



Photodigm DBR Laser Diodes

High-Power, Single-Frequency Laser Diodes For Precision Applications

The Photodigm family of high-power edge-emitting Distributed Bragg Reflector (DBR) lasers is based on Photodigm's proprietary single epi growth, first-order DBR architecture. The DBR laser diode is uniquely suited for applications requiring high-power single-frequency performance within a well-defined operating range. Photodigm has worked with its customers to develop a family of devices unmatched in the industry in terms of stability, reliability, and power for precision applications in spectroscopy, non-linear optics, and fiber amplifiers.

The laser is not just a component. It is the heart of a differentiated product.

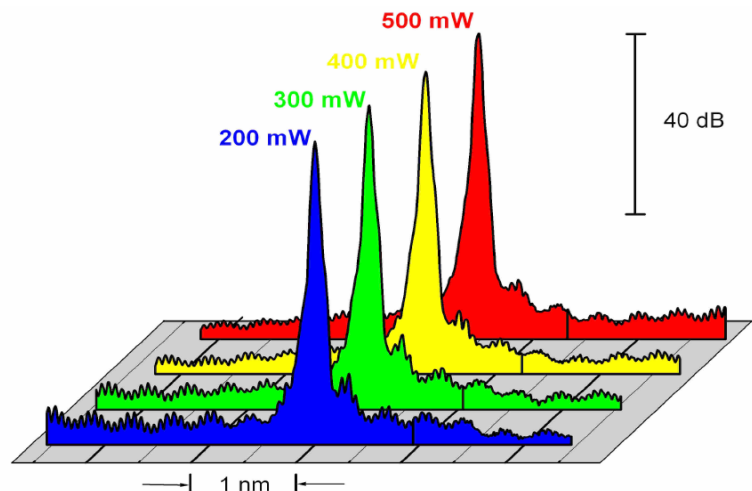
Performance matters

Details matter

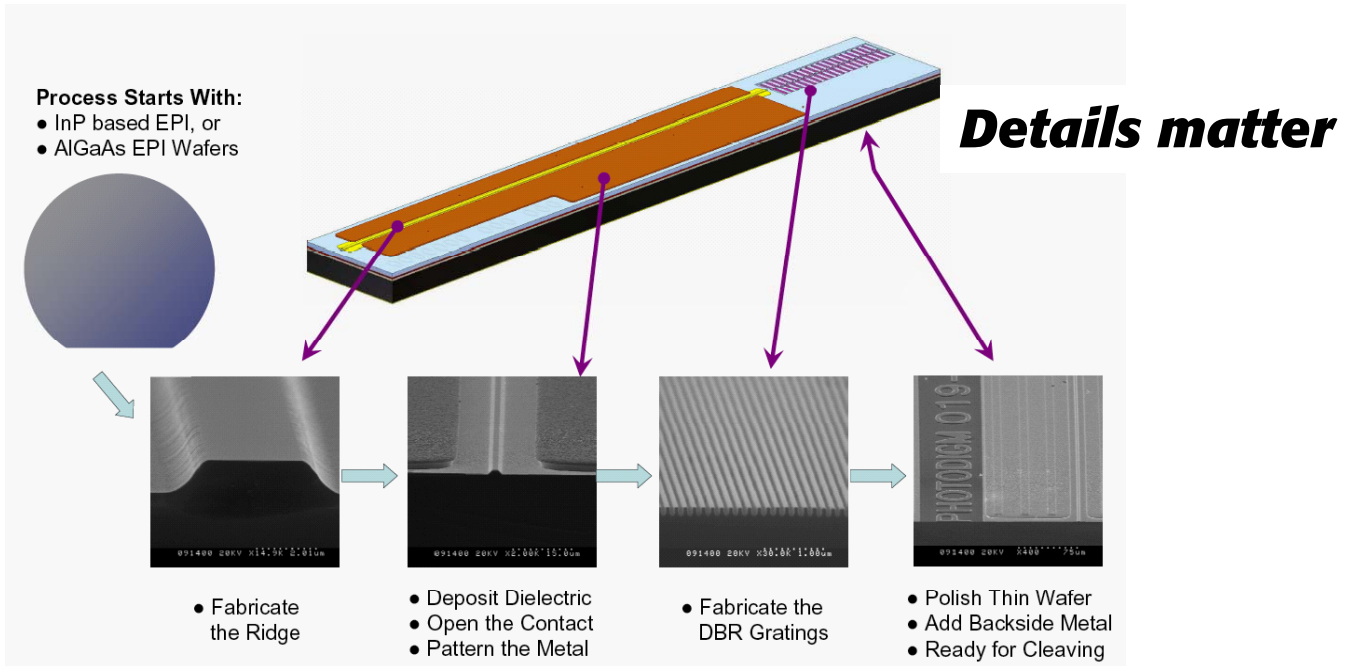
Precision matters

Photodigm delivers

Performance matters



Single-frequency performance of a Photodigm DBR laser over a wide operating range.



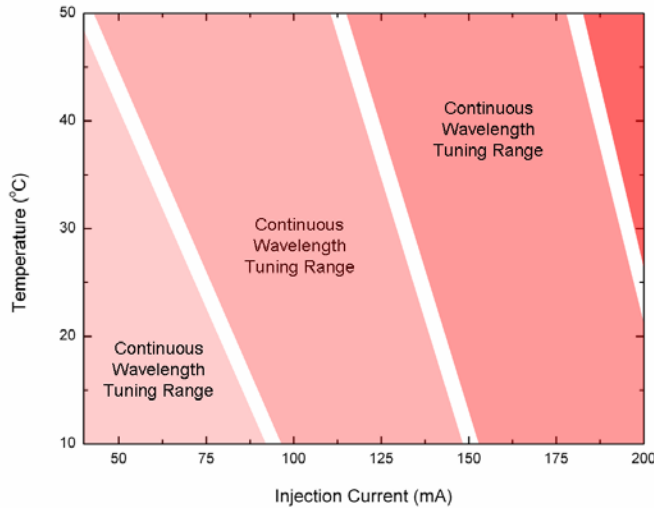
This graphic shows the unique design of the Photodigm DBR laser. Single-growth epi, combined with precision fabrication of ridges and passive gratings result in unmatched power, reliability, and stability for high power single frequency applications.



Photodigm is a primary manufacturer of semiconductor lasers, with proprietary design methodology and process technology.

Precision matters

✧ Large continuous tuning range

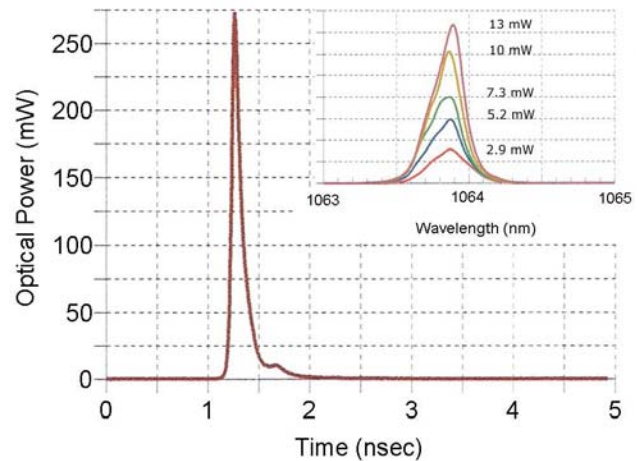


DBR lasers are the architecture of choice where high power within a well-defined operating range is required. The figure on the left shows ranges of hysteresis-free, continuous wavelength tunability with side mode suppression >40 dB. Within these regions the typical thermal tuning is $0.7\text{\AA}/^\circ\text{C}$ ($\sim 25\text{GHz}/^\circ\text{C}$) and typical current tuning is $0.025\text{\AA}/\text{mA}$ ($\sim 1\text{GHz}/\text{mA}$).

✧ Picosecond pulse capability

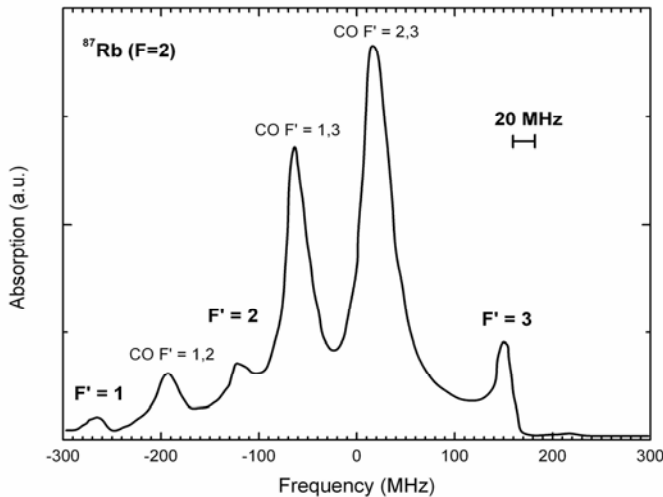
The figure on the right shows spectral stability of the Photodigm lasers with picosecond pulses.

Data Courtesy of PicoQuant GmbH



✧ Narrow linewidth to resolve spectroscopic fine structure

Photodigm's 780nm and 852nm lasers have exceptionally narrow linewidths of less than 1MHz. At the left, a 780nm laser is used to record the hyperfine structure of ^{87}Rb in the F=2 ground state.



Photodigm Product Line

Photodigm DBR Lasers These high-power single-frequency, diffraction limited devices are available at the following technologically important wavelengths:

780 nm for rubidium-based applications including cold atom physics, magnetometers, and quantum encryption

852nm for cesium-based applications including atomic clocks and terahertz generation

920 nm for frequency doubling to blue

976 nm for frequency doubling to blue-green; narrow band pumping of Yb fiber

1064 nm for DPSS replacement, fiber amplifier seeding, difference-frequency, and frequency doubling

1083 nm certified for the optical pumping of the He $2^3S \rightarrow 2^3P$ transition for sensitive magnetometry

Custom wavelengths available. Contact Photodigm for more information


Photodigm lasers are available in several configurations. Our standard configurations are as follows:

LASER SELECTION MATRIX

Wavelength/Package Type

	780nm Series				852nm Series				920nm Series				976nm Series				1064nm Series				1083nm Series							
	T8	CM	CS	BF	T8	CM	CS	BF	T8	CM	CS	BF	T8	CM	CS	BF	T8	CM	CS	BF	T8	CM	CS	BF				
040	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
080	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
100	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
125	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
200	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
300	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
400	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
500	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
600	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

*CW power. Under pulsed conditions, peak power is considerably higher.

	Available Part Numbers	<div style="border: 1px solid black; padding: 2px;"> T8=TO-8 CM='C' Mount CS=Chip on Submount BF=14 pin Butterfly </div>
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Part Selection Format: PHxxxDBRyyyzz
 xxx or xxxx is the wavelength in nm
 yyy is the optical power in mW
 zz is the package or mount type

See individual Product Bulletin for detailed information.

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