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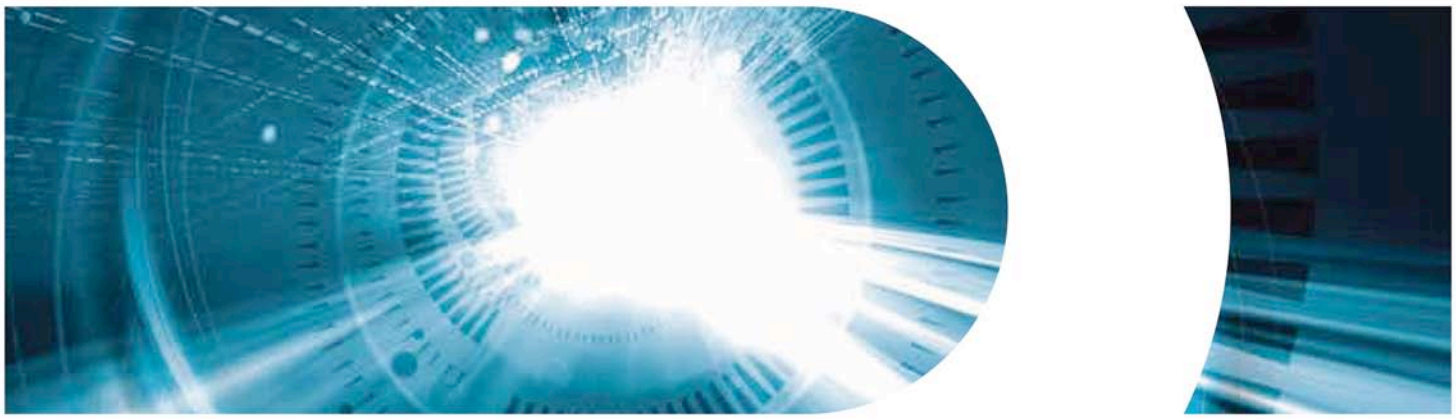


Pump Laser
Modules

KeyFeatures

- Operating power up to 750mW
- Operating temperature range: -5 to 75°C
- Total Power Consumption: 8W max @750mW Pop
- Telcordia GR-468 CORE Qualified
- RoHs 6/6

Applications

- High output power Low noise Erbium-doped Fiber Amplifier
- CATV
- Sensors
- Wavelength Conversion

For moreInfo

Please contact us at:
North America: **514.748.4848**
888.922.1044
Europe & Asia: **+33 (0) 1 69 80 58 33**
or via e-mail at **sales@3spgroup.com**

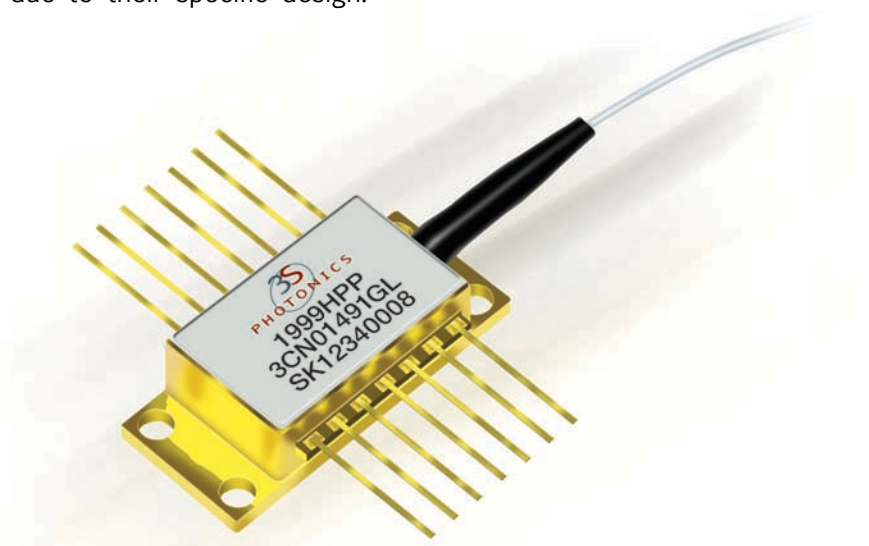
1999 HPP

825mW Kink-Free, FBG Stabilized 980 nm Pump Laser Module

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

Low Profile, 14-pin butterfly modules are available with an operating power up to 750mW. The wavelength is "locked" utilizing a fiber bragg grating (FBG) located in either a single mode Polarization Maintaining Fiber (PMF) or a Single Mode HI1060 Fiber (SMF) pigtail. The module meets the Telcordia™ GR-468-Core requirements for hermetic 980nm pump modules.

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



Pump Laser Modules

3SP Group

1999 HPP

825mW Kink-Free, FBG Stabilized 980 nm Pump Laser Module

ELECTRO-OPTICAL CHARACTERISTICS

The following parameters are specified BOL for TLD= 25°C, Tcase= -5 to 75°C, Pop= Pnom, unless otherwise stated.

Parameters	Conditions	Symbol	Min	Typ	Max	Unit
PUMP LASER						
Threshold current Note 1		I_{th}	-	60	80	mA
Nominal operating power		P_{nom}	450	600	750	mW
Kink free power Note 2		P_{kink}	1.1 x P_{nom}	-	-	mW
Forward current @ P_{nom} Note 3	P_{nom}= 450mW P_{nom}= 500mW P_{nom}= 550mW P_{nom}= 600mW P_{nom}= 680mW P_{nom}= 720mW P_{nom}= 750mW	I_{nom}	-	765 845 925 1005 1100 1110 1140	835 920 1005 1085 1120 1130 1150	mA
Forward voltage	@750mW	V_{nom}	-	1.9	2.2	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 ($T_{grating}$= -5 to 75°C)	0.1x P_{nom} to P_{nom}	$\Delta\lambda_p$ / ΔT	-	0.01	0.02	nm/°C
Spectral width @-3dB	0.1x P_{nom} to P_{nom}	$\Delta\lambda_{FWHM}$	-	0.6	1.0	nm
Optical power stability	Peak-to-peak 10Hz-50kHz, 10-20mW 20-50mW >50mW			 0.4 0.3 0.15	 0.6 0.4 0.2	dB
MONITOR DIODE						
Responsivity		dI_{BFM} / dP	0.5	-	10	mA
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}	$V_{TEC,\ EOL}$	-	-	3.3	V
TEC current (EOL)		$I_{TEC,\ EOL}$	-	-	1.5	A
TEC Power consumption		P_{TEC}	-	-	4.95	W
THERMISTOR						
Resistance	25°C	R_{th}	9.5	10	10.5	kΩ
Constant		B	3600	-	4200	K

(1): Ith is the intersection point with the x-axis of a linear fit of the P(I) curve between 15 and 50mW
(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
(3): EOL forward current I(EOL)= 1.1x I(BOL)

1999 HPP
825mW Kink-Free, FBG Stabilized 980 nm 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 (Tsubmount = 25°C)	T_{op}	-20	75	°C
Lead soldering temperature (10s maximum)		-	280	°C
LD forward drive current	I_{f_max}	-	1300	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	$V_{TEC\_C\_max}$	-	4.2	V
TEC current	$I_{TEC\_C\_max}$	-	2.0	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**

Parameter	Note	Min	Typ	Max	Unit
Fiber type		SM98-PS-U25A-H or equivalent HI1060™ or equivalent			
Coating diameter	(except along grating)	230	250	270	µm
FBG recoat diameter		-	-	400	µm
FBG position	Module to center of FBG	-	2.0	-	m
Loose tube buffer diameter		885	-	915	µm
Fiber prove test level		200	-	-	kpsi
Grating proof test level		150	-	-	kpsi
Pigtail termination	Bare fiber				
Polarization State	Aligned parallel to the slow axis				

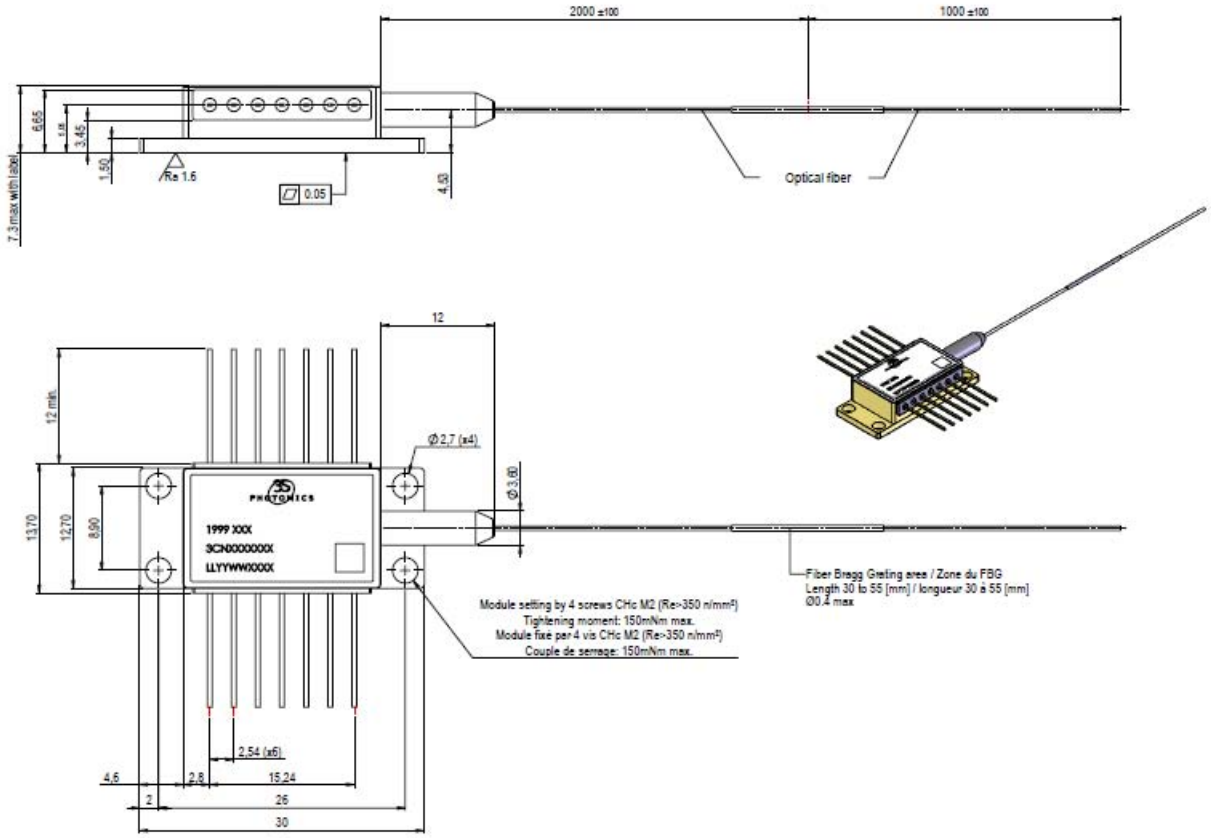
3SP Group

1999 HPP

**825mW Kink-Free,
FBG Stabilized 980 nm
Pump Laser Module**

MECHANICAL **DETAILS**

Dimensions are in mm.



PIN **ASSIGNEMENT**

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

Pump Laser Modules

3SP Group

1999 HPP

825mW Kink-Free, FBG Stabilized 980 nm 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**

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

SMF pigtail Nominal Power	λ_p=974.5nm Part Number	λ_p=976.0nm Part Number
450mW	3CN01489DL	3CN01490DL
500mW	3CN01489EA	3CN01490EA
550mW	3CN01489EL	3CN01490EL
600mW	3CN01489FA	3CN01490FA
680mW	3CN01489FS	3CN01490FS
720mW	3CN01489GE	3CN01490GE
750mW	3CN01489GL	3CN01490GL

PMF pigtail Nominal Power	λ_p=974.5nm Part Number	λ_p=976.0nm Part Number
450mW	3CN01491DL	3CN01492DL
500mW	3CN01491EA	3CN01492EA
550mW	3CN01491EL	3CN01492EL
600mW	3CN01491FA	3CN01492FA
680mW	3CN01491FS	3CN01492FS
720mW	3CN01491GE	3CN01492GE
750mW	3CN01491GL	3CN01492GL

Revised March 2013

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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