



## 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 mm x 40 mm x 140 mm**

**Wavelengths 532 nm, 561 nm, 594 nm**

**Free-beam or single-mode fibre output**

**Pulse width down to 50 ps**

**Pulse repetition rate 20 MHz, 50 MHz**

**Internal clock or synchronisation to external clock source**

**CW-equivalent power 0.3 to 0.5 mW**

**Fast on / off / multiplexing capability**

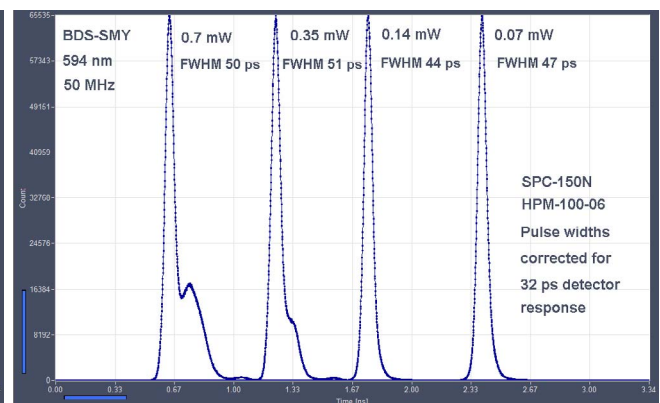
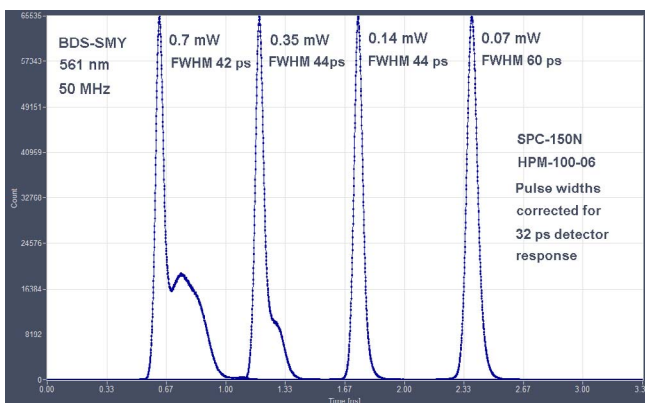
**Internal power stabilisation loop**

**All electronics integrated**

**No external driver unit**

**Simple +12 V power supply**

**Compatible with all bh TCSPC devices**



Free-beam power. Coupling efficiency into single-mode fibres is 50 to 70%. Pulse shapes and power levels may change due to development in laser diode technology.

Designed and manufactured by



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# BDS-SMY

## Optical

Repetition Rate, switchable 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) typically 0 to 0.5 mW  
 Beam diameter, free beam 1 mm x 2 mm  
 Polarisation horizontal  
 Coupling efficiency into single-mode fibre, typically 50% to 70 %

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

## Control Inputs

Laser ON / OFF  
 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 + 10V  
 Response time of optical output to power control < 4 us for power 10 to 100%, see figure right  
 Frequency 50 MHz active H, internal pull-up resistor  
 Frequency 20 MHz active H, internal pull-down resistor

## Power Supply

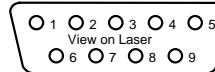
Power Supply Voltage + 9 V to +15 V  
 Power Supply Current at 12V 200 mA to 500 mA

## Mechanical Data

Dimensions 40 mm x 40 mm x 140 mm  
 Mounting holes four holes for M3 screws  
 Heat sink requirements < 2°C / W<sup>1)</sup>

## Connector Pin Assignment

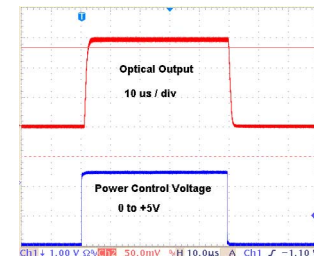
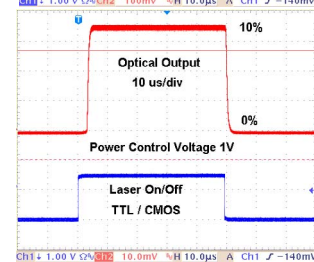
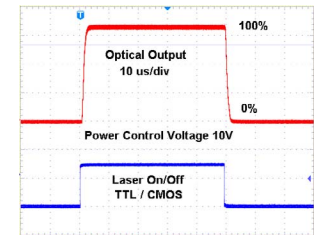
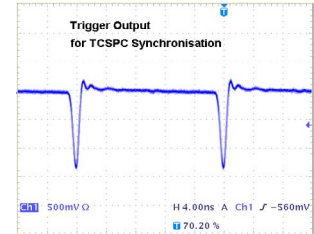
Connector version Mini Sub-D  
 Power supply +12V 1, 2  
 GND 4, 5, 9, and case  
 Power control voltage 8  
 Laser On/OFF (active H) 6  
 Frequency 50 MHz (active H, internal pull-up resistor) 7  
 Frequency 20 MHz (active H, internal pull-down resistor) 3



## 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

1) Laser must be mounted on heat sink. Case temperature must remain below 40°C



## Related Products

BDS-SM and BDS-MM picosecond and CW diode lasers, BDL-SMN picosecond and CW diode lasers



**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.**

**h International Sales Representative**



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