

## 980-Type Ultrahigh-Reliability Pump Laser Module Datasheet

### 1. Product Information

**Part Number: Pump-9804001022-01**

**Product Description:** The 980-Type Pump Laser Module is a precision, high-performance ultrahigh-reliability lightwave component, that provides high output power light, in the 980 nm range. The 980-Type Pump Laser Module is comprised of a single-mode laser diode, PIN backfacet monitor PD, microlensed PM fiber, and a Fiber Bragg Grating (FBG) for improved stability, all encased in a specially designed 14-pin, oxygen free, butterfly package.

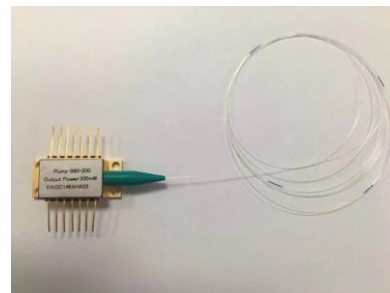
**Applications:**

- Undersea optical transmission systems
- Ultrahigh reliability optical communications for military systems

**Features:**

- Extremely high reliability
- Planar InGaAs PIN photodiode monitor for laser back-facet output
- Wide range of stable CW optical output power
- Individually certified for ultrahigh reliability
- InGaAs ridge waveguide 980 nm single-mode laser diode
- Standard low-profile, laser-welded, metal, hermetic, 14-pin butterfly package
- Single-mode fiber with Bragg Grating (FBG) for stable operations
- Stable single spatial mode kink-free operation over a wide range of temperatures and currents

**Reliability:** Telcordia GR-468. RoHS



### 2. Revision History

Rev.	Notes	Prepared by	Audited by	Approved by	Date
V0	Initial release	Larry Song	William Ge	Yuan Shi	2021-03-26

### 3. Performance Specifications

**Absolute Maximum Ratings**

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage Temperature	T <sub>S</sub>	-	-40	-	85	°C
Operating Case Temperature	T <sub>OP</sub>	-	-20	-	70	°C
Forward Current	I <sub>F</sub>	CW	-	-	900	mA
Laser Reverse Voltage	V <sub>LR</sub>	-	-	-	2	V
Laser Reverse Current	I <sub>REV</sub>	-	-	-	50	μA
PD Reverse Voltage	V <sub>PIN</sub>	-	-	-	40	V
PD Forward Current	I <sub>F</sub> PD	-	-	-	2	mA

**Optical Characteristics (at 25 °C laser temperature)**

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	$\lambda_c$	TL=15~35°C, CW	974	976	978	nm
Peak Optical Output Power	$P_O$	-	400	-	-	mW
Spectral Width	RMS	-	-	-	0.7	nm
Polarization Extinction Ratio	PER	-	20	-	-	dB

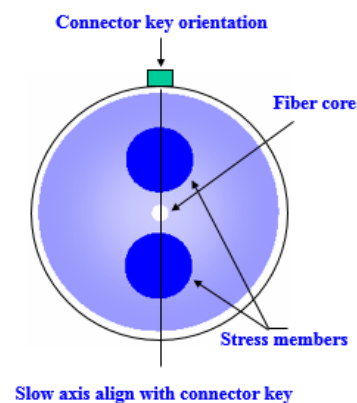
**Electrical Characteristics (at 25 °C laser temperature)**

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	$I_{th}$	-	-	50	80	mA
Operating Voltage	$V_{OP}$	CW, $P_O=400\text{mW}$	-	-	2.2	V
Operating Current	$I_{OP}$	CW, $P_O=400\text{mW}$	-	750	800	mA
Monitor Reverse-Bias Voltage	$V_{RMON}$	-	-	-	40	V
Monitor Current	$I_{RMON}$	$I = I_{OP}$	0.1	-	1.5	mA
Monitor Dark Current	$I_d$	$V_{RPD} = -5\text{ V}$	-	-	100	nA
TEC set temperature	$T_s$	-	15	-	35	°C
TEC Current	$I_{TEC}$	$T_L = 25\text{ °C}, T_C = 70\text{ °C}$	-	1.5	2	A
TEC Voltage	$V_{TEC}$	$T_L = 25\text{ °C}, T_C = 70\text{ °C}$	-	2.5	3.5	V

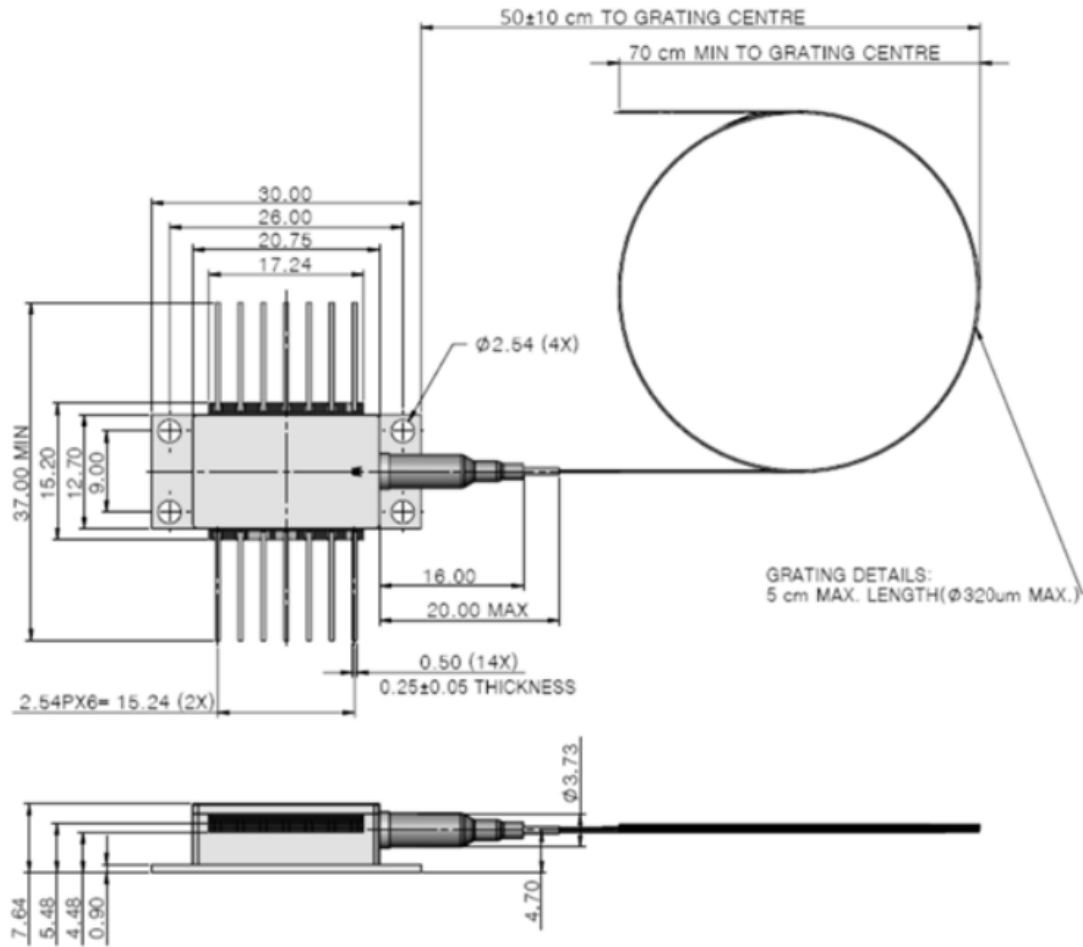
**Fiber Pigtail Specifications**

Parameters	Description
Fiber Type	SM98-PS-U25D(Fujikura)
Pigtail Type	250 $\mu\text{m}$ bare fiber
Pigtail Length	1.0 $\pm$ 0.1 m
Connector Type	FC/APC

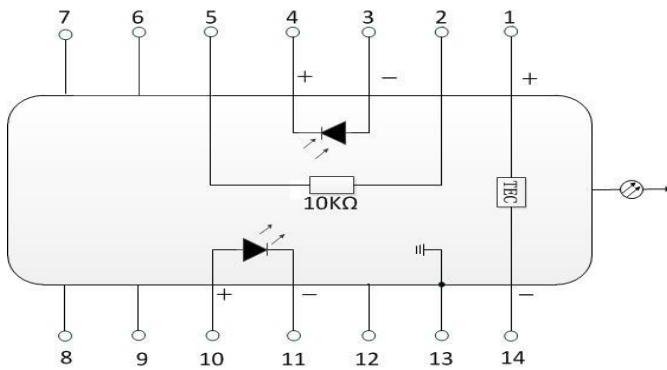
Note: The PM fiber and the connector key are aligned to the slow axis,  
 the slow axis works



**4. Package Drawing (Mechanical Dimensions):**



**5. Pinout Assignments:**



1	Thermoelectric Cooler (+)
2	Thermistor
3	Monitor PD Anode (-)
4	Monitor PD Cathode (+)
5	Thermistor
6	NC
7	NC
8	NC
9	NC
10	Laser Anode (+)
11	Laser Cathode (-)
12	NC
13	Case Ground
14	Thermoelectric Cooler (-)

**6. Test Report:** The test report should be provided when the products are delivered. Following characteristic test data should be included: Optical Output Power, Center Wavelength, P-I curve, Pinout Assignments.

**7. Packaging:** Vacuumize anti-static plastic package. Following items should be indicated on the outer packaging surface: Product Name, Product Number, Serial Number.

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