

Pump Laser Modules

Key Features

Epoxy free design inside the mini-DIL module for long term Reliability

300mW operating power

Operating temperature up to 75°C

Fiber Bragg Grating (FBG) on PM single mode fiber

Telcordia GR-468-CORE qualification on-going

RoHS 6/6

Applications

Compact size, low noise Erbium-Doped Fiber Amplifiers requiring low power consumption

Multi pumping architectures

Sensors

For more info

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 PLU

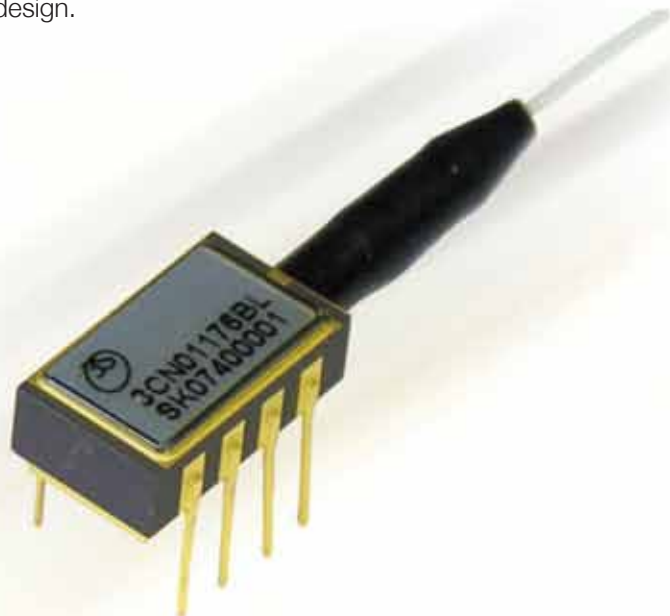
330mW Kink-Free, FBG Stabilized, 980nm Uncooled Pump Laser Module

The 1999 PLU is a new pump product family specifically designed for applications where a compact size and low power consumption are required. Modules feature a mini-DIL package incorporating a new laser chip internally developed for uncooled operation over a wide temperature range from -5°C to 75°C ; chip is fully qualified exceeding Telcordia recommendations.

Available kink-free power exceeds 330mW.

The wavelength is "locked" utilizing a Fiber Bragg Grating (FBG) located in a single mode polarization maintaining fiber (PMF) pigtail.

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



1999 PLU

**330mW Kink-Free, FBG
Stabilized, 980nm Uncooled
Pump Laser Module**



ELECTRO-OPTICAL CHARACTERISTICS

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

Parameters	Conditions	Symbol	Min	Typ	Max	Unit
PUMP LASER						
Threshold current (1)		I_{th}	-	-	85	mA
Nominal operating power		P_{nom}	100	-	300	mW
Kink free power (2)		P_{kink}	$1.1 \times P_{nom}$	-	-	mW
Forward current @ P_{nom} (3)	$P_{nom} = 100\text{mW}$ $P_{nom} = 150\text{mW}$ $P_{nom} = 200\text{mW}$ $P_{nom} = 250\text{mW}$ $P_{nom} = 260\text{mW}$ $P_{nom} = 270\text{mW}$ $P_{nom} = 300\text{mW}$	I_{nom}	-	225 305 385 465 480 495 550	280 380 480 580 600 600 600	mA
Forward voltage	@from 260 to 300mW @up to 260mW	V_{nom}	-	1.75 1.75	2.0 2.1	V
Peak wavelength tolerance	@ $T_{case} = T_{FBG} = 25^{\circ}\text{C}$ $0.1 \times P_{nom}$ to P_{nom}	$\Delta\lambda_p$		-	± 0.5	nm
Wavelength tuning vs temperature ($T_{grating} = -5$ to 75°C)		$\Delta\lambda_p / \Delta T$	-	0.01	0.02	nm/ $^{\circ}\text{C}$
Spectral width @-3dB	$0.1 \times P_{nom}$ to P_{nom}	$\Delta\lambda_{FWHM}$	-	-	1.0	nm
Power in band (4)	P_{nom}	P_{band}	90	-	-	%
Optical power stability	Peak to peak 10Hz-50kHz P_{nom}	ΔP_f	-	<2	3.5	%
Power consumption, EOL	$P_{nom} = 100\text{mW}$ $P_{nom} = 150\text{mW}$ $P_{nom} = 200\text{mW}$ $P_{nom} = 250\text{mW}$ $P_{nom} = 260\text{mW}$ $P_{nom} = 270\text{mW}$ $P_{nom} = 300\text{mW}$		-	0.35 0.50 0.70 0.90 0.92 0.94 0.96	0.50 0.75 1.00 1.25 1.30 1.35 1.35	W
MONITOR DIODE						
Responsivity		I_{BFM} / P	0.5	-	10	$\mu\text{A}/\text{mW}$
Dark current	$V_r = 5\text{V}$	I_{BFM_dark}	-	50	100	nA
THERMISTOR						
Resistance	25°C	R_{th}	9.5	10	10.5	k Ω
Constant		B	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 and 50mW

(2) A kink is detected when the local slope, dP/dI , is below S_{min} or above S_{max} .

S_{min} is defined as $0.5 \times S_{avg}$ and S_{max} is defined as $1.5 \times S_{avg}$

S_{avg} is the slope of a linear fit of the P(I) curve between 50 and 150mW.

(3) EOL forward current $I(EOL) = 1.1 \times I(BOL)$

(4) P_{band} is defined as the power within the band $\lambda_p \pm 1.5\text{nm}$ vs the total output power

1999 PLU

**330mW Kink-Free, FBG
Stabilized, 980nm Uncooled
Pump Laser Module**



3

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_{op}	-5	75	°C
Lead soldering temperature (10s maximum)		-	280	°C
LD forward drive current	I_{f_max}	-	800	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
ESD* damage	V_{ESD}	-	500	V
Mounting torque		-	150	mN.m
Fiber bend radius		20	-	mm
Axial pull force (1 x 1min)		-	5	N

* Human Body Model, C= 100pF, R= 1.5Ω

Fiber Pigtail Characteristics

Parameters	Note	Min	Typ	Max	Unit
Fiber type		SM98-PS-U25A-H 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		200			kpsi
Grating proof test level		150			kpsi
Pigtail termination	Bare fiber				

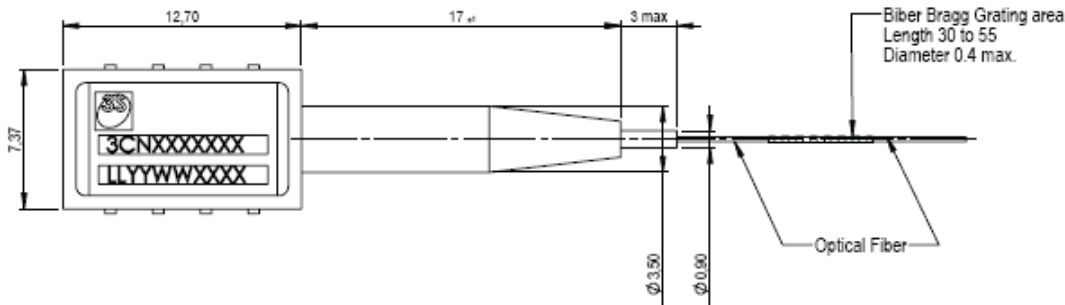
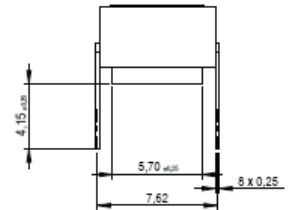
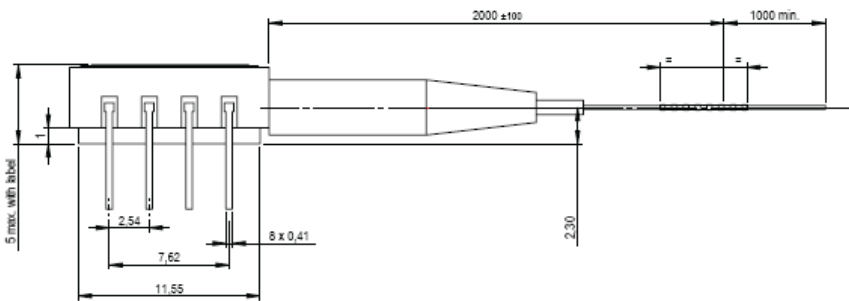
1999 PLU

**330mW Kink-Free, FBG
Stabilized, 980nm Uncooled
Pump Laser Module**



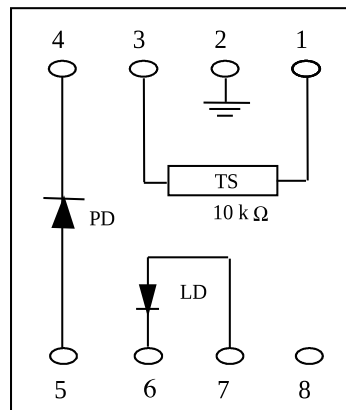
Mechanical Details

Dimensions are in mm.



Pin Assignment

N°	Description
1	Thermistor
2	Case ground
3	Thermistor
4	Monitor PD Cathode
5	Monitor PD Anode
6	Laser Cathode
7	Laser Anode
8	No connect



1999 PLU

330mW Kink-Free, FBG Stabilized, 980nm Uncooled 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.

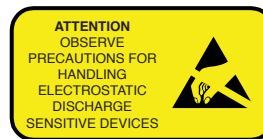
This product is classified Class 4 Laser Product according to IEC-60825-1.

Handling

This product is sensitive to 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. 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.



Ordering Information

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

Nominal Power (mW)	$\lambda_p = 974.5\text{nm}$	$\lambda_p = 976.0\text{nm}$
	Part Number	Part Number
100	3CN 01176 AA	3CN 01177 AA
150	3CN 01176 AL	3CN 01177 AL
200	3CN 01176 BA	3CN 01177 BA
250	3CN 01176 BL	3CN 01177 BL
260	3CN 01176 BN	3CN 01177 BN
270	3CN 01176 BQ	3CN 01177 BQ
300	3CN 01176 CA	3CN 01177 CA

Revised March 2012

Please note: information in this document is typical and must be specifically confirmed in writing by your supplier before it becomes applicable to any order or contract.

Information is subject to change without notice.

©2011 3S PHOTONICS S.A.S.

ORDERING INFO

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

3SPGroup
North America: 514.748.4848
888.922.1044

Europe and Asia: +33 (0)1 69 80 58 33
www.3spgroup.com • sales@3spgroup.com