CM97-xxx-76PM

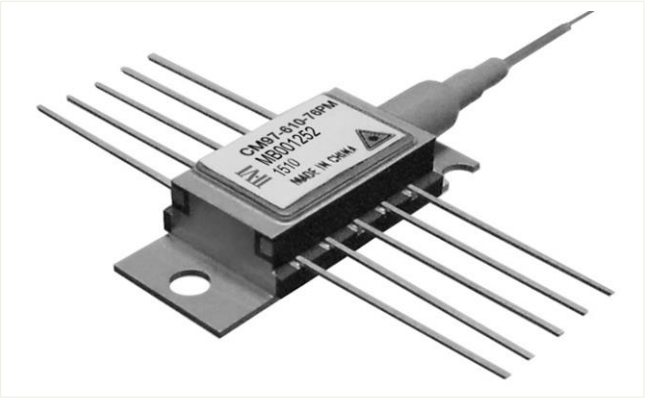
Cooled 980nm Pump Laser Module with Polarisation Maintaining Fibre

Features

- High output power, up to 1.0W kink free
- Fiber Bragg grating stabilization for wavelength locking over the entire operating conditions
- Polarisation Maintaining Fibre
- Hermetically sealed 10pin mini-butterfly package
- Internal thermoelectric heatpump and monitor photodiode
- Telcordia GR-468-CORE compliant
- Field-proven high reliability
- RoHS compliant

Applications

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



Product Overview

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 very high output powers that are stable with both time and temperature.

The CM97-series pump module utilizes a fiber Bragg grating design for enhanced wavelength and power stability performance. This product has been designed to ensure superior wavelength locking over drive current and case temperature.

Devices are available with kink free output powers to 1000mW.

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Optical Characteristics

Product Code	Kink-Free Power P_{kink} (mW)	Operating Power P_{op} (mW)	Maximum Operating Current I_{op} (mA)
CM97-610-76PM	610	555	855
CM97-750-76PM	750	680	1050
CM97-1000-76PM	1000	900	1360

Wavelength Specification

Product Code	Min.	Typ.	Max.	Units	Condition
CM97-xxx-76PM	975	976	977	nm	Air reference. FBG temperature is @ 25°C.

Notes;
1. Conditions unless otherwise stated: Case temperature -20 to 75°C, Submount temperature 25°C *(at any given case temperature),* Monitor diode bias -5V, CW operation
2. Operating power assumes a 10% ageing margin: Operating Power = Kink-Free Power/1.1

CM97-xxx-7xPM

Product Specification

Parameter		Min.	Typ.	Max.	Units	Condition
Threshold current	I_{th}		60	80	mA	
Maximum Kink Free Current	I_{kink} @ P_{kink}			1500	mA	
Operating forward voltage	V_{op}		2.0	2.2	V	
Spectral width	Δλ		0.2	1.0	nm	RMS at -13dB
Signal to noise ratio	SNR	20			dB	
Temperature dependence of peak wavelength	Δλ/ΔT		0.008	0.01	nm/°C	FBG temperature dependency
Monitor detector responsivity	R_m	1		10	μA/mW	@ -5V bias voltage
Fibre power stability >50mW 30 – 50mW 10 – 30mW	ΔP_f_t			 0.05 0.15 0.35	dB	Peak-to-peak Time = 60sec DC to 50kHz
Return loss	RL	8			dB	1500nm – 1600nm
Thermistor BETA value	β	3500	3575	4100		±1% temperature variation
Thermistor resistance	R_{th}	9.5	10.0	10.5	kΩ	At submount temperature of 25°C
Heat pump current	I_{TEC}			2.0	A	Tcase= 75°C, IF= 1500mA
Heat pump voltage	V_{TEC}			3.0	V	

Absolute Maximum Rating

Parameter		Min.	Typ.	Max.	Units	Condition
Operating case temperature	T_{op}	-20		75	°C	
Storage temperature	T_{stg}	-40		85	°C	
Storage relative humidity	RHstg	5		95	%	But not to exceed 0.024kg of water per 1.0kg of dry air
Operating relative humidity	RHop	5		85	%	
Pigtail axial pull force				0.5	kg	1 minute
Pigtail side pull force				0.25	kg	
Fibre bend radius		13			mm	
Lead soldering temperature				350	°C	10 sec
Laser diode forward current	If_max			1500	mA	CW
Laser diode current transient				1500	mA	Time = 1000ns max.
Laser diode reverse current	Ir			10	μA	
Laser diode reverse voltage	Vr			2.0	V	
Heat pump current	I_{TEC}	-2.5		2.5	A	Thermistor and TEC must be in closed loop control at all times
Heat pump voltage	V_{TEC}	-3.3		3.3	V	

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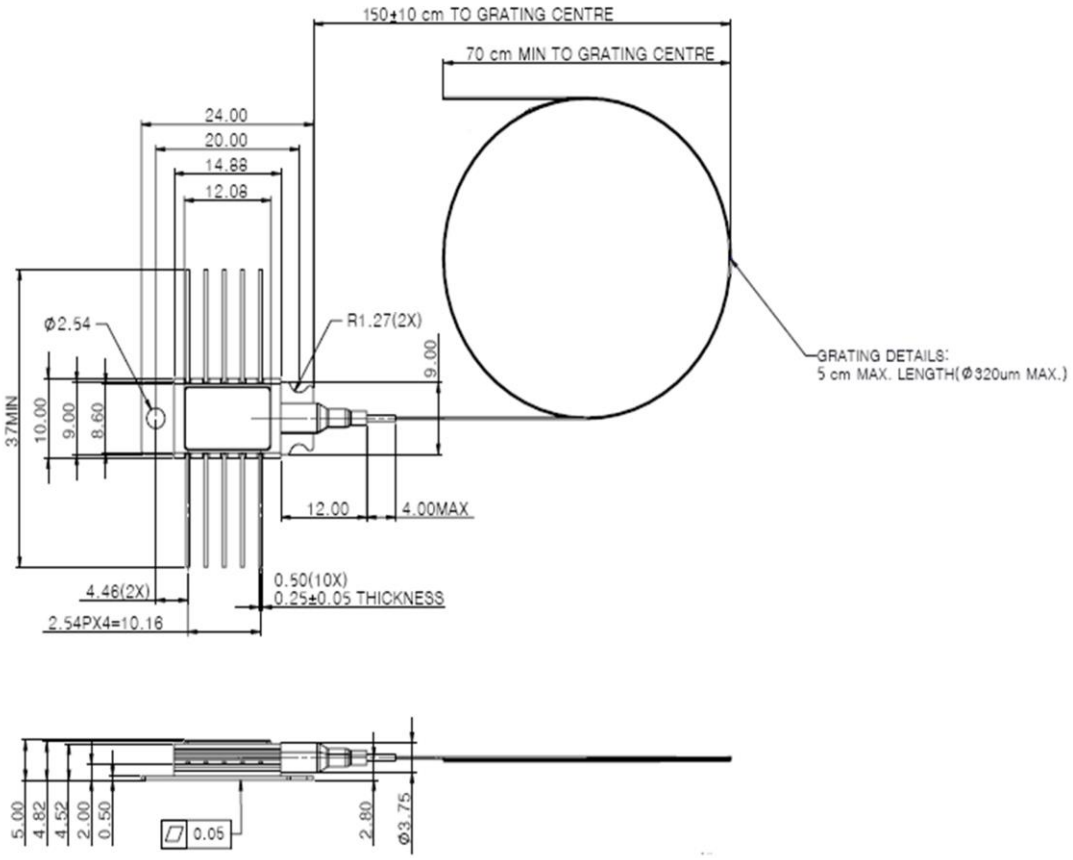
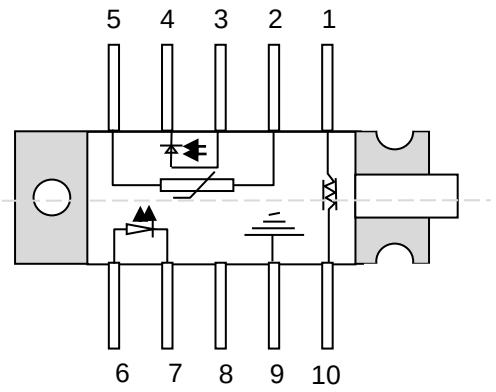
Module Outline Drawing and Pin Connections





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

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Fibre Specification

Parameter		Min.	Typ.	Max.	Units	Condition
Fiber type	Nufern PM980-XP or Corning PM 98-U25					
Cut-off wavelength		830	900	970	nm	
Mode field diameter		5.6	6.6	7.6	µm	@ 980nm
Cladding diameter		124	125	126	µm	
Fiber coating diameter		230	245	260	µm	Acrylate material, mechanically strippable
Grating recoat diameter		260	280	300	µm	
Core/cladding concentricity				<0.5	µm	
Coating-clad offset				≤5	µm	
Fiber proof test		200			kpsi	
Fiber Bragg Grating proof test		150			kpsi	

Note; Fibre termination; bare fibre with rough cleave.

Ordering Information

CM	97	-	xxx	-	76	PM
Product Type	Chip Type	-	Kink Free Power	-	Wavelength 76 for 976nm	Polarisation Maintaining Fibre

Example: CM97-610-76PM is a 610mW KFP; 976nm, product with PM fibre

Contact Information

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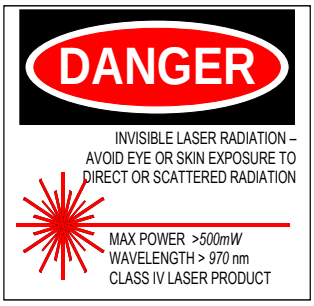
RoHS Compliance

II-VI Photonics 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.

User Safety

The laser light is invisible and maybe harmful to human eyes.
ESD protection, it is important that devices are handled correctly during all stages of manufacture and use.



THIS PRODUCT COMPLIES WITH 21CFR 1040.10

REFERENCE IEC 60825-1 Edition 3.0

Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Important Notice

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

This product is protected by patents and patent applications pending worldwide