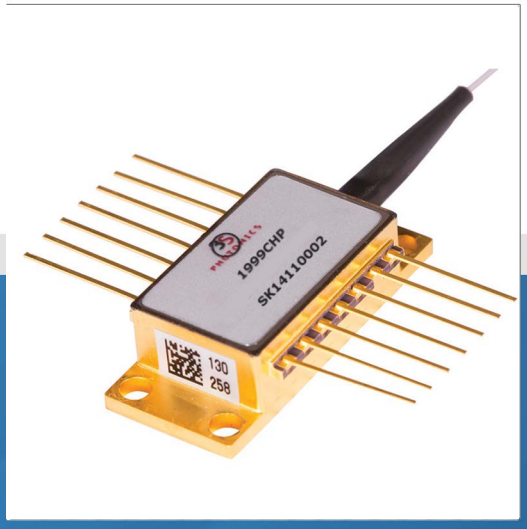

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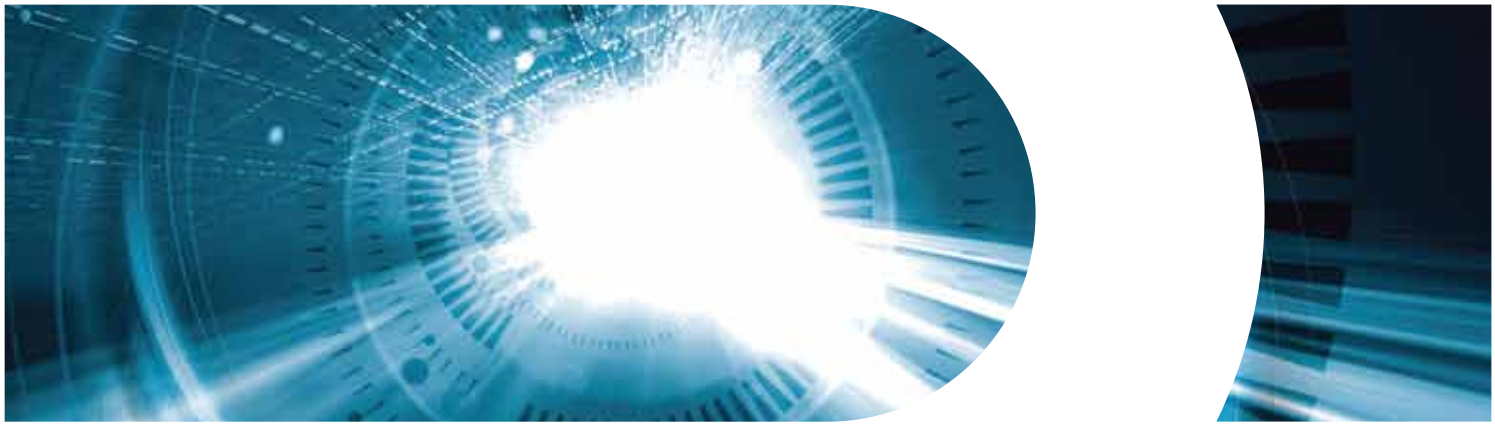


Pump Laser Modules

KeyFeatures

- 330mW operating power
- Epoxy free design inside the Butterfly module for long term Reliability
- Fiber Bragg Grating (FBG) stabilized
- Low total power consumption: 3.5W max @ 330mW
- Telcordia GR-468-CORE qualified
- RoHS 6/6

Applications

- Low Noise High Power Erbium-Doped Fiber Amplifiers
- Multi pumping architectures
- Sensors

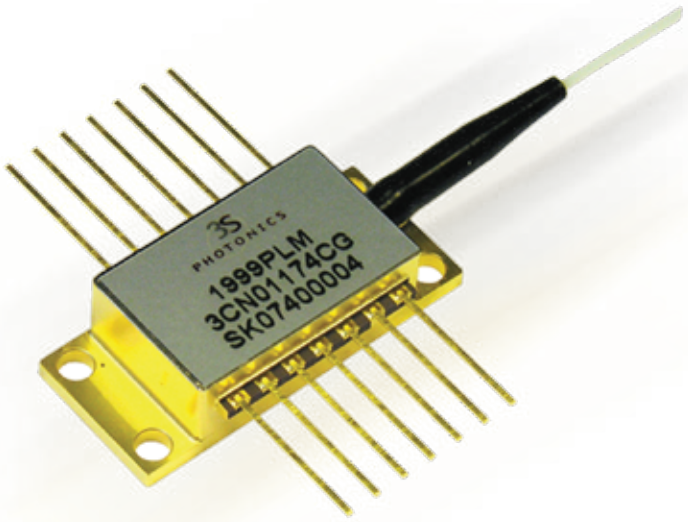
1999 PLM

365mW Kink Free, FBG Stabilized 980nm Pump Laser Module

The 1999 PLM is new generation of 980nm terrestrial pump modules powered by in-house chip technology which contains a new high power laser chip internally developed and fully qualified. Low Profile, epoxy-free, 14-pin butterfly modules are available with an operating power up to 330mW. The wavelength is “locked” utilizing a fiber bragg grating (FBG) located in a Single Mode HI1060 fiber (SMF) pigtail. The module meets TelcordiaTM GR-468-Core for hermetic 980nm pump modules.

These modules provide excellent stability and wide dynamic range due to their specific design.

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



For moreInfo

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or via e-mail at **sales@3spgroup.com**

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1999 PLM

365mW Kink Free, FBG Stabilized 980nm Pump Laser Module

ELECTRO-OPTICAL CHARACTERISTICS

The following parameters are specified BOL for $T_{submount}$= 25°C +/- 1°C, VBFM= -5V, -50dB max back-reflection and T_{case} = -5°C to 75°C unless otherwise stated.

Parameters		Conditions	Symbol	Min	Typ	Max	Unit
PUMP LASER							
Threshold current	Note 1		I_{th}	-	45	60	mA
Nominal operating power			P_{nom}	250		-	mW
Kink free power	Note 2		P_{kink}	1.1 x Pnom	-	-	mW
Forward current @ Pnom	Note 3	P_{nom}= 150mW	I_{nom}	-	260	290	mA
		P_{nom}= 200mW		-	330	365	
		P_{nom}= 250mW		-	400	440	
		P_{nom}= 300mW		-	470	515	
		P_{nom}= 330mW		-	520	570	
Forward voltage		@330mW	V_{nom}	-	1.8	2.0	V
Peak wavelength tolerance		@ T_{case}= T_{FBG}= 25°C 0.1x P_{nom} to P_{nom}	$\Delta\lambda_p$		-	±0.5	nm
Wavelength tuning vs temperature (Tgrating= -5 to 75°C)		0.1x P_{nom} to P_{nom}	$\Delta\lambda_p / \Delta T$	-	0.01	0.02	nm/°C
Spectral width @-3dB		0.1x P_{nom} to P_{nom}	$\Delta\lambda_{FWHM}$	-	-	1.0	nm
Power in band	Note 4	P_{nom}	P_{band}	90	-	-	%
Optical power stability		Peak to peak, 10Hz-50kHz, P_{nom}	ΔP_f	-	<1	2	%
MONITOR DIODE							
Responsivity			I_{BFM} / P	0.5	-	10	µA/mW
Dark current		Vr= 5V	I_{BFM_dark}	-	50	100	nA
THERMO-ELECTRICAL COOLER							
Cooling capacity			ΔT_{TEC}	50	-	-	°C
TEC voltage (EOL)		T_{case}= 75°C, 1.1 x I_{nom}	$V_{TEC, EOL}$	-	-	2.1	V
TEC current (EOL)			$I_{TEC, EOL}$	-	-	1.4	A
TEC Power consumption			P_{TEC}	-	-	2.9	W
THERMISTOR							
Resistance		25°C	R_{th}	9.5	10	10.5	kΩ
Constant			B	3600	-	4200	K

Note 1: Ith is the intersection point with the x-axis of a linear fit of the P(I) curve between 15 and 50mW
Note 2: A kink is detected when the local slope, dP/dI, is below Smin or above Smax.
Smin is defined as 0.5 x Savg and Smax is defined as 1.5 x Savg
Savg is the slope of a linear fit of the P(I) curve between 50 and 150mW.
Note 3: EOL forward current I(EOL)= 1.1x I(BOL)
Note 4: Pband is defined as the power within the band lp +-1.5nm vs the total output power

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1999 PLM

365mW Kink Free, FBG Stabilized 980nm Pump Laser Module

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 (2000h)	T_{stg}	-40	85	°C
Operating temperature ($T_{submount}$ = 25°C)	T_{op}	-5	75	°C
Lead soldering temperature (10s maximum)		-	260	°C
LD forward drive current	I_{f_max}	-	660	mA
LD reverse voltage	V_{r_max}	-	2	V
PD reverse voltage	V_{PD_max}	-	15	V
PD forward current	I_{PD_max}	-	10	mA
TEC voltage	V_{TEC_max}	-	3.3	V
TEC current	I_{TEC_max}	-	2.4	A
ESD* damage	V_{ESD}	-	1000	V
Mounting torque		-	150	mN.m
Fiber bend radius		25	-	mm
Axial pull force (1x 1min)		-	5	N

* Human Body Model, C= 100pF, R= 1.5Ω

Fiber Pigtail **Characteristics**

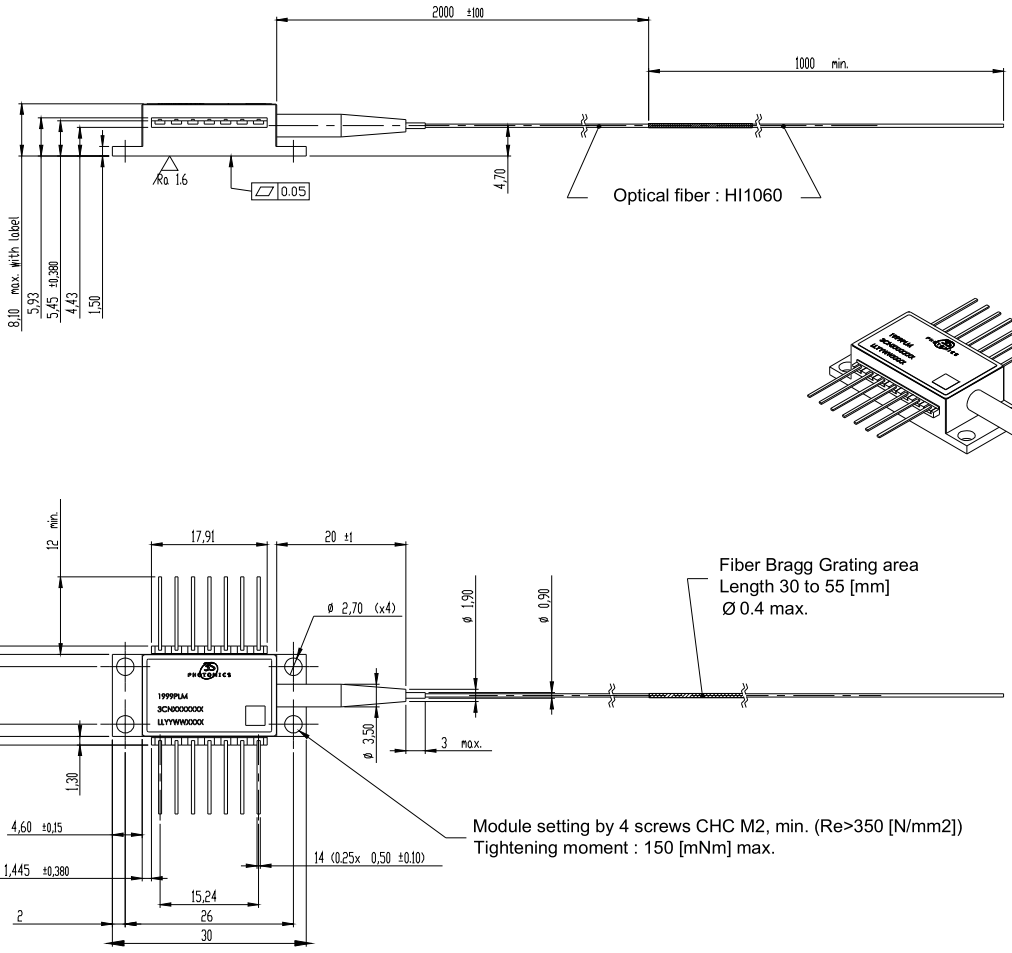
Parameters	Note	Min	Typ	Max	Unit
Fiber type			HI1060 ™ or equivalent		
Coating diameter	(except along grating)	230	250	270	µm
FBG recoat diameter		-	-	400	µm
FBG position	Module to center of FBG		2		m
Loose tube buffer diameter		885	-	915	µm
Fiber proof test level		100			kpsi
Grating proof test level		150			kpsi
Pigtail termination	Bare fiber				

1999 PLM

365mW Kink Free, FBG Stabilized 980nm Pump Laser Module

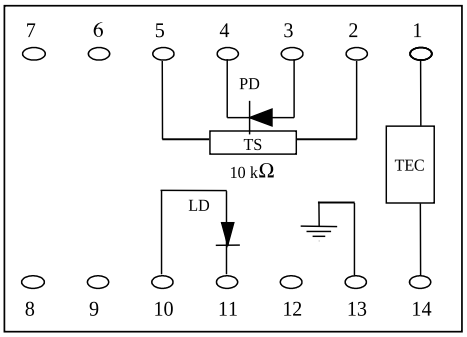
Mechanical **Details**

Dimensions are in mm.



Pin **Assignment**

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.

1999 PLM

365mW Kink Free, FBG Stabilized 980nm Pump Laser Module

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 modules. 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 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 product may cause permanent damage to the device.

Ordering **Information**

1999 PLM pump product family – other wavelengths are available upon request.

Nominal Power (mW)	λ_p = 974.5nm T = 25 °C Part Number	λ_p = 976.0nm T = 25 °C Part Number
150	3CN 01174 AL	3CN 01343 AL
200	3CN 01174 BA	3CN 01343 BA
250	3CN 01174 BL	3CN 01343 BL
300	3CN 01174 CA	3CN 01343 CA
330	3CN 01174 CG	3CN 01343 CG

Revised March 2012

ORDERING **INFO**

Please contact your Sales Manager. 3SPGroup can also develop custom products to meet a wide range of technical requirements.

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