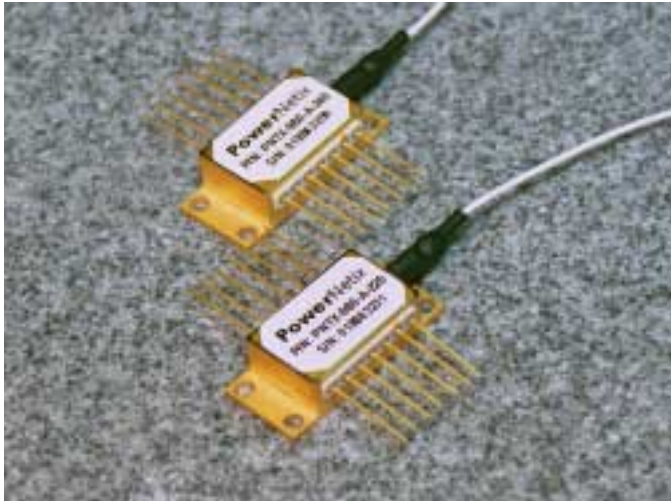


9000 Series

980 nm, Low-Profile, Single-Mode, Fiber Bragg Grating Stabilized, 14-pin Butterfly, Pump Module



Preliminary Datasheet

The 9000 Series 980 nm pump module from PowerNetix is a low-profile, 14-pin butterfly package capable of delivering more than 220 mW of fiber-coupled power. The pump module is constructed with state-of-the-art leading edge components.

The module is packaged using a unique, patent-pending technology called Uniline™ for permanent fiber alignment. Uniline provides superior end-of-life performance. This is achieved by maintaining a highly-stable, all-axis, alignment lock between the laser chip and the tip of the single-mode fiber.

With a package height of only 7.9 mm, the 9000 Series modules allow the user to design small form factor Erbium-Doped Fiber Amplifiers (EDFAs). The low threshold current of the laser chip together with high coupling efficiency in

the package allows efficient operation with low thermal dissipation.

The hermetically-sealed, 14-pin package is available with a fiber Bragg grating and also contains the thermoelectric cooler, thermistor, and monitor photodiode. The fiber Bragg grating accurately locks the center wavelength over extended power and temperature range. Center wavelengths in the range 974 to 986 nm are available with tight wavelength control.

Modules are pigtailed with 1.5 meters of Corning PureMode HI-1060 250µm-coated optical fiber. Various optional termination connectors are available if required.

The module is currently undergoing qualification to meet the requirements outlined in Telcordia GR-468-CORE.

Features:

- Low profile, 14-pin butterfly package
- Low power consumption
- Extended, ultra-stable end-of-life performance
- Up to 220 mW fiber-coupled kink-free output power
- Fiber Bragg Grating stabilized
- Broad operating temperature range
- Hermetically sealed
- Epoxy and flux free
- Undergoing Telcordia GR-468-CORE qualification

Applications:

Designed for integration with DWDM optical amplifiers (EDFAs) used in:

- telecom
- CATV
- test sets

9000 Series

Preliminary Specifications

Operating Powers

Model Number	Maximum Kink-Free Power	Maximum Kink-Free Current	Maximum Operating Power	Maximum Operating Current
	$P_{\max}$ (mW)	$I_{\max}$ (mA)	P_{op} (mW)	I_{op} (mA)
PNTX-9000-A-220	220	460	190	410
PNTX-9000-A-210	210	440	180	390
PNTX-9000-A-200	200	420	170	370
PNTX-9000-A-190	190	400	165	360
PNTX-9000-A-180	180	380	155	340
PNTX-9000-A-170	170	360	150	320
PNTX-9000-A-160	160	340	140	300

Absolute Maximum Ratings

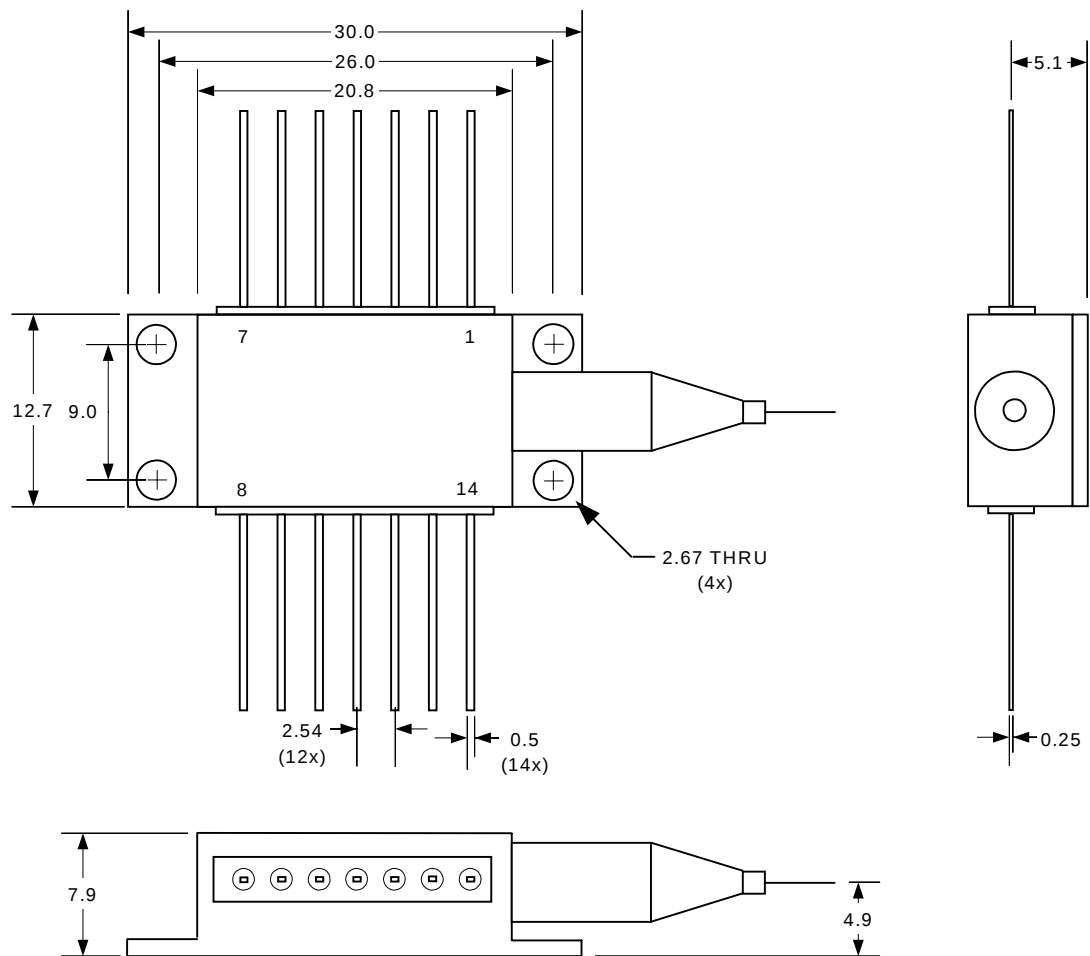
Parameter	Min	Max	Units
Laser			
DC Forward Current		0.55	A
Reverse Voltage		2.5	V
Reverse Current		2	mA
Monitor Photodiode			
Forward Current		10	mA
Reverse Voltage		20	V
Thermoelectric Cooler			
Current		1.5	A
Voltage		3	V
Thermistor			
Current		2	mA
Voltage		5	V
Fiber Pigtail			
Fiber Temperature	-40	+75	°C
Fiber Pull Force		5	N
Bend Radius	25		mm
Package			
Storage Temperature	-40	+75	°C
Operating Temperature	-20	+75	°C

Electro-Optical Performance

Parameter	Condition	Symbol	Min	Max	Unit
Laser Module					
Peak Wavelength	@ P_{op}	λ_c	974	986	nm
Threshold Current		I_{th}		35	mA
Forward Voltage	$I_{\max}$	V_f		2.5	V
Spectral Shift with temperature	With Fiber Bragg Grating	$\Delta\lambda/\Delta T$		0.02	nm/°C
Power in Band	@ $\lambda_c \pm 1.0$ nm; $P_{op} > 50$ mW	P_{band}	90		%
Total Module Power Consumption		$P_{mod,total}$		6.0	W
Monitor Photodiode					
Photocurrent	$V_r = -5.0V$; laser at P_{op}	I_{mpd}	0.1	3.0	mA
Dark Current	$V_r = -5.0V$; laser off	I_{dark}		0.1	μA
Thermoelectric Cooler					
Current	$\Delta T = 50^\circ C$	I_{TEC}		1.5	A
Voltage	$\Delta T = 50^\circ C$	V_{TEC}		2.5	V
Cooling Capacity		ΔT_{TEC}	50		°C
Thermistor					
Resistance	@ 25°C	R_{th}	9.5	10.5	k Ω

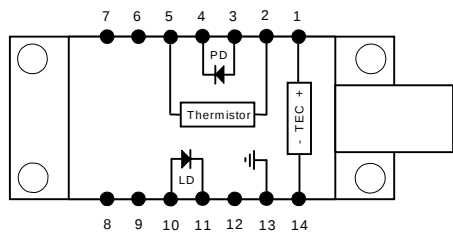
9000 Series
Package Dimensions

All dimensions in millimeters



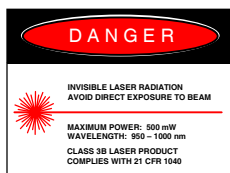
PIN Configuration

Electrical Schematic (package viewed from top)



Lead Connections			
1	TEC (+)	8	N/C
2	Thermistor	9	N/C
3	Monitor photodiode anode	10	Laser anode
4	Monitor photodiode cathode	11	Laser cathode
5	Thermistor	12	N/C
6	N/C	13	Case ground
7	N/C	14	TEC (-)

9000 Series



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