JDS Uniphase

Product Bulletin

PowerChip NanoLaser Diode pumped high UV energy microchip laser

The JDS Uniphase PowerChip NanoLaser is an all solid state laser which produces in excess of 100 kW peak power in the infrared and more than 20 kW in the UV with unparalleled compactness, simplicity and ease of use. Using passive Q-switching with a high power diode bar, it emits short pulses with a repetition rate in excess of 1 kHz.

The high energy of the PowerChip NanoLaser derives from a large microchip cavity consisting of a layer of Cr^{4+} doped YAG saturable absorber embedded monolithically in a YAG crystal, with doped and un-doped regions, and mirrors deposited at both ends. This cavity emits short pulses with high peak power without the costly and complicated electronics needed to drive traditional Q-switched lasers.

The PowerChip NanoLaser features a hermetically sealed laser head that protects optical components from dust, fumes, condensation, shock and vibration. Its inherent stability avoids the need for costly, complex electronic feedback loops. An optimal thermal environment, maintained by integral air-cooled heat sink, allows the laser to work either as a system component or as a standalone unit. The system operates on 24 VDC, supplied by the user.

The standard laser system is triggered internally at the factory-set repetition rate. Optional external TTL triggering allows a user-defined repetition rate. The laser is optimized for a frequency range around the repetition rate specified by the customer.

Key features

- Simple and efficient
- Passive Q-switching
- Hermetically-sealed laser head
- High UV energy
- Compact, rugged, self contained
- TEM_{00} beam
- IR, green and UV models available
- Built-in heat sink
- Easy computer interface

Applications

- MALDI-TOF for Genomics and Proteomics
- Semiconductor manufacturing
- Micro marking
- Nitrogen laser replacement
- Material processing
- Environmental assessment systems
- LIDAR, LIBS
- Fluorescence

Minimum performance specifications

Models	PNP- 005025-000	PNG- 002025-000	PNV- 001025-000	PNU- 001025-000
Wavelength	1064 nm	532 nm	355 nm	266 nm
Energy /pulse	50µJ	20 µJ	10 µJ	10 µJ
Average power (@2 kHz)	100 mW	40 mW	20 mW	20 mW
Pulse width	< 500 ps	< 500 ps	< 500 ps	< 500 ps
Repetition rate	100 Hz - 2 kHz	100 Hz - 2 kHz	100 Hz - 2 kHz	100 Hz - 2 kHz
Beam profile	TEM_{00}	TEM_{00}	Near Gaussian	Near Gaussian
Polarization ratio	> 100:1	> 100:1	> 100:1	> 100:1
Beam diameter	1.8 mm	1.5 mm	1.0 mm	1.0 mm
Beam divergence (full angle)	< 2 mrad	< 2 mrad	< 1 mrad	< 1 mrad
Power stability (1 hour)	± 3 %	± 3 %	± 5 %	± 5 %
Heatsink operating temperature	15 ºC - 35 ºC	15 ºC - 35 ºC	15 ºC - 35 ºC	15 ºC - 35 ºC
Storage temperature without humidity	10 °C - 50 °C	10 °C - 50 °C	10 °C - 50 °C	10 °C - 50 °C

Compliance to Regulatory Agencies

OEM versions of JDS Uniphase solid state lasers are offered as products for incorporation into other equipment. As such, they have not been certified by CDRH and are to be used only as components. The customer is responsible for CDRH certification of the systems incorporating these products. Please contact JDS Uniphase for information about CDRH compliant models.

Warranty

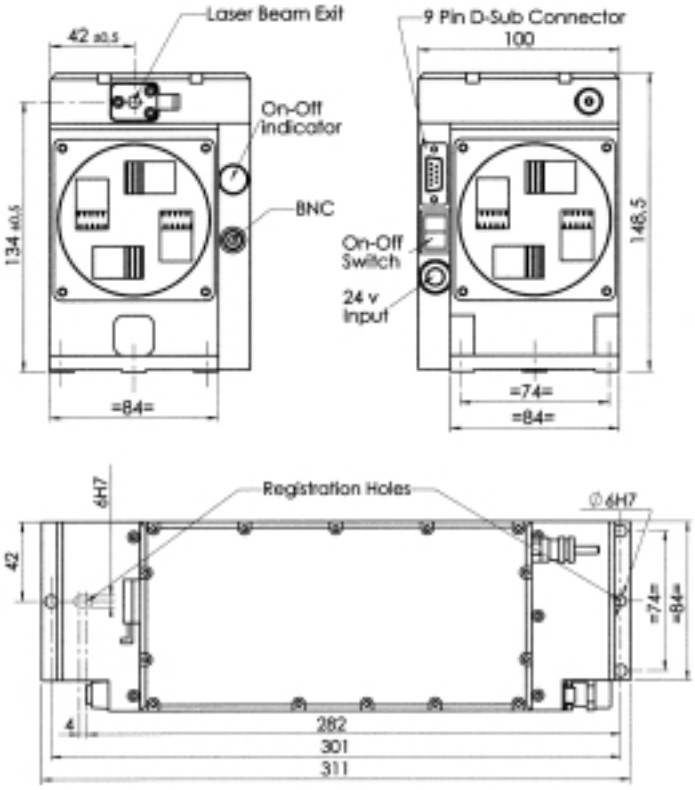
JDS Uniphase PowerChip lasers are warranted to be free of defects in materials and workmanship for six months from the date of shipment.

Licensing Information

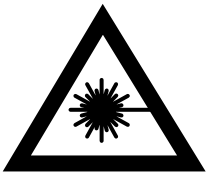
This product is sold pursuant to a limited sublicense under certain technology owned by ATX Telecom Systems, Inc. The rights that customers of JDS Uniphase receive through purchase of this product are restricted and exclude any right to use the product in the telecommunications field.

Patent Information

5,495,494 Self-aligned, monolithic, solid microlaser with passive switching by a saturable absorber and production process.



Weight 5 Kg



US-CDRH

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