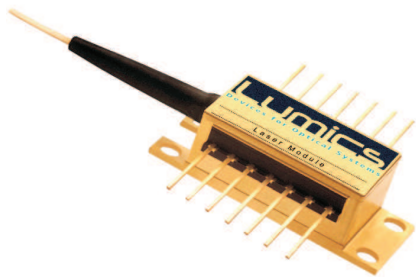


## LU1550M150 1550nm Laser Module, Seed Laser c.w. or pulsed mode



### Description:

The Lumics LU1550M150 laser diode module contains an optimized InP substrate based quantum well high power laser diode. It has been designed for customer specific applications and is available with special FBG's and fibers. The qualification contains a set of optoelectronic, thermal and mechanical tests. Each laser diode module is individually serialized for traceability and is shipped with a specified set of test data.

### Features & Functions:

- Wavelength 1550nm
- Up to 150mW c.w. operating power
- Up to 200mW peak power
- Short pulses 5nsec - 500nsec

### Options:

- FBG-options
- Low inductive rise fall time <1 ns

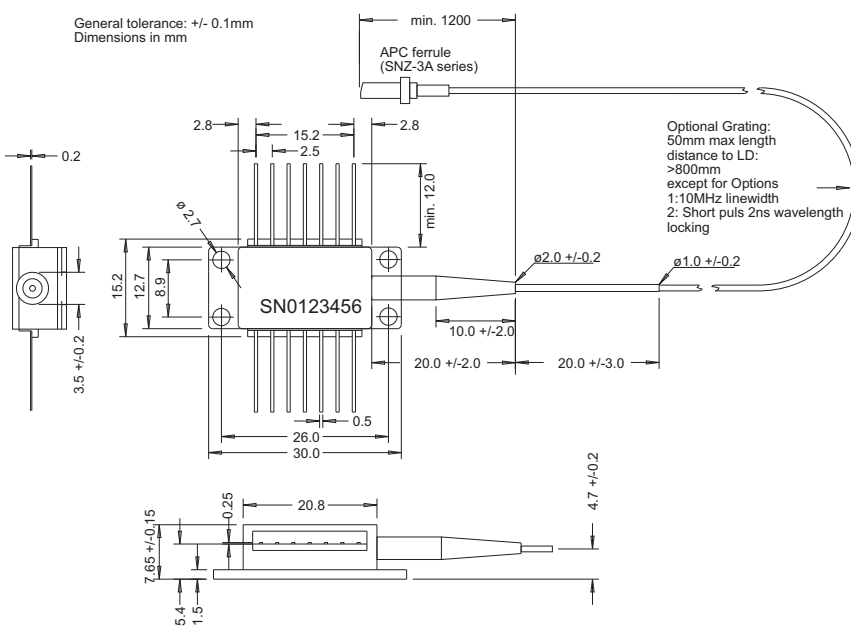
### Benefits:

- All laser welded
- High reliability

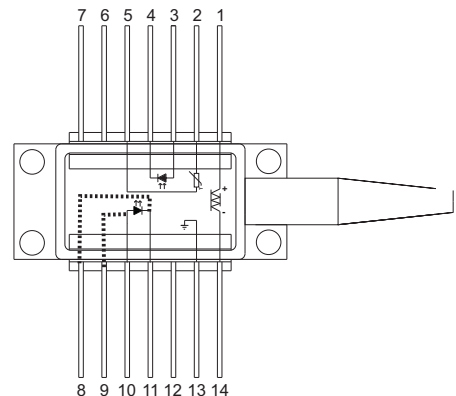
### Applications:

- Sensor applications

### Module Drawing (dimensions in mm)



### Pin Connections



Pin	Function	Pin	Function
1	Cooler (+)	8	(*) LD Cathode (-)
2	Thermistor	9	(*) LD Anode (+)
3	nc	10	LD Anode (+)
4	nc	11	LD Cathode (-)
5	Thermistor	12	nc
6	nc	13	Case ground
7	nc	14	Cooler (-)

(\*) Optional low inductive

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## Electrical and Optical Characteristics (at 25°C (T<sub>chip</sub> and T<sub>case</sub>) and Begin of Life (BOL)):

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Operating power	c.w.	P <sub>op</sub>		150		mW
Operating current	c.w.	I <sub>op</sub>		600	800	mA
Pulsed operating peak power	< 500ns / duty cycle <5%	P <sub>op_puls</sub>		200		mW
Pulsed operating peak current	< 500ns / duty cycle <5%	I <sub>op_puls</sub>			1	A
Rise and fall time (4)					2	nsec
Threshold current		I <sub>th</sub>		50		mA
Forward voltage	at I <sub>op</sub>	V <sub>op</sub>		1.6		V
Peak wavelength λ <sub>peak</sub> (2)	at P <sub>op</sub> without FBG	λ	1540	1550	1560	nm
Spectral Width (FW <sub>90%</sub> energy inclusion) (2)	at P <sub>op</sub> without FBG	Δλ		6		nm
Spectral Width (FWHM) (3)	at P <sub>op</sub> with FBG	Δλ		0.8		nm
Peak Wavelength at λ <sub>peak</sub> (3)	at P <sub>op</sub> with FBG	λ	1548	1550	1552	nm
Spectral shift with internal temp.	without FBG, internal T <sub>chip</sub>	Δ / T		0.6		nm/ °C
Spectral shift with temp.	with FBG Temp	Δ / T		0.01	0.02	nm/ °C
Side mode suppression (2)	at P <sub>op</sub> , with FBG			20		dB
TEC current	chip 25°C, case 70°C	I <sub>TEC</sub>		1.4		A
TEC voltage	chip 25°C, case 70°C	V <sub>TEC</sub>		2.2		V
Thermistor resistance	T=25°C	R <sub>th</sub>	9.5	10	10.5	kOhm
Thermistor B constant		B	3850	3950	4050	K
Steinhart-Hart-Equation coefficients	C <sub>1</sub> = 1.1292E-03 / C <sub>2</sub> = 2.3411E-04 / C <sub>3</sub> = 8.7755E-08					
Large signal modulation bandwidth				200		MHz
<b>Fiber Specifications</b>						
Fiber type	single mode (SMF28, NA 0.13)					

### Notes:

- 1) Ensure sufficient protection against high energy back reflection pulses from solid state lasers. High energy back reflection damages the diode (for example stimulated Brillouin scattering). Typical damage threshold for 8ns pulsed @200KHz is 0.05μJ (this level is not covered under warranty).
- 2) Intensity noise of light from modules with PM fiber after polarizer increases with lower polarization extinction ratio (example 6 /10/13 dB can result in intensity noise as high as 50/20/5 %). The intensity noise is sensitive to varying stress (by mechanical and temperature effects) introduced to the PM fiber.
- 3) Wavelength is measured in air. Without wavelength stabilisation by a fiber bragg grating(FBG) multiple peaks (side modes) around the average wavelength for a specific current in a range of (1-3) nm are observed. The full width half maximum (FWHM) of those peaks can suddenly narrow or broaden. Side mode suppression counts the first side peaks next to the main peak. A peak is defined by significant lower values left and right to this peak.
- 4) With wavelength stabilisation by a fiber bragg grating (FBG) a single peak for a specific current is observed. The full width half maximum (FWHM) of this single peaks is stable over time as long as it is not disturbed by further back reflection from the outgoing optical path.
- 5) Rise and fall depends on appropriate driver and can be lower than 1ns with the low inductive version.

## Absolute Maximum Ratings

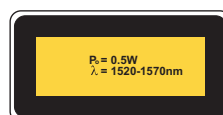
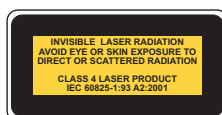
Parameter	Symbol	Min	Max	Unit
Storage temp.	T <sub>max</sub>	-40	85	°C
Operating case temp.	T <sub>op, case</sub>	-20	70	°C
Operating chip temp.	T <sub>op, chip</sub>	20	40	°C
Soldering temp. (max. 10sec)		260		°C
LD Forward current (c.w.)	I <sub>op, max</sub>		0.85	A
LD Forward current (Pulse 500ns 5% d.c.)			1	A
LD Reverse voltage	V <sub>R, max</sub>		2	V
TEC Current	I <sub>TEC</sub>		1.8	A
TEC Voltage	V <sub>TEC</sub>		3.2	V
ESD Damage (1)			500	V
Fiber pigtail bend radius	SMF28		25	mm
Maximum transient (<3μs) forward current			1.5	A

(1) A standard human body model (1.5kOhm, 1000pF) is used for ESD thresholds

### Note:

Absolute maximum ratings may be applied to the laser module for short period of time only. Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device.

## User Safety



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