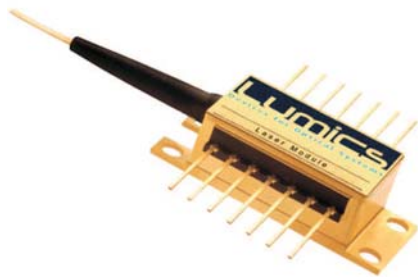




## LU1064M450 1064nm Laser Module, Seed Laser c.w. or pulsed mode



### Description:

The Lumics LU1064M450 laser diode module contains an optimized GaAs 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 extremely stringent reliability requirements are achieved through our patent pending innovative technology. This includes careful design, exactly defined manufacturing and extensive testing. 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 1064nm
- > 500mW kink-free power
- Up to 1.2W peak power
- Short pulses 5nsec - 500nsec
- Single mode pigtail
- Cooled 14pin package
- FBG-options
- PM-fiber option

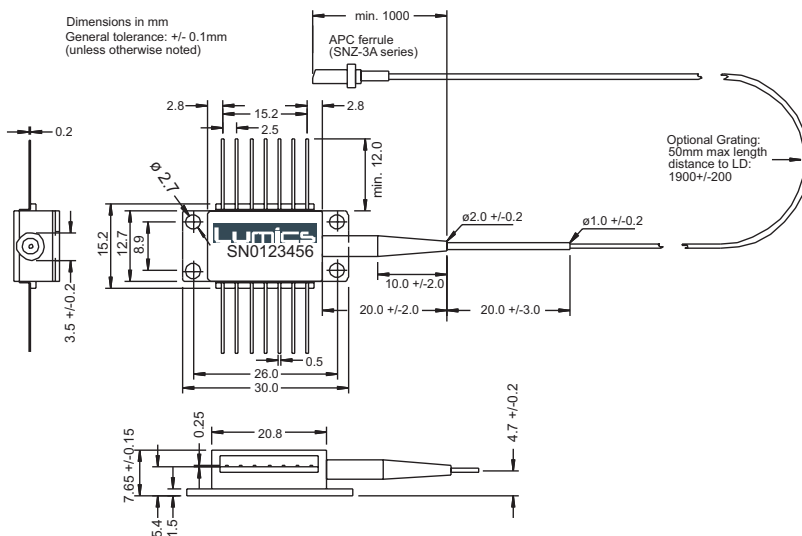
### Benefits:

- All Laser welded
- MTTF > 50.000h
- Field proven reliability

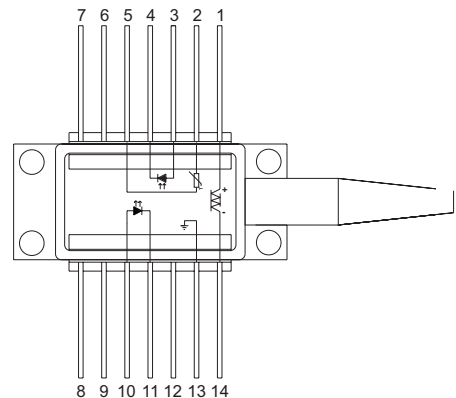
### Applications:

- Seeder for fiber laser
- Sensor applications

### Module Drawing (dimensions in mm)



### Pin Connections



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

Your ideas are welcome.

## Electrical and Optical Characteristics (at 1064nm, 25°C (T<sub>chip</sub> and T<sub>case</sub>) and Begin of Life (BOL)):

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
C.w. Operating Power	c.w.	P <sub>op</sub>		450		mW
C.w. Operating Current	c.w.	I <sub>op</sub>		760	800	mA
Pulsed Operating peak power	< 500ns / duty cycle <5%	P <sub>op</sub>		1200		mW
Pulsed Operating peak current	< 500ns / duty cycle <5%	I <sub>op</sub>			1.6	A
Rise and Fall Time			1		2	nsec
Threshold Current		I <sub>th</sub>		65		mA
Forward Voltage	at I <sub>op</sub>	V <sub>op</sub>		1.75	1.85	V
Peak Wavelength λ <sub>peak</sub>	at P <sub>op</sub>	λ	1059	1064	1069	nm
Spectral Width (FWHM)	at P <sub>op</sub> , with FBG	Δλ			1	nm
Optical Power Stability	at I <sub>op</sub> , t = 60 sec	P <sub>op</sub> / t			0.5	%
Polarization Extinction Ratio	PM fiber version		11			dB
Spectral Shift with Temp.	FBG Temp.	Δ / T			0.01	nm/ °C
Side Mode Suppression	at P <sub>op</sub> , with FBG		-20			dB
Monitor Responsivity		R	0.1	0.5	2	μA / mW
Monitor Dark Current				5	40	nA
TEC Current	chip 25°C, case 70°C	I <sub>TEC</sub>		2.1		A
TEC Voltage	chip 25°C, case 70°C	V <sub>TEC</sub>		2.6		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 (similar to HI 1060, fiber PM 980 on request)					

## Absolute Maximum Ratings

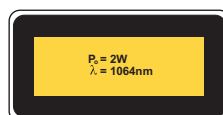
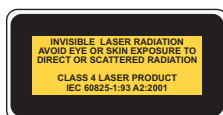
Parameter	Symbol	Min	Max	Unit
Storage temp.	T <sub>max</sub>	-40	85	°C
Operating case temp.	T <sub>op, case</sub>	-20	60	°C
Operating chip temp.	T <sub>op, chip</sub>	20	30	°C
Soldering temp. (max. 10sec)		260		°C
LD Forward current (c.w.)	I <sub>op, max</sub>		900	mA
LD Forward current (Pulse 500ns 5% D.C.)			1.6	A
LD Reverse voltage	V <sub>R, max</sub>		2	V
Monitor forward current	I <sub>F, PD</sub>		5	mA
Monitor reverse voltage	V <sub>R, PD</sub>		20	V
TEC Current	I <sub>TEC</sub>		2.5	A
TEC Voltage	V <sub>TEC</sub>		3.2	V
ESD Damage (2)			500	V
Fiber pigtail bend radius	HI 1060		25	mm
Maximum transient (<3μs) forward current			1.2	A
Maximum back reflection external amplifier (10ns / 5μs)			0.1	μJ

(2) A standard human body model (1.5kOhm, 100pF) is used for ESD thresholds

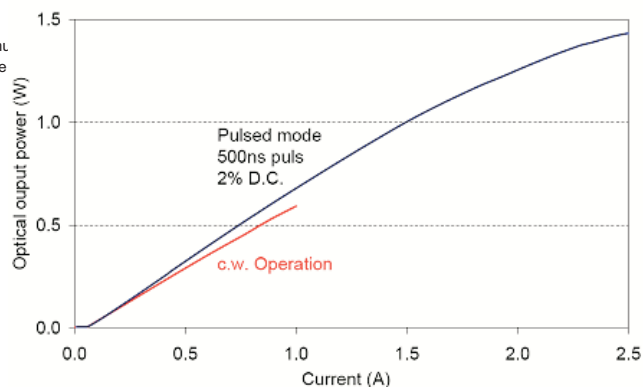
### Note:

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

## User Safety



Power versus current in c.w. and pulsed operation



Your ideas are welcome.