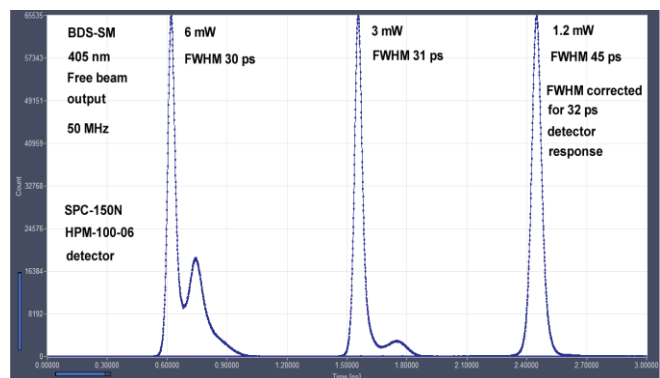
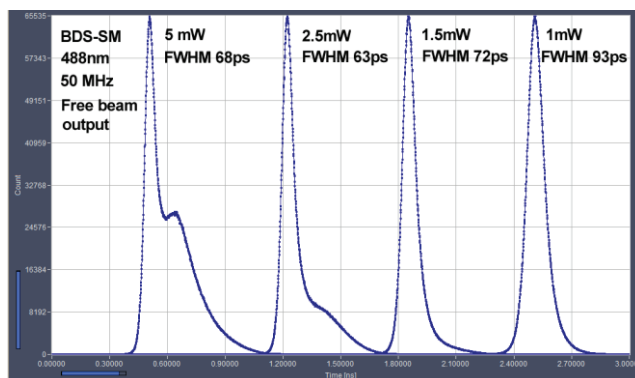
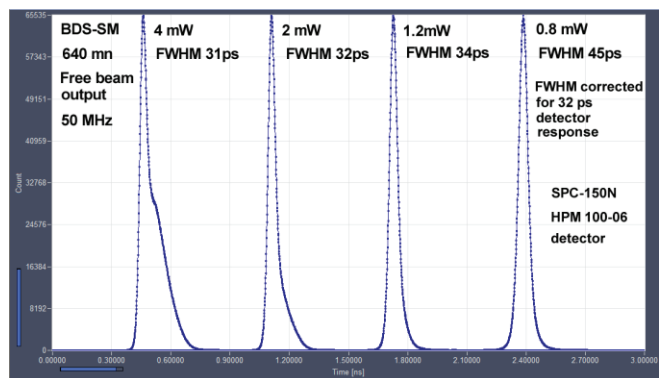
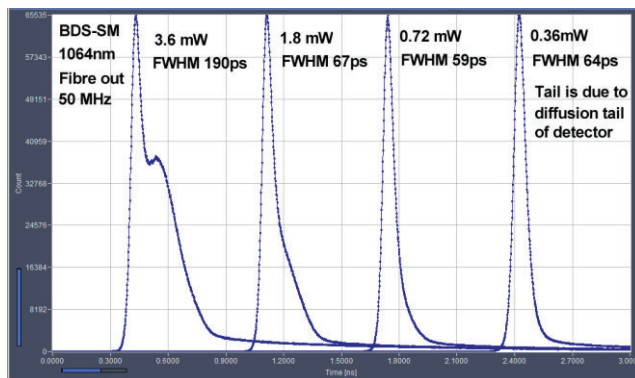




BDS-SM Family Picosecond Diode Lasers

- Small-size Module, 40 x 40 x 120 mm³ or 40 x 70 x 120 mm³
- Wavelengths 375, 405, 445, 473, 488, 515, 640, 685, 785, 1064 nm
- Free-beam or single-mode fibre output
- Pulse width down to < 40 ps
- Pulse repetition rate 20 MHz, 50, 80 MHz, and CW mode
- Sync input for synchronisation with external frequency
- Power in pulsed mode up to 1.3/3/5 mW @ 20/50/80 MHz
- Power in CW mode up to 50 mW
- Fast ON/OFF and multiplexing capability
- Internal power stabilisation loop
- All electronics integrated, no external driver unit required
- 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 %.

Designed and manufactured by



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Optical

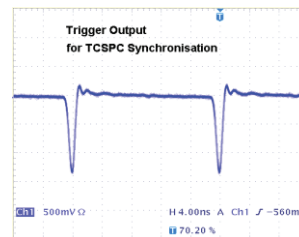
Repetition Rate, switchable by TTL signal
 Wavelengths
 Pulse width (FWHM, at medium power)
 Pulse width (FWHM, at maximum power)
 Power control range (power in free beam)
 Power control range (CW mode, power in free beam)
 Beam diameter, free beam
 Polarisation
 Coupling efficiency into single-mode fibre, typically

20 MHz, 50 MHz, 80 MHz and CW, other repetition rates on request
 375, 405, 445, 470, 485, 515, 640, 685, 785, 1064 nm, other on request
 30 to 90 ps
 60 to 300 ps
 0 to 1 mW 0 to 5 mW (depends on wavelength version)
 0 to 20 mW 0 to 50 mW (depends on wavelength version)
 0.8 mm (circular) or 1 x 3 mm (elliptical, depends on version)
 horizontal
 up to 60 % (circular version)

Trigger Output, to TCSPC Modules

Pulse Amplitude
 Pulse Width
 Output Impedance
 Connector
 Jitter between Trigger and Optical Pulse

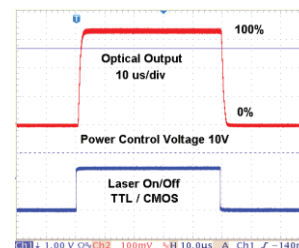
-1.2 V (peak) into 50 Ω
 1 ns, see figure right
 50 Ω
 SMA
 < 10 ps



Synchronisation Input

Input amplitude
 Duty cycle
 Input frequency
 Connector
 Switch between internal clock and sync input

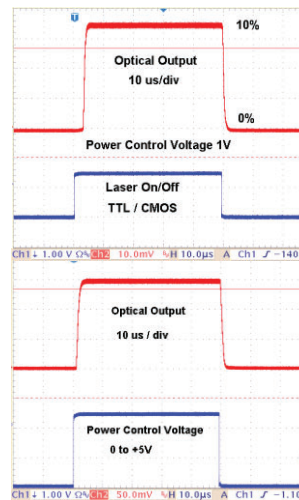
+3.3 to +5 V into 50 Ω
 10 to 30 %. DC equivalent must be < 2.5 V
 single pulse to 80 MHz / power control 10 to 80 MHz
 SMA
 automatic, by average voltage at trigger connector



Control Inputs

Laser ON/OFF
 Response of optical output to ON/OFF signal
 External Power Control
 Response time of optical output to power control
 F1: 50 MHz
 F2: 20 MHz
 F3: 80 MHz
 CW

TTL / CMOS, 'low' means 'OFF', internal pull-up
 < 4 us for power 10 to 100 %, see figures right
 analog input, 0 to +10 V
 < 4 us for power 10 to 100 %, see figure right
 active H, internal pull-up resistor
 active H, internal pull-down resistor
 active H, internal pull-down resistor
 active H, internal pull-down resistor
 Laser runs at 50 MHz when Frequency/CW inputs unconnected



Power Supply

Power Supply Voltage
 Power Supply Current at 12V

+9 V to +15 V
 200 mA to 500 mA ¹⁾

Mechanical Data

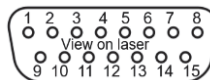
Dimensions (OEM)
 Dimensions (w/ cooling)
 Mounting holes
 Heat sink requirements

40 mm x 40 mm x 120 mm
 40 mm x 70 mm x 120 mm
 four holes for M3 screws
 < 2 °C / W ²⁾

Connector Pin Assignment

Connector version
 Power supply +12V
 GND
 Power control voltage
 Laser ON/OFF (TTL/CMOS, active H)
 F2: 20 MHz (active H, int. pull-down resistor)
 F1: 50 MHz (active H, int. pull-up resistor)
 F3: 80 MHz (active H, int. pull-down resistor)
 CW (active H, int. pull-down resistor)
 Do not connect:

Mini Sub-D 15 pin
 1, 2
 4, 5, and case
 8
 6
 3
 7
 10
 9
 11, 12, 13, 14, 15



Maximum Values

Power Supply Voltage
 Voltage at 'Laser ON/OFF' and 'Frequency' inputs
 Voltage at 'Laser Power' input
 Ambient Temperature

0 V to +15 V
 -2 V to +7 V
 -12 V to +12 V
 0 °C to +40 °C ²⁾

1) Depends on case temperature due to laser diode cooling. Cooling current changes with case temperature.
 2) 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, BDL-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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