



Active Components Pump Laser Modules

Datasheet

Key Features

Extended operating temperature range (0 °C to +75 °C)

FBG inside package: easy fiber management

Reduced fiber length

TO-56 ultra compact package

RoHS compliant

Applications

Micro-size, low power consumption Erbium-Doped Fiber Amplifiers (EDFA)

CFP2 100 & 200G transceiver

Sensors

1999UMT

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

The 1999UMT is a new generation of 980 nm uncooled pump modules powered by in-house chip technology and specifically designed for size constrained applications.

Ultra-compact, TO-56 modules are offered with up to 200mW operating power.

The wavelength is “locked” utilizing a fiber Bragg grating (FBG) located inside the TO package with a single mode 125µm Fiber pigtail, facilitating the fiber management.



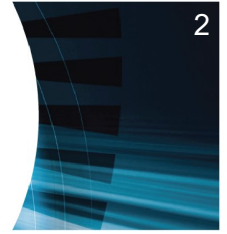
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ELECTRO-OPTICAL CHARACTERISTICS

The following parameters are specified BOL for $T_{case} = 0\text{ }^{\circ}\text{C}$ to $75\text{ }^{\circ}\text{C}$, -50 dB max back-reflection unless otherwise stated.

Parameters	Conditions	Symbol	Min	Max	Unit
PUMP LASER					
Threshold current ⁽¹⁾		I_{th}	-	85	mA
Nominal operating power		P_{nom}	50	200	mW
Kink free power ⁽²⁾		P_{kink}	$1.1 \times P_{nom}$	-	mW
Center Wavelength	air reference $T_{case}=25^{\circ}\text{C}$	λ_{P_974}	973	975	nm
		λ_{P_976}	975	977	
Reverse current		I_{rev}		10	μA
Forward current ⁽³⁾	$P_{nom} = 100\text{ mW}$ $P_{nom} = 150\text{ mW}$ $P_{nom} = 200\text{ mW}$	I_{nom}	-	380 450 540	mA
Forward voltage	P_{nom}	V_{nom}	-	1.9	V
Peak wavelength tolerance	@ $T_{case} = T_{FBG} = 25\text{ }^{\circ}\text{C}$ $0.1 \times P_{nom}$ to P_{nom}	$\Delta\lambda_p$	-	± 0.5	nm
Wavelength tuning vs temperature	$T_{case} = 0\text{ }^{\circ}\text{C}$ to $75\text{ }^{\circ}\text{C}$	$\Delta\lambda_p / \Delta T$	-	0.02	nm / $^{\circ}\text{C}$
Spectral width @ -3 dB	$0.1 \times P_{nom}$ to P_{nom}	$\Delta\lambda_{FWHM}$	-	1.0	nm
Spectral width @ -13 dB	$0.1 \times P_{nom}$ to P_{nom}	$\Delta\lambda_{FWHM}$	-	1.0	nm
Power in band ⁽⁴⁾	P_{nom}	P_{band}	90	-	%
Optical power stability	Peak to peak, $T_{case} = 25^{\circ}\text{C}$ 10 Hz-50 kHz, 60 sec, P_{nom}	ΔP	-	3.5	%
Power consumption, EOL	$P_{nom} = 100\text{ mW}$		-	0.71	W
	$P_{nom} = 150\text{ mW}$		-	0.84	
	$P_{nom} = 200\text{ mW}$		-	1	

(1) I_{th} is the intersection point with the x-axis of a linear fit of the P(I) curve between 15 mW and 50 mW

(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 $1.5 \times S_{avg}$

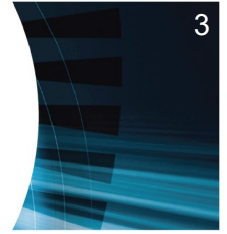
(3) EOL forward current $I(EOL) = 1.1 \times I(BOL)$

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

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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
Relative humidity	RH	5	95	%
Lead soldering temperature (5s maximum)		-	350	°C
LD forward drive current (1 hour)	I _{f_max}	-	800	mA
LD reverse voltage	V _{r_max}	-	2	V
ESD* damage	V _{ESD}	-	2000	V
Axial pull force (1x1min)		-	5	N

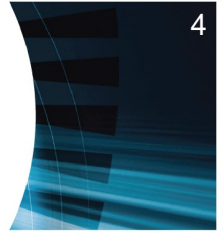
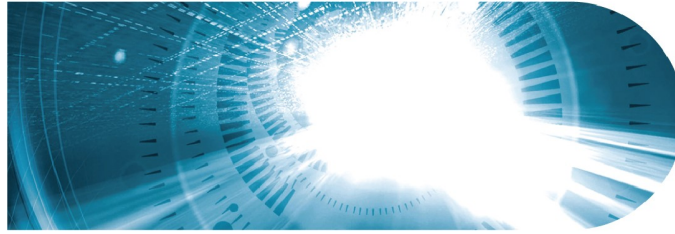
* Human Body model, C = 100 pF, R = 1.5 kΩ

FIBER PIGTAIL CHARACTERISTICS

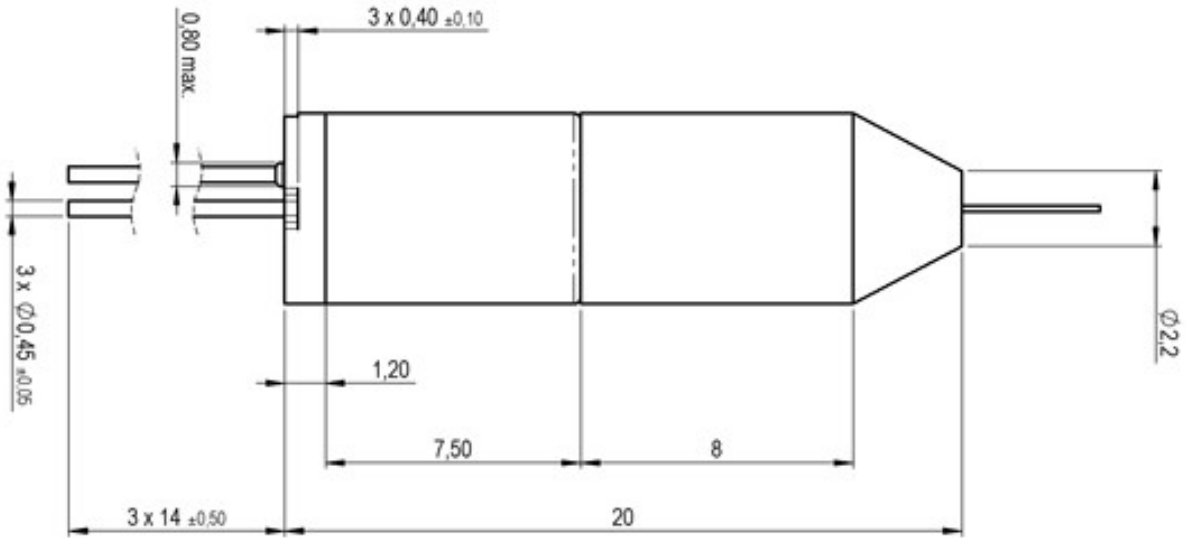
Parameter	Note	Min	Typ	Max	Unit
Fiber type		HI1060™ or equivalent			
Cladding outside diameter		124	125	126	μm
Coating outside diameter		235	245	255	μm
Core to cladding offset				0.5	μm
Mode Field diameter		5.6	5.9	6.2	μm
Fiber proof test level		200	-	-	kpsi
Pigtail length	Bare fiber	0.8			m

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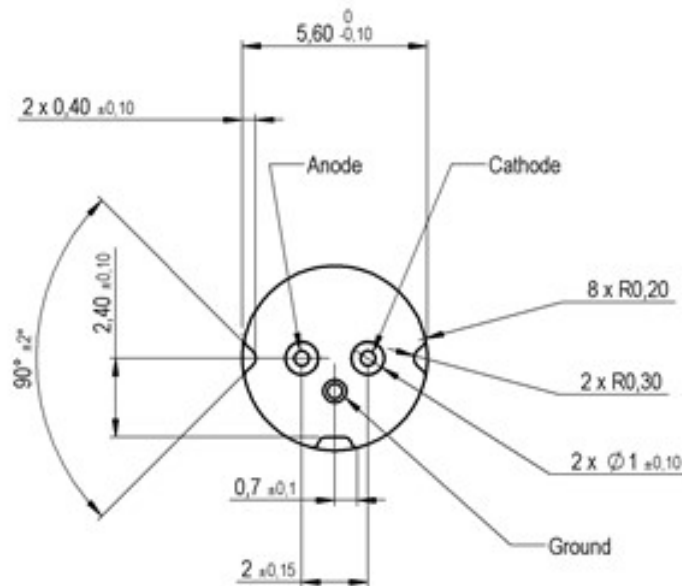


MECHANICAL DETAILS



Dimensions are in mm

PIN ASSIGNMENT

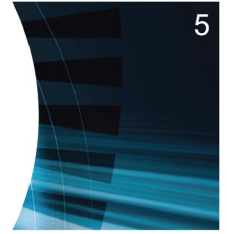
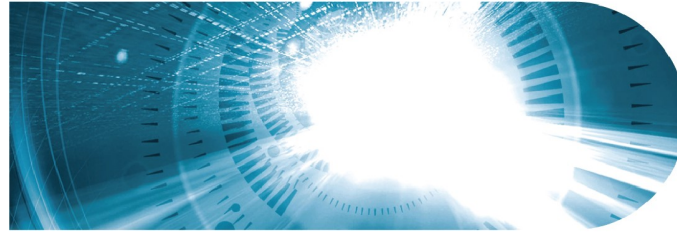


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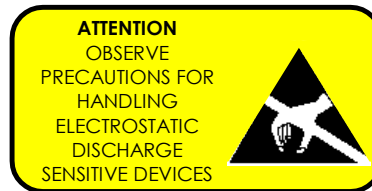
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LASER SAFETY INFORMATION

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 pump laser module. Caution! 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.



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

APPLICATION NOTES

In order to prevent any mishandling, misuse, neglect or accident, it is highly recommended to read and follow the instructions detailed in the application notes accessible from <http://www.3sptechnologies.com>:

3SPT-Uncooled TO can pump_Application Notes_RCL IMA APN 000 00010_1

ORDERING INFORMATION

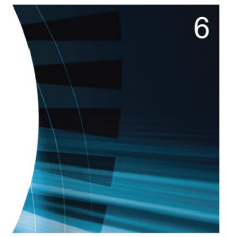
1999UMT PUMP PRODUCT FAMILY

	$\lambda_p = 974 \text{ nm},$ 125 μm	$\lambda_p = 976 \text{ nm},$ 125 μm
Nominal Power	Part Number	Part Number
100 mW	3CN01770AA	3CN01771AA
150 mW	3CN01770AL	3CN01771AL
200 mW	3CN01770BA	3CN01771BA

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