2. Bias current is dependent on output power required.
3. Typical capabilities shown, consult factory with exact requirement.
4. For higher output power, refer to specifications for InP Gunn oscillators.
5. High output power and wide tuning range are difficult to achieve in the same unit. Please contact factory to discuss your requirements.



Series HGM & HGV Mechanically-Tuned Gunn Oscillators & VCOs

Revised March 2013

Voltage-Tuned Gunn Oscillators								
Waveguide	Frequency Range (GHz)	Typical Tuning Range ⁵ (MHz)	Typical Output Power ⁵ (mW)	Standard Flange	Varactor Tuning (volts)	Typical Frequency Stability (MHz/°C)	Typical Bias Voltage (volts)	Typical Bias Current ² (amps)
WR – 90 / 112	7.00 – 12.4	60	50	UG–39/U	0 - 25	-0.5	10.5	0.7
WR – 62	12.4 – 18.0	200	150	UG–419/U	0 - 25	-0.7	8.0	0.5
WR – 42	18.0 – 26.5	500	50	UG–595/U	0 - 25	-0.8	7.5	0.4
WR – 28/22	26.5 – 40.0	500	50	UG–599/U	0 - 25	-0.9	7.0	0.4
WR – 22/19	40.0 – 45.0	500	50	UG–599/U	0 - 25	-1.3	5.0	0.5
WR – 22/19	45.0 – 50.0	300	20	UG–599/U	0 - 25	-1.3	5.0	0.4
WR – 19/15	50.0 – 55.0	1000	20	UG–599/U	0 - 25	-1.8	4.5	0.8
WR – 19/15	55.0 – 60.0	1000	40	UG–599/U	0 - 25	-2.5	4.0	0.8
WR – 15/12	60.0 – 65.0	1000	40	UG–385/U	0 - 25	-3.0	3.5	0.8
WR – 15/12	65.0 – 70.0	750	30	UG–385/U	0 - 25	-3.5	3.5	0.8
WR – 12	70.0 – 75.0	500	20	UG–387/U	0 - 25	-4.0	3.5	0.8
WR – 12/10	75.0 – 80.0	500	10	UG–387/U-M	0 - 25	-4.5	4.0	0.8
WR – 12/10	80.0 – 85.0	500	10	UG–387/U-M	0 - 25	-5.0	5.0	0.8
WR – 12/10	85.0 – 90.0	500	10	UG–387/U-M	0 - 25	-6.0	5.0	0.7
WR – 12/10	90.0 – 95.0	500	10	UG–387/U-M	0 - 25	-7.0	5.0	0.7
WR – 12/10	95.0 – 100.0	Consult Factory	Consult Factory	UG–387/U-M	0 - 25	-8.0	4.0	0.7
WR – 12/10	100.0 – 110.0	Consult Factory	Consult Factory	UG–387/U-M	Consult Factory			

Notes:

1. Specifications @ 35°C T_{CASE}. Specifications subject to change without notice.
2. Bias current is dependent on output power required.
3. Typical capabilities shown, consult factory with exact requirement.
4. For higher output power, refer to specifications for InP Gunn VCOs.
5. High output power and wide tuning range are difficult to achieve in the same unit. Please contact factory to discuss your requirements.



Series HGM & HGV Mechanically-Tuned Gunn Oscillators & VCOs

Revised March 2013

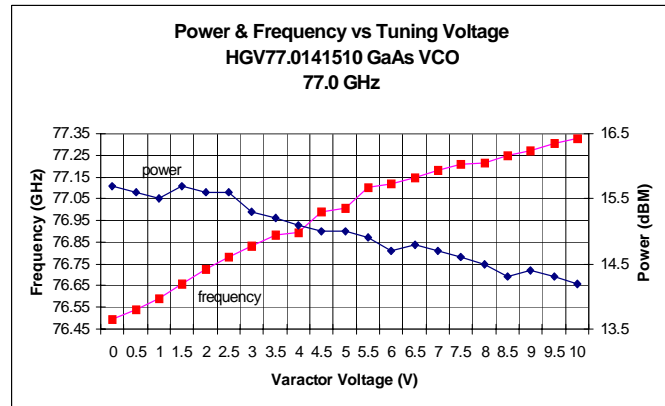
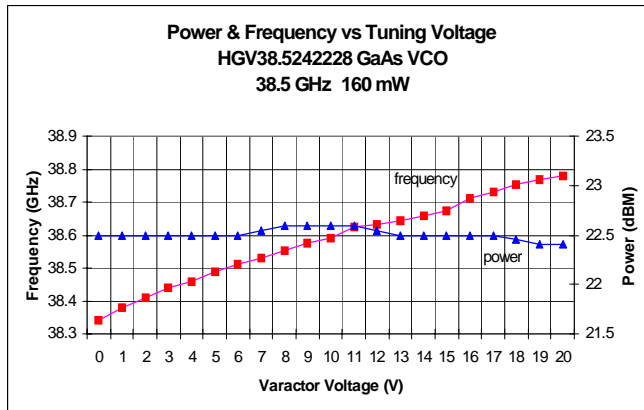
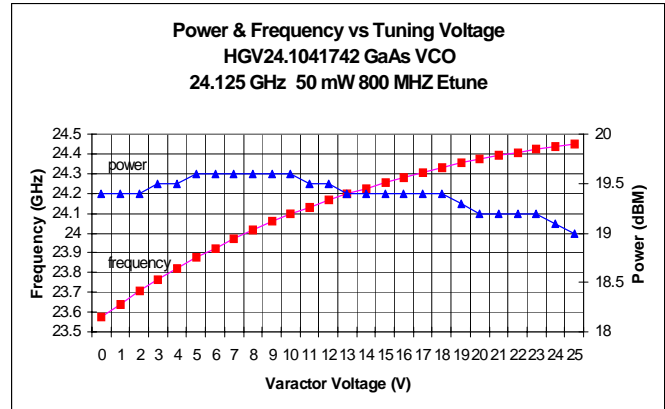
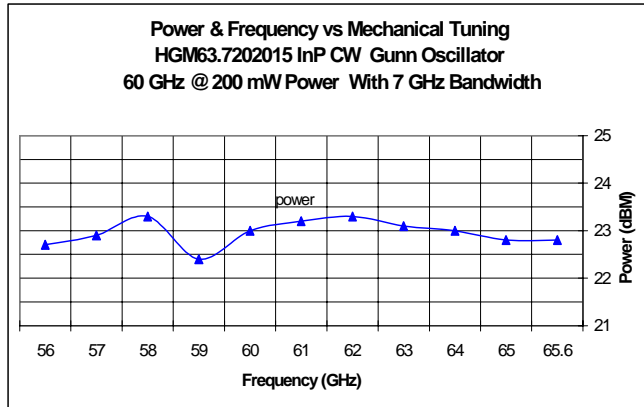
Mechanically-Tuned Gunn Oscillators & Gunn VCOs Wideband or High Power Models

Waveguide	Center Frequency Range (GHz)	Standard Flange	Mechanical Tuning Maximum (Note 5)	Varactor Tuning Maximum (Note 5)	Power Maximum (Note 5)	Frequency Stability (MHz/°C) (typ)	Bias Voltage (typ)	Bias Current (typ)
WR – 28	30.0 – 40.0	UG–599/U	5 GHz	4 GHz	400 mW	-2.0	Consult Factory	Consult Factory
WR – 22	33.0 – 50.0	UG–599/U-M	5 GHz	4 GHz	300 mW	-2.5	Consult Factory	Consult Factory
WR – 19	40.0 – 60.0	UG–599/U-M	5 GHz	4 GHz	250 mW	-3.0	Consult Factory	Consult Factory
WR – 15	50.0 – 75.0	UG–385/U	5 GHz	4 GHz	200 mW	-4.0	Consult Factory	Consult Factory
WR – 12	60.0 – 90.0	UG–387/U	4 GHz	4 GHz	100 mW	-4.0	Consult Factory	Consult Factory
WR – 10	75.0 – 110.0	UG–387/U-M	4 GHz	4 GHz	100 mW	-5.0	Consult Factory	Consult Factory

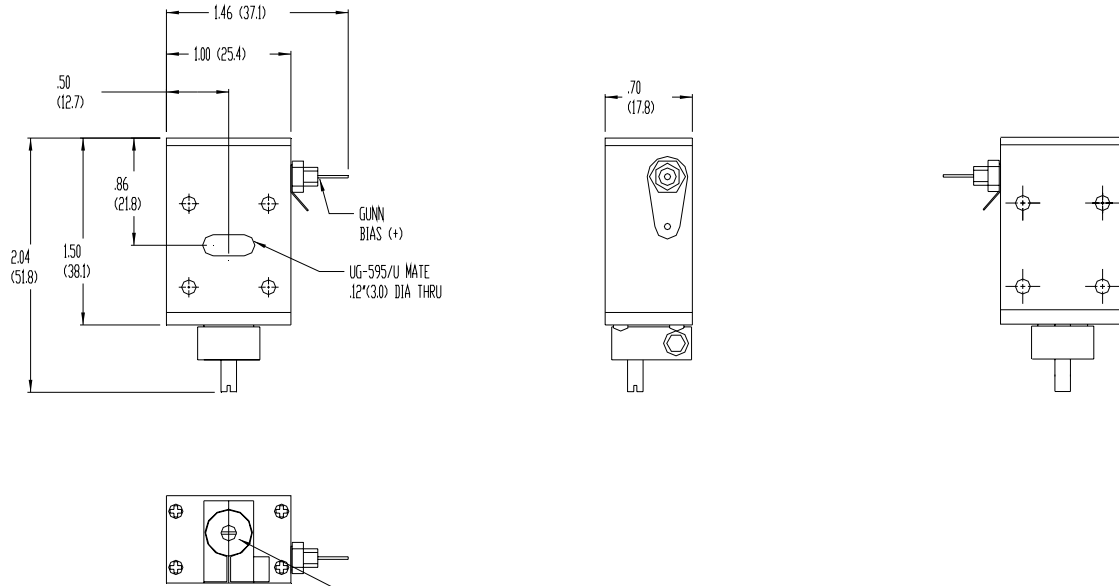
Notes:

1. Specifications @ 35°C T_{CASE}. Specifications subject to change without notice.
2. Contact factory with your requirement.
3. Bias current is dependent on output power required.
4. Typical capabilities shown, consult factory with exact requirement.
5. Maximum power and maximum tuning are not available in the same unit. Please contact factory to discuss your requirements.
6. InP oscillator availability and specifications are subject to diode availability.

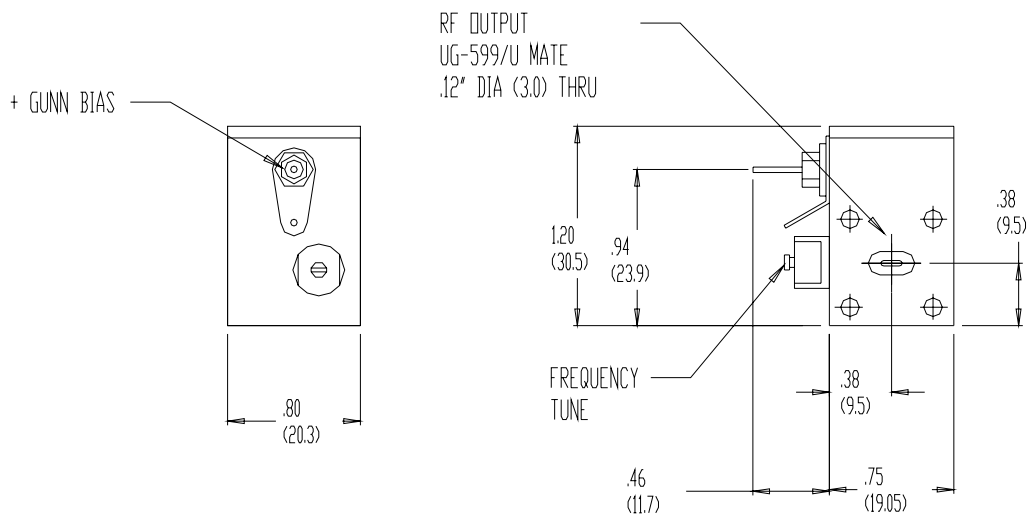
Typical Data - HGM Gunn Oscillators and HGV Gunn VCOs



Mechanically-Tuned Gunn Oscillator Outlines

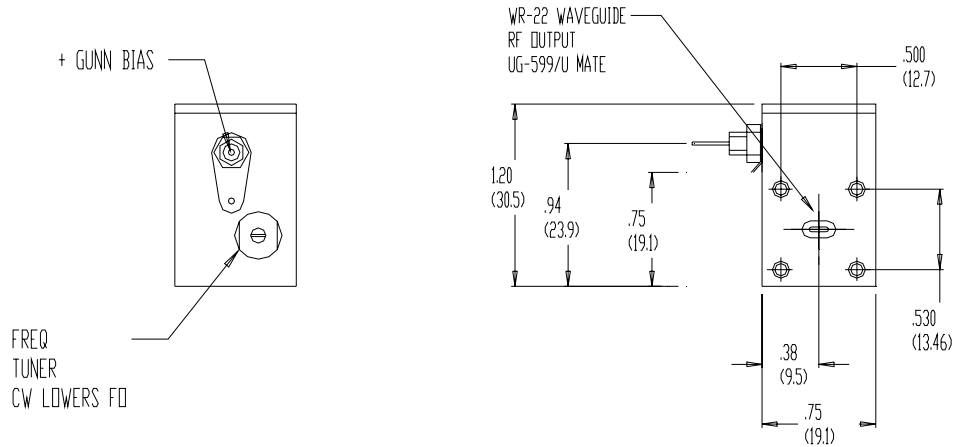


**24 GHz (WR- 42) Mechanically-Tuned Gunn Oscillator
(GaAs diodes only)**

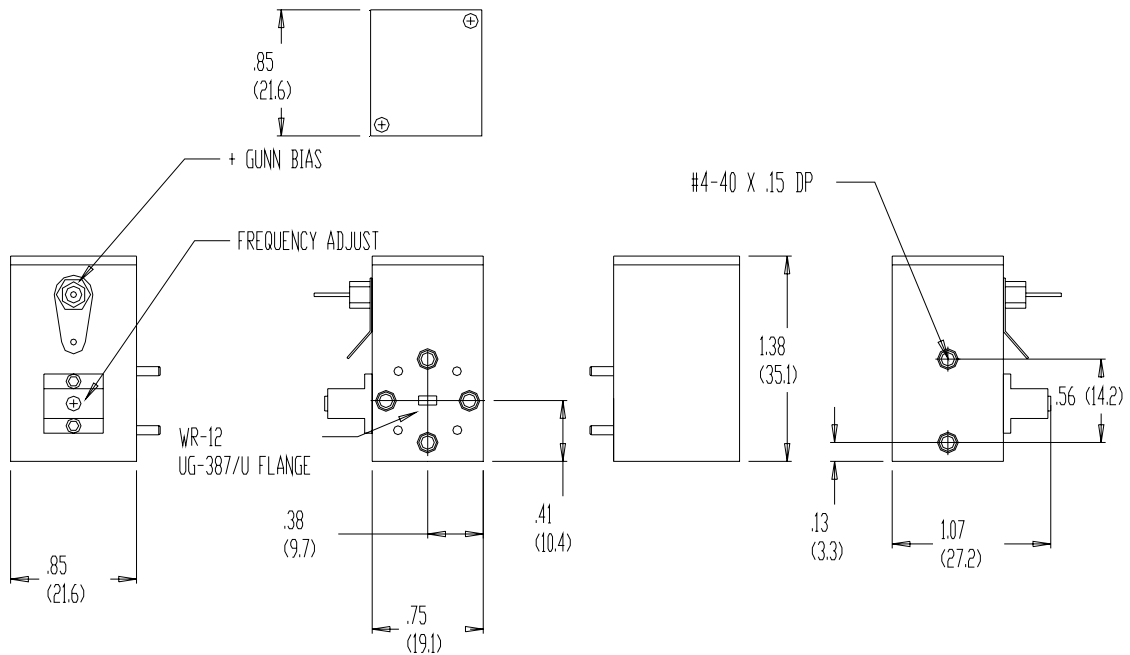


**35 GHz (WR-28) Mechanically-Tuned Gunn Oscillator
(GaAs diodes only)**

Mechanically-Tuned Gunn Oscillator Outlines

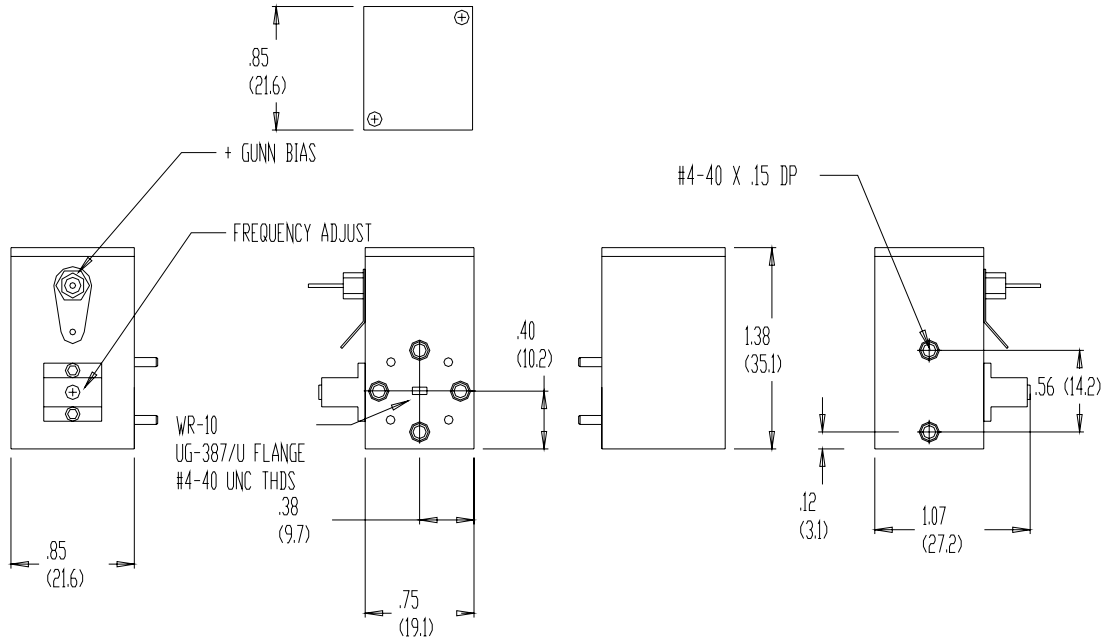


**50 GHz (WR- 22) Mechanically-Tuned Gunn Oscillator
(GaAs Diodes Only)**



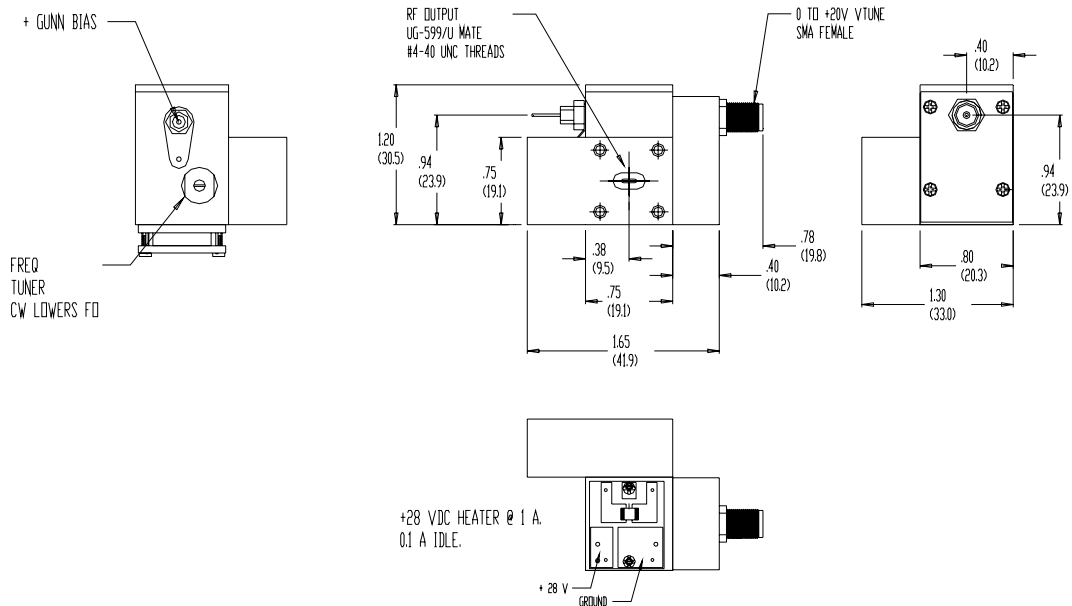
**77 GHz (WR-12) Mechanically-Tuned Gunn Oscillator
(GaAs Diodes Only)**

Mechanically-Tuned Gunn Oscillator Outlines

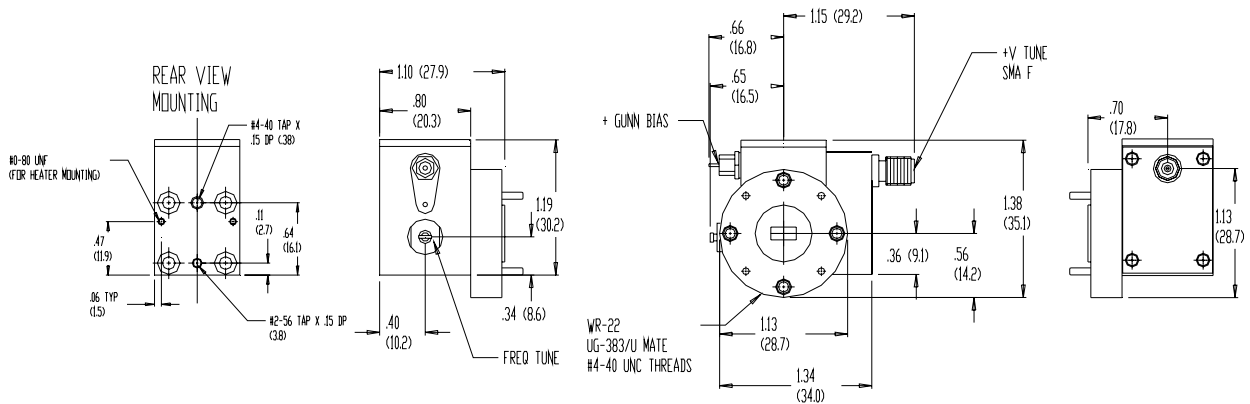


**94 GHz Mechanically-Tuned Gunn Oscillator
 (GaAs Diodes only)**

Gunn VCO Outlines

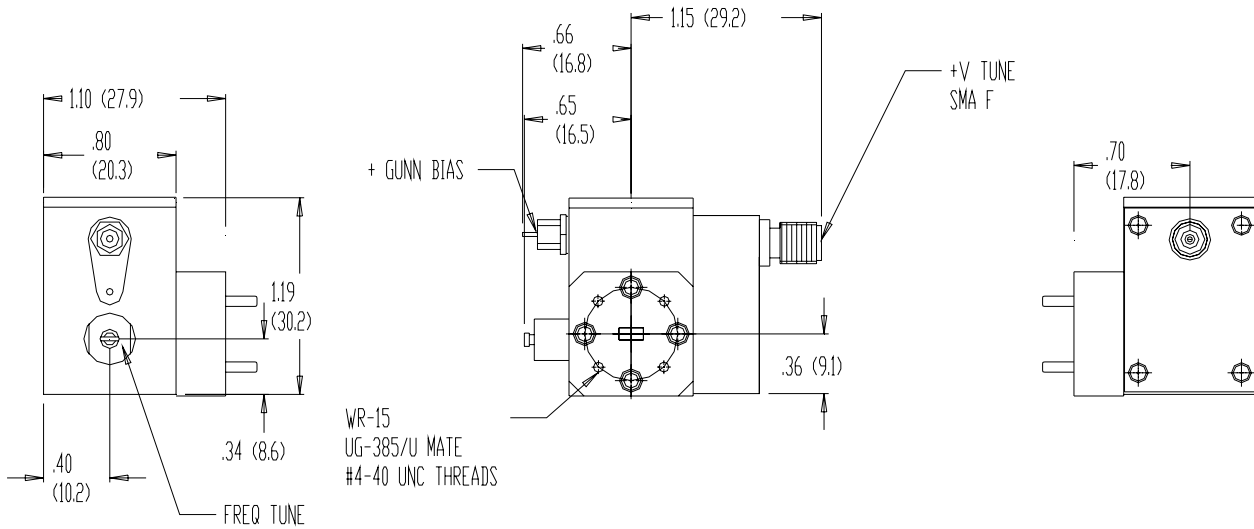


35 GHz (WR-28) Gunn VCO (GaAs Diodes Only)

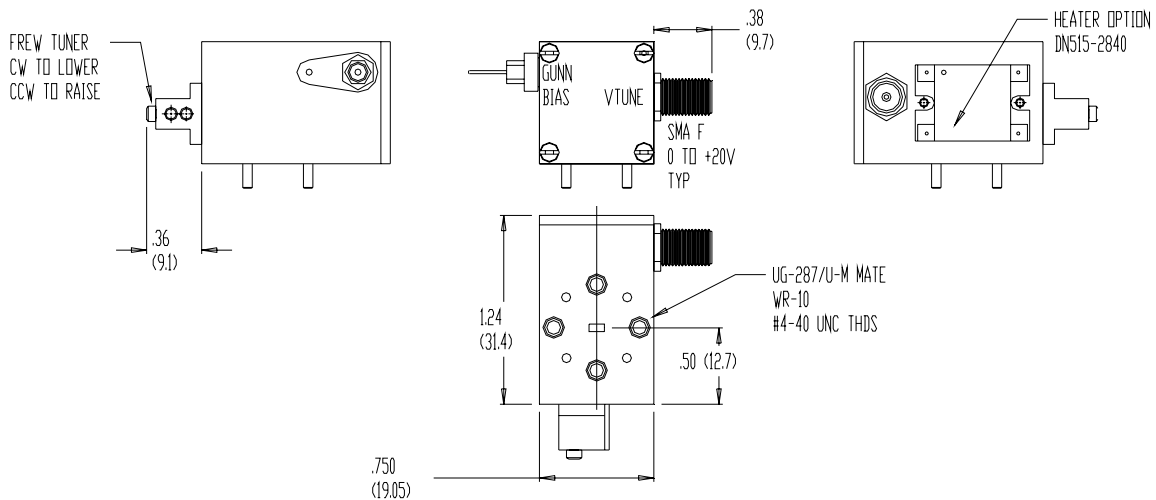


50 GHz (WR-22) Gunn VCO (GaAs Diodes Only)

Gunn VCO Outlines



(60 GHz) (WR-15) Gunn VCO



W-Band (WR-10) Gunn VCO (GaAs Diodes Only)



Series HGM & HGV Mechanically-Tuned Gunn Oscillators & VCOs

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Requesting Quotes

When requesting a quote for HGM or HGV oscillators, please specify center frequency, tuning bandwidth and output power, as well as any other required specifications. The part number guide below can also be used as a reference for requesting quotes.

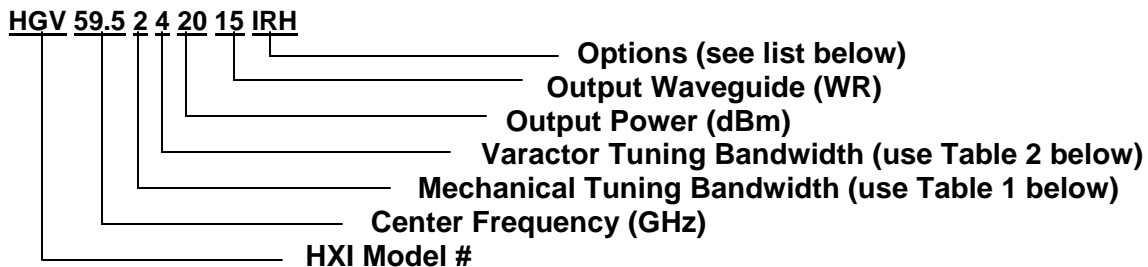
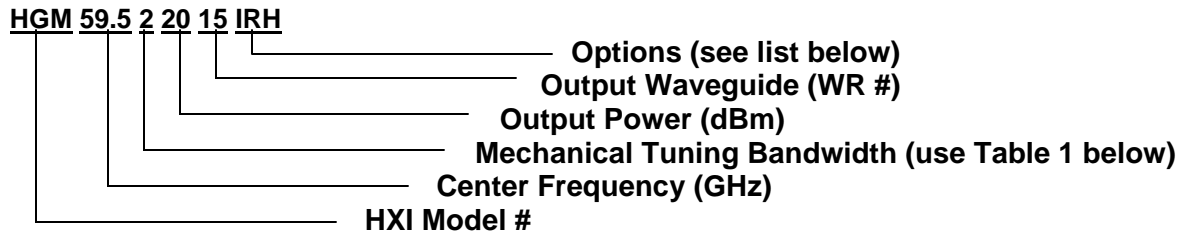


Table 1
Mechanical Tuning Range

0:	Fixed Frequency
1:	± 100 MHz
2:	± 250 MHz
3:	± 500 MHz
4:	± 750 MHz
5:	± 1000 MHz
6:	± 1500 MHz
7:	± 2000 MHz
8:	± 2500 MHz
9:	± 3000 MHz

Table 2
Varactor Tuning Range

1:	50 MHz
2:	100 MHz
3:	200 MHz
4:	350 MHz
5:	500 MHz
6:	750 MHz
7:	1000 MHz
8:	1500 MHz
9:	2000 MHz
A:	3000 MHz

Available Options

I = Isolator
H = +28 VDC Heater
HS = Heat Sink

R = Voltage Regulator
MT = Micrometer Frequency Tuner
/383 = UG-383 Flange Option (for WR-22 only)