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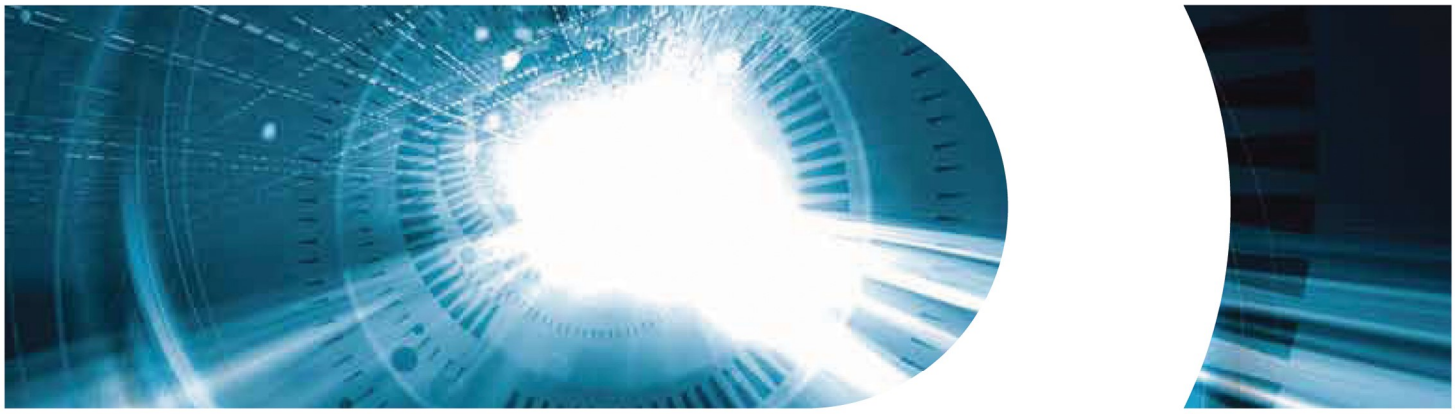


Active Components
Pump Laser Modules

Key Features

- Up to 1000mW Pop
- Low Power Consumption
- Extended operating temperature range (-5 °C to +75 °C)
- Fiber Bragg Grating (FBG) on SMF
- High wavelength and power stability RoHS compliant

Applications

- High output power low noise EDFAs
- Dense wavelength division multiplexing EDFAs
- CATV

1999CVB

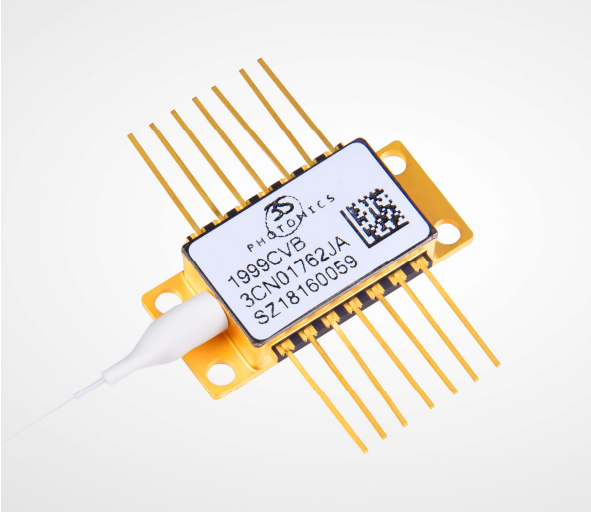
980 nm Cooled Pump Laser Module 1100mW Kink-free

The 1999CVB is a new generation of 980 nm terrestrial pump modules powered by an in-house chip technology fully qualified, ensuring an outstanding level of performance and reliability.

Low Profile, 14-pin butterfly modules are available with an operating power up to 1000 mW.

They incorporate a thermoelectric cooler (TEC), a precision NTC thermistor and a back-facet monitoring photodiode.

The 1999CVB family has been designed to ensure high wavelength and power stability performance at low power.



For more Info

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1999CVB

**1100mW Kink-free,
FBG Stabilized,
980 nm Cooled
Pump Laser Module**

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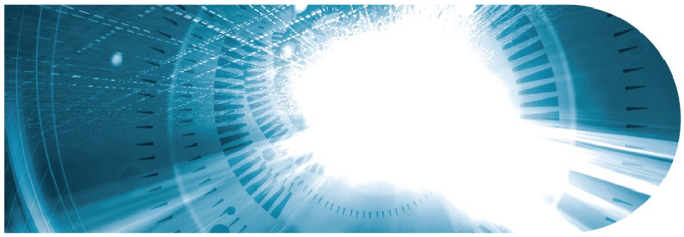
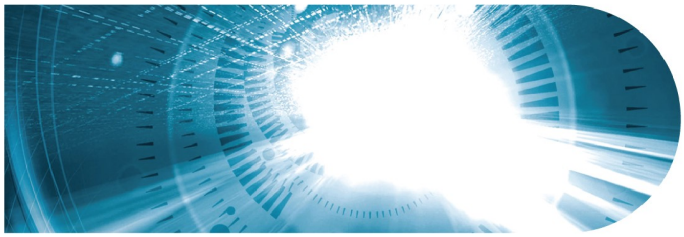


ELECTRO-OPTICAL **CHARACTERISTICS**

The following parameters are specified BOL for a $T_{submount}$ = 25 °C, T_{case} = -5 °C to 75 °C, V_{BFM}= -5 V and -50 dB max back-reflection unless otherwise stated.

Parameters	Conditions	Symbol	Min	Typ	Max	Unit
PUMP LASER						
Threshold current (1)		I_{th}	-		100	mA
Nominal operating power		P_{nom}	850	-	1000	mW
Kink free power (2)		P_{kink}	1.1 x P_{nom}	-	-	mW
Forward current (3)	P_{nom}= 850 mW P_{nom}= 900 mW P_{nom}= 950 mW P_{nom}= 1000 mW	I_{nom}	- - - -	- - - -	1520 1575 1600 1630	mA
Forward voltage	@ 1000 mW	V_{nom}	-		2	V
Peak wavelength tolerance	@ T_{case}= T_{FBG}= 25 °C Power Range	$\Delta\lambda_p$	-	-	±1	nm
Wavelength tuning vs temperature (T_{FBG} = -5 to 75 °C)	Power Range	$\Delta\lambda_p$ / ΔT	-	-	0.02	nm / °C
Spectral width @ -3 dB	Power Range	$\Delta\lambda_{FWHM}$	-	-	1.0	nm
Power range			30		P_{nom}	mW
Power in band (4)	P_{nom}	P_{band}	90	-	-	%
Optical power stability	Peak to peak, 1 Hz-50 kHz, 60 sec, 30mW≤P<50mW 50mW≤P≤P_{nom}	ΔP	-		 0.2 0.1	dB
Power consumption, EOL	1.1 P_{nom} = 1000 mW		-	-	9.5	W
MONITOR DIODE						
Responsivity		I_{BFM} / P	0.5	-	10	µA / mW
Dark current	V_r = 5 V	I_{BFM_dark}	-	-	100	nA
THERMO-ELECTRICAL COOLER						
TEC voltage (EOL)	T_{case}= 75 °C, 1.1 P_{nom} =1000mW	$V_{TEC, EOL}$	-	-	3.52	V
TEC current (EOL)		$I_{TEC, EOL}$	-	-	1.54	A
TEC Power consumption		$P_{TEC, EOL}$	-	-	5.42	W
THERMISTOR						
Resistance	25 °C	R_{th}	9.5	-	10.5	kΩ
Constant		β	3600	-	4200	K

(1) I_{th} is the intersection point with the x-axis of a linear fit of the P(I) curve between 15 mW and 50 mW
(2) A kink is detected when the local slope dP/dI is below S_{min} or above S_{max}. S_{min} is defined as 0.5xS_{avg} and S_{max} is defined as 1.5xS_{avg}
(3) EOL forward current I(EOL)= 1.1x I(BOL)
(4) P_{band} is defined as the power within the band λp ±1.5 nm vs the total output power



ABSOLUTE MAXIMUM **RATINGS**

Exposing this device to stresses and conditions above those listed in this section could cause permanent damage and affect reliability. The device is not meant to operate outside the operational limits described in previous section at any length of time.

Parameter Conditions	Symbol	Min	Max	Unit
Storage temperature (2000 h)	T_{stg}	-40	85	°C
Operating temperature ($T_{submount}$ = 25 °C)*	T_{op}	-20	75	°C
Lead soldering temperature (10 s maximum)		-	280	°C
Storage Relative Humidity (Non Condensing)		5	95	%
Operating Relative humidity		5	85	%
LD forward drive current (10 s maximum)	I_{f_max}	-	1800	mA
LD reverse voltage	V_{r_max}	-	2.0	V
LD reverse current	I_{rev}		10	µA
PD reverse voltage	V_{PD_max}	-	15	V
PD forward current	I_{PD_max}	-	10	mA
TEC voltage	$V_{TEC\_C\_max}$	-4.2	4.2	V
TEC current	$I_{TEC\_C\_max}$	-2.0	2.0	A
ESD** LD damage	V_{ESD-LD}	-	1000	V
ESD** MPD damage	$V_{ESD-MPD}$		500	V
Mounting torque		-	150	mN.m
Fiber bend radius		16	-	mm
Axial pull force (1x1 min)		-	5	N

* No cold start. TEC will be turned on first.
** Human Body model, C = 100 pF, R = 1.5 kΩ

FIBER PIGTAIL **CHARACTERISTICS**

Parameter	Note	Min	Typ	Max	Unit
Fiber type			HI1060™ or equivalent		
Coating diameter	(except along grating)	230	250	270	µm
FBG recoat diameter		-	-	400	µm
FBG position	Module to center of FBG	-	2	-	m
Fiber proof test level		200	-	-	kpsi
Grating proof test level		150	-	-	kpsi
Pigtail termination	Bare fiber				

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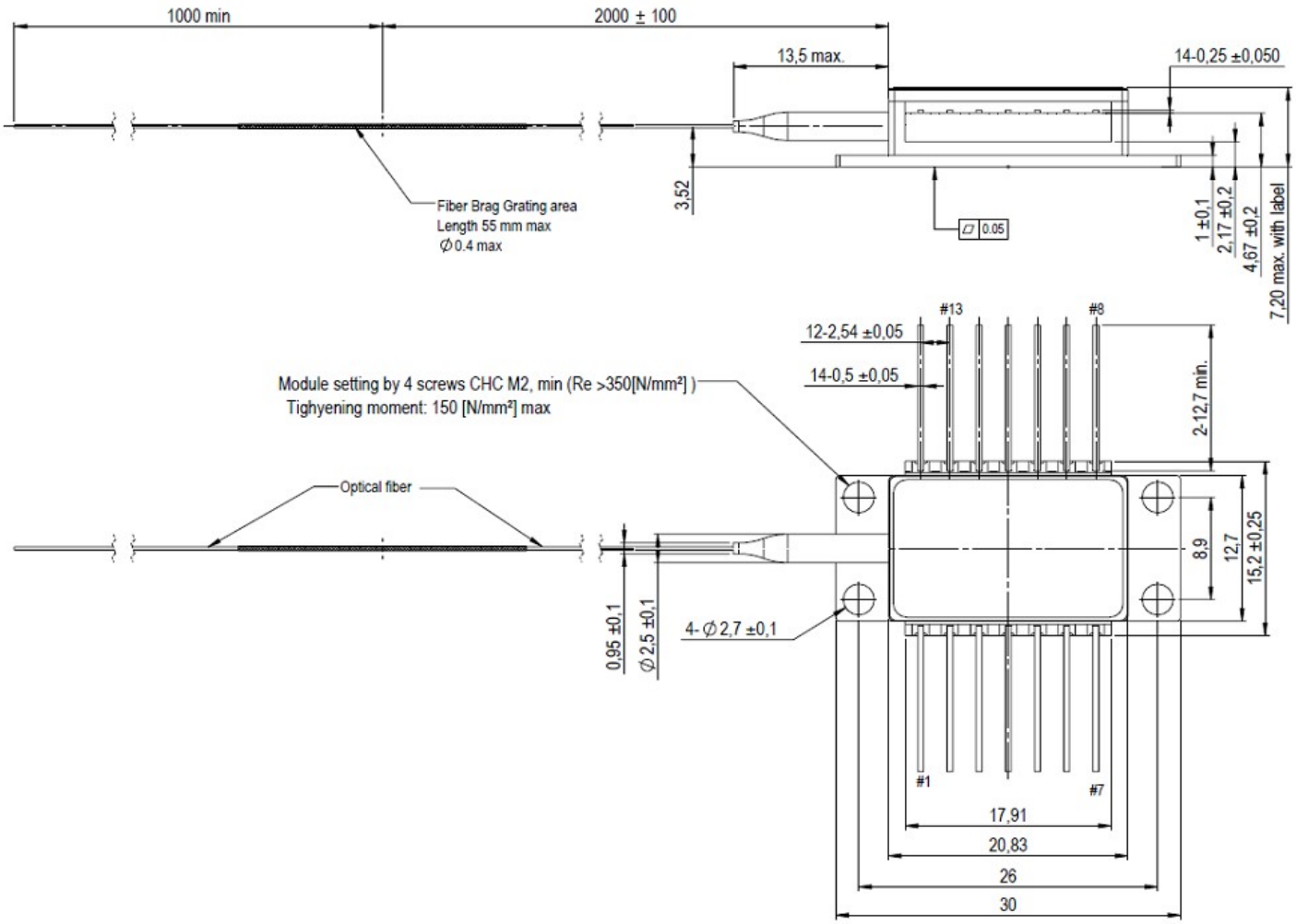
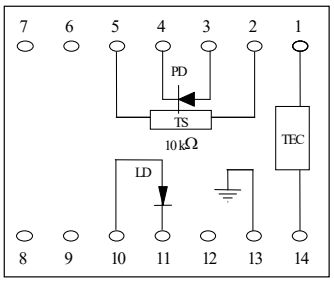
MECHANICAL **DETAILS**



PIN **ASSIGNEMENT**

Dimensions are in mm

N°	Description	N°	Description
1	TEC (+)	8	No connect
2	Thermistor	9	No connect
3	Monitor PD Anode	10	Laser Anode (+)
4	Monitor PD Cathode	11	Laser Cathode (-)
5	Thermistor	12	No connect
6	No connect	13	Ground
7	No connect	14	TEC (-)



Totally floating pin-out

LASER SAFETY **INFORMATION**

This laser module emits invisible light. Take appropriate precautions to prevent undue exposure to naked eye when module is in operation. This product is classified Class 4 Laser Product according to IEC-60825-1.

HANDLING

This product is sensitive to electrostatic discharge and should not be handled except at a static free workstation. Take precautions to prevent ESD; use wrist straps, grounded work surfaces and recognized anti-static techniques when handling the pump laser module. Caution! Handle the module by its package only; never hold it by its pigtail.
Care should be taken to avoid supply transient currents and voltages. Drive voltage above the maximum specified in absolute maximum rating section may cause permanent damage to the device.

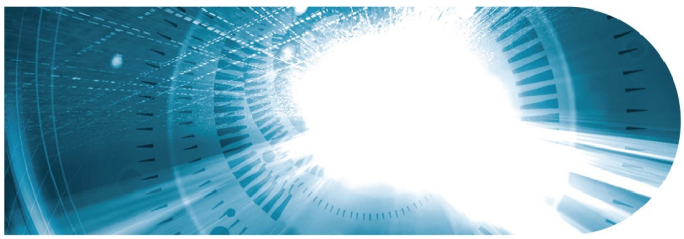
APPLICATION **NOTE**

In order to prevent any mishandling, misuse, neglect or accident, it is highly recommended to read and follow the instructions detailed in the application note reference “3SPT_980nm Cooled 14_10 pin butterfly module & Raman pump_Application Note_RCLIMAAPN00000007” that can be downloaded from 3SP Technologies website: http://www.3sptechnologies.com

ORDERING **INFORMATION**

1999CVB PUMP PRODUCT FAMILY

SMF Pigtail	**λ_p= 974.0 nm, T= 25 °C**	**λ_p= 976.0 nm T= 25 °C**
Nominal Power	**Part Number**	**Part Number**
850mW	3CN04037HL	3CN04038HL
900mW	3CN04037JA	3CN04038JA
950mW	3CN04037JL	3CN04038JL
1000 mW	3CN04037KA	3CN04038KA



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