Millimeter Wave Products

A Wholly-Owned Subsidiary of Renaissance Electronics Corp.

Series HGM & HGV Mechanically-Tuned and VCO Gunn Oscillators

Revised October 2010

DESCRIPTION

The HGM and HGV series Gunn Oscillators cover the range from 7 – 150 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

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Mechanically-Tuned Gunn Oscillators Using GaAs Diodes							
Waveguide	Center Frequency Range (GHz)	Mechanical Tuning Maximum (MHz)	Standard Flange	Power (1) Maximum (mW)	Frequency Stability (MHz/^{O}C) (typ)	Bias Voltage (typ)	Bias Current Amps (typ)
WR – 90 / 112	7.00 – 12.4	500	UG–39/U	400	-0.5	+10.0	1.3
WR – 62	12.4 –18.0	500	UG–419/U	350	-0.7	+8.0	1.3
WR – 42	18.0 – 26.5	500	UG–595/U	250	-0.8	+7.0	1.2
WR – 28/22	26.5 – 40.0	500	UG–599/U	200	-0.9	+6.5	1.1
WR – 22/19	40.0 – 45.0	500	UG–599/U	170	-0.9	+6.5	1.1
WR – 22/19	45.0 – 50.0	500	UG–599/U	150	-1.0	+6.0	1.0
WR – 19/15	50.0 – 55.0	400	UG–599/U	100	-1.8	+6.0	1.0
WR – 19/15	55.0 – 60.0	400	UG–599/U	90	-2.5	+5.5	0.9
WR – 15/12	60.0 – 65.0	400	UG–385/U	80	-3.0	+5.0	0.8
WR – 15/12	65.0 – 70.0	400	UG–385/U	60	-3.2	3.5-7.0	0.7
WR – 12	70.0 – 75.0	300	UG–387/U	60	-3.5	3.5-7.0	0.7
WR – 12/10	75.0 – 80.0	300	UG–387/U-M	60	-4.0	3.5-7.0	0.7
WR – 12/10	80.0 – 85.0	200	UG–387/U-M	60	-4.0	+5.0	0.7
WR – 12/10	85.0 – 90.0	200	UG–387/U-M	50	-4.5	+4.5	0.7
WR – 12/10	90.0 – 95.0	200	UG–387/U-M	40	-5.0	+4.0	0.7
WR – 12/10	95.0 – 100.0	200	UG–387/U-M	30	-6.0	+4.0	0.7
WR – 12/10	100.0 – 110.0	200	UG–387/U-M	Contact Factory			

Notes:

1. Specifications @ 35^{0}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. Maximum power and maximum tuning are not available in the same unit. Please contact factory to discuss your requirements.

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Voltage-Tuned Gunn Oscillators Using GaAs Diodes

Waveguide	Frequency Range (GHz)	Maximum Power vs. Elec. tuning 50 MHz	500 MHz	Standard Flange	Varactor Tuning (volts)	Typical Frequency Stability (MHz/^{O}C)	Typical Bias Voltage (volts)	Typical Bias Current (amps)
WR – 90 / 112	7.00 – 12.4	300	150	UG–39/U	0 - 25	-0.5	+10.0	1.3
WR – 62	12.4 –18.0	300	150	UG–419/U	0 - 25	-0.7	+8.0	1.3
WR – 42	18.0 – 26.5	250	100	UG–595/U	0 - 25	-0.8	+7.0	1.2
WR – 28/22	26.5 – 40.0	200	100	UG–599/U	0 - 25	-0.9	+6.5	1.1
WR – 22/19	40.0 – 45.0	160	70	UG–599/U	0 - 25	-1.3	+6.0	1.0
WR – 22/19	45.0 – 50.0	130	70	UG–599/U	0 - 25	-1.3	+6.0	1.0
WR – 19/15	50.0 – 55.0	100	60	UG–599/U	0 - 25	-1.8	+6.0	1.0
WR – 19/15	55.0 – 60.0	80	60	UG–599/U	0 - 25	-2.5	+5.5	0.9
WR – 15/12	60.0 – 65.0	80	45	UG–385/U	0 - 25	-3.0	+5.0	0.8
WR – 15/12	65.0 – 70.0	60	45	UG–385/U	0 - 25	-3.5	3.5-7.0	0.7
WR – 12	70.0 – 75.0	60	40	UG–387/U	0 - 25	-4.0	3.5-7.0	0.7
WR – 12/10	75.0 – 80.0	50	30	UG–387/U-M	0 - 25	-4.5	3.5-7.0	0.7
WR – 12/10	80.0 – 85.0	50	30	UG–387/U-M	0 - 25	-5.0	+5.0	0.7
WR – 12/10	85.0 – 90.0	40	25	UG–387/U-M	0 - 25	-6.0	+4.5	0.7
WR – 12/10	90.0 – 95.0	40	25	UG–387/U-M	0 - 25	-7.0	+4.0	0.7
WR – 12/10	95.0 – 100.0	30	20	UG–387/U-M	0 - 25	-8.0	+4.0	0.7
WR – 12/10	100.0 – 110.0			UG–387/U-M	Contact Factory			

Notes:

1. Specifications @ 35^{0}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. Maximum power and maximum tuning are not available in the same unit. Please contact factory to discuss your requirements.

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Mechanically-Tuned Gunn Oscillators & Gunn VCOs Using InP Diodes								
Waveguide	Center Frequency Range (GHz)	Standard Flange	Mechanical Tuning Maximum (GHz)	Varactor Tuning Maximum (GHz)	Power (5) Maximum (mW)	Frequency Stability (MHz/^{O}C) (typ)	Bias Voltage (typ)	Bias Current (typ)
WR – 28	30.0 – 40.0	UG–599/U	5	4	400	-2.0	11-12	0.3
WR – 22	33.0 – 50.0	UG–599/U-M	5	4	300	-2.5	11-12	0.3
WR – 19	40.0 – 60.0	UG–599/U-M	5	4	250	-3.0	10	0.3
WR – 15	50.0 – 75.0	UG–385/U	5	4	200	-4.0	10	0.3
WR – 12	60.0 – 90.0	UG–387/U	4	4	100	-4.0	10	0.25
WR – 10	75.0 – 110.0	UG–387/U-M	4	4	100	-5.0	10	0.25
WR – 8	100.0 – 140.0	UG–387/U-M	2	Note 2	30	-6.0	10	0.25
WR – 6	130.0 – 150.0	UG–387/U-M	2	Note 2	20	-6.0	10	0.25

Notes:

1. Specifications @ 35^{0}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.

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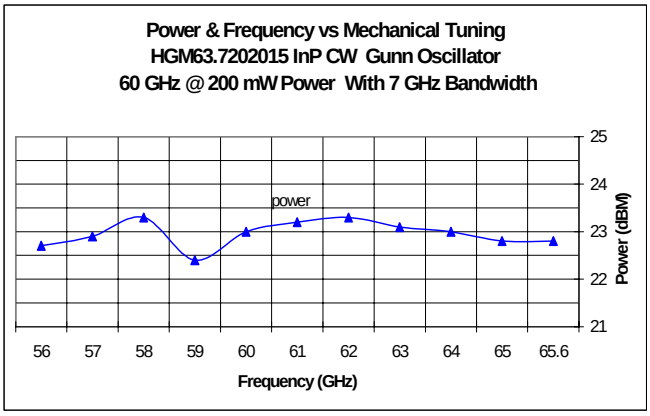
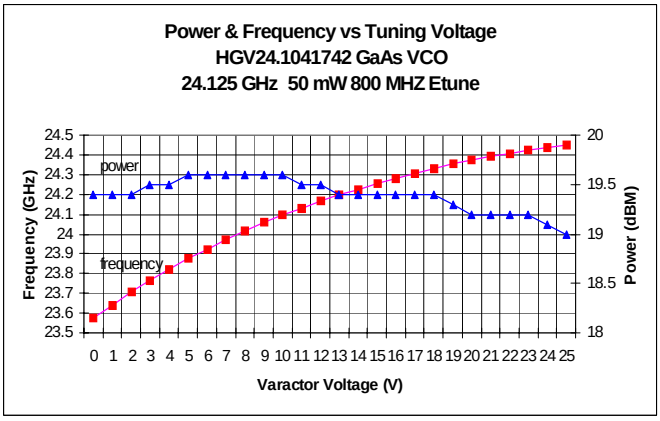
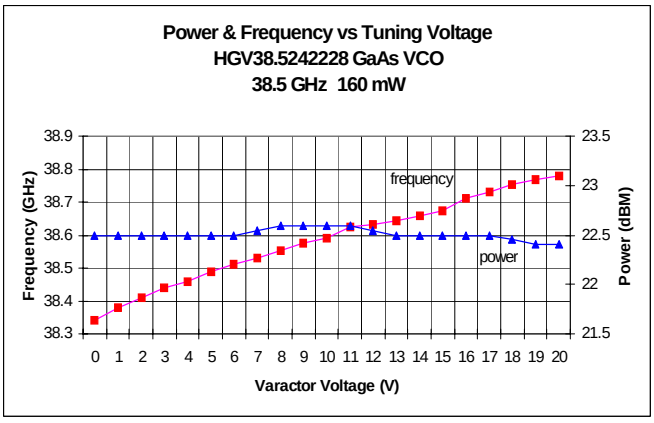
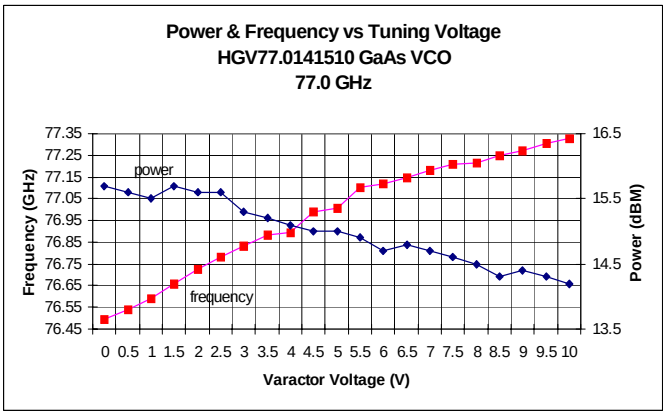
Typical Data - HGM Gunn Oscillators and HGV Gunn VCOs









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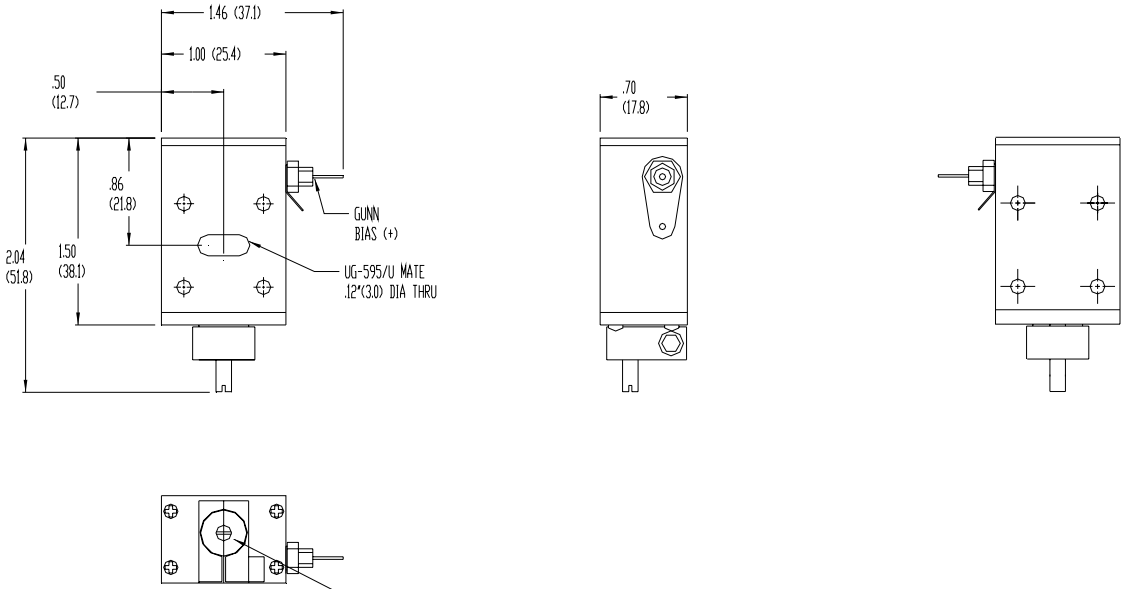
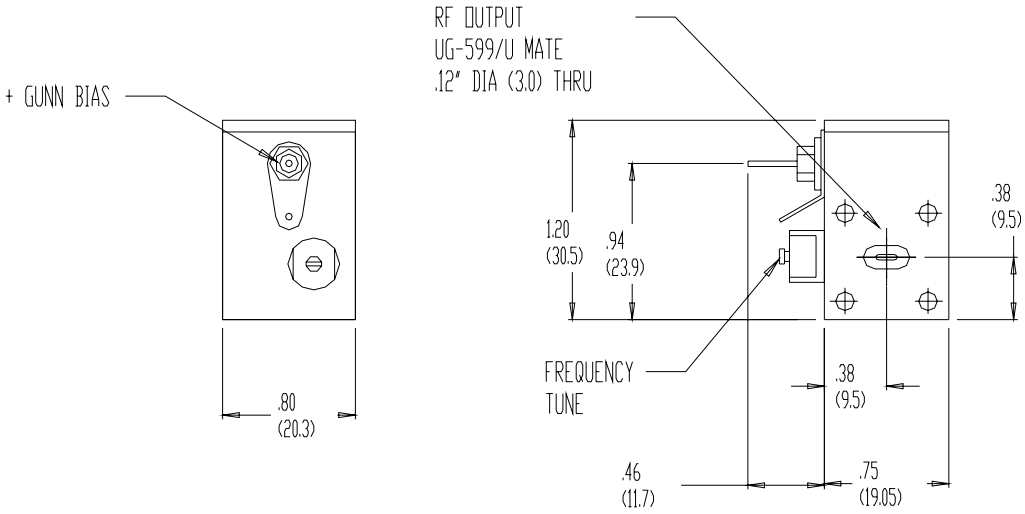
Series HGM & HGV Mechanically-Tuned and VCO Gunn Oscillators

Revised October 2010

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)

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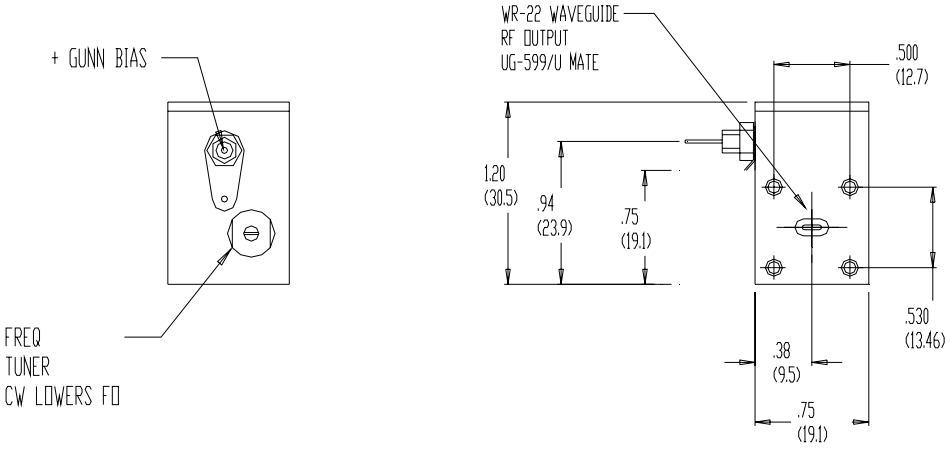
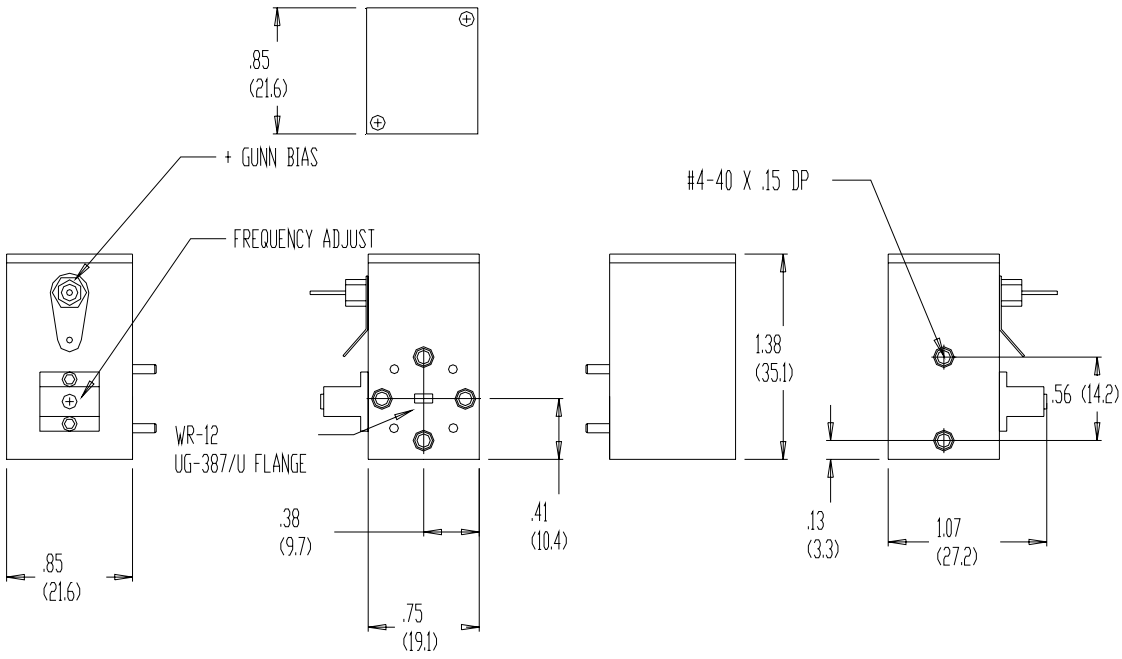
Mechanically-Tuned Gunn Oscillator Outlines



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



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

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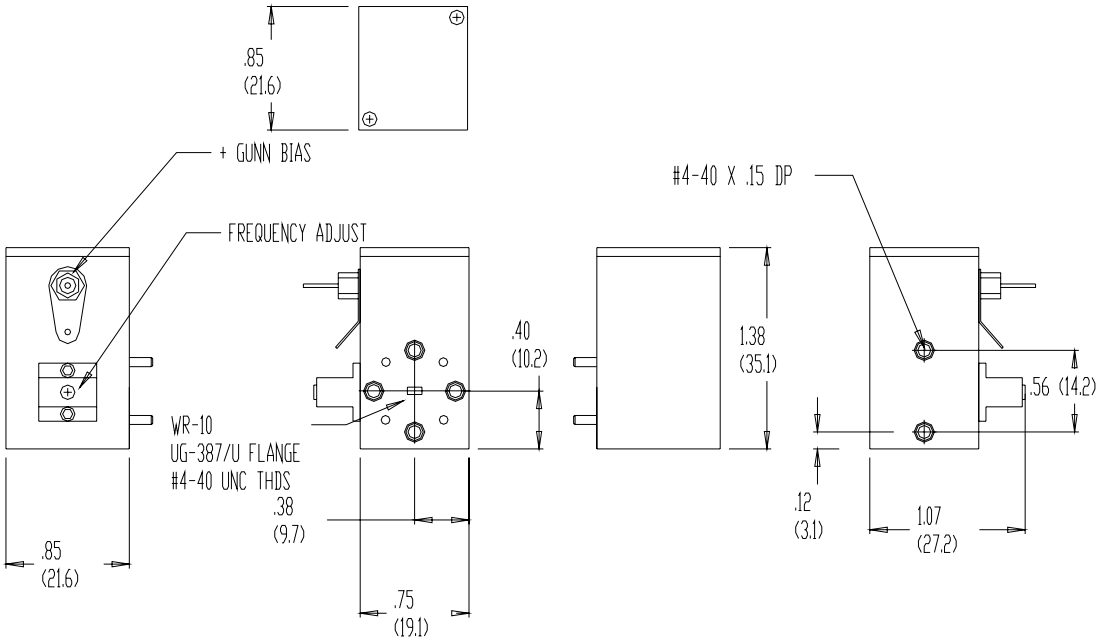
Mechanically-Tuned Gunn Oscillator Outlines



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

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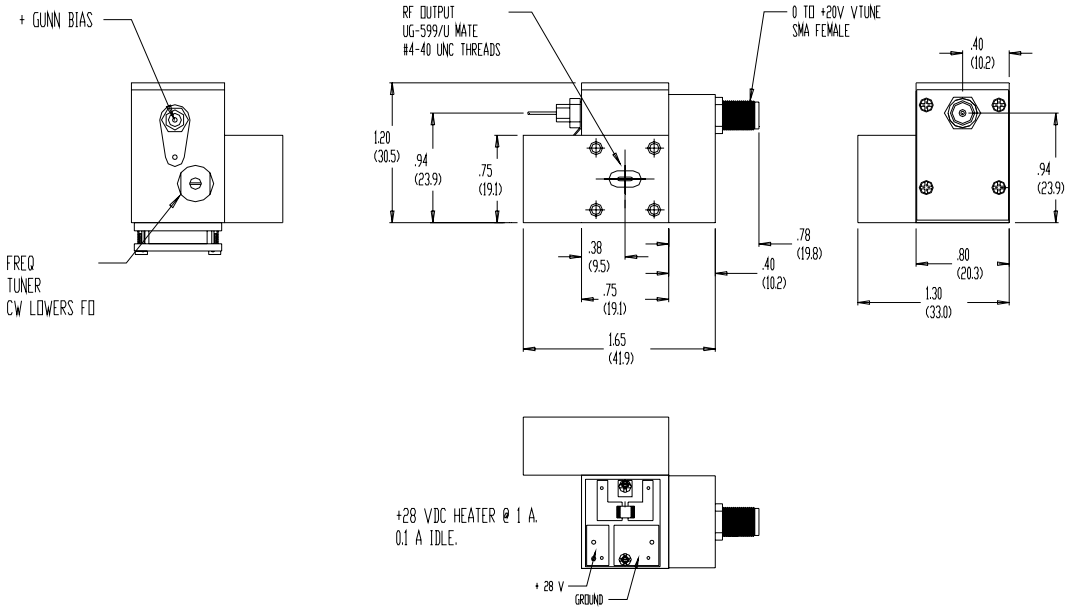
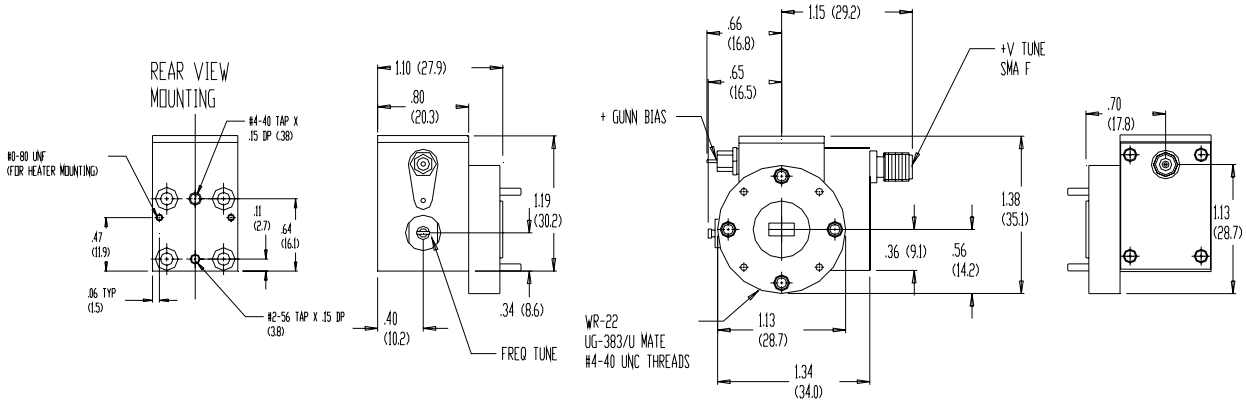
Gunn VCO Outlines



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



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

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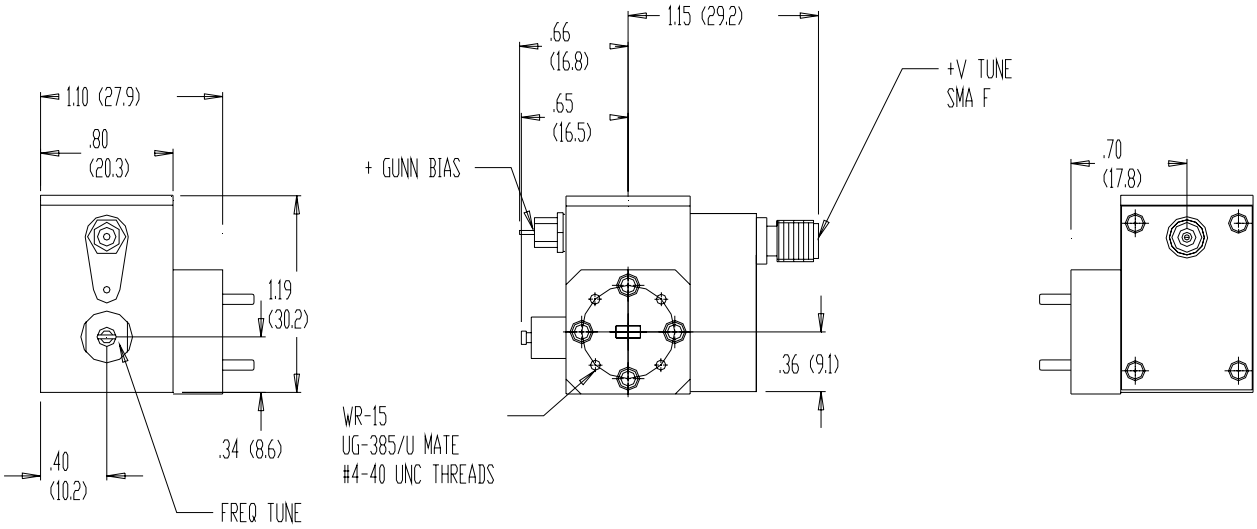
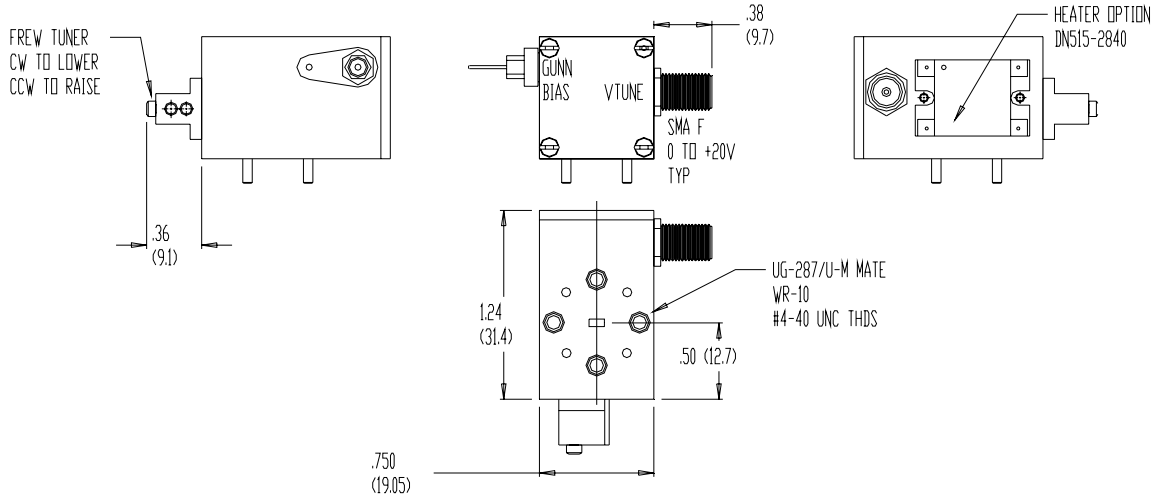
Gunn VCO Outlines



(60 GHz) (WR-15) Gunn VCO



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

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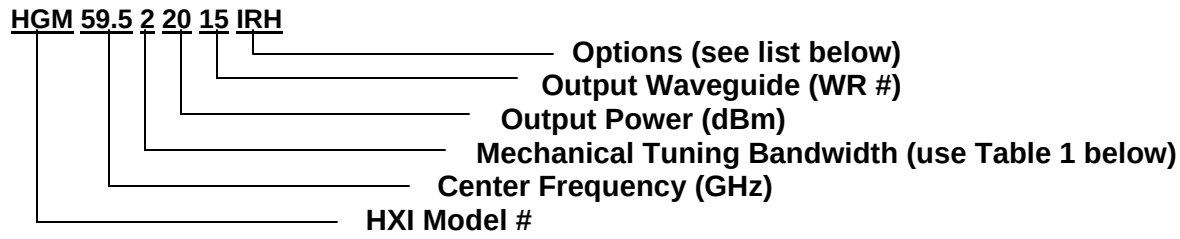
Requesting Quotes

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.



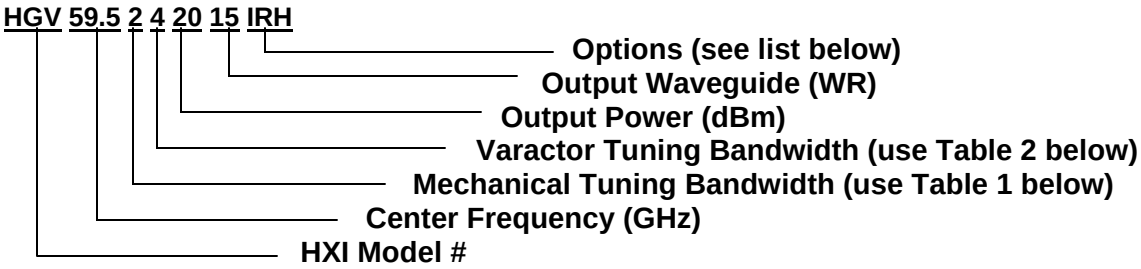


Table 1
Mechanical Tuning Range

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)

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