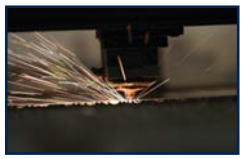
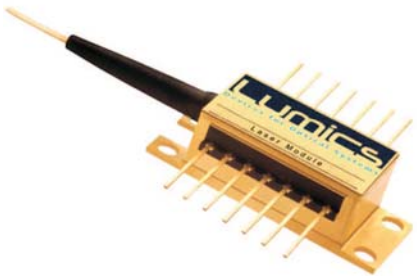
Lumics Member of scansonic Group



LU1064M200

200mW 1064nm Laser Module, Single Mode Pump Laser



The single mode fiber pigtailed laser diode module contains an optimized GaAs substrate based quantum well high power laser diode. 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.

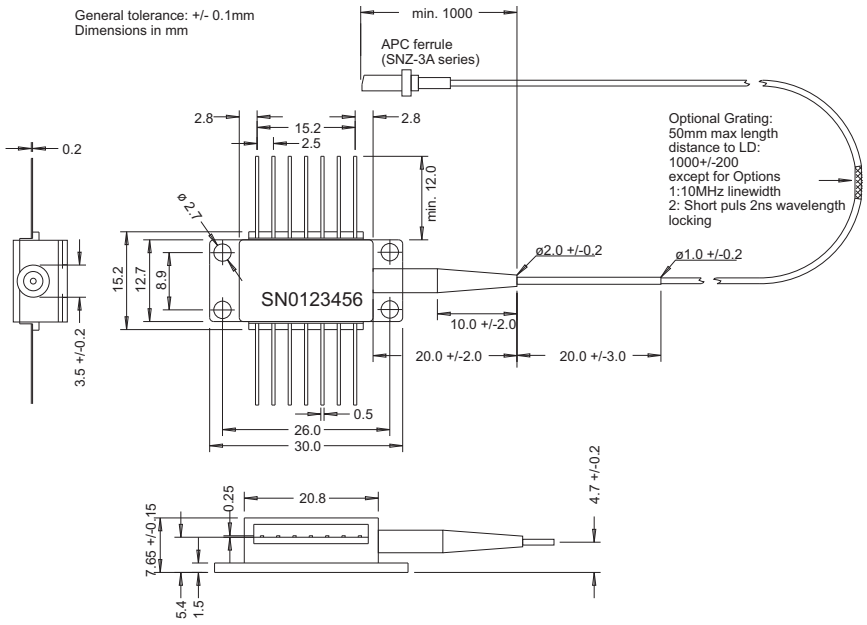
Features & Functions:
- Wavelength 1064nm
- Ultra narrow line width 0.04 pm (10MHz)
- ASE noise suppresison 25 dB
- Up to 200 mW c.w. operating power
- Rise time < 2nsec
- internal TEC temperaure stabilisation

Options:
- PM fiber option

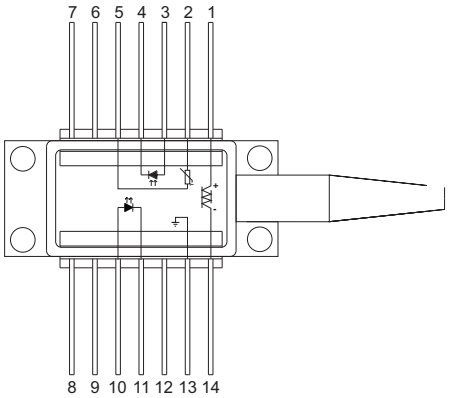
Benefits:
- All laser welded
- Field proven reliability
- Hermetic sealing
- Telcordia compliant package
- RoHS compliant

Applications:
- Fequency doubling
- 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 (-)

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Electrical and Optical Characteristics (at 25°C (T_{chip} and T_{case}) and Begin of Life (BOL)):

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Operating power (1)	c.w.	P_{op}		200		mW
Operating current	c.w.	I_{op}		350		mA
Pulsed operating peak power	< 500ns / duty cycle <5%	P_{op}		1000		mW
Pulsed operating peak current	< 500ns / duty cycle <5%	I_{op}			2	A
Rise and fall time				2		nsec
Threshold current		I_{th}		40		mA
Forward voltage	at I_{op}	V_{op}		1.65		V
Peak wavelength λ_{peak}	at P_{op}	λ	1063	1064	1065	nm
Spectral width (FWHM) (2)	at P_{op} , with FBG	$\Delta\lambda$		0.04		pm
Spectral width (FWHM) (2)	at P_{op} , with FBG	$\Delta\lambda$		10		MHz
Optical power stability	at I_{op}, t = 60 sec	P_{op} / t		0.5		%
Polarization extinction ratio	PM fiber version		6	12		dB
Spectral shift with temp.	FBG Temp.	Δ / T			0.02	nm/ °C
ASE noise suppression	at P_{op} , with FBG			25		dB
Monitor responsivity		R	0.04	0.08	2	µA / mW
Monitor dark current				5	40	nA
TEC current	chip 25°C, case 70°C	I_{TEC}		0.9		A
TEC voltage	chip 25°C, case 70°C	V_{TEC}		1.7		V
Thermistor resistance	T=25°C	R_{th}	9.5	10	10.5	kOhm
Thermistor B constant		B	3850	3950	4050	K
Steinhart-Hart-Equation coefficients	C_1= 1.1292E-03 / C_2= 2.3411E-04 / C_3= 8.7755E-08					

Fiber Specifications	
Fiber type	PM Fiber, PM980, Type PANDA

Note:

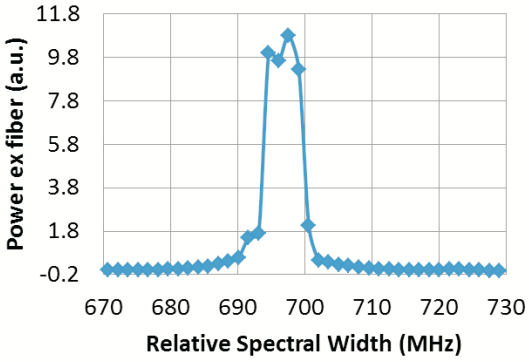
(1) operating power shows kinks approx. every 10mA - 100mA in defined power range due to single longitudinal laser mode hoping

(2) FWHM is valid in the current regime free of mode hoping. Smallest and stable line width over time is only achieved with drift and noise free laser diode driver and temperature controller meaning current drift below 0.1mA and noise band <10 µA up to 10 MHz as well as internal temperature drift below 0.2°C.

Absolute Maximum Ratings

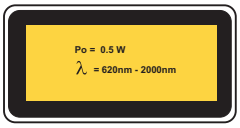
Parameter	Symbol	Min	Max	Unit
Storage temp.	T_{max}	-40	85	°C
Operating case temp.	$T_{op, case}$	-20	70	°C
Operating chip temp.	$T_{op, chip}$	20	40	°C
Soldering temp. (max. 10sec)		260		°C
LD forward current (c.w.)	$I_{op\ max}$		600	mA
LD forward current (Pulse 500ns 5% D.C.)			0.7	A
LD reverse voltage	$V_{R, max}$		2	V
Monitor forward current	$I_{F, PD}$		5	mA
Monitor reverse voltage	$V_{R, PD}$		20	V
TEC current	I_{TEC}		2.5	A
TEC voltage	V_{TEC}		3.2	V
ESD damage (2)			500	V
Fiber pigtail bend radius	PM 980		25	mm

Example of single mode spectra



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

User Safety



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