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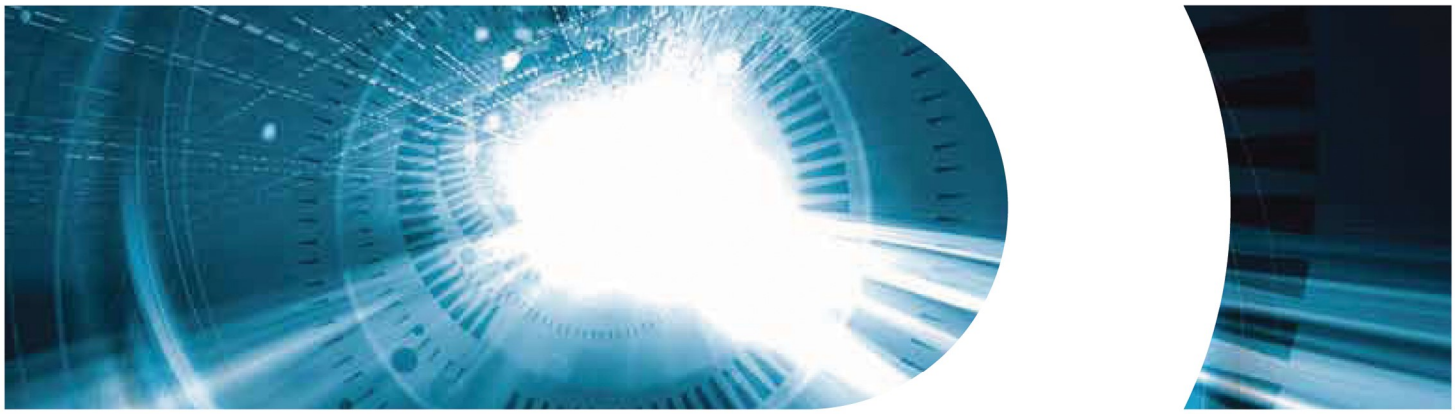


Active Components
Pump Laser Modules

Datasheet

Key Features

- Up to 550mW Pop
- Low Power Consumption
- Extended operating temperature range (-5 °C to +75 °C)
- Fiber Bragg Grating (FBG) on SMF
- High wavelength and power stability Telcordia GR-468-CORE qualified RoHS compliant

Applications

- High output power low noise EDFAs
- Dense wavelength division multiplexing EDFAs
- CATV

1999CMB

980 nm Cooled Pump Laser Module 605mW Kink-free

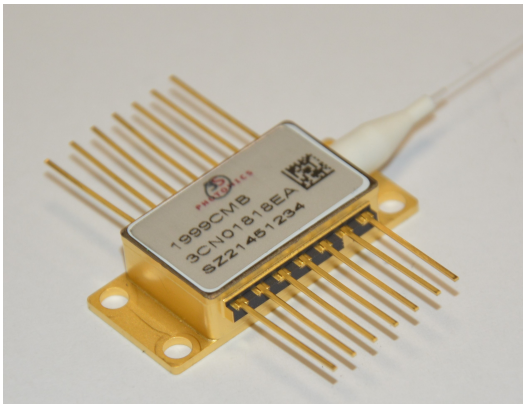
The 1999CMB is a new generation of 980 nm terrestrial pump modules powered by an in-house chip technology fully qualified, ensuring an outstanding level of performance and reliability.

Low Profile, 14-pin butterfly modules are available with an operating power up to 605 mW kink free.

They incorporate a thermoelectric cooler (TEC), a precision NTC thermistor and a back-facet monitoring photodiode.

The 1999CMB family has been designed to ensure high wavelength and power stability performance at low power with a 16.5dB dynamic range.

The module meets the Telcordia™ GR-468-Core requirements for hermetic 980 nm pump modules.



For more Info

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1999CMB

605mW Kink-free, FBG Stabilized, 980 nm Cooled Pump Laser Module

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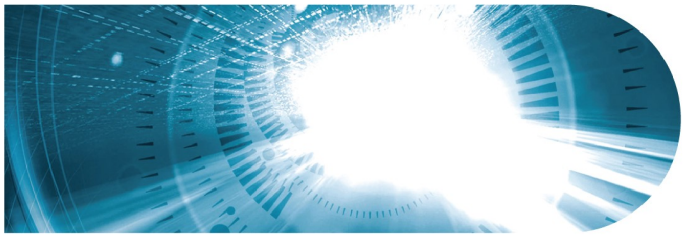
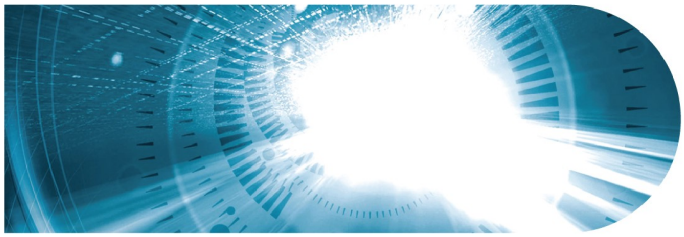


ELECTRO-OPTICAL **CHARACTERISTICS**

The following parameters are specified BOL for a $T_{submount}$ = 25 °C, T_{case} = -5 °C to 75 °C, V_{BFM}= -5 V and -50 dB max back-reflection unless otherwise stated.

Parameters	Conditions	Symbol	Min	Typ	Max	Unit
PUMP LASER						
Threshold current (1)		I_{th}	-		50	mA
Nominal operating power		P_{nom}	150	-	550	mW
Kink free power (2)		P_{kink}	1.1 x P_{nom}	-	-	mW
Forward current (3)	P_{nom}= 150 mW P_{nom}= 200 mW P_{nom}= 250 mW P_{nom}= 300 mW P_{nom}= 350 mW P_{nom}= 360 mW P_{nom}= 400 mW P_{nom}= 450 mW P_{nom}= 460 mW P_{nom}= 480 mW P_{nom}= 500 mW P_{nom}= 540 mW P_{nom}= 550 mW	I_{nom}	- - - - - - - - - - - - -	- - - - - - - - - - - - -	290 370 450 520 580 620 680 740 780 820 860 870 870	mA
Forward voltage	@ 550 mW	V_{nom}	-		1.9	V
Center Wavelength		λ_{974}	973	974	975	nm
		λ_{976}	975	976	977	
Peak wavelength tolerance	@ T_{case}= T_{FBG}= 25 °C Power Range	$\Delta\lambda_p$	-	-	±1	nm
Wavelength tuning vs temperature (T_{FBG} = -5 to 75 °C)	Power Range	$\Delta\lambda_p$ / ΔT	-	-	0.02	nm / °C
Spectral width @ -3 dB	Power Range	$\Delta\lambda_{FWHM}$	-	-	1.0	nm
Power range			10		P_{nom}	mW
Power in band (4)	P_{nom}	P_{band}	90	-	-	%
Optical power stability	Peak to peak, 1 Hz-50 kHz, 60 sec, 10mW≤P<15mW 15mW≤P≤P_{nom}	ΔP	-		 0.2 0.1	dB
Power consumption, EOL	T_{case}= 75 °C, 1.1 P_{nom} = 550 mW		-	-	5.2	W
MONITOR DIODE						
Responsivity		I_{BFM} / P	0.5	-	10	µA / mW
Dark current	V_r = 5 V	I_{BFM_dark}	-	-	100	nA
THERMO-ELECTRICAL COOLER						
TEC voltage (EOL)	T_{case}= 75 °C, 1.1 P_{nom} =520mW	$V_{TEC,\ EOL}$	-	-	2.7	V
TEC current (EOL)		$I_{TEC,\ EOL}$	-	-	1.2	A
TEC Power consumption		$P_{TEC,\ EOL}$	-	-	3.2	W
THERMISTOR						
Resistance	25 °C	R_{th}	9.5	-	10.5	kΩ
Constant		β	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 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 0.5xS_{avg} and S_{max} is defined as 1.5xS_{avg}
(3) EOL forward current I(EOL)= 1.1x I(BOL)



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 (2000 h)	T_{stg}	-40	85	°C
Operating temperature ($T_{submount}$ = 25 °C) *	T_{op}	-20	75	°C
Lead soldering temperature (10 s maximum)		-	280	°C
Storage Relative Humidity (Non-Condensing)		5	95	%
Operating Relative humidity		5	85	%
LD forward drive current (10 s maximum)	I_{f_max}	-	1000	mA
LD reverse voltage	V_{r_max}	-	2.0	V
PD reverse voltage	V_{PD_max}	-	15	V
PD forward current	I_{PD_max}	-	10	mA
TEC voltage	$V_{TEC\_C\_max}$	-	4.2	V
TEC current	$I_{TEC\_C\_max}$	-	2.0	A
ESD** LD damage	V_{ESD-LD}	-	1000	V
ESD** MPD damage	$V_{ESD-MPD}$		500	V
Mounting torque		-	150	mN.m
Fiber bend radius		16	-	mm
Axial pull force (1x1 min)		-	5	N

* No cold start. TEC will be turned on first.
** Human Body model, C = 100 pF, R = 1.5 kΩ

FIBER PIGTAIL **CHARACTERISTICS**

Parameter	Note	Min	Typ	Max	Unit
Fiber type		HI1060™ 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
Fiber proof test level		200	-	-	kpsi
Grating proof test level		150	-	-	kpsi
Pigtail termination	Bare fiber				

1999CMB

**605mW Kink-free,
FBG Stabilized,
980 nm Cooled
Pump Laser Module**

3SPTechnologies
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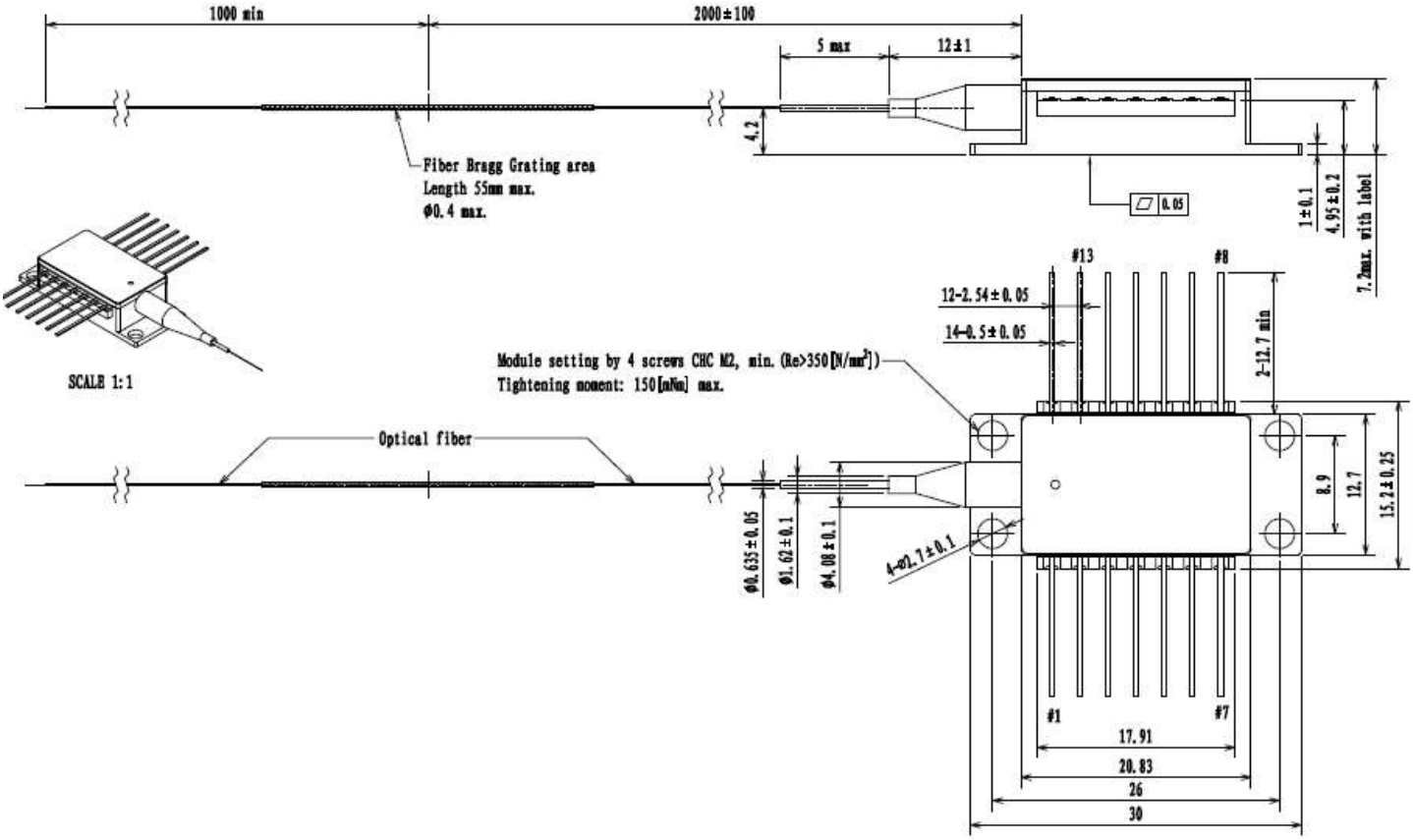
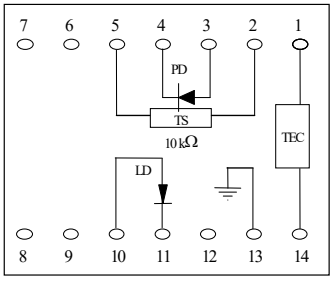
MECHANICAL **DETAILS**



Dimensions are in mm

PIN **ASSIGNEMENT**

N°	Description	N°	Description
1	TEC (+)	8	No connect
2	Thermistor	9	No connect
3	Monitor PD Anode	10	Laser Anode (+)
4	Monitor PD Cathode	11	Laser Cathode (-)
5	Thermistor	12	No connect
6	No connect	13	Ground
7	No connect	14	TEC (-)



Totally floating pin-out

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.

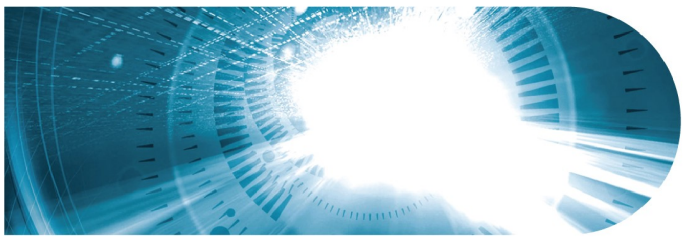
APPLICATION **NOTE**

In order to prevent any mishandling, misuse, neglect or accident, it is highly recommended to read and follow the instructions detailed in the application note reference “3SPT_980nm Cooled 14_10 pin butterfly module & Raman pump_Application Note_RCLIMAAPN00000007” that can be downloaded from 3SP Technologies website: http://www.3sptechnologies.com

ORDERING **INFORMATION**

1999CMB PUMP PRODUCT FAMILY

SMF Pigtail	λ_p= 974.0 nm, T= 25 °C	λ_p= 976.0 nm, T= 25 °C
Nominal Power	Part Number	Part Number
150mW	3CN01818AL	3CN04001AL
200mW	3CN01818BA	3CN04001BA
250mW	3CN01818BL	3CN04001BL
300mW	3CN01818CA	3CN04001CA
350mW	3CN01818CL	3CN04001CL
360mW	3CN01818CN	3CN04001CN
400mW	3CN01818DA	3CN04001DA
450mW	3CN01818DL	3CN04001DL
460mW	3CN01818DN	3CN04001DN
480mW	3CN01818DS	3CN04001DS
500mW	3CN01818EA	3CN04001EA
540mW	3CN01818EJ	3CN04001EJ
550mW	3CN01818EL	3CN04001EL



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