

Features & benefits

Licensed Technology

Exclusive licence on Passively Q-switched picosecond microlaser.
US Patent 5394413

Gaussian beam

TEM 00, $M^2 \leq 1.3$

100's ps pulse width

Very short pulses down to 300ps resulting in high peak power.

kHz repetition rate

Flexible from 10Hz to 1kHz.

Sealed package

Proven long lifetime even in harsh operating condition. Dust and up to 90% relative humidity resistant.

Air cooled

Not need for cumbersome water cooling. Integrated heat sink.

RS232 connection

Easy laser diagnostic and control.

Rugged design

Shock resistant up to 2g.
Vibration resistant up to 25g.

Low power consumption

Requires typically 25W during normal operation thanks to its optimised design and efficient diode pumping.

External Trigger

TTL compatible input on Sub-D connector

Photodiode Output

TTL compatible output on BNC connector

RoHS and CDRH compliant

With optional power transformer

Ultra high peak power Passively Q-Switched Nd :YAG laser

Teem Photonics' PowerChip series are ultra high peak power, high repetition range passively Q-switched MicroChip lasers capable of producing hundreds of picoseconds and several tens of microJoules pulses at kilohertz repetition rates with excellent beam quality. Furthermore, the PowerChip is a completely integrated platform which includes the laser head, power supply and air cooling in a compact, rugged, turnkey package.



Infra Red 1064nm

Model	PNP-M06010	PNP-M08010	PNP-M10005
Peak Power (kW)	175	220	275
Average Power (mW)	70	90	55
Repetition rate (kHz)	1	1	0.5
Pulse Width (ps)	400	400	400
Energy/Pulse (µJ)	70	90	110

Typical values

Green 532nm

Model	PNG-M02010	PNG-M04005
Peak Power (kW)	80	150
Average Power (mW)	25	45
Repetition rate (kHz)	1	0.5
Pulse Width (ps)	300	300
Energy/Pulse (µJ)	25	45

Typical values

Applications

- ▶ Marking
- ▶ Micro Machining
- ▶ Laser Induced Fluorescence (LIF)
- ▶ Laser Induced Breakdown Spectroscopy (LIBS)
- ▶ Light Detection and Ranging (LIDAR)

Technical specifications:

Laser model	PNP-M06010	PNP-M08010	PNP-M10005	PNG-M02010	PNG-M04005
Wavelength, (nm)	1064	1064	1064	532	532

Pulse Frequency Range					
Repetition rate ⁽¹⁾ , (Hz)	10-1000	10-1000	10-500	10-1000	10-500

Pulse Energy					
Pulse energy, (μJ)	>60	>80	>100	>20	>40
Short term pulse to pulse stability ⁽²⁾ (1min,1s)	<1%	<1%	<1%	<3%	<3%

Average power					
Average power, (mW), at max rep. rate	>60	>80	>55	>20	>20
Long term stability (6h) ⁽³⁾	<3%	<3%	<3%	<3%	<3%

Pulse duration					
Pulse duration, (ps)	<500	<500	<500	<400	<400
Peak power, (kW)	>120	>160	>200	>50	>100

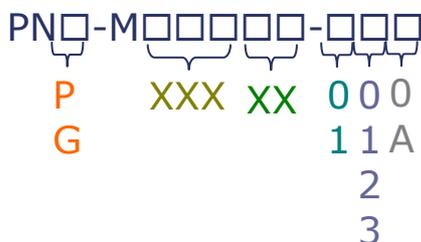
Polarisation					
Polarization ratio	>100 :1 (horizontal)				

Beam quality						
Spatial mode	Gaussian, TEM00					
M ²	≤1.3	≤1.3	≤1.3	≤1.3	≤1.3	
Beam divergence, 1/e ² , full angle, (mrad)	H	2.0±0.3	2.0±0.5	10±2	2.0±0.5	5±1
	V	2.0±0.3	2.0±0.5	9±2	2.0±0.5	4±1
Beam roundness	≤ 1.3	≤ 1.3	≤ 1.3	≤ 1.3	≤ 1.3	
Beam waist location, (mm)	≈ +300	+300±10	-110±2	+14±5	+77±5	
Optical axis height, (mm)	134	134	134	134	134	
Beam angular tolerance, (mrad)	±5	±5	±5	±5	±5	

Specifications are subject to change without notice

Ordering information & notes :

To order the laser you require, please use the following ordering system:



P: 1064nm

G: 532nm

XXX: Energy

XX: Repetition rate

0: OEM

1: CDRH, requires PCR-240500-100 power converter

other: Starting with a letter, OEM specific model

0: standard free running mode

1: internal fixed rep rate mode

2: external fixed rep rate mode

3: external multi rep rate (3 rep rates to be chosen)

0: manual mode

A: auto ON

E.g. a PNG-M02010-030 is an externally triggered, 532nm PowerChip with 20μJ per pulse at 1kHz, OEM and optimised at 3 different repetition rate, to be defined at order.

PowerChip PNx requires 24V DC or the transformer reference PCR-240500-100 to be CDRH compliant and use wall plug.

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Environment parameters	
Operating temperature	20-35 °C
Maximum Power Consumption	<75 W
Storage temperature	0-50 °C
Shock of 11ms according to IEC 68-2-27, non operating	25 g
Vibration 5Hz to 500Hz sinusoidal according to IEC 68-2-6	2 g

Certification	
Laser classification according to IEC 60825-1:1993+A2:2001	Class 3B
CE ⁽⁴⁾ , ROHS	RoHS, CE

Package	
Package type	M
Laser Head dimensions, LxWxH	311x100x149 mm
Laser Head weight	5 kg

Options	
CDRH	Yes
Multi rep rate	Yes

Notes	
(1)	Select one rep.rate between Fmin and Fmax. Multi rep rate possible (3 rep rate) as an option: -x3x
(2)	Measured with a Moletron detector (3SIGMA detector model coupled to a J-09-10K-010 detector head)
(3)	Average power is measured with a calorimeter-detector band [DC, 2Hz]. For temperature variation <±3°C and <3°C/hour
(4)	If used with Powerchip CDRH power supply

PowerChip PNP, PNG

teem photonics™
Ultra High peak power microchip lasers

Dimensions: PNP, PNG (OEM)

Weight : 3kg

