



BDS-MM Family Picosecond Diode Lasers

Optical power up to 60 mW @ 50 MHz

Wavelengths 405, 445, 525, 640, 685, 785, 915 nm

Power up to 60 mW, multi-mode @ 50 MHz

Small-size Module, 40 x 40 x 120 mm³ or 40 x 70 x 120 mm³

Free-beam or multi-mode fibre output

Pulse repetition rate 20 MHz and 50 MHz, others on request

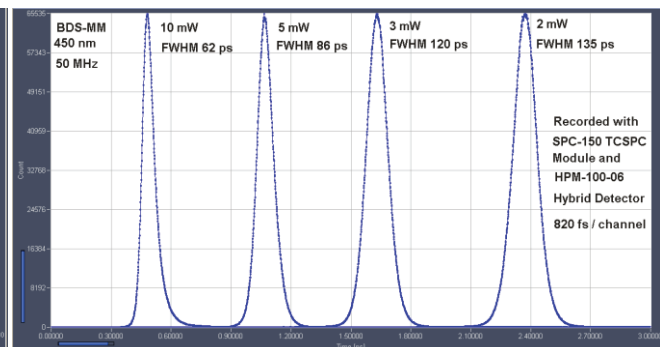
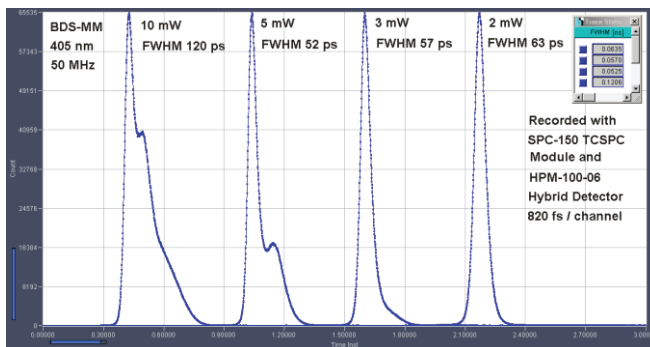
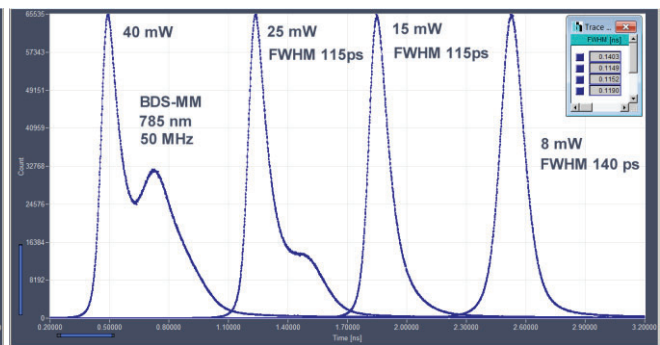
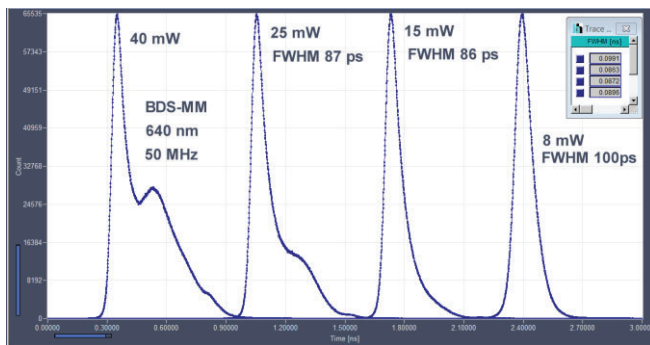
Fast ON / OFF / multiplexing capability

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 may change due to development in laser diode performance. Power measured in free beam. Coupling efficiency into optical fibres is 60 to 90%, depending on fibre diameter

Designed and manufactured by



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BDS-MM

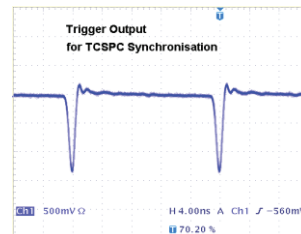
Optical

Repetition Rate, switchable by TTL signal
 Wavelengths
 Max. optical power
 Coupling efficiency into fibres (multi-mode, typical values)
 Pulse width (FWHM, at medium power)
 Pulse width (FWHM, at maximum power)
 Warm-up time for power and pulse shape stabilisation after power on

20 MHz and 50 MHz, other combinations on request
 405, 450, 525, 640, 685, 785, 915 nm, others on request
 10 to 60 mW at 50 MHz, depends on wavelength version
 100 µm: 60% 200 µm: 80% 500 µm: 90 %
 65 to 120 ps
 120 to 300 ps
 1 min¹⁾

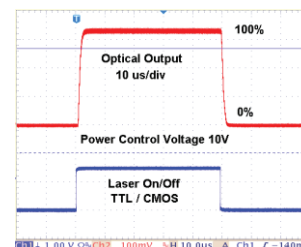
Trigger Output, to TCSPC Modules

Pulse Amplitude -1 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



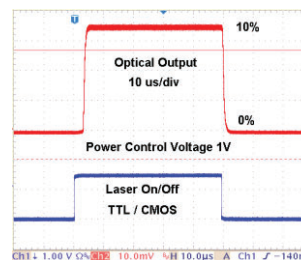
Synchronisation Input

Input amplitude +3.3 to +5 V into 50 Ω
 Duty cycle 10 to 30 %. DC equivalent must be < 2.5V
 Input frequency 20 to 50 MHz, others on request
 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 + 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 with Frequency inputs unconnected



Power Supply

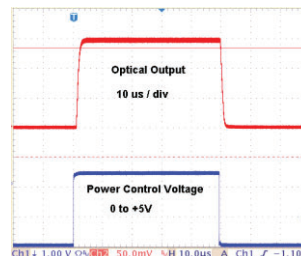
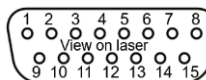
Power Supply Voltage +9 V to +15 V
 Power Supply Current at 12V 200 mA to 500 mA²⁾

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 / W³⁾

Connector Pin Assignment

Connector version Micro Sub-D
 Power supply +12V 1, 2
 GND 4, 5, 9, and case
 Power control voltage 8
 Laser ON/OFF (active H) 6
 F1: 50 MHz (active H, internal pull-up resistor) 7
 F2: 20 MHz (active H, internal pull-down resistor) 3
 Do not connect: 9 to 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 °C³⁾

- 1) Operation below 13 °C ambient temperature may result in extended warm-up time.
- 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-SM 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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