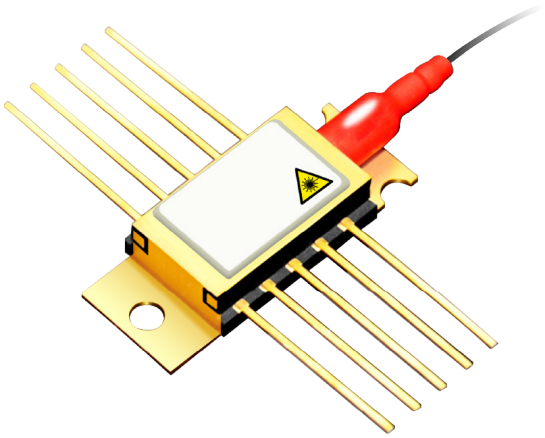
UNCOOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

DCU96**7*-10R

The DCU96-series is a high power, uncooled, dual-chip, dual-fiber pump laser, housed in a 10-pin mBTF package. This module represents Coherent's next generation uncooled product, and leverages our market-leading expertise in uncooled 980nm pump lasers. The DCU96-series provides high optical power yet low power consumption for highly reliable pumping of multi-stage, SFF metro and multi-channel amplifiers. The module specifically addresses arrayed EDFA for ADD/DROP ROADM application as well as compact 40/100Gb/s per-channel amplification.



FEATURES

- One package supporting two chips and two independent output fibers
- Up to 500mW kink free power from each fiber over the full operating temperature range
- Operating temperature range from -5°C to +75°C (case)
- Combined optical power of up to 1.0W with variable power ratios
- Minimal thermal or optical cross talks
- Polarization maintaining (PM) fiber
- Fiber Bragg grating stabilization for wavelength locking over the entire operating conditions
- Hermetically sealed 10pin butterfly package
- Telcordia GR-468-CORE compliant
- RoHS compliant

APPLICATIONS

- Which require higher optical power with low power consumption and small form factor package
- Low noise EDFAs
- Single or multi stage applications
- Mid-stage Access (MSA) EDFA
- Dense wavelength division multiplexing (DWDM) EDFAs
- Arrayed EDFA for ADD/DROP ROADM applications

COHERENT

The DCU96* has been designed specifically for uncooled operation over a wide operating temperature range and high power levels previously only addressable with cooled pump lasers. Qualification of the enhanced G08EL chip ensures high reliability even at 500mW kink free power, at 75°C. The DCU96* series uses a MSA 10-pin mBTF package, enabling smaller form factor designs with ease of integration and thermal management. External Fiber Bragg Grating (FBG) stabilization provides excellent wavelength lock and power stability over the entire operating range.

Operating Parameter

Laser Power Code - per Fiber	Minimum Kink-Free Power P_{kink} (mW)	Maximum Operating Power P_{op} (mW)	Typical Operating Current I_{op} (mA)	Maximum Operating Current I_{op} (mA)
A	200	180	360	470
B	220	200	400	510
C	240	220	440	550
D	260	235	470	580
E	280	255	510	620
F	300	270	560	650
G	320	290	585	700
H	340	310	615	725
J	360	325	645	755
K	380	345	680	800
L	400	365	720	850
M	420	380	745	880
N	440	400	780	920
P	460	420	820	960
R	480	440	855	1000
S	500	455	890	1000

Notes
1. Conditions unless otherwise stated: Case temperature -5 to 75°C, Uncooled, Monitor diode bias -5V, CW operation
2. Operating power assumes a 10% ageing margin: Operating Power = Kink-Free Power/1.1
3. All parameters are per single chip unless specified otherwise

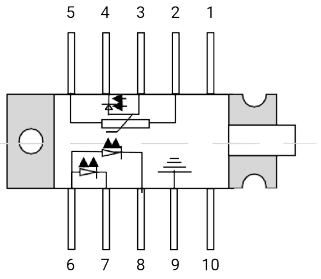
Product Specification

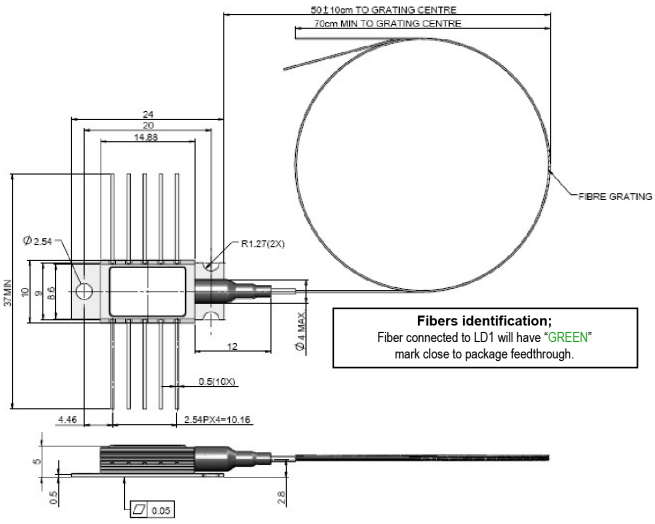
Parameter		Min.	Typ.	Max.	Units	Condition
Threshold current	I_{th}		55	100	mA	At 75 °C case
Maximum combined current at 75 °C case temperature				2200	mA	
Operating forward voltage	V_{op}		1.75	2.1	V	1100 mA, 75 °C
Centre Wavelength		973 975	974 976	975 977	nm	-5 to 75 °C, >50 mW Air reference. FBG temperatures is @
Spectral width	Δλ		0.2	1.0	nm	RMS at -13 dB
Power in band ratio		90 75			%	>100 mW 50-100 mW
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		0.3	6	15	μA/mW	
Monitor dark current	I_{dark}			60	nA	-5 V bias voltage
Fiber power stability >30 mW 20 – 30 mW 10 – 20 mW 5 – 10 mW	ΔPf_t			 0.10 0.10 0.25 0.20	dB	Peak-to-peak Time = 60 sec DC to 50 kHz
Return loss	RL	20			dB	1500 nm – 1600 nm
Thermistor BETA value	β	3539	3575	3611		±1% temperature variation
Thermistor resistance	R_{th}	9.5	10.0	11.0	kΩ	At submount temperature of 25 °C
Optical power cross talk				1.0	mW	At any condition
Thermal cross talk				<1.0	°C	Ifmax=1050 mAper chip
Total electrical power consumption			1.5	2.0	W	Per laser diode; Tcase= 75 °C, 500 mW

Absolute Maximum Ratings

Parameter		Min.	Typ.	Max.	Units	Condition
Operating case temperature	T_{op}	-5		75	°C	
Storage temperature	T_{stg}	-40		85	°C	
Storage relative humidity	RH_{stg}	5		95	%	But not to exceed 0.024kg of water per 1.0 kg of dry air
Operating relative humidity	RH_{op}	5		85	%	But not to exceed 0.024kg of water per 1.0 kg of dry air
Pigtail axial pull force				0.5	kg	1 minute
Pigtail side pull force				0.25	kg	90°, 3 directions, 5s
Fiber bend radius		13			mm	
Lead soldering temperature				350	°C	10 sec
Laser diode forward current	If_max			1100	mA	CW
Laser diode current transient				1200	mA	Time = 1000 ns max.
Laser diode reverse current	I_r			10	µA	
Laser diode reverse voltage	V_p			2.0	V	
Photodiode reverse voltage				20	V	
Photodiode reverse current				5	mA	

Module Outlines Drawing and Pin Connections





Pin	Description	Pin	Description
1	Not conected	6	LD1&2 Anode (+)
2	Thermistor	7	LD1 Cathode (-)
3	Monitor anode (-)	8	LD2 Cathode (-)
4	Monitor cathode (+)	9	Package Ground
5	Thermistor	10	Not connected

Fiber Specification

Parameter	Min.	Typ.	Max.	Units	Condition
Fiber type	PM-980				
Cut-off wavelength	830	900	970	nm	
Mode field diameter	5.6	6.6	7.6	µm	@ 980 nm
Cladding diameter	124	125	126	µm	
Fibre coating diameter	230	245	260	µm	Acrylate material, mechanically strippable
Grating recoat diameter	260	290	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

DCU	96	*	*	7*	P	-10	R
Product Type	Chip Type	LD1 KFP	LD2 KFP	Wavelength 74 for 974nm 76 for 976nm	Product Design	Package type	RoHS Compliance

Example: DCU96AL74P-10R refers to “200mW KFP for LD1 and 400mW KFP for LD2, 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.

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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