



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

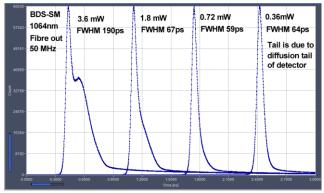
High power stability

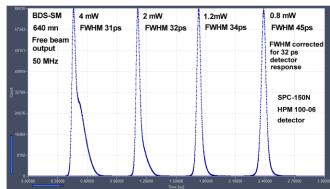
All electronics integrated, no external driver unit required

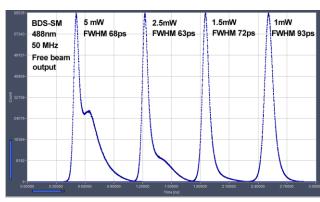
Simple +12 V power supply

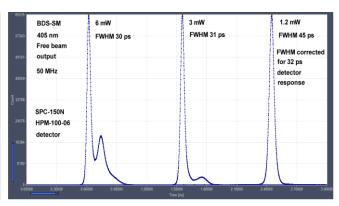
Compatible with all bh TCSPC devices











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

Designed and manufactured by



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for TCSPC Synchronisation

Optical Output 10 us/div

Power Control Voltage 10V

GNI + 1.00 V Ω%Ch2 100mV %H 10.0μs A Ch1 J -140mV

Laser On/Off

H 4.00ns A Ch1 J -560n

10%

Optical

Repetition Rate, switchabel 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

Trigger Output, to TCSPC Modules

Pulse Amplitude Pulse Width Output Impedance

Connector

Jitter between Trigger and Optical Pulse

Synchronisation Input

Input amplitude

Duty cycle

Input frequency

Active power stabilization / power control

Connector

Switch between internal clock and sync input

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

Power Supply

Power Supply Voltage Power Supply Current at 12V

Mechanical Data

Dimensions (OEM)

Dimensions (w/ cooling) Mounting holes

Heat sink requirements

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:

Maximum Values

Power Supply Voltage

Voltage at 'Laser ON/OFF' and 'Frequency' inputs

Voltage at 'Laser Power' input

 $20\ MHz,\,50\ MHz,\,80\ MHz$ 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)

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

+3.3 to +5 V into 50Ω 10 to 30 %. DC equivalent must be < 2.5 V single shot to 80 MHz 10 to 80 MHz SMA

automatic, by average voltage at trigger connector

TTL / CMOS, 'low' means 'OFF', internal pull-up < 4 us for power 10 to 100 %, see figures right analog input, 0 to $\pm 10~V$ < 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

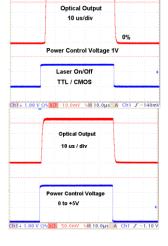
+ 9 V to +15 V 200 mA to 500 mA 1)

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

Mini Sub-D 15 pin 1, 2 4, 5, and case 6 3 10

> 0 V to +15 V -2 V to +7 V -12 V to +12 V 15 °C to +35 °C 2)

11, 12, 13, 14, 15



- 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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