



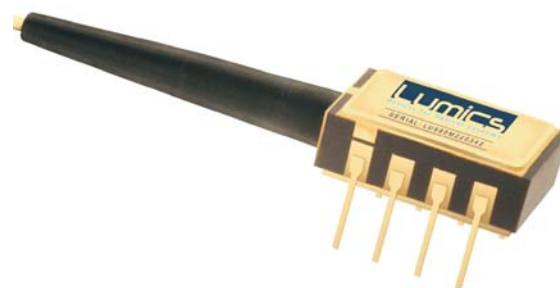
## LU0980M250-2 miniDIL

### Pump Laser Module, Uncooled

# Up to 250mW operation power

#### Features:

- Wavelength 974-985nm
- High-coupled rated output power
- Fiber Bragg Grating for wavelength stability
- Photodetector back-facet monitor
- Single mode fiber pigtail
- Telcordia GR-468-CORE compliant
- Very low power consumption



#### Description / Applications:

The Lumics LU0980M250-2 miniDIL 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 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. Reliability tests according to Telcordia GR-468-CORE are ongoing at present.



## Operating Parameters

Product code	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)
LU0980M210	210	520	231	572
LU0980M220	220	540	242	594
LU0980M230	230	560	253	616
LU0980M240	240	580	264	638
LU0980M250	250	605	275	666

## Characteristics: ( $T_{case} = 0$ to $70^\circ\text{C}$ )

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Treshold Current	@ $0^\circ\text{C}$	$I_{th}$			60	mA
	@ $25^\circ\text{C}$				65	mA
	@ $70^\circ\text{C}$				100	mA
LD Operating Voltage	$0-70^\circ\text{C}$	$V_{op}$			2.0	V
Center Wavelength ( $\lambda_c$ )	$0-70^\circ\text{C}$ (FBG)	$\lambda$	974	977	985	nm
Spectral Width ( $\Delta\lambda_{FWHM}$ )		$\lambda$		0.5	2	nm
Side Mode Supression Ratio			20			dB
Power-In-Band	(Integration band +/- 1.5nm)		90			%
Photodetector Dark Current (ID)	$V_R = 5\text{V}$ , $T_{case}$			5	40	nA
Photodetector Responsivity / dlp / dP)			0.1	0.3	20	$\mu\text{A}/\text{mW}$
Thermistor Resistance ( $R_{th}$ )	$T_{submount} = 25^\circ\text{C}$		9.5		10.5	$\text{K}\Omega$
Total Power Consumption	$P_{op}=250\text{mW}$ BOL				1002	mW
	$P_{op}=250\text{mW}$ EOL				1100	mW
Fiber Type (Corning HI1060 / PM980)	Single Mode Fiber					
Fiber Bend Radius (HI1060/PM980)			25 / 40			mm
Pigtail Length after Grating			0.5			m
Module to Grating Distance			1		2	m

### Important Notes:

- (1) kink-free is defined as  $|dL/dl| - \langle dL/dl \rangle < 0.2$ , where  $\langle dL/dl \rangle$  is the average slope efficiency 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  $I_k$ . the individual value of  $I_k$  is noted on the hardcopy of the test report shipped with the device. 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 20mW and 120% of maximum operating power  $P_{op}$ . 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.
- (3)  $\lambda_{pg5}$  is defined as 95% of total spectral power
- (4) Monitor diode for alarm and diagnostic purpose onl



## Absolute Maximum Ratings: ( $T_{case} = 0$ to $70^{\circ}C$ )

Parameter	Symbol	Min	Max	Unit
Storage Temp.	$T_{max}$	-40	85	$^{\circ}C$
Operating Case Temp.	$T_{op, case}$	0	70	$^{\circ}C$
Lead Soldering Temp. (max. 10sec)			260	$^{\circ}C$
LD Forward Current	$I_{F, max}$		800	mA
LD Reverse Voltage	$V_{R, max}$		2	V
ESD Damage (1)			500	V
Maximum transient ( $<3\mu s$ ) forward current			1.2	A

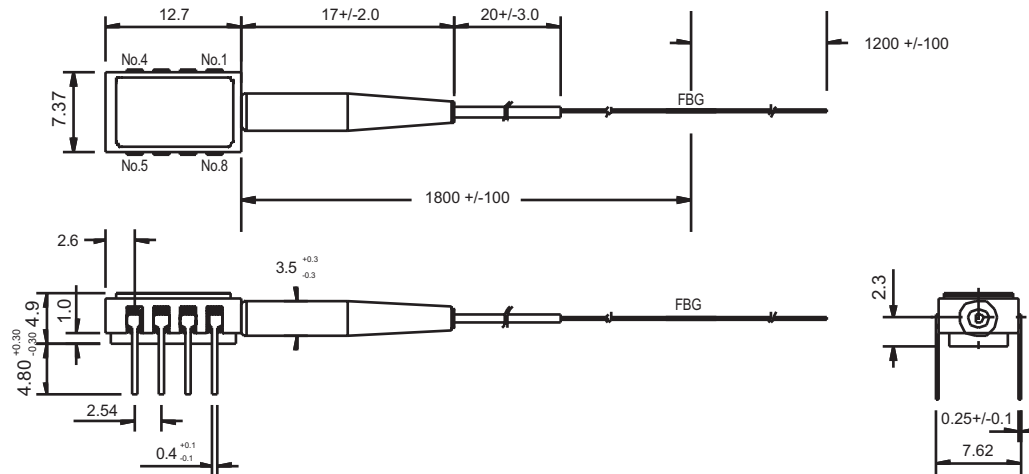
(1) A standard human body model (1.5kOhm, 1000pF) is used for ESD thresholds

### Note:

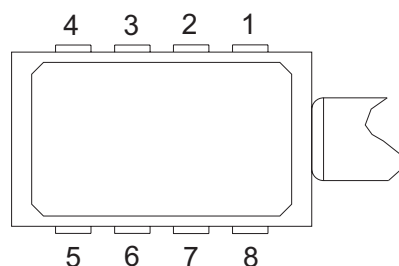
Absolute maximum ratings may be applied to the laser module for short periods of time only. Exposure to maximum ratings for extended periods of time or exposure above one or more max ratings may cause damage or affect the reliability of the device.

## Module Drawing (dimensions in mm):

Dimensions in mm  
General tolerance  
(unless otherwise specified):  $\pm 0.2$



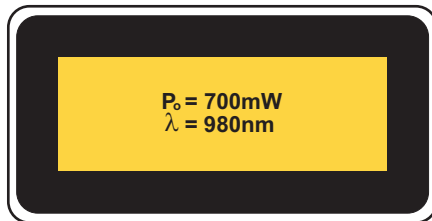
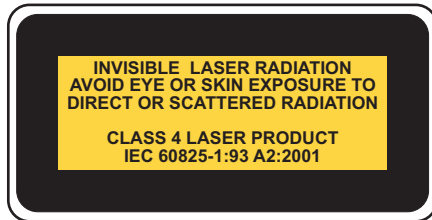
## Pin Connections:



Pin	Connection
1	Thermistor
2	Package ground
3	Thermistor
4	Photodiode (-)
5	Photodiode (+)
6	Laser diode (-)
7	Laser diode (+)
8	not connected



## User Safety:



Complies with 21 CFR1040.10

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