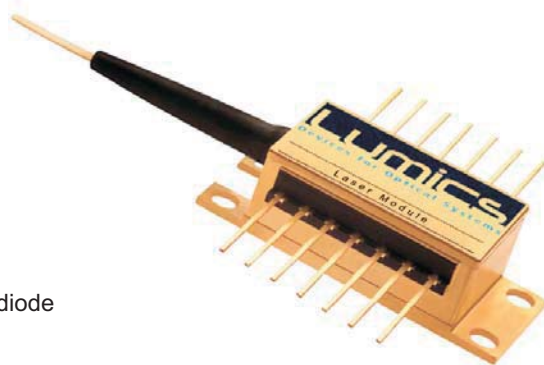


**LU0975M450****Pump Laser Module FBG stabilized**

## 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 LU0975M450 laser diode module contains 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.

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## 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)	Kink Free Current $I_k$ [mA] (1)
LU0975M300	300	530	330	600
LU0975M450	450	730	500	800

## 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		$I_{th}$		60	85	mA
Forward Voltage	at $I_{op}$	$V_{op}$			2.0	V
Peak Wavelength	as specified +/- 2nm	$\lambda_{peak}$	974	975	976	nm
Spectral Width (3) (95% power)	at $P_{op}$ , with FBG	$\lambda_{p95}$			2	nm
Optical Power Stability	at $I_{op}$ , t = 60sec	$P_{op} / t$			0.5	%
Spectral Shift with Temp.	FBG Temp.	$\lambda / T$			0.02	nm/°C
Side Mode Suppression	at $P_{op}$ , with FBG			20		dB
Monitor Responsivity		R	0.1	2	10	$\mu A/mW$
Monitor Dark Current				5	40	nA
TEC Current	chip 25°C, case 70°C	$I_{TEC}$		1.1		A
TEC Voltage	chip 25°C, case 70°C	$V_{TEC}$		1.9		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  $|dL/dI| - \langle dL/dI \rangle < 0.2$ , where  $\langle dL/dI \rangle$  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:

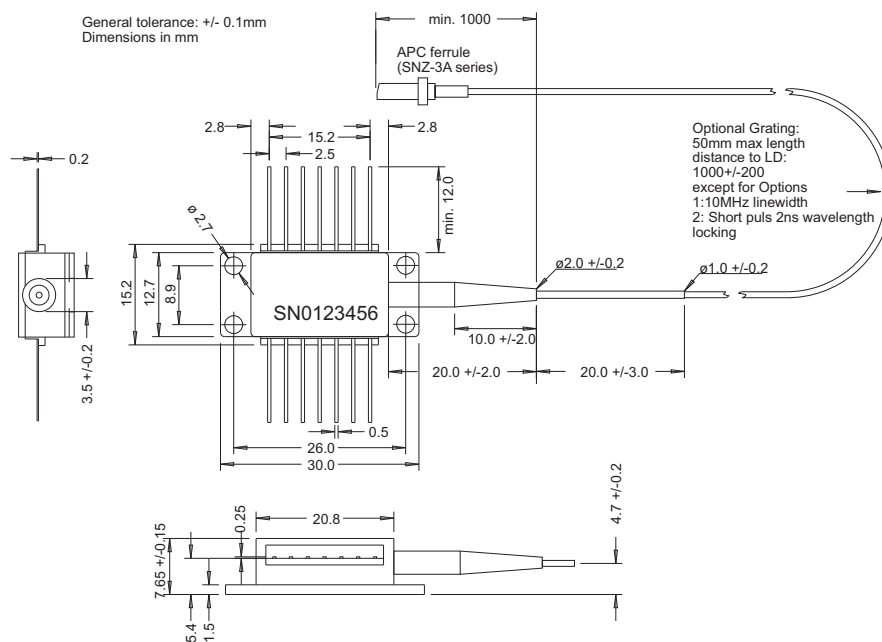
Parameter	Symbol	Min	Max	Unit
Storage Temp.	$T_{max}$	-40	85	°C
Operating Case Temp.	$T_{op, case}$	-20	70	°C
Operating Chip Temp.	$T_{op, chip}$	20	40	°C
Lead Soldering Temp. (max. 10sec)			260	°C
LD Forward Current	$I_{F, max}$		1000	mA
LD Reverse Voltage	$V_{R, max}$		2	V
Monitor Forward Current	$I_{F, PD}$		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

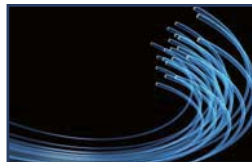
### Note:

Absolute Maximum Ratings may be applied to the laser module for short periods of time only. Exposure to maximum ratings for extended periods 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):

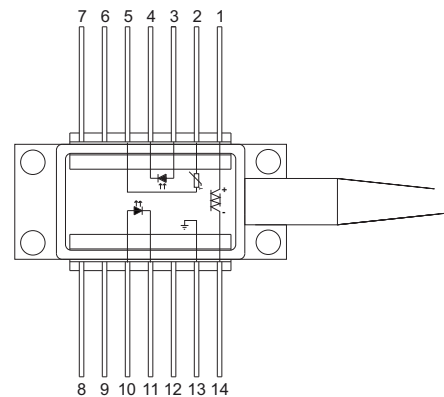


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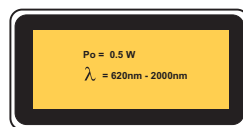


## Pin Connections:

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



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