



Preliminary Product Brief

Ultra-Narrow Linewidth Laser Source

Whispering Gallery Mode Micro-Resonator Enabled Laser Module



OEwaves Ultra-Narrow Linewidth Laser Source, based on a high quality factor (Q) Whispering Gallery Mode (WGM) micro-resonator, offers super-fine instantaneous optical spectral linewidth of less than **300Hz** and ultra-low phase/frequency noise in a small form factor. The laser is scalable to a variety of wavelengths ranging from 390nm to 2900nm.

Features

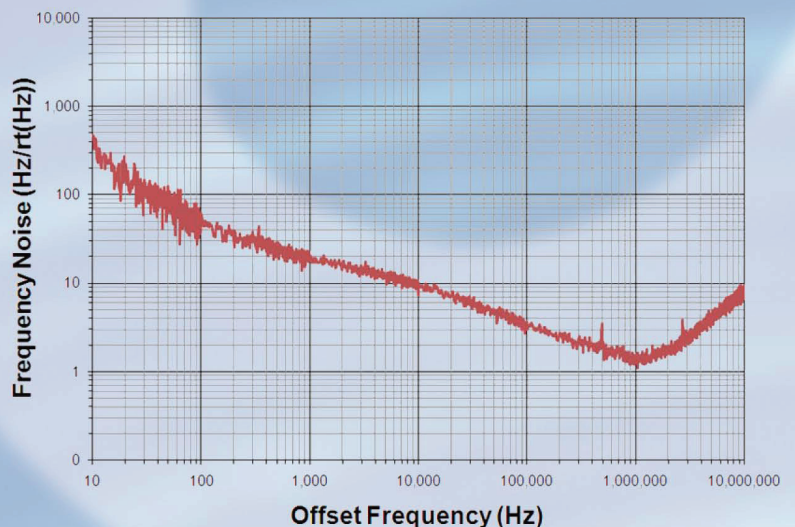
- Ultra-Narrow Laser Linewidth
- Ultra-Low Phase/Frequency Noise
- Ultra-Wideband Support
- Wide Frequency Sweep
- Direct modulation capability
- Low vibration sensitivity
- High Wavelength Agility
- Wavelength Stability
- Wide Operating Case Temperature
- Compact Package
- Optional Output Interface

Applications

- LIDAR
- B-OTDR Temperature and Strain Sensing
- Optical Metrology and Spectroscopy
- Acoustic Sensing
- Oil and Gas Exploration
- Leak Detection and Monitoring
- Interferometric Optical Sensing
- Coherent Communication
- Test and Measurement

The unique design of the OEwaves Ultra-Narrow Linewidth Laser Source is based on the self-injection locking of a suitable commercially available laser diode via a resonant optical feedback from a high-Q WGM micro-resonator. Its monolithically integrated approach along with micro-scale mass and volume make the laser virtually insensitive to environmental vibrations. The laser is available in standard or custom compact packages installed with either an SMF or PM pigtail fiber, suitable for a broad range of sensing, monitoring, and metrology applications where high resolution, high precision, and absolute accuracy are required.

Frequency noise of the laser measured by beating two 1550nm self-injection-locked lasers on a fast photodiode. →



Specifications

| Parameter | NLWL | Notes |
|-----------------------------|--------------------------|---|
| Output Power | +10 mW | |
| Wavelength | C-Band L-Band | Consult factory for other wavelength options. |
| Instantaneous Linewidth | 300 Hz | Lorentzian; 10 us |
| Threshold Current | 10 mA | |
| Forward Current | 150 mA | Max |
| Reverse Voltage | 2 V | |
| Side-Mode Suppression Ratio | 55 dB | |
| RIN | -160 dBc/Hz | 10 MHz; +3 mW Pout |
| Long-Term Drift | 10 MHz/day | At constant case temperature. |
| Frequency Sweep Range | 4 GHz | |
| Direct Modulation | DC-20MHz 200MHz-1GHz | DC coupled AC coupled |
| TEC Voltage | 2.5V | |
| TEC Current | 1.5A | Max |
| Operating Temp. Range | -10° - +75° C | Case |
| Storage Temp. Range | -30° - +80° C | Case |
| Package | 14-pin butterfly | Other options available. |
| Fiber Pigtail | SMF | |
| Connector | FC/APC | Other options available. |
| Options | | |
| Wavelength | 390-2900 nm | Wavelength availability depends on the commercial availability of suitable diodes. Package size may vary. |
| Instantaneous Linewidth | 200 Hz | Lorentzian; 10 us |
| Thermal Wavelength Agility | 2nm | |
| Extended Frequency Sweep | 10GHz+ | |
| Fiber Pigtail | PM | |
| Connector | Other standard | Specify when ordering. |
| Package | Other standard or custom | Specify when ordering. |



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