Multi-Mode Laser Diode TO220

The Lumics multi-mode fiber pigtailed flat pin laser diode module contains an optimized GaAs 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 (burn-in), thermal and mechanical tests. Each laser diode module is individually serialized for traceability and is shipped with a specified set of test data.

The flat pin laser diode module has a robust design and are easy to mount thus allowing a reliable integration into other systems. Applications for these long-lifetime and cost-effective laser diode modules include pumping, material processing, illumination, and medical laser therapy.

Features & Functions

- Wavelength 785, 808, 915, 940, 975 and 1064 nm
- 50, 105 and 200 µm core NA 0.12-0.22 fiber
- Hermetically sealed single emitter
- Floating anode / cathode
- Direct modulation up to 20 MHz
- Rise / Fall time <20 ns

Options

- 900 µm protective tube
- Flat 0° FC / PC ferrule
- Fiber ferrule fixing nut

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Optical and Electrical Characteristics

	Output power P_{op} – Operating Current I_{op} [A] / Operating Voltage V_{op} [V]		
Peak Wavelength [nm]	**50 µm fiber**	**105 µm fiber**	**200 µm fiber**
785 ± 5		**4 W** – 5.2 A / 1.9 V	
808 ± 10	**2 W** – 2.7 A / 1.9 V	**4 W** – 5.2 A / 1.8 V	**7 W** – 8.5 A / 1.9 V
915 ± 10		**9 W** – 10.5 A / 1.7 V	
940 ± 10		**9 W** – 11.0 A / 1.6 V	
975 ± 10		**9 W** – 11.5 A / 1.6 V	
990 ± 10	**4 W** – 4.8 A / 1.4 V		
1030 ± 10	**3 W** – 3.7 A / 1.4 V		
1064 ± 10		**7 W** – 9.7 A / 1.5 V	**10 W** – 14.0 A / 1.5 V

Fiber Specifications

Connector Type (optional): APC ferrule (SMA, FC / APC, FC / PC connector)

Core Diameter [µm]	Cladding Diameter [µm]	Buffer Diameter [µm]	Length [m]	Numerical Aperture NA
50	125	250	1	0.12
50	125	250	1	0.22
105	125	245	1	0.15
105	125	245	1	0.22
200	220	320	1	0.22

Operating Conditions and Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Unit
Maximum Operating Current	$I_{op,\ max}$			I_{op} + 1	A
Maximum Reverse Voltage	$V_{R,\ max}$			2	V
Minimum Fiber Bend Radius for 50 and 105 µm fibers (Short / Long Term) Minimum Fiber Bend Radius for 200 µm fibers (Short / Long Term)		15 / 30 25 / 50			mm
Storage Temperature	T_S	-30		80	°C
Operating Case Temperature	$T_{op\ case\ temperature}$	-10		70	°C
Recommended Case Temperature	T_{case}	20	25	30	°C
Pin Soldering Temperature for maximum 10 s	$T_{pin,\ soldering}$			250	°C
Humidity / Non-condensing Atmosphere				85	RH%

Notes:

1. Electrical and optical characteristics are determined at 25°C.
2. Absolute Maximum Ratings may be applied to the laser module for short period of time only. Exposure to maximum ratings for extended period or exposure above one or more maximum ratings may cause damage or affect the reliability of the device.
3. Thermal load and required thermal resistance of heat sink to maintain internal diode temperature at 25°C:
   a. Thermal load = Output power * (1/conversion efficiency - 1)
   b. Heat sink thermal resistance = (25 °C - ambient temperature) / thermal load
   c. Example: Output power: 7W, Conversion efficiency: 0.42, Ambient temperature: 20°C
      → Thermal load = 7 W * ((1 / 0.42) - 1) ~ 9.6 W
      → Heat sink thermal resistance = (25°C - 20°C) / 9.6 W = 0.52 K/W
4. Lumics GmbH is fully compliant with RoHS.
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