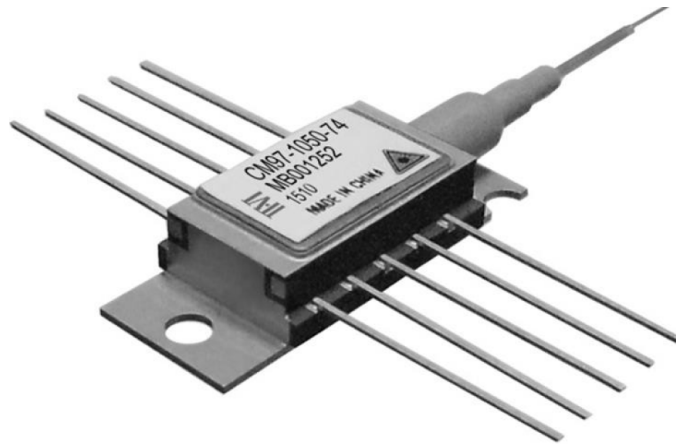



COOLED 980 nm PUMP LASER MODULE

CM97-xxx-7x

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 >1.0 W.



FEATURES

- High output power, >1.0 W kink free
- Fiber Bragg grating stabilization for wavelength locking over the entire operating conditions
- Hermetically sealed 10 pin 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

COOLED 980 nm PUMP LASER MODULE

Optical Characteristics

Product Code	Kink-Free Power P _{kink} (mW)	Operating Power P _{op} (mW)	Maximum Operating Current I _{op} (mA)
CM97-610-7*	610	555	855
CM97-630-7*	630	570	885
CM97-650-7*	650	590	915
CM97-670-7*	670	610	940
CM97-690-7*	690	625	970
CM97-710-7*	710	645	995
CM97-730-7*	730	665	1030
CM97-750-7*	750	680	1050
CM97-770-7*	770	700	1080
CM97-790-7*	790	720	1105
CM97-810-7*	810	735	1135
CM97-830-7*	830	755	1165
CM97-850-7*	850	775	1190
CM97-870-7*	870	790	1215
CM97-890-7*	890	810	1245
CM97-910-7*	910	830	1275
CM97-930-7*	930	845	1300
CM97-950-7*	950	865	1330
CM97-970-7*	970	880	1360
CM97-990-7*	990	900	1360
CM97-1010-7*	1010	920	1360
CM97-1030-7*	1030	935	1360
CM97-1050-7*	1050	955	1360

Wavelength Specification

Product Code	Min.	Typ.	Max.	Units	Condition
CM97-xxx-74	973	974	975	nm	Air reference. FBG temperatures is @ 25°C.
CM97-xxx-76	975	976	977		

Notes:

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

COOLED 980 nm PUMP LASER MODULE

Product Specification

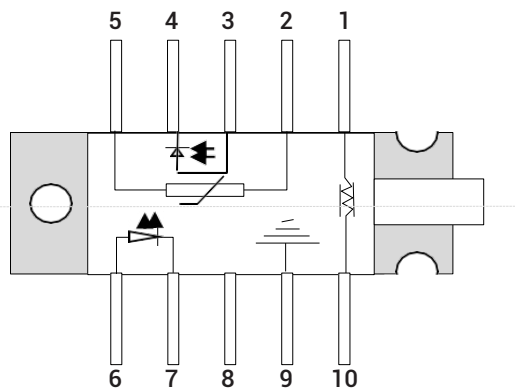
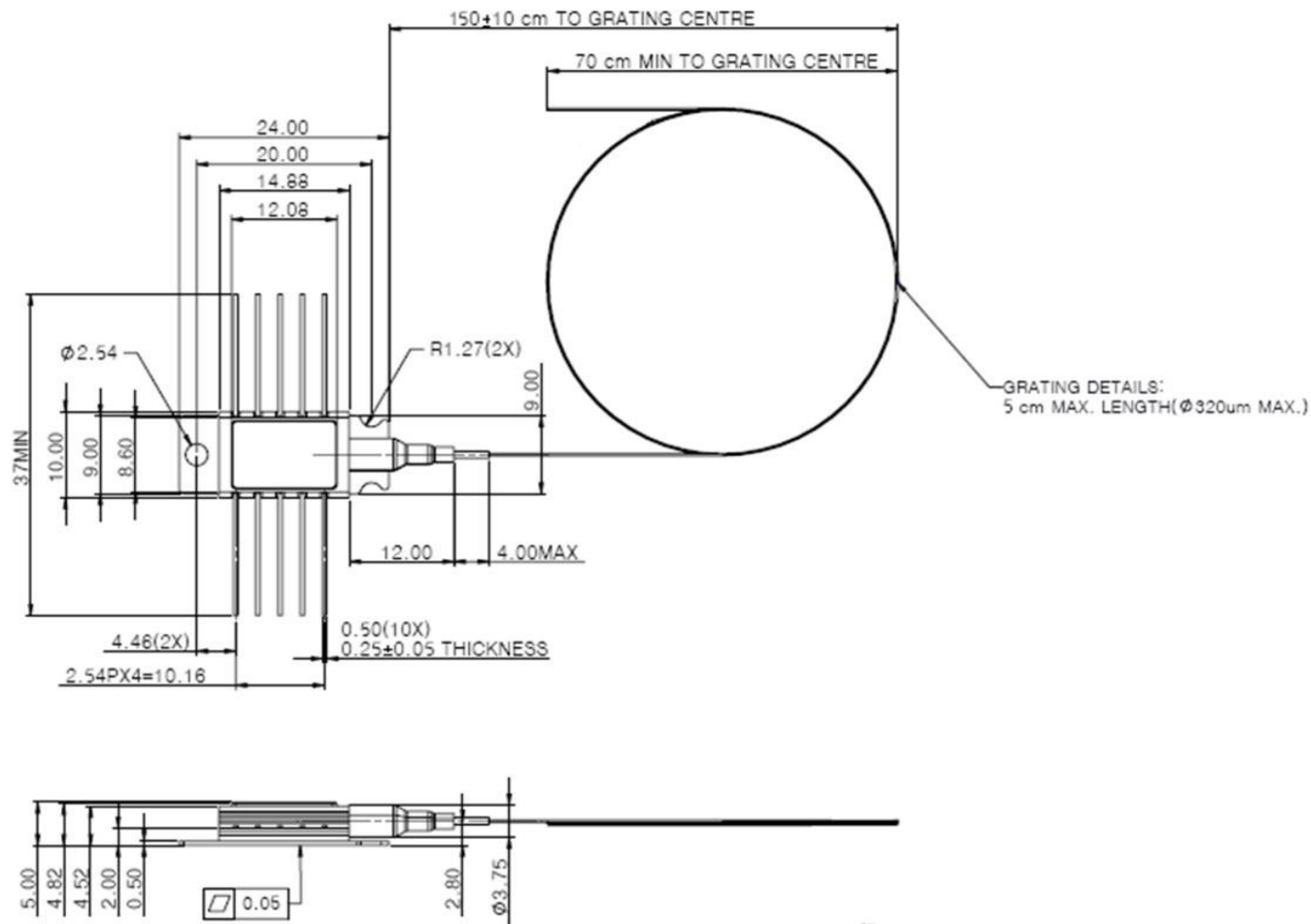
Parameter		Min.	Typ.	Max.	Units	Condition
Threshold Current	I_{th}		60	80	mA	
Maximum Kink Free Current	$I_{kink} @ P_{kink}$			1500	mA	
Operating Forward Voltage	V_{op}		2.0	2.2	V	
Spectral Width	$\Delta\lambda$		0.2	1.0	nm	RMS at -13 dB
Signal to Noise Ratio	SNR	20			dB	
Temperature Dependence of Peak Wavelength	$\Delta\lambda/\Delta T$		0.008	0.01	nm/°C	FBG temperature dependency
Monitor Detector Responsivity	R_m	1		10	$\mu A/mW$	@ -5 V bias voltage
Monitor Dark Current	I_{dark}			50	nA	
Fibre Power Stability >50 mW 30 – 50 mW 10 – 30 mW	ΔP_{f-t}			0.05 0.15 0.35	dB	Peak-to-peak Time = 60 sec DC to 50 kHz
Return Loss	RL	8			dB	1500 nm – 1600 nm
Thermistor BETA Value	β	3500	3575	4100		$\pm 1\%$ temperature variation
Thermistor Resistance	R_{th}	9.5	10.0	10.5	k Ω	At submount temperature of 25°C
Heat Pump Current	I_{TEC}			2.0	A	Tcase = 75°C, IF = 1500 mA
Heat Pump Voltage	V_{TEC}			3.0	V	

Absolute Maximum Ratings

Parameter		Min.	Typ.	Max.	Units	Condition
Operating Case Temperature	T_{op}	-20		75	°C	
Storage Temperature	T_{stg}	-40		85	°C	
Storage Relative Humidity	RH_{stg}	5		95	%	But not to exceed 0.024 kg of water per 1.0 kg of dry air
Operating Relative Humidity	RH_{op}	5		85	%	
Pigtail Axial Pull Force				0.5	kg	1 minute
Pigtail Side Pull Force				0.25	Kg	90°, 4 directions, 5 s
Fiber Bend Radius		13			mm	
Lead Soldering Temperature				350	°C	10 sec
Laser Diode Forward Current	I_{f_max}			1500	mA	CW
Laser Diode Current Transient				1500	mA	Time = 1000 ns max
Laser Diode Reverse Current	I_r			10	μA	
Laser Diode Reverse Voltage	V_r			2.0	V	
Heat Pump Current	I_{TEC}	-2.5		2.2	A	Thermistor and TEC must be in closed control loop at all times
Heat Pump Voltage	V_{TEC}	-3.3		3.3	V	

COOLED 980 nm PUMP LASER MODULE

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 (-)

COOLED 980 nm PUMP LASER MODULE

Fiber Specification

Parameter	Min.	Typ.	Max.	Units	Condition
Fiber Type	HI1060				
Cut-off Wavelength	870	920	970	nm	
Mode Field Diameter	5.6	5.9	6.2	μm	@ 980nm
Cladding Diameter	124.5	125	125.5	μm	
Fiber Coating Diameter	230	245	260	μm	Acrylate material, mechanically strippable
Grating Recoat Diameter	260	280	320	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	-	***	-	7*
Product Type	Chip Type	-	Kink Free Power	-	Wavelength 74 for 974 nm 76 for 976 nm

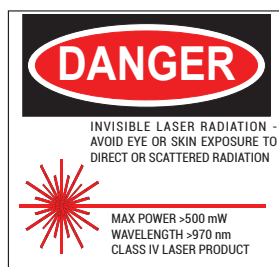
Example: CM97-550-74 is a 550mW KFP; 974nm product.

RoHS Compliance

Coherent 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 Ed 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 Coherent before they become applicable to any particular order or contract. In accordance with the Coherent policy of continuous improvement specifications may change without notice. Further details are available from any Coherent sales representative.

This product is protected by patents and patent applications pending worldwide.