

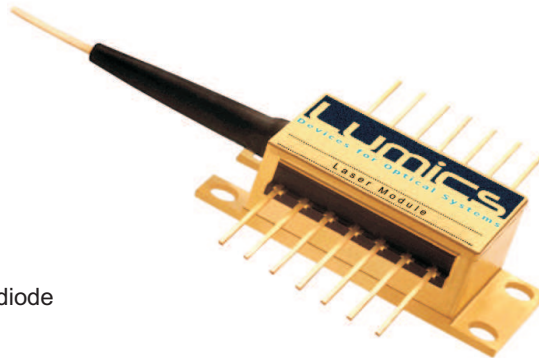
LU0975M300 / LU0975M400 / LU0975M450

Pump Laser Module FBG stabilized

Up to 450mW power

Features:

- Wavelength 975nm
- High kink-free power up to 450mW
- Proven reliability for high power operation
- Internal TEC temperature stabilisation
- Single mode fiber pigtail
- Fiber Bragg Grating stabilized
- Telcordia GR-468 qualified package and laser diode



Description / Applications:

The Lumics LU0975M300, LU0975M400 and LU0975M450 laser diode modules contain an optimized GaAs/AlGaAs/InGaAs quantum well high power laser. It has been specifically designed for applications in low noise high power Erbium Doped Fiber Amplifiers (EDFA). The extremely stringent reliability requirements are achieved through the Lumics patent 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.

We manufacture diode lasers.

Operating Parameters

Product code	Maximum Operating Power P_{op} [mW]	Maximum Operating Current I_{op} [mA] (2)	Minimum Kink Free Power P_k [mW] (1)	Maximum Kink Free Current I_k [mA] (1)
LU0975M300	300	580	330	630
LU0975M400	400	750	450	820
LU0975M450	450	820	500	880

Electrical and Optical Characteristics (at 975nm, 25°C (T_{chip} and T_{case}) and Begin of Life (BOL)):

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Threshold Current		I_{th}		65	85	mA
Forward Voltage	at I_{op}	V_{op}			2.0	V
Peak Wavelength	as specified +/- 2nm	λ_{peak}	974	975	976	nm
Spectral Width (3) (95% power)	at P_{op} , with FBG	λ_{p95}			2	nm
Optical Power Stability	at I_{op} , t = 60sec	P_{op} / t			0.5	%
Spectral Shift with Temp.	FBG Temp.	λ / T			0.02	nm/°C
Side Mode Suppression	at P_{op} , with FBG			20		dB
Monitor Responsivity		R	0.1	4	10	μA/mW
Monitor Dark Current				5	40	nA
TEC Current at 400mW	chip 25°C, case 70°C	I_{TEC}		1.1		A
TEC Voltage at 400mW	chip 25°C, case 70°C	V_{TEC}		1.8		V
Thermistor Resistance	T=25°C	R_{th}	9.5	10	10.5	kOhm
Thermistor 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 Type	Corning HI 1060, single mode					

Important Notes:

(1)

Kink-free is defined as $IdL/dI - <dL/dI>I < 0.2$, where $<dL/dI>$ is the average slope efficiency (between 1.8 times threshold and 4.5 times threshold) below kink. The module is kink free (at least) up to a minimum kink-free power P_k that the module will achieve at a device-specific current, the kink-free current I_k . All values of I_k are limited by values listed in Table 'Absolute Maximum Ratings' (see below).

(2)

Operating current (power) is the maximum current (power) where the slope efficiency does not decrease by more than 20% from average between 1.8 times threshold and 4.5 times threshold. The maximum operating power P_{op} will be achieved at a device-specific current, the maximum operating current I_{op} . The individual value of I_{op} is noted on the hardcopy of the test report shipped with the device. All values of I_{op} are limited by the values listed in table 'Absolute Maximum Ratings'. The pump laser shall never be operated at a power higher than the maximum operating power P_{op} throughout its lifetime. At Begin of Life (BOL), the operating current shall never be higher than the device-specific maximum operating current I_{op} that is noted in the test report shipped with the device. At End of Life (EOL) the operating current shall never be higher than the device-specific kink free current I_k that is noted in the test report.

Absolute Maximum Ratings:

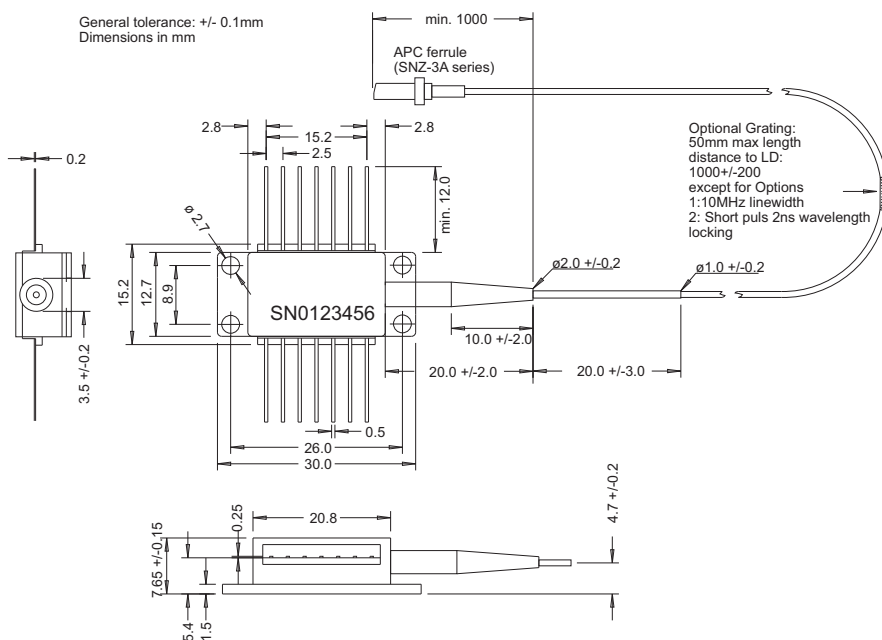
Parameter	Symbol	Min	Max	Unit
Storage Temp.	T_{\max}	-40	85	°C
Operating Case Temp.	$T_{\text{op, case}}$	-20	70	°C
Operating Chip Temp.	$T_{\text{op, chip}}$	15	35	°C
Lead Soldering Temp. (max. 10sec)			260	°C
LD Forward Current	$I_{F, \max}$		950	mA
LD Reverse Voltage	$V_{R, \max}$		2	V
Monitor Forward 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 ⁽¹⁾			500	V
Fiber Pigtail Bend Radius		25		mm
Maximum transient (<3μs) forward current			1.2	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.

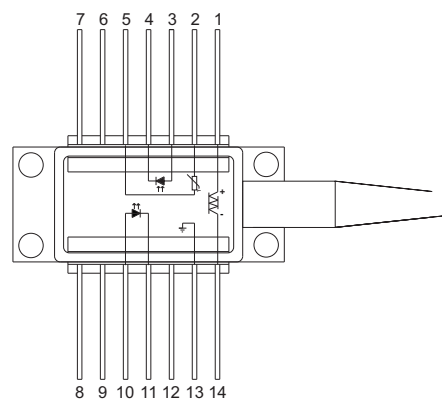
Module Drawing (dimensions in mm):



We manufacture diode lasers.

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 (-)



User Safety

