



Pump Laser Modules

Key Features

300mW operating power

Operating temperature up to 75°C

Fiber Bragg Grating (FBG) on PM
single mode fiber

Telcordia GR-468-CORE qualified

RoHs 6/6

1999 PLU

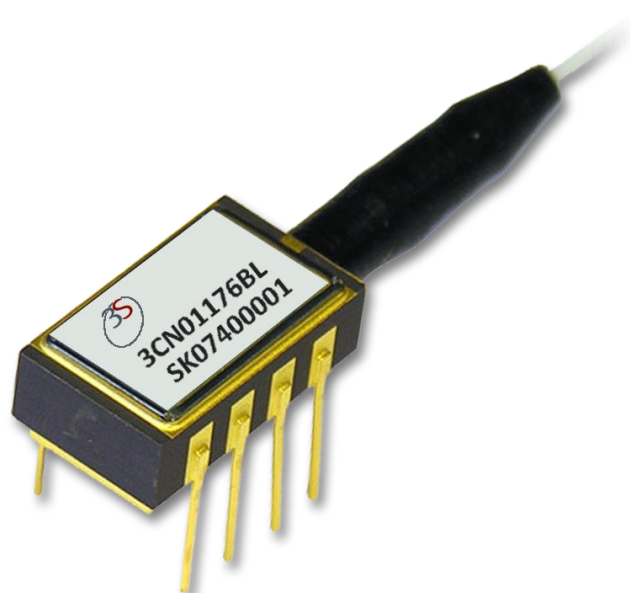
330mW Kink-Free, FBG Stabilized, 980nm Uncooled Pump Laser Module

The 1999 PLU is a 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.



For more Info

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



ELECTRO-OPTICAL CHARACTERISTICS

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

Parameters	Conditions	Symbol	Min	Typ	Max	Unit	
PUMP LASER							
Threshold current	Note 1	I _{th}	-	-	85	mA	
Nominal operating power		P _{nom}	100	-	300	mW	
Kink free power	Note 2	P _{kink}	1.1 x P _{nom}	-	-	mW	
Forward current	Note 3	I _{nom}	P _{nom} = 100mW	-	225	280	mA
			P _{nom} = 150mW	-	305	380	
			P _{nom} = 200mW	-	385	480	
			P _{nom} = 250mW	-	465	580	
			P _{nom} = 260mW	-	480	600	
			P _{nom} = 270mW	-	495	600	
		P _{nom} = 300mW	-	550	600		
Forward voltage	@ up to 260mW @ from 260 to 300mW	V _{nom}	-	1.75 1.75	2.0 2.1	V	
Peak wavelength tolerance	@ T _{case} = T _{FBG} = 25°C 0.1x P _{nom} to P _{nom}	Δλ _p		-	±0.5	nm	
Wavelength tuning vs temperature (T _{grating} = -5 to 75°C)		Δλ _p / ΔT	-	0.01	0.02	nm/°C	
Spectral width @-3dB	0.1x P _{nom} to P _{nom}	Δλ _{-FWHM, -3dB}	-	-	1.0	nm	
Spectral width @-13dB	0.1x P _{nom} to P _{nom}	Δλ _{-FWHM, -13dB}	-	-	1.0	nm	
Power in band	Note 4	P _{band}	90	-	-	%	
Optical power stability	Peak to peak, 10Hz-50kHz, 60sec P _{nom}	ΔP	-	2	3,5	%	
Power consumption, EOL			P _{nom} = 100mW	-	0,35	0.50	W
			P _{nom} = 150mW	-	0,50	0.75	
			P _{nom} = 200mW	-	0,70	1.00	
			P _{nom} = 250mW	-	0,90	1,25	
			P _{nom} = 260mW	-	0,92	1,30	
			P _{nom} = 270mW	-	0,94	1,35	
		P _{nom} = 300mW	-	0,96	1,35		
MONITOR DIODE							
Responsivity		I _{BFM} / P	0.5	-	10	μA/mW	
Dark current	V _r = 5V	I _{BFM_dark}	-	50	100	nA	
THERMISTOR							
Resistance	25°C	R _{th}	9.5	10	10.5	kΩ	
Constant		B	3600	-	4200	K	

Note 1: I_{th} 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 S_{min} or above S_{max}. S_{min} is defined as 0.5xS_{avg} and S_{max} is defined as 1.5xS_{avg}

Note 3: EOL forward current I(EOL)= 1.1x I(BOL)

Note 4: P_{band} is defined as the power within the band λ_p ±1.5nm vs the total output power

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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 (1x 1min)		-	5	N

* Human Body model, C= 100pF, R= 1.5Ω

FIBER PIGTAIL CHARACTERISTICS

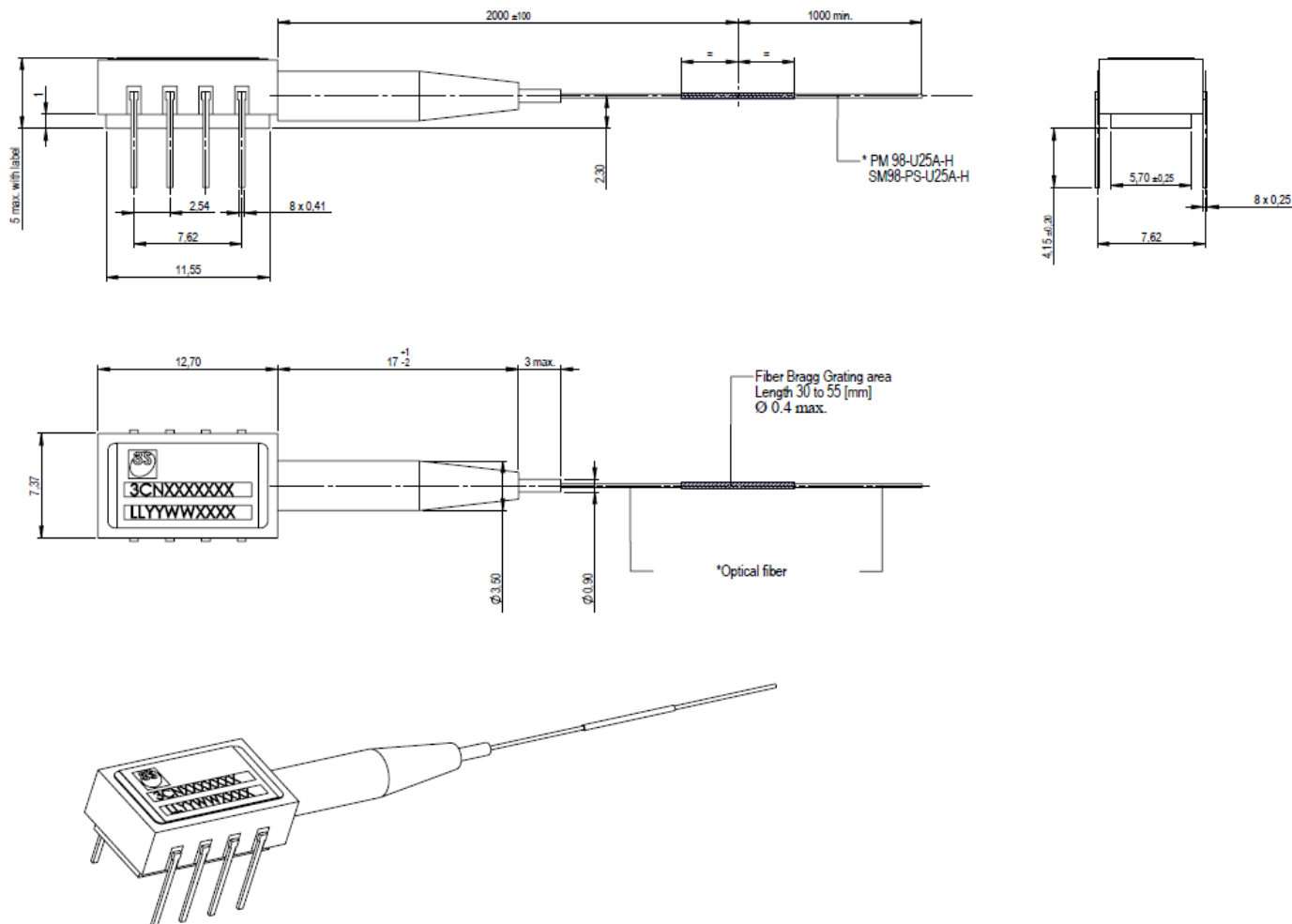
Parameter	Note	Min	Typ	Max	Unit
Fiber type		SM98-PS-U25A-H or equivalent			
Coating diameter	(except along grating)	230	250	270	μm
FBG recoat diameter		-	-	400	μm
FBG position	Module to center of FBG		2		m
Loose tube buffer diameter		885	-	915	μm
Fiber proof test level		200			kpsi
Grating proof test level		150			kpsi
Pigtail termination	Bare fiber				

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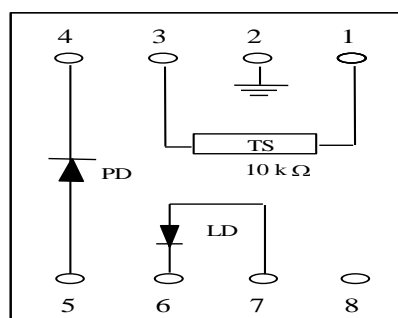
MECHANICAL DETAILS

Dimensions are in mm.



PIN ASSIGNMENT

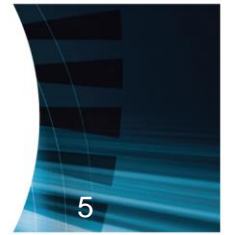
N°	Description
1	Thermistor
2	Case ground
3	Thermistor
4	Monitor PD Cathode
5	Monitor PD Anode
6	Laser Cathode
7	Laser Anode
8	No connect



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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 **1999PLU PUMP LASER 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 may cause permanent damage to the device.



ORDERING INFORMATION

1999 PLU PUMP PRODUCT FAMILY.

	$\lambda_p= 974.5\text{nm}, T= 25^\circ\text{C}$	$\lambda_p= 976.0\text{nm}, T= 25^\circ\text{C}$
Nominal Power (mW)	Part Number	Part Number
100	3CN 01176AA	3CN 01177AA
150	3CN 01176AL	3CN 01177AL
200	3CN 01176BA	3CN 01177BA
250	3CN 01176BL	3CN 01177BL
260	3CN 01176BN	3CN 01177BN
270	3CN 01176BQ	3CN 01177BQ
300	3CN 01176CA	3CN 01177CA

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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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