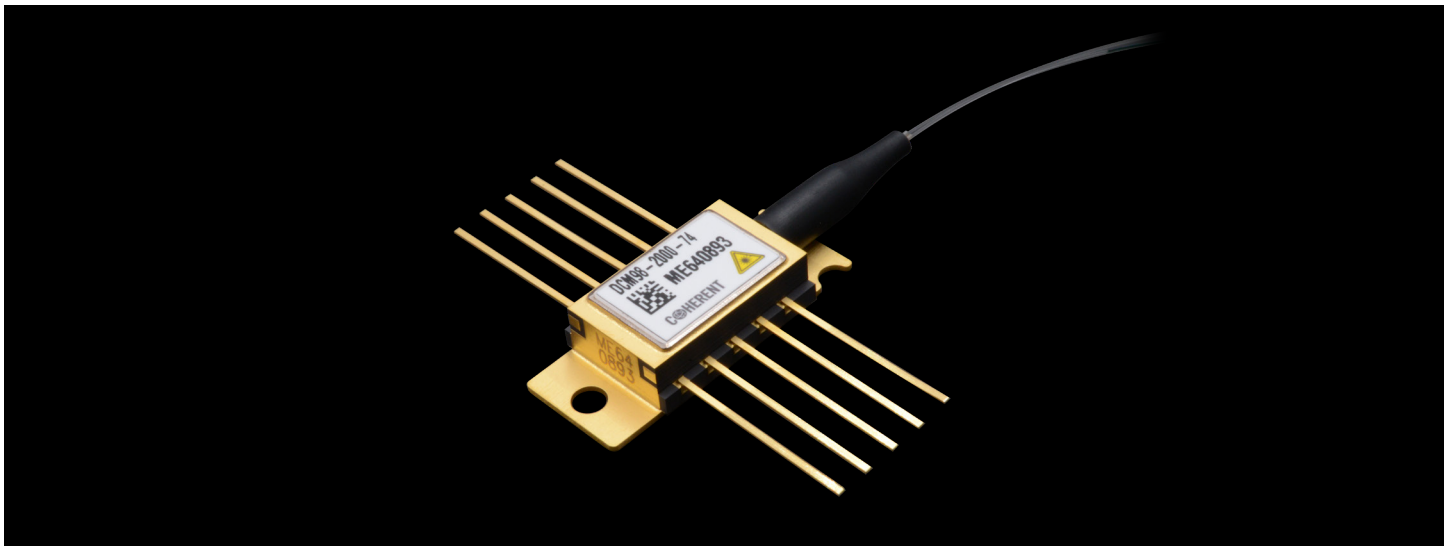


COOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

DCM98-xxxx-74

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 DCM98-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.



FEATURES

- High output power, up to 2000mW total operating output power
- 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

COOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

Operating Parameter

Product Code	Parameters per Laser Diode				Parameters per Module at 75C case temperature							
	Max Operating Power (mW)	Max Operating IF (mA)	Max Kink-Free Power (mW)	Max Kink-Free IF (mA)	MAX TEC I (A) @ SOL	MAX TEC V (A) @ SOL	TEC Power (W) @ SOL	MAX TEC I (A) @ EOL	MAX TEC V (A) @ EOL	TEC Power (W) @ EOL	P total (W) @ SOL	P total (W) @ EOL
DCM98-1000-74 (1441951)	500	950	550	1045	1.51	2.39	3.61	1.56	2.45	3.82	6.1	6.5
DCM98-1100-74 (1442021)	550	1035	605	1139	1.55	2.45	3.80	1.60	2.52	4.04	6.5	7.0
DCM98-1200-74 (1441953)	600	1120	660	1232	1.59	2.50	4.00	1.65	2.58	4.26	6.9	7.5
DCM98-1300-74 (1442016)	650	1210	715	1331	1.64	2.57	4.21	1.70	2.65	4.50	7.4	8.0
DCM98-1400-74 (1441950)	700	1290	770	1419	1.68	2.62	4.40	1.74	2.71	4.72	7.8	8.4
DCM98-1500-74 (1442018)	750	1380	825	1518	1.72	2.68	4.62	1.79	2.78	4.97	8.2	8.9
DCM98-1600-74 (1441949)	800	1465	880	1612	1.76	2.74	4.83	1.84	2.84	5.21	8.6	9.4
DCM98-1700-74 (1441952)	850	1550	935	1705	1.81	2.80	5.05	1.88	2.90	5.46	9.1	9.9
DCM98-1800-74 (1442019)	900	1640	990	1804	1.85	2.86	5.29	1.93	2.97	5.74	10.0	10.8
DCM98-1900-74 (1442017)	950	1680	1045	1848	1.87	2.89	5.40	1.95	3.00	5.86	10.0	11.0
DCM98-2000-74 (1442020)	1000	1680	1100	1848	1.87	2.89	5.40	1.95	3.00	5.86	10.0	11.0

Notes

The standard product codes listed above describe products with matching power from each fibre output; e.g. DCM98-2000-74 = 2x 1000mW operating power.

Alternative combinations of output power are available upon request.

(Product code information in brackets is for internal reference)

Wavelength Specification

Product Code	Min.	Typ.	Max.	Units	Condition
DCM98-xxxx-74	973	974	975	nm	Air reference. FBG temperature is @ 25 °C.

Notes:

1. Conditions unless otherwise stated: Case temperature -5 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

COOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

Product Specification

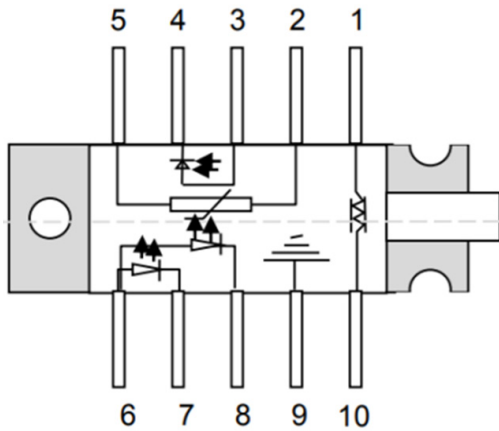
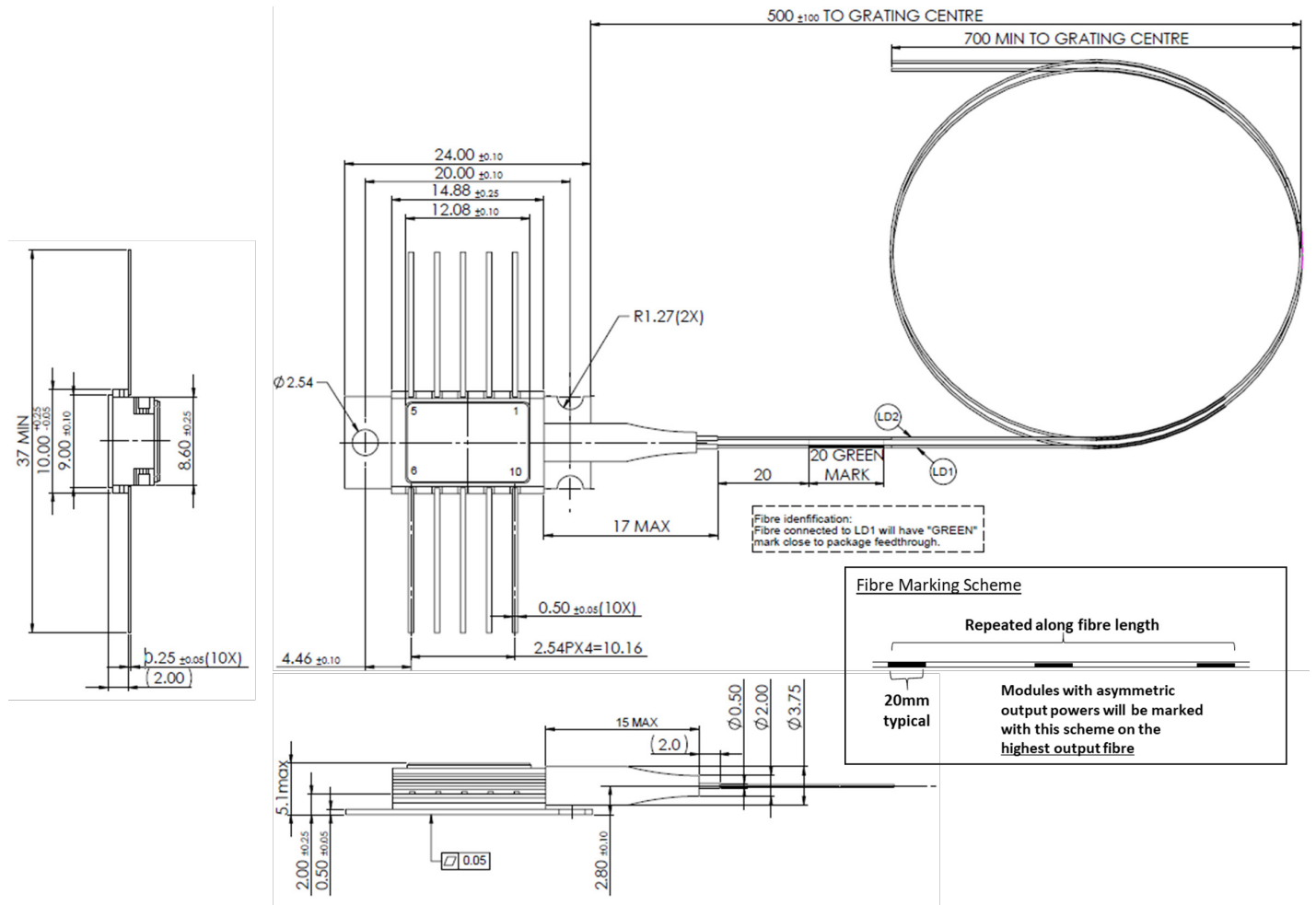
Parameter		Min.	Typ.	Max.	Units	Condition
Threshold current	I_{th}		60	100	mA	
Operating forward voltage	V_{op}			2.0	V	At EOL current per laser diode
Spectral width	$\Delta\lambda$		0.2	1.0	nm	RMS at -13 dB
Signal to noise ratio	SNR	20			dB	
Temperature dependence of peak wavelength	$\Delta\lambda/\Delta T$		0.008	0.02	nm/°C	FBG temperature dependency
Monitor responsivity	R_{mt}	0.01	1.5	10.0	$\mu A/mW$	
Fiber power stability >20 mW 10 – 20 mW	ΔPf_t			0.10 0.25	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	3611		$\pm 1\%$ temperature variation
Thermistor resistance	R_{th}	9.5	10.0	11.0	k Ω	At submount temperature of 40 °C
Heat pump current	I_{TEC-5}	-0.75	-0.7	1.0	A	$T_{case} = -5\text{ °C}$, $IF = 0mA$
Heat pump voltage	V_{TEC-5}	-1.15	-1.0	<1.0	V	

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	%	
Pigtail axial pull force				5.0	N	3x10 seconds
Pigtail side pull force				2.5	N	
Fibre bend radius		13			mm	
Lead soldering temperature				400	°C	10 sec
Laser diode forward current	I_{f_max}			2000	mA	CW per LD
Laser diode current transient				2000	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 (CW)	I_{TEC}	-1.0		2.4	A	Thermistor and TEC must be in closed loop control at all times
Heat pump voltage (CW)	V_{TEC}	-2.0		4.0	V	
Heat pump current (<1s)	I_{TEC}	-2.4		4.0	A	
Heat pump voltage (<1s)	V_{TEC}	-4.0		5.3	V	

COOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

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 (-)

COOLED DUAL CHIP 10PIN BUTTERFLY 980nm PUMP LASER MODULE

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		260	µm	Acrylate material, mechanically strippable
Grating recoat diameter			400	µm	
Core/cladding concentricity			<0.5	µm	
Coating-clad offset			≤5	µm	
Fibre proof test	150			kpsi	
Fibre Bragg Grating proof test	150			kpsi	

Note: Fibre termination; bare fibre with rough cleave.

Ordering Information

DCU	98	-	XXXX	-	74
Product Type	Chip Type	-	Total Operating Power	-	Wavelength 74 for 974nm

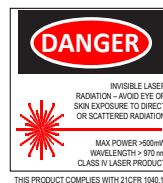
Example: DCM98-2000-74 is a 2x1000mW operating power, 974nm product.

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.



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