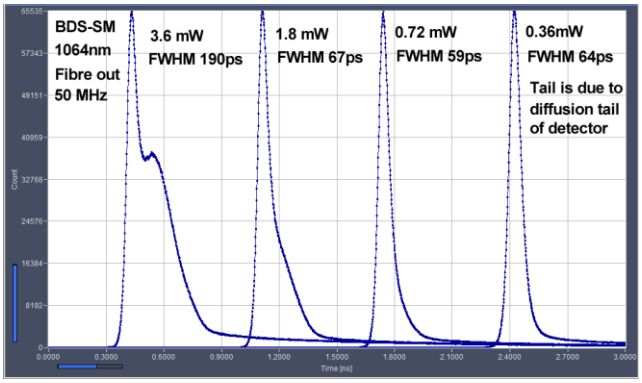
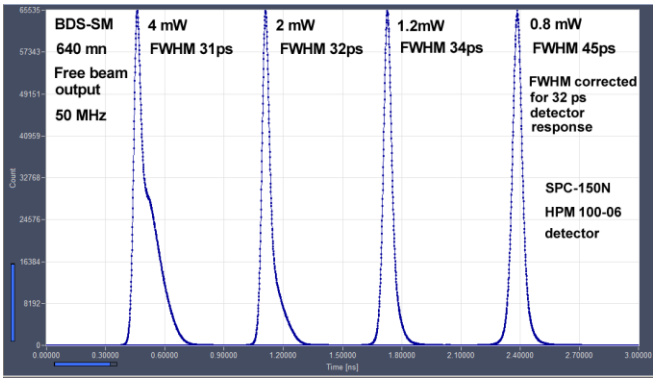
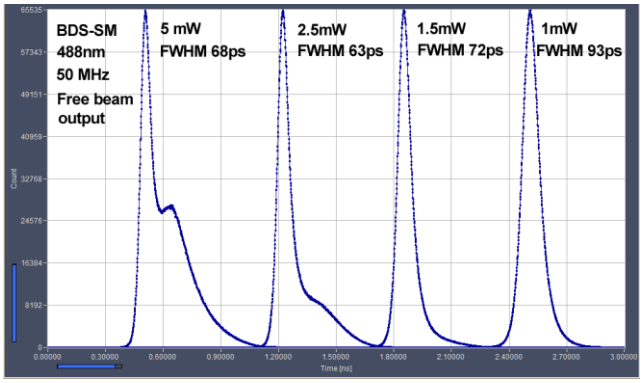
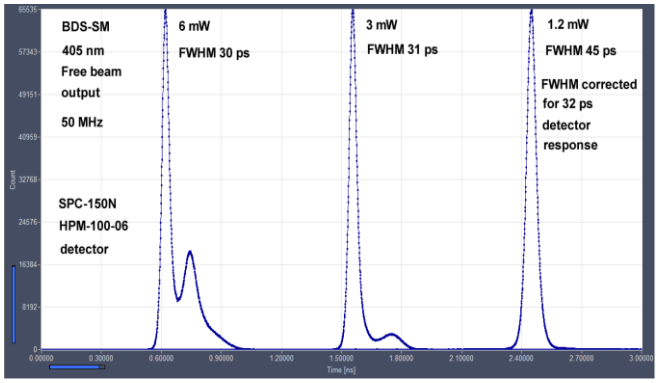
BDS-SM Family Picosecond Diode Lasers

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, 50, 80 MHz, and CW mode
Ext. trigger via sync. input: Single shot to 80 MHz
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
High power stability
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 %.

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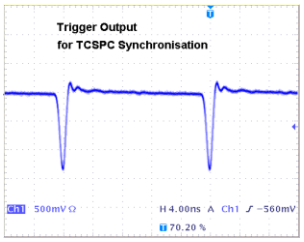
Optical

Repetition Rate, switchabel by TTL signal	20 MHz, 50 MHz, 80 MHz and CW, other repetition rates on request
Wavelengths	375, 405, 445, 470, 485, 515, 640, 685, 785, 1064 nm, other on request
Pulse width (FWHM, at medium power)	30 to 90 ps
Pulse width (FWHM, at maximum power)	60 to 300 ps
Power control range (power in free beam)	0 to 1 mW ..... 0 to 5 mW (depends on wavelength version)
Power control range (CW mode, power in free beam)	0 to 20 mW ..... 0 to 50 mW (depends on wavelength version)
Beam diameter, free beam	0.8 mm (circular) or 1 x 3 mm (elliptical, depends on version)
Polarisation	horizontal
Coupling efficiency into single-mode fibre, typically	up to 60 % (circular version)

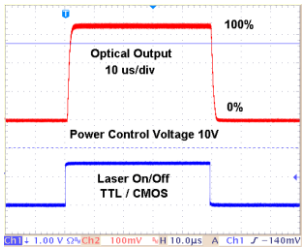


Trigger Output, to TCSPC Modules

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	single shot to 80 MHz
Active power stabilization / power control	10 to 80 MHz
Connector	SMA
Switch between internal clock and sync input	automatic, by average voltage at trigger connector

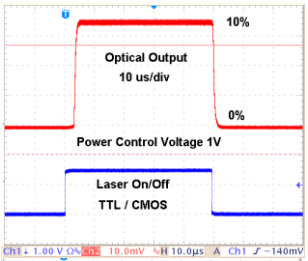


Control Inputs

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
F3: 80 MHz	active H, internal pull-down resistor
CW	active H, internal pull-down resistor
	Laser runs at 50 MHz when Frequency/CW inputs unconnected

Power Supply

Power Supply Voltage	+ 9 V to +15 V
Power Supply Current at 12V	200 mA to 500 mA [1]

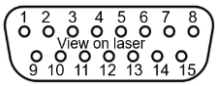


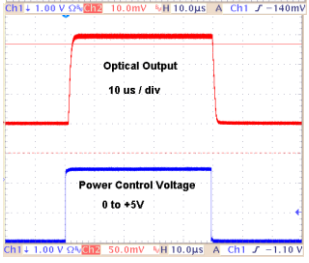
Mechanical Data

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 [2]

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
F3: 80 MHz (active H, int. pull-down resistor)	10
CW (active H, int. pull-down resistor)	9
Do not connect:	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	15 °C to +35 °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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