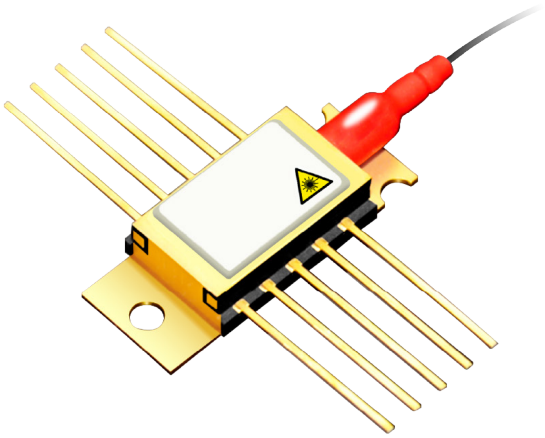
COOLED DUAL CHIP 10PIN MINI-BUTTERFLY 980nm PUMP LASER MODULE

DCM97-***-***-7*

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 DCM97-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, temperature and optical feedback changes.

Devices are available with kink free output powers up to 750mW per laser diode.



FEATURES

- High output power, up to 750mW kink-free, per laser diode
- Fiber Bragg grating stabilization for wavelength locking over the entire operating conditions
- Hermetically sealed 10pin m-BTF package
- Internal thermoelectric heat-pump 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

COHERENT

Optical Characteristics (per Laser Diode)

Product Code	Kink- Free Power P_{kink} (mW)	Operating Power P_{op} (mW)	Maximum Operating Current I_{op} (mA)
DCM97-390-xxx-7*	390	355	685
DCM97-410-xxx-7*	410	375	710
DCM97-430-xxx-7*	430	390	735
DCM97-450-xxx-7*	450	410	760
DCM97-470-xxx-7*	470	425	785
DCM97-490-xxx-7*	490	445	810
DCM97-510-xxx-7*	510	465	835
DCM97-530-xxx-7*	530	480	860
DCM97-550-xxx-7*	550	500	880
DCM97-570-xxx-7*	570	520	910
DCM97-590-xxx-7*	590	535	935
DCM97-610-xxx-7*	610	555	965
DCM97-630-xxx-7*	630	575	990
DCM97-650-xxx-7*	650	590	1020
DCM97-670-xxx-7*	670	610	1050
DCM97-690-xxx-7*	690	625	1075
DCM97-710-xxx-7*	710	645	1100
DCM97-730-xxx-7*	730	665	1100
DCM97-750-xxx-7*	750	680	1100

Note: “xxx” denotes Laser kink-free power

Wavelength Specification

Product Code	Min.	Typ.	Max.	Units	Condition
DCM97-***-***-74	973	974	975	NM	Air reference. FBG temperature is @ 25°C.
DCM97-***-***-76	975	976	977		

Note:
1. Conditions unless otherwise stated: Case temperature -20 to 75°C, Submount temperature 40°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

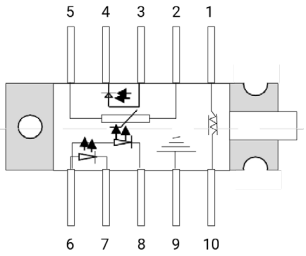
Product Specification (per Laser Diode)

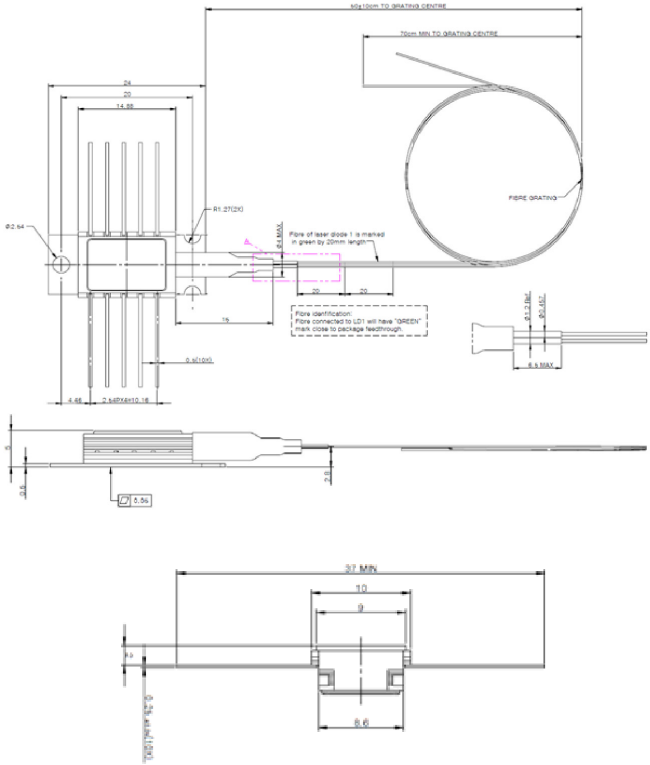
Parameter		Min.	Typ.	Max.	Units	Condition
Threshold current	I_{th}		60	90	mA	
Maximum Kink Free Current	I_{kink} @ P_{kink}			2200	mA	
Operating forward voltage	V_{op}		1.8	2.0	V	
Spectral width	Δλ	973	974	975	nm	
Signal to noise ratio	SNR		0.2	1.0	dB	RMS at -13dB
Temperature dependence of peak wavelength	Δλ/ΔT	20			nm/°C	
Monitor responsivity (LD1)	R_{m1}	0.5	1.5	5.0	µA/mW	FBG temperature dependency
Monitor responsivity (LD2)	R_{m2}	0.1	0.7	3.0	µA/mW	
Fiber power stability >50 mW 30 – 50 mW 10 – 30 mW	$\Delta P_{f-}t$			 0.10 0.15 0.35	dB	Peak-to-peak Time = 60 sec DC to 50 kHz
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 40°C
Heat pump current	I_{TEC}			2.0	A	T_{case} = 75 °C, IF= 1200 mA (per LD)
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	But not to exceed 0.024 kg of water per
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				5.0	N	3x10 seconds
Pigtail side pull force				2.0	N	
Fiber bend radius		13			mm	
Lead soldering temperature				350	°C	10 sec
Laser diode forward current	If_max			1200	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		2.5	A	Thermistor and TEC must be in closed loop control at all times
Heat pump voltage	V_{TEC}	-3.3		3.3	V	

Module Outlines Drawing and Pin Connections





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

Notes:
1. All dimensions in MM.
2. General Tolerance: ± 0.1 U.O.S

Fiber Specification

Parameter	Min.	Typ.	Max.	Units	Condition
Fiber type	HI1060 Fibre				
Cut-off wavelength	870	920	970	nm	
Mode field diameter	5.6	5.9	6.2	µm	@ 980 nm
Cladding diameter	124.5	125	125.5	µm	
Fibre 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	
Fibre proof test	200			kpsi	
Fibre Bragg Grating proof test	150			kpsi	

Note: Fibre termination; bare fibre with rough cleave.

Ordering Information

DCM	97		****	-	****	7*
Product Type	Chip Type	NA	LD1 Kink Free Power	NA	LD2 Kink Free Power	Wavelength 74 for 974nm 76 for 976nm

Example: DCM97-550-750-74 is for LD1 550mW KFP and LD2 750mW KFP; 974nm
Note: Dissimilar output power ratings are available upon request – please contact your II-VI sales manager for further information

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.

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

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