


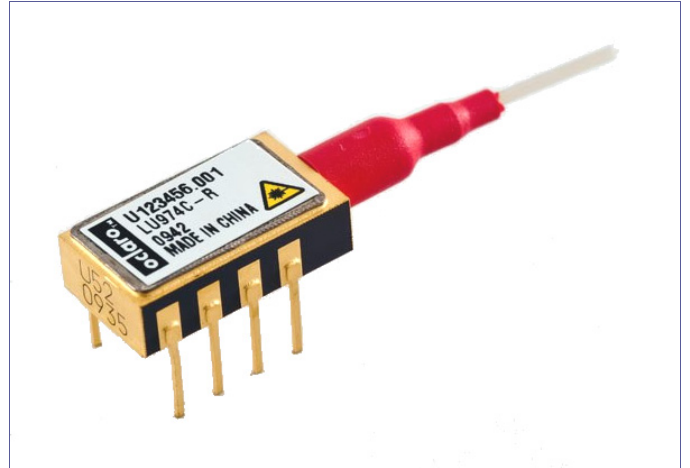
Uncooled Mini-DIL 980nm Pump Laser Module LU9

Features:

- Operating temperature range from 0°C to +70°C (case)
- Up to 300mW kink-free power over full operating temperature range
- Polarization maintaining (PM) fiber
- Low power dissipation
- Laser chip and package design with submarine reliability
- Wavelength stabilized by fiber Bragg grating over entire operating range
- Center wavelength at 974, 976 and 980nm
- Telcordia GR-468-CORE compliant
- RoHS compliant 

Applications:

- EDFA or EDWA requiring low-to-medium optical power with low power consumption and small form-factor package



The Oclaro LU9 uncooled Mini-DIL 980nm pump laser module is the second generation uncooled pump module providing higher power for highly reliable amplification for metro, cross-connect or other single/multi-channel amplification applications. The LU9 uses a Mini-DIL package enabling low-cost and small form-factor. The G07 ridge-waveguide laser diode inside has been designed for uncooled operation at high temperature and power levels. Submarine qualification of the G07 chip ensures high reliability even at 270mW operating power, 70°C. External Fiber Bragg Grating (FBG) stabilization provides excellent wavelength and power stability over the entire temperature operating range.

Operating Characteristics

Conditions unless otherwise stated: Case temperature 0 to +70°C
 Monitor diode bias -5V
 CW operation

Kink-free Power	Operating Power	Product Code	Kink-free Power	Operating Power	Product Code
110mW	100mW	LU974C-R	209mW	190mW	LU974M-R
121mW	110mW	LU974D-R	220mW	200mW	LU974N-R
132mW	120mW	LU974E-R	231mW	210mW	LU974P-R
143mW	130mW	LU974F-R	242mW	220mW	LU974R-R
154mW	140mW	LU974G-R	253mW	230mW	LU974S-R
165mW	150mW	LU974H-R	264mW	240mW	LU974T-R
176mW	160mW	LU974J-R	275mW	250mW	LU974U-R
187mW	170mW	LU974K-R	286mW	260mW	LU974V-R
198mW	180mW	LU974L-R	300mW	270mW	LU974W-R

Operating powers shown above with 10% margin applied: Operating power = 0.9 x kink-free power

Codes shown are for 974nm variant. For other wavelength options, see ordering information

Parameter	Symbol	Measurement Conditions	Min	Typ	Max	Unit
Threshold current	I _{th}	70°C case		50	70	mA
Operating current: Typical values at 25°C Maximum values at 70°C	I _{op}	100mW 110mW 120mW 130mW 140mW 150mW 160mW 170mW 180mW 190mW 200mW 210mW 220mW 230mW 240mW 250mW 260mW 270mW		225 240 255 270 290 305 320 335 350 370 385 400 415 430 445 460 475 490	260 280 305 325 345 365 390 410 430 455 475 500 520 540 560 585 605 620	mA
Operating forward voltage	V _{op}	270mW, 70°C		1.75	2.0	V
Center wavelength	λ _c	0 - 70°C		974 976 980		nm
Spectral width at -13dB	Δλ			0.2	1.0	nm
Power in band ratio	PIBR	λ _c ±1.5nm	90			%

Parameter	Symbol	Measurement Conditions	Min	Typ	Max	Unit
Temperature dependence of peak wavelength	dλ/dT			0.02		nm/°C
Monitor diode responsivity	Rmon		0.3	1.1	15	μA/mA
Photodiode dark current	Idark	-5V bias, 0 - 70°C			50	nA
Fiber power stability 10 – 270mW		Peak-to-peak Time = 60sec DC to 50kHz		0.1	0.15	dB
Thermistor BETA value		±1%	3539	3575	3611	K
Thermistor resistance	Rth	At Tcase set to 25°C	9.5	10.0	10.5	kΩ
Total power consumption	Ptot	Tcase= 70°C, 270mW		0.6	1.0	W

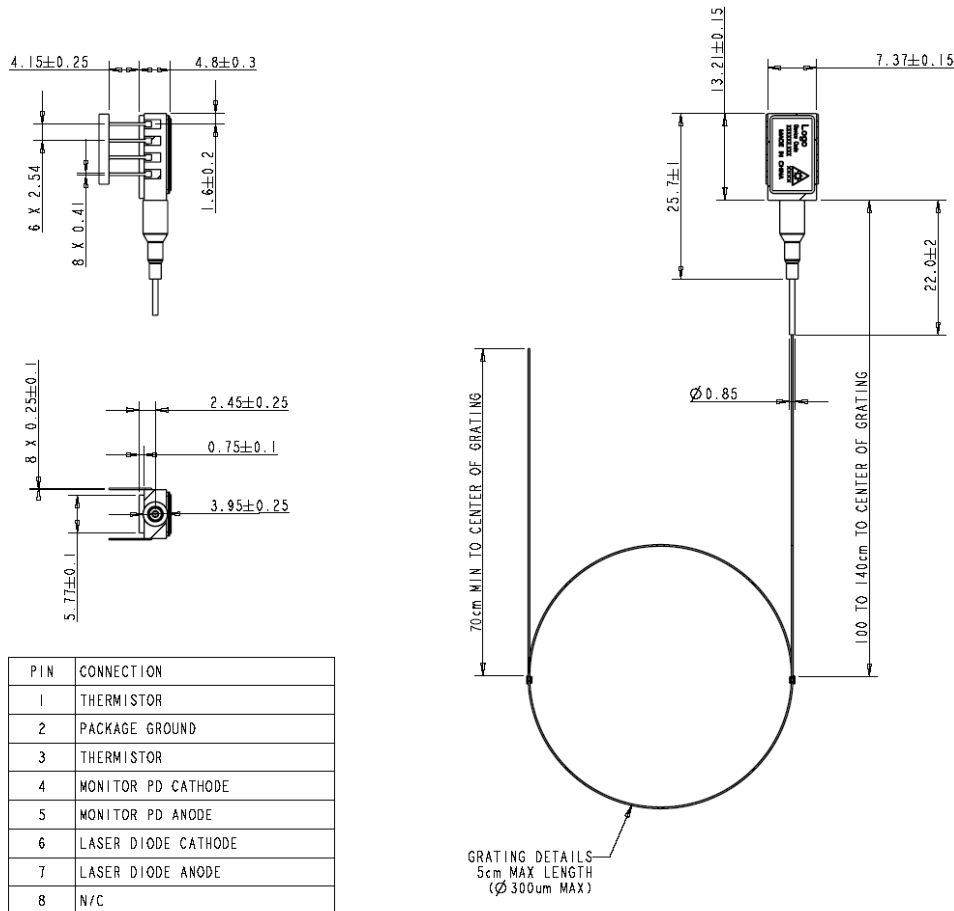
Absolute Maximum Ratings

Parameter	Symbol	Measurement Conditions	Min	Max	Unit
Operating case temperature	Top		0	70	°C
Storage temperature	Tstg	Non-condensing	-40	85	°C
Storage relative humidity	RHstg		5	95	%RH
Operating relative humidity	RHop		5	85	%RH
Pigtail axial pull force		3x10 seconds		10.0	N
Pigtail side pull force		3x10 seconds		5.0	N
Fiber bend radius			20		mm
Lead soldering temperature		10 sec		350	°C
Laser diode forward current	I _f max	Tcase = 0°C Tcase = 25°C Tcase = 70°C		900 900 800	mA
Laser diode reverse Current	I _r max	Reverse voltage <2V		10	μA
Laser diode reverse voltage	V _{revLD}			2.5	V
Photodiode reverse voltage				20	V
Photodiode reverse current				5	mA
ESD threshold		HBM, C=100pF, R=1.5kΩ		500	V

Fiber Specification

Parameter	Note	Min	Typ	Max	Unit
Fiber type	Nufern PM980-HP or equivalent				
Fiber termination	Bare fiber, rough cleave				
Operating wavelength			980		nm
Mode field diameter	@ 980nm	5.6	6.6	7.6	μm
Beat length	@ 980nm		3.3		mm
Cladding diameter		124	125	126	μm
Fiber coating diameter	Acrylate material, mechanically strippable	230	245	260	μm
Grating recoat diameter		260	280	300	μm
Core-Clad concentricity				<0.5	μm
Coating/Clad offset				<5	μm
Fiber proof test		150			kpsi

Package Outline Drawing



RoHS Compliance



Oclaro is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

Kink-free Power	Operating power	974nm Code	976nm Code	980nm Code
110mW	100mW	LU974C-R	LU976C-R	LU980C-R
121mW	110mW	LU974D-R	LU976D-R	LU980D-R
132mW	120mW	LU974E-R	LU976E-R	LU980E-R
143mW	130mW	LU974F-R	LU976F-R	LU980F-R
154mW	140mW	LU974G-R	LU976G-R	LU980G-R
165mW	150mW	LU974H-R	LU976H-R	LU980H-R
176mW	160mW	LU974J-R	LU976J-R	LU980J-R
187mW	170mW	LU974K-R	LU976K-R	LU980K-R
198mW	180mW	LU974L-R	LU976L-R	LU980L-R
209mW	190mW	LU974M-R	LU976M-R	LU980M-R
220mW	200mW	LU974N-R	LU976N-R	LU980N-R
231mW	210mW	LU974P-R	LU976P-R	LU980P-R
242mW	220mW	LU974R-R	LU976R-R	LU980R-R
253mW	230mW	LU974S-R	LU976S-R	LU980S-R
264mW	240mW	LU974T-R	LU976T-R	LU980T-R
275mW	250mW	LU974U-R	LU976U-R	LU980U-R
286mW	260mW	LU974V-R	LU976V-R	LU980V-R
300mW	270mW	LU974W-R	LU976W-R	LU980W-R

Contact Information

www.oclaro.com

Patents

This product is protected by US patent numbers 6,359,330, 6,528,329, 6,782,024, 6,798,815, 6,837,075, 7,173,953 and 7,218,659 and other patents and applications pending worldwide.

Important Notice

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