

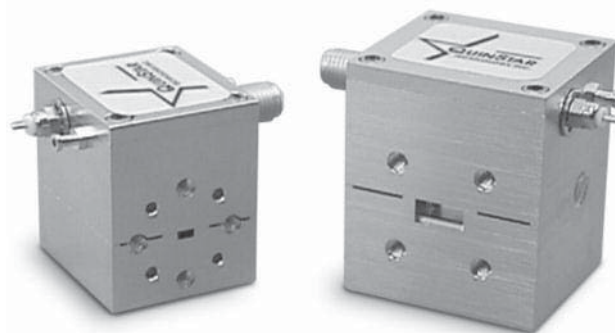


Varactor-Tunable Gunn Oscillators

QTV

Characteristics

- ◆ High Output Power
- ◆ Wide Tuning Bandwidth
- ◆ Low Phase Noise
- ◆ Optional Mechanical Tuning Capability



Product Description

QuinStar Technology's series **QTV varactor-tunable Gunn oscillators** cover the frequency range of 18 to 110 GHz in seven waveguide bands. These oscillators combine proprietary cavity design, abrupt or hyperabrupt tuning varactor diodes and high performance Gunn diodes to produce power in the millimeter wave frequency range. Tuning voltages range from 0 to +20 VDC. The electrical tuning rate may be as high as 50 MHz (20ns per sweep).

Each oscillator has an internal low frequency suppression circuit to ensure stable RF oscillation and over-voltage protection. Mechanical tuning in addition to voltage tuning can be offered as an option. Gunn oscillators can be provided with broader tuning ranges, higher power

levels, temperature controlled heaters, integral isolators and voltage regulators.

These varactor-tunable Gunn oscillators exhibit low AM and FM noise, moderately high output power and wide tuning bandwidth, as well as monotonic tuning characteristics. These characteristics make the oscillator a unique low cost solution for most FM transmitter, local oscillator, AFC loops and phase locked subsystem applications.

For many applications, a bias tuned Gunn oscillator is adequate. Please see mechanically-tunable Gunn oscillators (series QTM) and contact QuinStar for more information.

Specifications

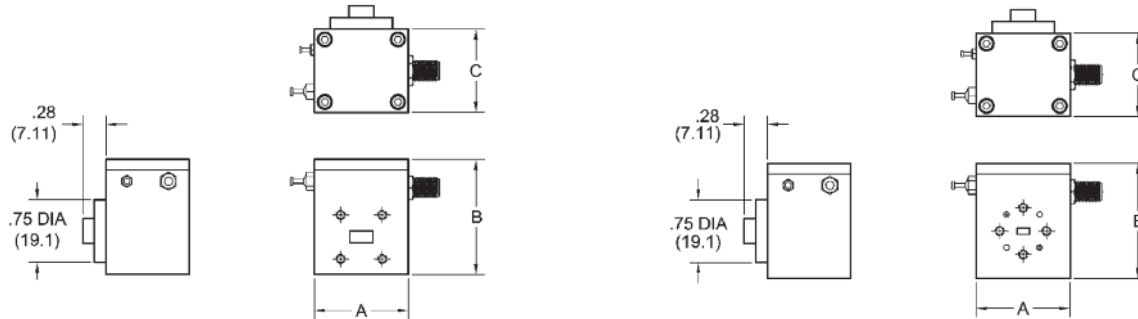
FREQUENCY BAND		K	Ka	Q	U	V	E	W
Frequency Range (GHz)		18-26.5	26.5-40	33-50	40-60	50-75	60-90	75-110
Waveguide Size		WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Output Power Range ¹	(mW)	10-250	10-200	10-200	10-100	10-100	10-60	10-50
	(dBm)	10-24	10-23	10-23	10-20	10-20	10-18	10-17
DC Bias Voltage Range (typ)	GaAs (volts)	5-8	5-7	5-6	5-6	3-6	3-6	3-6
	InP (volts)	---	---	6-11	6-10	6-10	8-10	8-10
DC Bias Current Range (typ)	GaAs (Amp)	0.6-2.0	0.6-2.0	0.6-2.0	0.6-2.0	0.6-1.5	0.6-1.5	0.6-1.5
	InP (Amp)	---	---	0.3	0.3	0.3	0.25	0.25
Mechanical Tuning Range (GHz) ²		50-300	50-300	50-500	50-500	50-500	50-500	50-500
Frequency Stability (MHz/°C typ)		-2.0	-3.0	-4.0	-4.0	-5.0	-5.0	-6.0
Power Stability (dB/°C typ)		-0.03	-0.03	-0.04	-0.04	-0.04	-0.04	-0.04
Operating Temperature		0 to 50°C						

Other waveguide sizes are available.

¹ This is the range for standard products within the band. Higher power outputs are available at selected frequencies.

² Standard units have a minimum tuning range of ± 150 MHz. Broader varactor tuning ranges are available.

Outline Drawings/Mechanical Specifications



WR-42 and WR-28

WR-22 through WR-10

FREQUENCY BAND	WAVEGUIDE SIZE	FLANGE PATTERN	OUTLINE DIMENSIONS, inches/mm ¹		
			A	B	C
K	WR-42	UG-595/U	1.13/28.7	1.38/35.1	1.00/25.4
Ka	WR-28	UG-599/U	1.13/28.7	1.38/35.1	1.00/25.4
Q	WR-22	UG-383/U	1.13/28.7	1.38/35.1	1.00/25.4
U	WR-19	UG-383/U	1.13/28.7	1.38/35.1	1.00/25.4
V	WR-15	UG-385/U	0.88/22.4	1.13/28.7	1.00/25.4
E	WR-12	UG-387/U	0.88/22.4	1.13/28.7	1.00/25.4
W	WR-10	UG-387/U	0.88/22.4	1.13/28.7	1.00/25.4

¹ Consult factory for exact outline dimensions if options are specified.

Ordering Information

Model Number **QTV -** **AB CD EF G H**  Please specify exact center frequency, tuning range and options when ordering.

center frequency (rounded to nearest GHz)
(A0 = 100 GHz, A1 = 101 GHz, B1 = 111 GHz, etc.)

power output in dBm

tuning bandwidth (in hundreds of MHz)
(03 = 300 MHz)

options

- | | |
|--|---|
| H = heater * | A = full feature regulator (see page 70) |
| I = isolator * | 0 = no option |
| B = heater and isolator * | S = special combination of preceding options (please specify) |
| R = compact regulator (see page 70) | Z = custom |
| C = heater, isolator and compact regulator * | |
| M = micrometer tuner | |

waveguide band designator

- | | |
|-------------|------------|
| K = K-band | V = V-band |
| A = Ka-band | E = E-band |
| Q = Q-band | W = W-band |
| U = U-band | |

* Addition of heater and isolator options reduce output power.