

LU0980S430

## Pump Laser Chip on Submount

# 430mW operation power

### Features:

- Wavelength 970-985nm
- Kink-free power 520mW
- Proven reliability for high power operation
- Suited for cooled and uncooled operation
- Telcordia GR-468-CORE



### Description / Applications:

The Lumics LU0980S430 laser chip on submount contains an optimized GaAs/AlGaAs/InGaAs quantum well high power laser. It has been specifically designed for applications in low noise broadband Erbium Doped Fiber Amplifiers (EDFA). 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 chip is individually serialized for traceability and is shipped with a specified set of test data.

### Characteristics ( $T_{op}=25^{\circ}\text{C}$ )

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Threshold Current		$I_{th}$		43	65	mA
Characteristic Temp.		$T_0$	110			K
Forward Voltage	at $I_{op}$ , $T_{op}$	$V_{op}$		1.55	1.75	V
Slope Efficiency	at $I_{op}$ , $T_{op}$	$\eta_{diff}$	0.87	0.89		W/A
Peak Wavelength	at $I_{op}$ , $T_{op}$	$\lambda_{peak}$	970		985	nm
Spectral Width (3)	at $I_{op}$ , $T_{op}$	$\lambda_{rms}$		3,4	4	nm
Lateral Farfield	at $I_{op}$ , $T_{op}$	$\Delta\Theta_{II}$	6	8	10	deg
Vertical Farfield	at $I_{op}$ , $T_{op}$	$\Delta\Theta_{\perp}$	27	30	33	deg
AR Reflectivity		$r_f$		0.5		%
HR Reflectivity		$r_r$		95		%
Spectral Shift with Current		$\lambda_{I\_Shift}$		0.011		nm/mA
Spectral Shift with Temp.		$\lambda_{T\_Shift}$		0.3		nm/K

(1) Kink-free is defined as  $|dL/dI - \langle dL/dI \rangle| < 0.2$ , where  $\langle dL/dI \rangle$  is the average slope efficiency below kink.

(2) Operating power is the maximum power where the slope efficiency does not decrease by more than 20% from average between  $2 \times I_{th}$  –  $3.5 \times I_{th}$ . The operating power will be achieved at a device specific operating current which is noted on the hardcopy of the test report shipped with the device. The pump laser shall not be operated at a higher power level than the operating power  $P_{op}$  listed in the table "Operating Parameters" throughout its lifetime. At the Begin of Life the operating current shall not be higher than the device specific 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 maximum operating current at EOL that is noted in table "Operating Parameters". A failure analysis assuming a log normal distribution results in median live (ML) of  $>1 \times 10^6$ h with a distribution width of  $\sigma = 2,6$ . ML.

(3)  $I_{rms}$  is defined as 95% power is in the central peak defined as  $\pm rms$

## Operating Parameters (2)

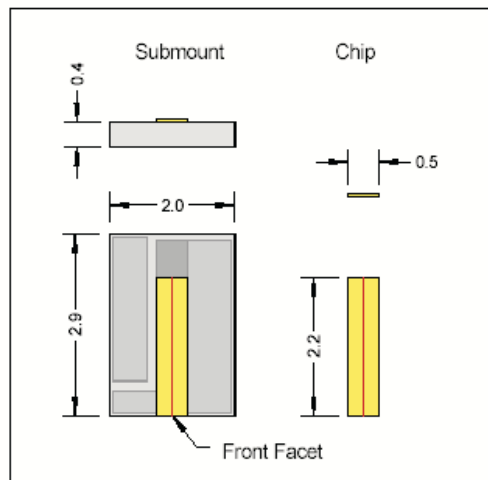
Product Code	Operating Power	Max operating Current $I_{op}$ [mA]		Min kink free Power
	$P_{op}$ [mW]	BOL	EOL	$P_k$ [mW]
LU0980S330	330	480	528	396
LU0980S400	400	520	572	480
LU0980S430	430	560	616	516

## Absolute Maximum Ratings:

Parameter	Symbol	Min	Max	Unit
Forward Current max. 10sec	$I_{F,max}$		750	mA
Reverse Voltage	$V_{R,max}$		2	V
Operating Temp.*	$T_{op}$	-10	70	°C
Storage Temp.	$T_{max}$	-40	85	°C
Processing Temp.	$T_{S,max}$		260	°C
Submount, max. 10sec.				

\* LD reliability is a function of the operating temperature and the current  
 Extended wavelength range from 920nm to 1060nm on request.

## Drawing of Chip on Submount (dimensions in mm):



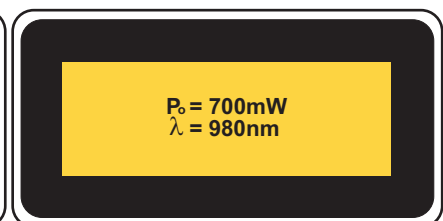
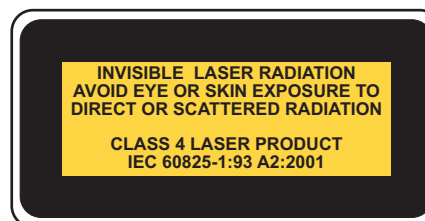
Customized versions with other submount sizes, operation power levels and wavelengths are available on request.



Complies with 21 CFR1040.10

1. The laser light emitted from this device is invisible and may be harmful to the human eye and skin. Avoid looking directly into the light when the device is in operation. Use of protective gear is recommended when the device is in operation.

2. Electro-static discharge is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces, and rigorous anti-static techniques when handling this device.



For further information and ordering details please contact Lumics at:

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