



PRELIMINARY DATASHEET

275mW Kink-Free, FBG Stabilized, 980nm Laser Pump Module Uncooled

Features:

- Operating temperature up to 75°C
- 275mW kink free output power
- Epoxy free, flux free mini-DIL package
- Coolerless device with low power consumption
- Fiber Bragg Grating (FBG) on PM single mode fiber enabling high stability
- Telcordia GR-468-CORE qualification on-going
- RoHS compliant

Applications:

- Compact size, low noise Erbium-Doped Fiber Amplifiers requiring low power consumption
- Multi pumping architectures
- Sensors

Description

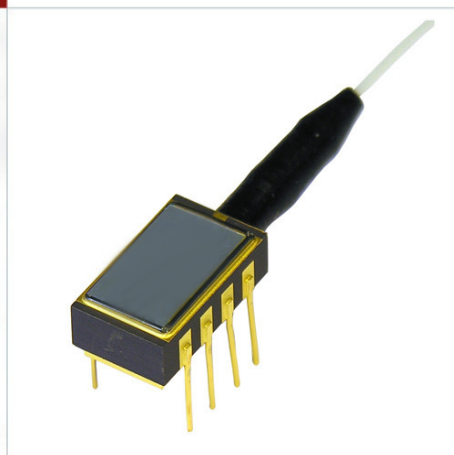
The T ÔP JÝÝ is a new pump product family specifically designed for applications where a compact size and low power consumption are required.

Modules feature a mini-DIL package incorporating a new laser chip internally developed for uncooled operation over a wide temperature range from 0 to 75°C; chip is fully qualified exceeding Telcordia recommendations.

Available kink-free power exceeds 275mW.

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.





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Electro-Optical Characteristics

The following parameters are specified BOL for a T_{case} = 0°C to 75°C, VBFM= -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	-	250	mW
Kink free power	Note 2	P_{kink}	$1.1 \times P_{nom}$	-	-	mW
Forward current	Note 3	I_{nom}	-	-	280 380 480 580	mA
Forward voltage	@250mW	V_{nom}	-	1.75	1.9	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} = 0 to 75°C)		$\Delta\lambda_p / \Delta T$	-	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_{band}	90	-	-	%
Optical power stability	Peak to peak, 10Hz-50kHz, P _{nom}	ΔP_f	-	<2	3.5	%
Power consumption, EOL	P _{nom} = 100mW P _{nom} = 150mW P _{nom} = 200mW P _{nom} = 250mW		-	0,35 0,50 0,70 0,90	0.50 0.75 1.00 1,25	W
MONITOR DIODE						
Responsivity		dI_{BFM} / dP	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 $0.5 \times S_{avg}$ 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.

Note 3: EOL forward current $I_{(EOL)} = 1.1 \times I_{(BOL)}$

Note 4: P_{band} is defined as the power within the band $\lambda_p \pm 1.5nm$ 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}	0	75	°C
Lead soldering temperature (10s maximum)		-	260	°C
LD forward drive current	I_{f_max}	-	700	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

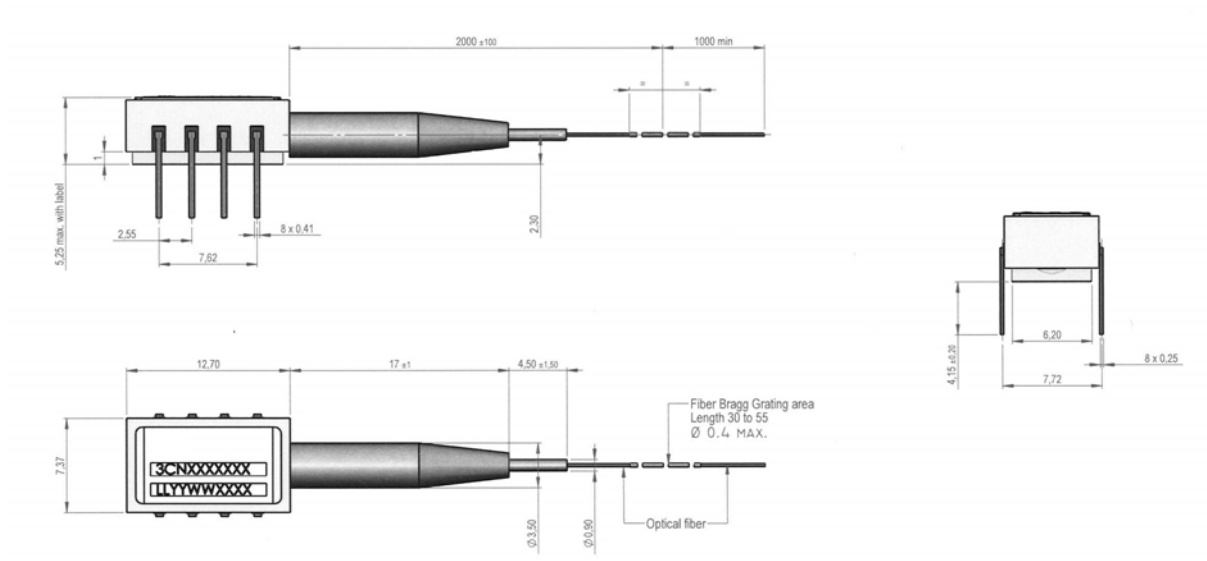
Parameters	Note	Min	Typ	Max	Unit
Fiber type		SM98-PS-U25A-H or equivalent			
Coating diameter	(except along grating)	230	250	270	μm
FBG recoat diameter		-	-	400	μm
FBG position	Module to center of FBG		2		m
Loose tube buffer diameter		885	-	915	μm
Fiber proof test level		200			kpsi
Grating proof test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



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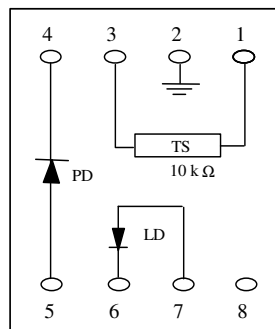
Mechanical details

Dimensions are in mm



PIN Assignment

Pin #	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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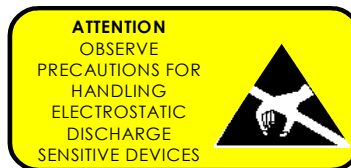
Laser Safety Information

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-825-1.

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 T ÔPJÝ 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

T ÔPJÝ 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	T ÔPJÏ I T ÚF€€	T ÔPJÏ Î T ÚF€€
150	T ÔPJÏ I T ÚFÍ €	T ÔPJÏ Î T ÚFÍ €
200	T ÔPJÏ I T ÚG€€	T ÔPJÏ Î T ÚG€€
250	T ÔPJÏ I T ÚG €	T ÔPJÏ Î T ÚG €

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Customized versions are available for volume quantities.