

Laserdiode

Company: RIO-Lasers

- Typ: rio PLaNEX™ external cavity Laser (http://www.rio-lasers.com/_products/planex.html)
- Serial Number: 105638
- Product_brief/Manual
- Datasheet

Specification for ordering

- Part Number for ordering: RIO0195-5-01-4-AK8
- Fiber/Connector: PMF/FC-APC
- Output Power (min.): 20 mW
- Wavelength: Custum Wavelength 1560.493 nm
- Phase Noise/Linewidth: Grade 4
 - Spectral Linewidth:($\leq 2\text{kHz}$)
 - Phase Noise typical @ 200 Hz: 4 $\mu\text{rad/rt-Hz}$ 1 m OPD

Absolute Maximum Ratings

- Fiber bend radius: 35 mm
- Tensile strength, fiber to the package: 5 N

Parameter	Max	Unit
Laser diode reverse voltage	1.2	V
Laser diode forward current	250	mA
TEC current	1.5	A
TEC voltage	4	V
ESD-susceptibility	500	V

Parameter	Conditions	Min	Typ	Max	Unit
Monitor diode reverse voltage				15	V
Monitor diode forward current				25	mA
Monitor bias voltage (V_R)	Cathode positive to anode	4,75	5	5,25	V
Monitor diode current (I_{mc})	P_{out}	0,05		1	mA
Monitor diode dark current (I_{md})	$V_R = 5\text{ V}$			5	nA

Optical and Electrical Specifications

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
TEC set Temperature	T_{set}	specified for every laser	15		50	°C	

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
Threshold current	I _{th}	@T _{set}	see ordering information page			mW	
Laser Bias Current	I _b	CW, P _{out}		120	200 (140?)	mA	
Side Mode Suppression Ratio	SMSR	CW, at specified P _{out}	40			dB	
Wavelength tunability	Δλτ	via TEC temperature change	30			pm	phase continous tuning by changing TEC temperature. Some performance parameters will change over tuning range.
Relative Intensity Noise	RIN	≥ 1 kHz			-140	dB/Hz	
		≥ 500 kHz	shot noise limited				
Modulation bandwidth			1			GHz	
Input Impedance	Z ₀			25		Ohm	
Optical Isolation	ISO		40			dB	

Linewidth and Phase Noise Specifications

Parameter	Symbol	Conditions	Grade 4	Unit	
Phase Noise Typical Values	PhN	@ 10 Hz	20	$\mu\text{rad}/\text{rt-Hz}$ 1 m OPD	measured with RIO's interferometric phase noise test setup, 1m path mismatch in the SM fiber
		@ 200 Hz	4		

Thermal Specifications

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermistor resistance	R_t	At 25 °C		10		k Ω
Constant of thermistor	β			3950		K
TEC power dissipation	W_0	$T_{CASE} = -5$ to 75 °C, T_s		2.0	3.5	W

DWDM ITU Wavelength

ITU channel number	ITU Frequency (THz)	Wavelength (nm)
21	192.10	1560.61

Test report from RIO PLANEX laser

Full test report

Parameter	Value	Units
Operating Temperature (Tset) [Thermistor resistance: 14.000 k Ω at Tset]	17.5	°C
Operating Bias Current (Ibias)	124	mA
Maximum Bias Current (Imax)	140	mA
Output Power at Tset and Ibias	20.5	mW
Threshold Current	4.3	mA

Parameter	Value	Units
Center Wavelength at Tset and Ibias	1560.478	nm
Custom Wavelength	1560.493	nm
Offset from Custom Wavelength	-15	pm
Linewidth (Lorentzian FWHM)	1.30	kHz
Side Mode Suppression Ratio at Tset and Ibiass	55	dB
Polarization Extinction ratio (room temperature)	> 25	dB

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