



# Mechanically Tuned Gunn Oscillators

## 18-140 GHz

### 6 (WG) M Series

#### Features

- GaAs or InP
- Excellent Frequency Stability
- High Output Power
- Low AM and FM Noise
- Small and Lightweight
- Standard and Broadband Tuning
- Multi-diode Combining
- 15 or 28 Vdc Temperature Controller Available

#### Description

These mechanically tuned Gunn oscillators are specially designed for low AM and FM noise characteristics. They combine either GaAs or InP Gunn diodes with high Q waveguide cavities to generate RF power from 28 to 140 GHz. Standard models can be provided with temperature compensation techniques that translate to superior frequency stability necessary for local oscillators in radio communications, doppler radars and many receiver systems. Broadband models are designed to produce the highest possible power with reliable and repeatable mechanical tuning ideally suited for laboratory use or drivers for wideband high frequency multipliers. An optional micrometer-driven tuning mechanism further enhances these oscillators by allowing convenient and reliable frequency resetting.

Other options include a temperature controller to improve the frequency stability of these oscillators due to changes in ambient temperature and an isolator which reduces the frequency pulling caused by changes in load VSWR.

#### Environmental

These devices are designed to meet the following conditions:

Test	MIL-STD	Method	Condition
Temperature Cycle	202	102A	-50°C to +85°C 5 cycles, ½ hour per cycle
Acceleration (Non-Operating)	202	212	11G, three mutually perpendicular axes
Vibration (High Freq.)	202	204B	10G Peak, 10-2000 Hz

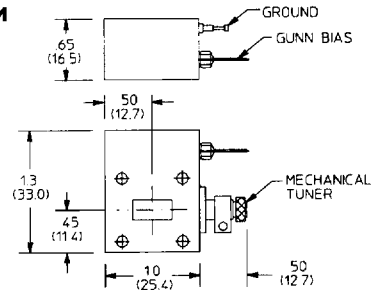
#### Maximum Ratings

Storage Temp.	-50°C to +85°C
Operating Temp. <sup>1</sup>	-30°C to +70°C

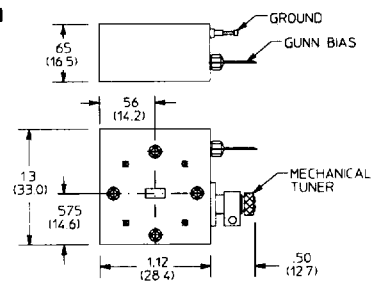
#### Notes:

1. Units will operate from -30°C to +70°C although specifications listed above are guaranteed only between 0°C and +50°C. Broader temperature units are available. Test data measured at a case temperature of 30 ± 5°C is provided with each unit.

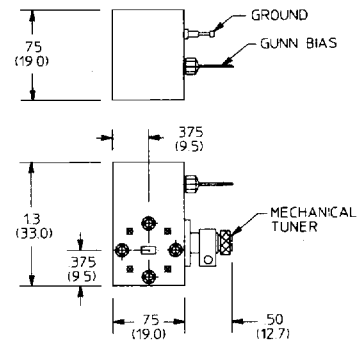
#### 6-42M & 6-28M Series



#### 6-22M & 6-19M Series



#### 6-15M, 6-12M, 6-10M, 6-08M Series



Dimensions apply to standard models only. Consult factory regarding other models.

Specifications Subject to Change Without Notice.

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Specifications at  $T_c$  30°C<sup>1,3</sup>

Frequency (GHz) <sup>2</sup>	Output Power (mW)		Frequency Stability <sup>8</sup> (MHz/°C Max.)	Power Stability (dB/°C Max.)	dc Power (V/A Max.)		Model No. <sup>†</sup>
	Standard	Broadband			GaAs	InP	
18-26.5	250	150	1.0	0.03	8/1.5	N/A	6-42M-XXXX-XX**
26.5-40	300	150	1.0	0.03	8/1.5	13/0.3	6-28M-XXXX-XX**
33-50	250	125	2.0	0.03	7/1.5	13/0.3	6-22M-XXXX-XX
40-60	200	100	2.0	0.03	7/1.5	12/0.3	6-19M-XXXX-XX
50-60	200	100	3.5	0.03	6/1.5	11/0.4	6-15M-XXXX-XX
60-75	100	70	3.5	0.03	6/1.5	11/0.4	
60-75	100	70	4.0	0.03	6/1.4	11/0.4	6-12M-XXXX-XX
75-90	70	40	4.0	0.03	6/1.4	11/0.4	
75-95	70	40	5.0	0.03	6/1.4	11/0.4	6-10M-XXXX-XX
95-110	50	20	5.0	0.03	6/1.4	11/0.4	
90-110	30	20	*	*	*	*	6-08M-XXXX-XX
110-140	*	*	*	*	*	*	

\* Consult factory.

\*\*Specify tapped or thru holes for flange.

Tuning Range Options

Standard	Broadband
0: Fixed Frequency	3: ± 500 MHz
1: ± 100 MHz	4: ± 750 MHz
2: ± 250 MHz	5: ± 1000 MHz
	6: ± 1500 MHz
	7: ± 2000 MHz

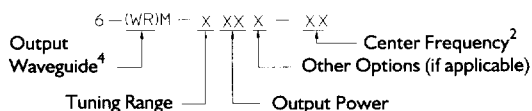
Output Power Options

01: 10mW	10: 100mW
02: 20mW	12: 125mW
03: 30mW	15: 150mW
04: 40mW	20: 200mW
05: 50mW	25: 250mW
07: 70mW	30: 300mW

Other Options

- F: Integrated Ferrite Isolator<sup>6</sup>
- H: Temperature Controller<sup>7</sup> (15 or 28Vdc)
- M: Micrometer Tuner

†How to Order



Mechanical Specifications

Waveguide	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10	WR-08
RF Mating Flange <sup>4</sup> MIL-F-3922/	54-001-M	68-001 68-002	67B-006	67B-007	67B-008	67B-009	67B-010	67B-010 MOD
UG Reference	595/U	599/U	383/U	383/U-M	385/U	387/U	387/U-M	387/U-M
dc Connector	Feed Thru							
Cooling	Conduction <sup>5</sup>							

Notes:

1. This table lists the maximum power available in the frequency ranges specified. For a specific combination of tuning range and output power, consult the factory.
2. All oscillators are supplied with a center frequency tolerance of ± 50 MHz unless otherwise stated.
3. Units will operate from -30°C to +70°C although specifications listed above are guaranteed only between 0°C and +50°C. Broader temperature units are available. Test data measured at a case temperature of 30 ± 5°C is provided with each unit.

4. Other waveguide flange patterns and custom designs are available.
5. Heat sink can be provided. Consult factory.
6. When ordered with ferrite isolator, the output power will be reduced by the isolator loss.
7. When temperature controller is ordered, the units are stabilized at 55 ± 2°C and the output power is reduced by approximately 1.0 dB.
8. Frequency stability is improved typically by a factor of 2 with temperature compensated units.

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