

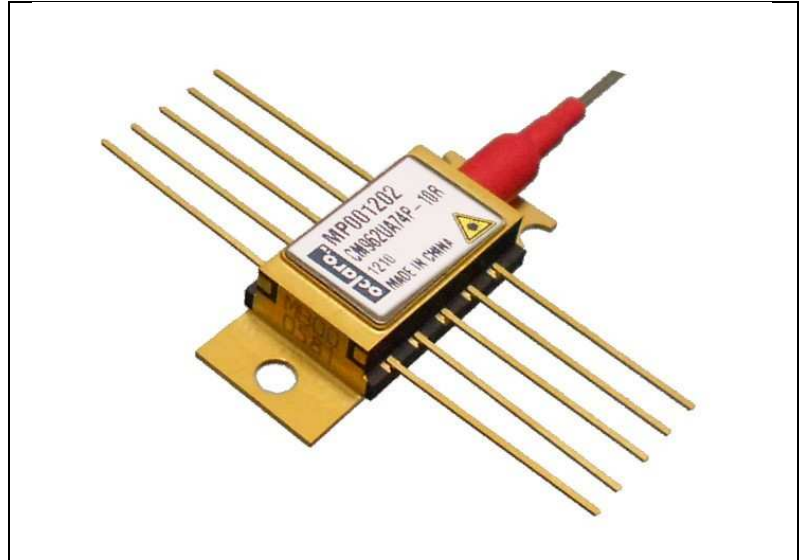
Cooled Mini-Butterfly 980nm Pump Laser Module CM962U***P-10R

Features:

- High output power, up to 750mW kink free
- Polarization maintaining fiber pigtail
- Fiber Bragg grating stabilization for wavelength locking over the entire operating conditions
- Small form factor (mini-Butterfly) package
- Internal thermoelectric heatpump and monitor photodiode
- Hermetically sealed 10 pin butterfly package
- Telcordia GR-468-CORE compliant
- Field-proven high reliability
- RoHS compliant 

Applications:

- Low noise EDFAs
- Dense wavelength division multiplexing (DWDM) EDFAs
- CATV Applications



These lasers are designed as pump sources for erbium doped fiber amplifier (EDFA) applications. Processes and techniques of coupling the fiber to the laser allow high output powers that are very stable with both time and temperature. The grating is located in the pigtail to stabilize the wavelength. Oclaro laser diode chips incorporate E2 front mirror passivation that prevents Catastrophic Optical Damage (COD) to the laser diode facet. Processes and techniques of coupling the fiber to the laser chip allow high output powers that are very stable with both time and temperature.

Devices are available with fiber output power up to 750mW.

Operating Characteristics

Conditions unless otherwise stated:

Case temperature -20 to 75°C
 Submount temperature 20°C
 Monitor diode bias -5V
 CW operation

Kink-free Power	Operating Power	974nm Code	976nm Code
625mW	570mW	CM962UA74P-10R	CM962UA76P-10R
650mW	590mW	CM962UB74P-10R	CM962UB76P-10R
675mW	615mW	CM962UC74P-10R	CM962UC76P-10R
700mW	635mW	CM962UD74P-10R	CM962UD76P-10R
725mW	660mW	CM962UE74P-10R	CM962UE76P-10R
750mW	680mW	CM962UF74P-10R	CM962UF76P-10R

Operating power assumes a 10% ageing margin: Operating Power = Kink-Free Power/1.1

Parameter	Symbol	Measurement Conditions	Min	Typ	Max	Unit
Threshold current	I _{th}	Thermistor @ 10kΩ		40	55	mA
Operating current	I _{op}	570mW 590mW 615mW 635mW 660mW 680mW		900 940 975 1000 1050 1070		mA
Operating forward voltage	V _{op}			2.0	2.2	V
Center wavelength	λ _c	974nm series 976nm series	973 975	974 976	975 977	nm
Spectral width at -13dB	Δλ			0.2	1.0	nm
Signal to noise ratio	SNR		20			dB
Temperature dependence of peak wavelength	dλ/dT			0.01	0.02	nm/°C
Monitor diode responsivity	R _{mon}		1		10	μA/mW
Photodiode dark current	I _{dark}	-5V bias			50	nA
Fiber power stability >30mW 20 – 30mW 10 – 20mW 5 – 10mW		Peak-to-peak Time = 60sec DC to 50kHz			0.15 0.10 0.20 0.35	dB
Thermistor BETA value		±1%	3539	3575	3611	K
Thermistor resistance (@20°C)	R _{th}		9.5	10.0	10.5	kΩ
Intended laser submount operating temperature			18	20	22	°C
Heat pump current	I _{tec}	T _{case} = 75°C, I _F = 1200mA			1.9	A
Heat pump voltage	V _{tec}	T _{case} = 75°C, I _F = 1200mA			3.4	V

Absolute Maximum Ratings

Parameter	Symbol	Measurement Conditions	Min	Max	Unit
Operating case temperature	Top		-20	75	°C
Storage temperature	Tstg		-40	85	°C
Storage relative humidity	RHstg	But not to exceed 0.024kg of water per 1.0kg of dry air		85	%RH
Operating relative humidity	RHop		5	80	%RH
Pigtail axial pull force		3x10 seconds		10.0	N
Pigtail side pull force		3x10 seconds		5.0	N
Fiber bend radius			13		mm
Lead soldering temperature		10 sec		350	°C
Laser diode forward current	If max			1500	mA
Laser diode reverse Current	Ir max	Reverse voltage <2V		10	µA
Laser diode reverse voltage	VrevLD			2	V

Fiber Specification

Parameter	Note	Min	Typ	Max	Unit
Fiber type	Nufern PM980-HP or Corning PM 98-U25A				
Fiber termination	Bare fiber, rough cleave				
Cut-off wavelength		830	900	970	nm
Mode field diameter	@ 980nm	5.6	6.6	7.6	µm
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/cladding concentricity				<0.5	µm
Coating-clad offset				≤5	µm
Fiber proof test		200			kpsi
Grating proof test		150			kpsi

Package Outline Drawing and Dimensions

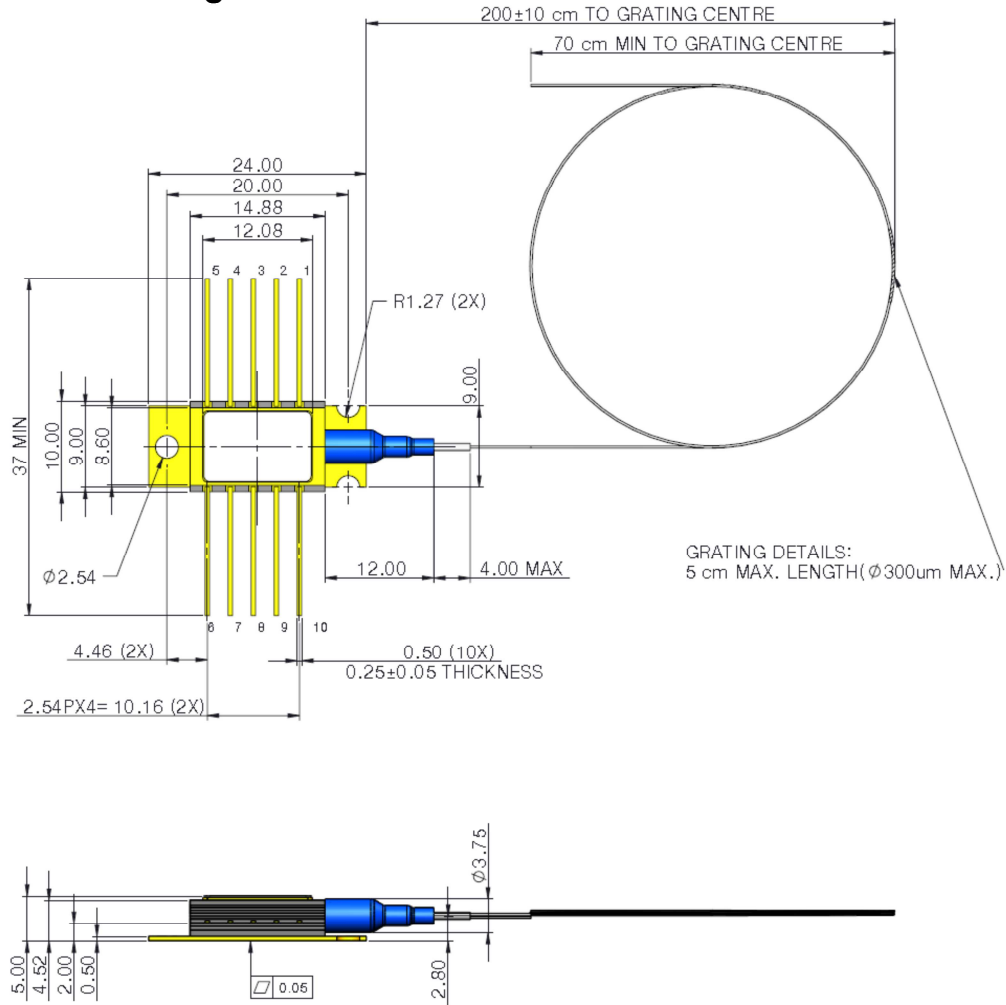


Figure 1: Package Outline Drawing and Dimensions (mm)

Connections

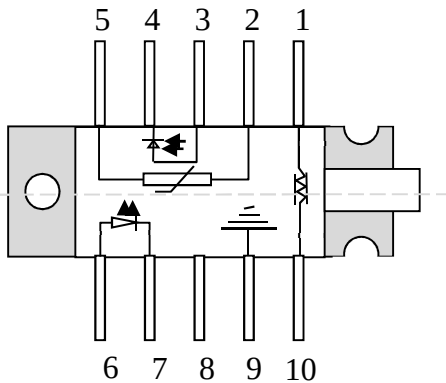


Figure 2: Connections

Pin #	Description	Pin#	Description
1	TEC (+)	6	Laser anode (+) 1
2	Thermistor	7	Laser cathode (-) 1
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

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.

Contact Information

www.oclaro.com

Ordering Information

974nm Code	976nm Code	Kink-free Power	Operating Power
CM962UA74P-10R	CM962UA76P-10R	625mW	570mW
CM962UB74P-10R	CM962UB76P-10R	650mW	590mW
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CM962UD74P-10R	CM962UD76P-10R	700mW	635mW
CM962UE74P-10R	CM962UE76P-10R	725mW	660mW
CM962UF74P-10R	CM962UF76P-10R	750mW	680mW

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

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by Oclaro before they become applicable to any particular order or contract. In accordance with the Oclaro policy of continuous improvement specifications may change without notice. Further details are available from any Oclaro sales representative.



D00363-PB Issue 02 July 2012
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