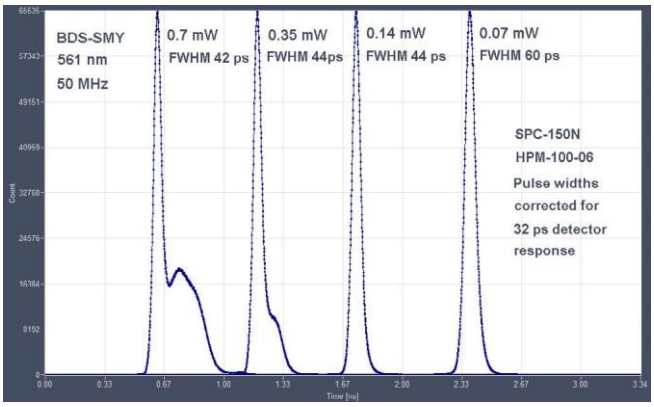
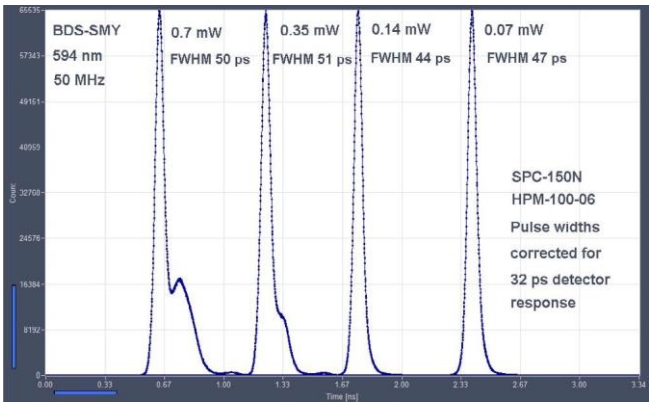
BDS-SMY Family Picosecond Diode Lasers

The BDS-SMY lasers close the wavelength gap in the spectrum of ps diode lasers in the 520 to 630 nm range. The lasers are based on the QLD series laser modules of QD Laser Inc., Japan. These modules contain an IR laser diode, an amplifier diode, and a frequency doubler. Combined with bh BDS laser series technology, the BDS-SMY lasers provide picosecond light pulses of short pulse width and narrow bandwidth at wavelengths of 532 nm, 561 nm, and 594 nm.

Small-size OEM Module, 40 x 40 x 120 mm³ or 40 x 70 x 120 mm³
Wavelengths 532 nm, 561 nm, 594 nm**
Free-beam or single-mode fibre output
Pulse width down to 50 ps
Pulse repetition rate 20/50* MHz
Internal clock or synchronisation to external clock source
CW-equivalent power 0.3 to 0.5 mW @ 50 MHz
Fast on / off / multiplexing capability
Internal power stabilisation loop
All electronics integrated
No external driver unit
Simple +12 V power supply
Compatible with all bh TCSPC devices





Pulse shapes and power levels may change due to development in laser diode technology. Coupling efficiency into single-mode fibres is 40 to 60 %.

* Laser power and power control is optimized for one frequency.
** Manufactured under license under German utility model #: DE202013006817.5

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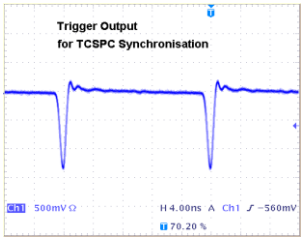
BDS-SMY

Optical

Repetition Rate, switchabel by TTL signal	20 MHz and 50 MHz, other repetition rates on request
Wavelengths	532 nm, 561 nm, 594 nm
Pulse width (FWHM, at medium power)	40 to 80 ps
Power control range (power in free beam)	typicallly 0 to 0.5 mW [1]
Beam diameter, free beam	1 mm x 2 mm
Polarisation	horizontal
Coupling efficiency into single-mode fibre, typically	up to 50 %

Trigger Output, to TCSPC Modules

Pulse Amplitude	-1.2 V (peak) into 50 Ω
Pulse Width	1 ns, see figure right
Output Impedance	50 Ω
Connector	SMA
Jitter between Trigger and Optical Pulse	< 10 ps

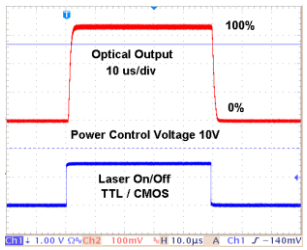


Synchronisation Input

Input amplitude	+3.3 to +5 V into 50 Ω
Duty cycle	10 to 30 %. DC equivalent must be < 2.5 V
Input frequency	20 to 60 MHz [1]
Connector	SMA
Switch between internal clock and sync input	automatic, by average voltage at trigger connector

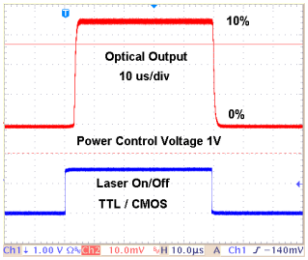
Control Inputs

Laser ON/OFF	TTL / CMOS, 'low' means 'OFF', internal pull-up
Response of optical output to ON/OFF signal	< 4 us for power 10 to 100 %, see figures right
External Power Control	analog input, 0 to +10 V
Response time of optical output to power control	< 4 us for power 10 to 100 %, see figure right
F1: 50 MHz	active H, internal pull-up resistor
F2: 20 MHz	active H, internal pull-down resistor
	Laser runs at 50 MHz when 'Fx' inputs unconnected



Power Supply

Power Supply Voltage	+ 9 V to +15 V
Power Supply Current at 12V	200 mA to 500 mA [2]

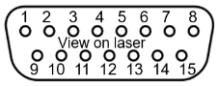


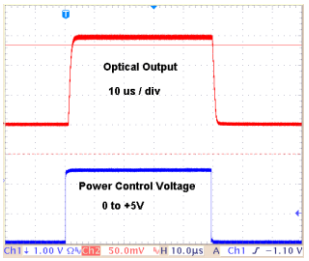
Mechanical Data

Dimensions (OEM)	40 mm x 40 mm x 120 mm
Dimensions (w/ cooling)	40 mm x 70 mm x 120 mm
Mounting holes	four holes for M3 screws
Heat sink requirements	< 2 °C / W [3]

Connector Pin Assignment

Connector version	Mini Sub-D 15 pin
Power supply +12V	1, 2
GND	4, 5, and case
Power control voltage	8
Laser ON/OFF (TTL/CMOS, active H)	6
F2: 20 MHz (active H, int. pull-down resistor)	3
F1: 50 MHz (active H, int. pull-up resistor)	7
Do not connect:	9, 10, 11, 12, 13, 14, 15





Maximum Values

Power Supply Voltage	0 V to +15 V
Voltage at 'Laser ON/OFF' and 'Frequency' inputs	-2 V to +7 V
Voltage at 'Laser Power' input	-12 V to +12 V
Ambient Temperature	0 °C to +40 °C [3]

1) Laser power and power control is optimized for one frequency, only.
2) Depends on case temperature due to laser diode cooling. Cooling current changes with case temperature.
3) OEM version without active cooling must be mounted on heat sink. Case temperature must remain below 40 °C.

Related Products

BDS-MM picosecond diode lasers, BDS-SMN picosecond and CW diode lasers, 375, 405, 445, 473, 488, 515, 640, 685, 785, 1064 nm

Caution: Class 3B laser product. Avoid direct eye exposure. Light emitted by the device may be harmful to the human eye. Please obey laser safety rules when operating the devices. Complies with US federal laser product performance standards.

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