

Laser Diode Bar Modules



High optical output power and high conversion efficiency

Laser diode (LD) bar modules consist of LD bars with their light-emitting points arranged on a linear array and integrated with an efficient cooling mechanism and other components. We provide LD bar modules that deliver kilowatt-class output power by stacking high-performance LD bars with high-power and high-reliability.







Consistent in house development and manufacturing

Our LD bar modules are developed and manufactured consistently in house from epitaxial growth of LD to modularization.

Therefore, we can supply high-quality and high-reliability products by getting quick feedback and make improvements in the development and manufacturing processes. And this allows us to respond to requests for custom designs such as wavelength adjustment and optimal packaging selection. We also make proposals that incorporate our unique technology called "jet cooling".





End pumping

The laser is pumped from the end of the crystal. This pumping method is used for lasers that require higher pumping efficiency and higher beam quality.

Annealing



The laser can be used as a light source for laser heaters that heat the target objects such as semiconductor wafers.

Products Lineup Matrix

We manufacture LD bars with a wide variety of specifications. LD bars are stacked or arrayed to achieve higher radiant power. These stacked and arrayed LD bars are modularized into a basic unit. We propose an appropriate combination according to your own request.

LD bar modules



Fiber output LD bar modules

Radiant power	Cooling	Wavelength	Operation mode	Lineup
≤ 40 W	Passive cooling	▶ 808 nm 885 nm 940 nm -	QCW	Custom
≤240 W	Water cooling	► 808 nm 885 nm -	CW	L15856 series Custom

Custom



·····See the product lineup on page 4 for details.

·····See the customized products on page 5 for details.

CustomPlease contact us for details.

Products Lineup

CW laser diode bar modules

Jet cooled stack module

Туре по.	Radiant power	Cooling	Wavelength	Operation mode	Operating current	Stacks	Duty ratio	Collimated type
L11408-15-940	1200 W	Jet cooling	940 nm ± 5 nm	CW	86 A	1.58 mm	-	Available*1
*1 Attachment of FAC lens is optional. A module attached FAC lens is regarded as a customized product.								

CW single bar modules

-								
Type no.	Radiant power	Cooling	Wavelength	Operation mode	Operating current	Stacks	Duty ratio	Collimated type
L8413-50-808	50 W		808 nm ± 5 nm	CW	60 A		_	Not available
L8413-60-940	60 W	Fassive cooling	940 nm ± 5 nm	CW	61 A		_	NOT available

Pulsed laser diode bar modules

Water cooled stack module

Type no.	Peak radiant power	Cooling	Wavelength	Operation mode	Operating current	Stacks	Duty ratio	Collimated type
L13713-25P940	8000 W	Water cooling	940 nm ± 5 nm	QCW	310 A	2.14 mm	1 %	Available ^{*1}
*1 Attachment of FAC lens is optional. A module	attached FAC lens is req	arded as a customize	d product.				•	

Passive cooled stack modules

Type no.	Peak radiant power	Cooling	Wavelength	Operation mode	Operating current	Stacks	Duty ratio	Collimated type	
L11398-16P808	1600 W		808 nm ± 5 nm		105 4	105.4	0.4 mm 1	1 %	
L11398-16P940	1600 W	Passive cooling	940 nm ± 5 nm	QCW	105 A	0.4 11111	1 /0	Not available	
L14001-01	650 W		808 nm ± 3 nm		130 A	1.2 mm	2.5 %	1	

Fiber output laser diode bar module

Type no.	Radiant power	Cooling	Wavelength	Operation mode	Operating current	Stacks	Duty ratio	Collimated type
L15856-01	240 W	Water cooling	940 nm ± 3 nm	CW	50 A	-	-	-



L11408-15-940



L8413 series



L13713-25P940



L11398 series



L14001-01



L15856-01

Customized Products

We provide various customizations according to the customer's request.

Jet cooled modules

These LD bar modules employ our unique jet cooling. In jet cooling, the heatsink serves as both an electrical current path and heat dissipation path and exhibits very high cooling efficiency. This ensures stable output of high energy and high power laser light.

Туре	Radiant power	Cooling	Wavelength	Operation mode	Stacks	Duty ratio	Collimated type	Package example
	2400 W		940 nm ± 5 nm			_		
Ote els trute	1500 W		000 mm 1 5 mm	CW	20		Available *1	1
Stack type	1500 W	Jet cooling	808 nm ± 5 nm	QCW	30	20 %	Available	
	15000 W		938 nm ± 5 nm			5 %		2
Array type	160 W		807 nm ± 5 nm	CW	4	-	Not available	3
Anay type	100 W		007 IIII 1 J IIII	011	4		NOT available	

*1 Attachment of FAC lens is optional.

Water cooled modules

These LD bar modules utilize water cooling ideal for pulse oscillation modules.

Туре	Radiant power	Cooling	Wavelength	Operation mode	Stacks	Duty ratio	Collimated type	Package example
Stack type	3000 W	Water ecoling	808 nm ± 5 nm	00%	10	1 %	Available *1	
Stack type	6500 W	water cooling	934 nm ± 5 nm	QCW	10			4

*1 Attachment of FAC lens is optional.



Wavelength stabilization and spectral narrowing technology Example of oscillation wavelength (wavelength: 880 nm) Mounting a VBG (Volume Bragg Grating) element is an effective way to narrow the 100 spectral bandwidth of LD and also to reduce 80 temperature-induced wavelength fluctuations. Relative intensity (%) This improves the efficiency in laser pumping 60 and spectroscopic applications. 4(20 0 876 878 880 882 884 Example of VBG technology implementation Wavelength (nm) LHA3F0180-02

MEMO

AMAMA' PHOTON IS OUR BUSINESS

Main Products

- Single Chip Laser Diodes
- Laser Diode Bar Modules
- Ouantum Cascade Lasers
- Direct Diode Lasers
- Applied Products of Semiconductor Lasers
- Solid State Lasers / Fiber Lasers
- Laser Related Products



To use laser products safely and effectively always read the "Precautions and notes on laser products" thoroughly from beginning to end. Also carefully read the user's manual and precautions that come with the product and comply with those instructions and related laws and regulations.

WARNING

Caution points regarding laser radiation exposure

When using laser products, classify laser products according to IEC 60825-1 and take safety measures for the applicable laser classes. In addition, observe the latest laws and standards of each country.

Harmful substances

This product may contain substances harmful to the human body. These cause no problems during normal use. However, when disposing of these products, be sure to comply with the regulations enforced by the relevant local government.

Safety measures

When using this product, take appropriate measures including designing safety features to avoid potential risks that might occur during normal use. The user must evaluate and install a safe laser system that complies with the regulations and standards in each country and the precautions needed for using the product.



Safety and handling precautions

• When using laser products always check the information that we provide on each product and comply with the instructions and precautions to ensure safe use. • We do not guarantee the integrity and complete safety of the products listed in this document. When a product is used in equipment or systems that might cause injury or death or property damage, take appropriate measures including a design with ample safety features to avoid potential trouble that might occur during normal use.

Precautions and notes on laser products

https://www.hamamatsu.com/jp/en/support/disclaimer/index.html

Information described in this material current as of March 2021. Specifications are subject to change without notice.

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

Laser Promotion Division, Business Promotion G.

1-8-3, Shinmiyakoda, Kita-ku, Hamamatsu City, Shizuoka, 431-2103, Japan, Telephone: (81)53-484-1301, Fax: (81)53-484-1302, E-mail: sales-laser@lpd.hpk.co.jp

US.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de France: Hamamatsu Photonics Index SA.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: info@hamamatsu.de Strance: Hamamatsu Photonics IVK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-32777 E-mail: info@hamamatsu.co.uk North Europe: Hamamatsu Photonics Norden AB: Torshannsgatan 35 16440 Kista, Sweden, Telephone: (46)6-509 031 01 E-mail: info@hamamatsu.se Italy: Hamamatsu Photonics Ikalia S.r.L: Strada della Moia, 1 int. 6, 20044 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.if China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Bellu, Chaoyang District, 100020 Beijing, P.R. China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section 2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.com.tw