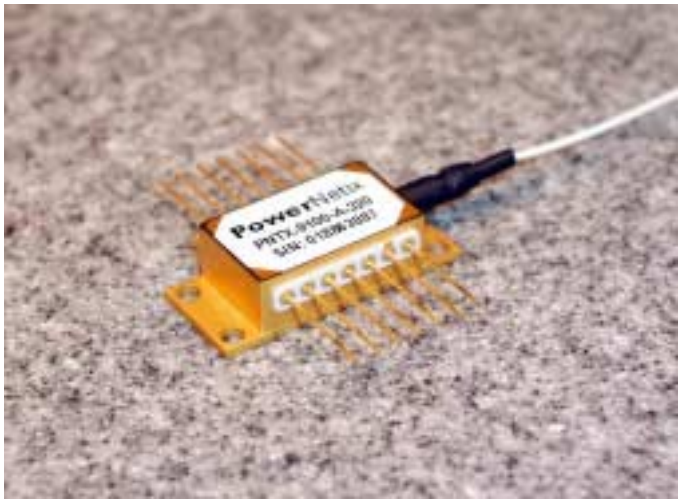
9100 Series

980 nm, 350 mW, Low-Profile, Single-Mode, Fiber Bragg Grating Stabilized, 14-pin Butterfly, Pump Module



Preliminary Datasheet

The 9100 Series 980 nm pump module from PowerNetix is a high power, low-profile, 14-pin butterfly package capable of delivering up to 350 mW of fiber-coupled power.

The module is packaged using a unique, patent-pending technology called Uniline™ for permanent fiber alignment. Uniline provides superior power and wavelength stability over wide internal and external temperature variations. 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 9100 Series modules allow the user to design small form factor Eribium-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 also contains the thermoelectric cooler, thermistor, and monitor photodiode. An external 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:

- **Up to 350 mW fiber-coupled kink-free output power**
- **Low profile, 14-pin butterfly package**
- **Low power consumption**
- **High stability over wide operating temperature range**
- **Fiber Bragg Grating stabilized**
- **Hermetically sealed**
- **Epoxy and flux-free assembly**
- **Undergoing Telcordia GR-468-CORE qualification**

Applications:

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

- **telecom**
- **CATV**
- **test sets**

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9100 Series
Preliminary Specifications

Operating Powers

Model Number	Maximum Kink-Free Power P_{max} (mW)	Maximum Kink-Free Current I_{max} (mA)	Maximum Operating Power P_{op} (mW)	Maximum Operating Current I_{op} (mA)
PNTX-9100-A-350	350	800	315	700
PNTX-9100-A-340	340	785	305	685
PNTX-9100-A-330	330	770	295	670
PNTX-9100-A-320	320	690	285	590
PNTX-9100-A-310	310	650	280	550
PNTX-9100-A-300	300	620	270	520
PNTX-9100-A-290	290	600	260	500
PNTX-9100-A-280	280	580	250	480
PNTX-9100-A-270	270	560	240	460
PNTX-9100-A-260	260	540	235	440
PNTX-9100-A-250	250	520	225	420
PNTX-9100-A-240	240	500	215	400
PNTX-9100-A-230	230	480	205	380

Absolute Maximum Ratings

Parameter	Min	Max	Units
Laser			
DC Forward Current		0.8	A
Reverse Voltage		2.5	V
Reverse Current		2	mA
Monitor Photodiode			
Forward Current		10	mA
Reverse Voltage		20	V
Thermoelectric Cooler			
Current		2.5	A
Voltage		4	V
Thermistor			
Current		2	mA
Voltage		5	V
Fiber Pigtail			
Fiber Temperature	-40	+75	^oC
Fiber Pull Force		5	N
Bend Radius	25		mm
Package			
Storage Temperature	-40	+75	^oC
Operating Temperature	-20	+75	^oC

Electro-Optical Performance

Parameter	Condition	Symbol	Min	Max	Unit
Laser Module					
Peak Wavelength	@ P_{op}	λ_c	974	986	nm
Threshold Current		I_{th}		45	mA
Forward Voltage	I_{max}	V_f		2.5	V
Spectral Shift with temperature	With Fiber Bragg Grating	$\Delta\lambda/\Delta^oT$		0.02	nm/^oC
Power in Band	@ λ_c +/- 1.0 nm; P_{op} > 50 mW	P_{band}	90		%
Total Module Power Consumption		$P_{mod,total}$		7.0	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	$\Delta T = 50^oC$	I_{TEC}		2.1	A
Voltage	$\Delta T = 50^oC$	V_{TEC}		3.0	V
Cooling Capacity		ΔT_{TEC}	50		^oC
Thermistor					
Resistance	@ 25^oC	R_{th}	9.5	10.5	kΩ

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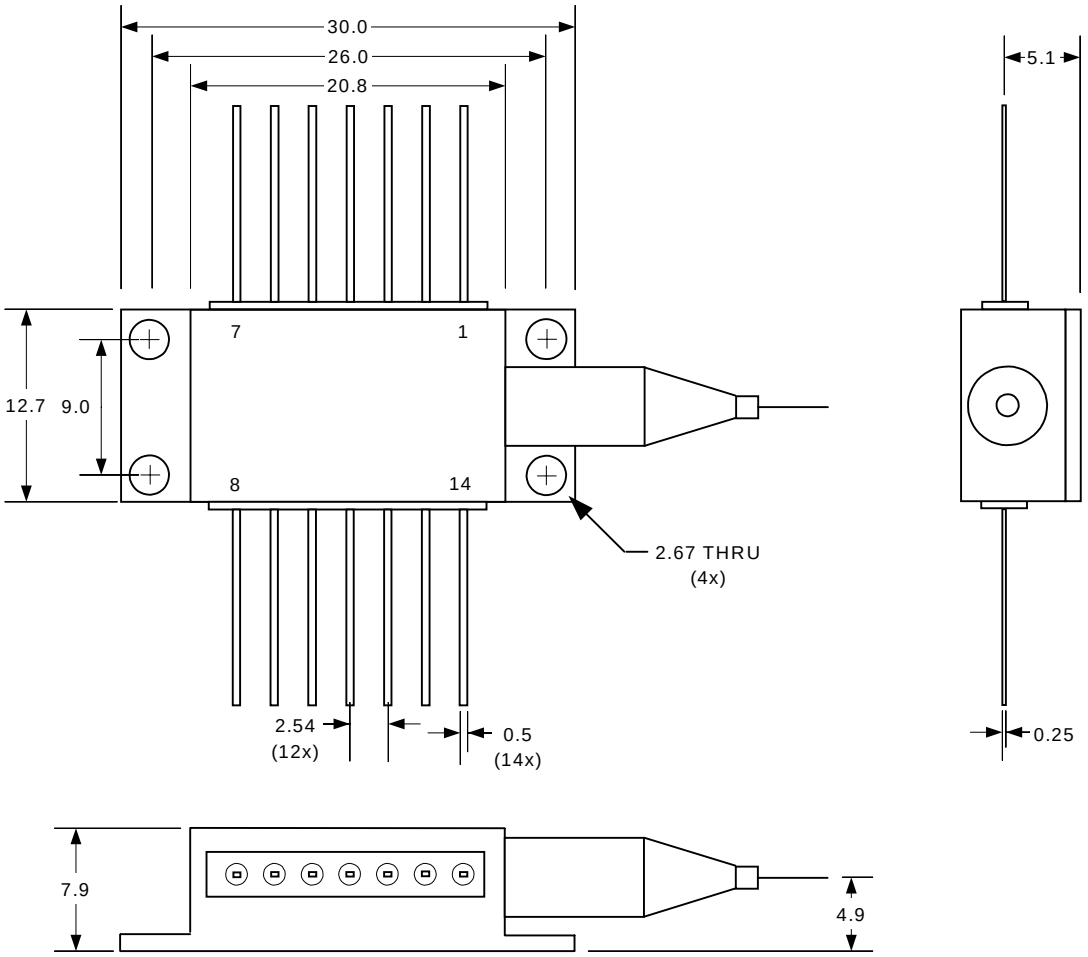
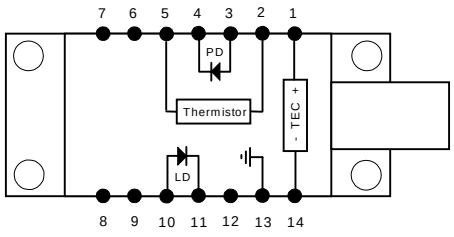
Package Dimensions

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 (-)

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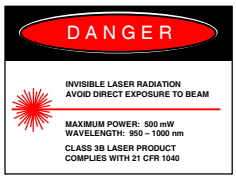

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