

HPC 50W


at 9xxnm & 10xxnm, 50W 18% Fill Factor
High Power Laser Diode Half-bar on Passive Cooler



The II-VI Laser Enterprise HPC9xx-50C-677 & HPC10xx-50C-677 18% fill factor laser diode half-bar on passive cooler series has been designed to provide high reliability and the exceptional high brightness required for collimated pumping of next generation solid-state lasers and direct applications. Low bar smile values well below $1\mu\text{m}$ and small emitter width of $90\mu\text{m}$ only enhance the fiber coupling efficiency, especially for low core diameters.

The proprietary E2 front mirror passivation process, developed at our Zurich site, prevents Catastrophic Optical Damage (COD) to the laser diode facet even at extremely high output powers. The laser diode bars are mounted on an expansion matched sub-mount onto a conductive cooled Cu block package providing very high reliability in CW and pulsed (1-Hz type) applications.

Features:

- Mounted 5.4mm laser diode half-bar
- Passive 1" x 1" Cu block cooler
- 50W 18% fill factor ($90\mu\text{m}$ / $500\mu\text{m}$ pitch)
- Low smile assembly; $<1\mu\text{m}$
- Highly reliable single quantum well MBE structure
- Telecom-grade AuSn mounting technology
- Standard wavelengths at 915nm, 940nm, 980nm and 1030nm, 1060nm (others available on request)
- RoHS compliant 

Applications:

- Direct applications such as material processing (welding, cutting, etc.)
- Collimated solid-state laser pumping
- Fiber laser pumping
- Printing
- Medical

Optical Characteristics (typical values)

The following parametric limits detailed are for a cold plate [1] temperature of 20°C.

Parameter	Symbol	Unit					
CW Output Power	P_{op}	W	50	50	50	50	50
Center Wavelength [2]	λ_c	nm	915	940	980	1030	1060
Spectral Width	$\Delta\lambda$ (FWHM)	nm	3	3	3	3	4
	$\Delta\lambda$ (90%PC)	nm	4	4	4	4	5
Wavelength Shift with Temperature	$d\lambda_c/dT_{op}$	nm/°C	0.3	0.3	0.3	0.3	0.3
Beam Divergence	$\theta_{//}$ (FWHM)	deg	5.5	5.5	5.5	5.5	5.5
	$\theta_{//}$ (90%PC)		6	6	6	6	6
	θ_{\perp} (FWHM)		26	26	26	26	26
	θ_{\perp} (90%PC)		45	45	45	45	45
Polarization TE [3]	–	%	95	95	95	95	95
Threshold Current	I_{th}	A	4.7	4.5	4.0	4.5	4.5
Slope Efficiency	η_D	W/A	1.1	1.1	1.1	1.1	1.0
Conversion Efficiency	H	%	62	60	62	62	62
Operating Current	I_{op}	A	50	50	51	54	55
Operating Voltage	V_{op}	V	1.65	1.65	1.55	1.5	1.5
Operating Temperature [4]	T_{op}	°C	25 ± 5	25 ± 5	25 ± 5	25 ± 5	25 ± 5
Bar Width	b	mm	5.4	5.4	5.4	5.4	5.4
Number of Emitters	n	–	10	10	10	10	10
Emitter Spacing	p	µm	500	500	500	500	500
Emitter Width	w	µm	90	90	90	90	90
Fill Factor	f	%	18	18	18	18	18

Notes:

[1] The cold plate is the defined the top surface of the device the HPC is mounted to for cooling.

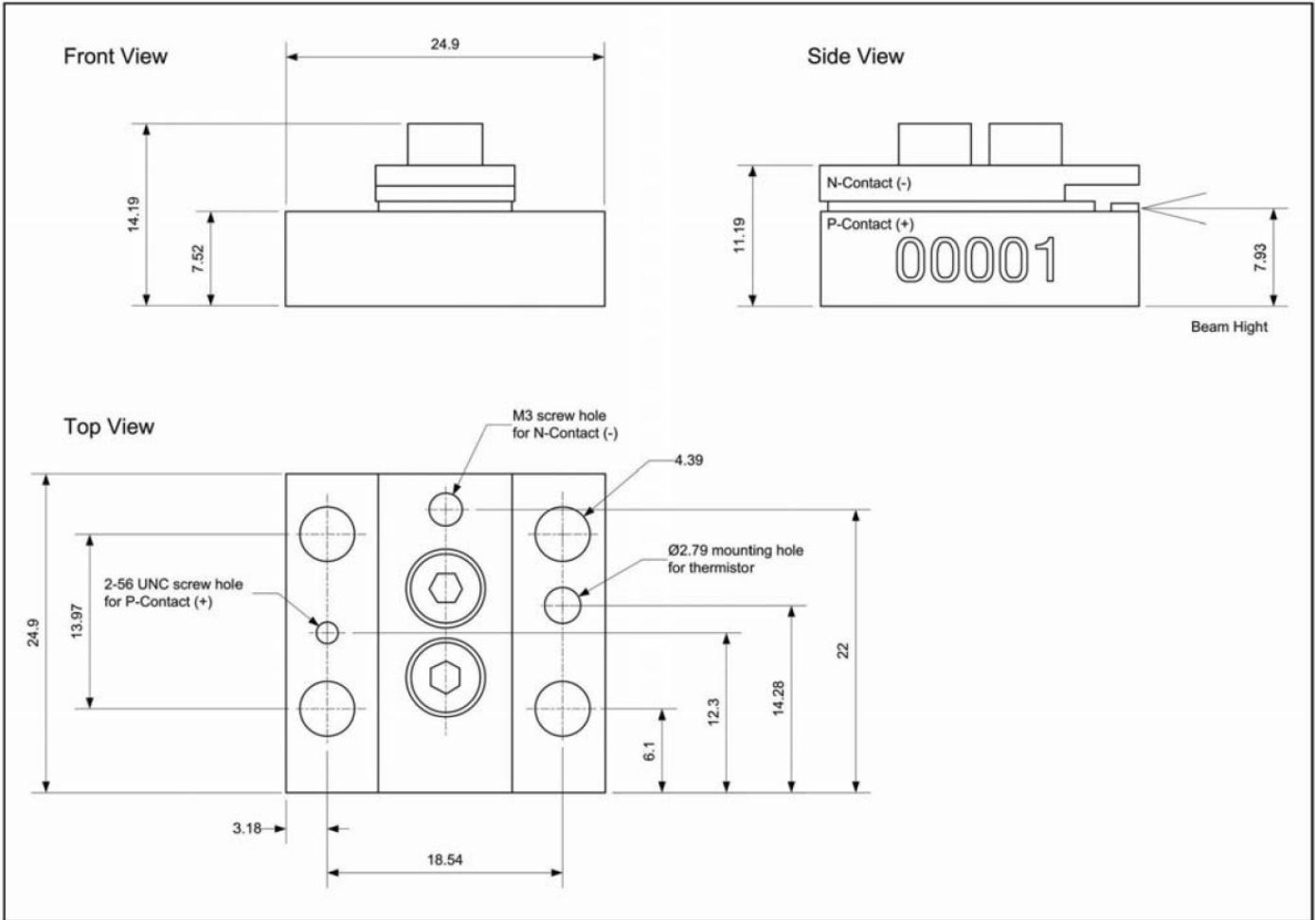
[2] For other center wavelengths contact Product Line Manager (910-1070nm).

[3] Direction of polarization is parallel to the bar.

[4] The temperature measured on the cold plate adjacent to the long side of the BLM not more than 4mm from the front facet.

Drawing (typical values)

All dimensions in millimeter if not otherwise indicated.



RoHS Compliance



II-VI Laser Enterprise is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information:

HPCxxx-50C-677r 50W 18% Fill Factor Laser Diode Half-bar on Passive Cooler
 xxx is the center wavelength between 910 and 1070nm,
 r indicates wavelength tolerance and smile (see table).

Bar Smile \ WL-Tolerance	> ±5nm	≤ ±5nm	≤ ±3nm
	> ±2.0µm	A	B
≤ ±2.0µm	F	G	H
≤ ±1.5µm	L	M	N

Notes:

Contact Product Line Manager for other than given values.

Contact Information

www.laserenterprise.com

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by II-VI Laser Enterprise before they become applicable to any particular order or contract. In accordance with the II-VI Laser Enterprise policy of continuous improvement specifications may change without notice. The publication of information in this data sheet does not imply freedom from patent or other protective rights of II-VI Laser Enterprise or others. Further details are available from any II-VI Laser Enterprise sales representative.



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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