



PART NUMBER 1030U-11C  
 ITEM NAME 1030 NM NANOSECOND Q-SWITCH LASER

## PRODUCT DATASHEET



### DESCRIPTION

An ultra-compact 1029 nm nanosecond laser is a high peak power passive Q-Switch transmitter for OEM LiDAR and range finding applications. The short pulse duration of down to fewer than 1.3 ns allows high spatial resolution, the high peak power of >70 kW allows large distances to be measured.

Apart from LiDAR, this laser is also usable in portable or even wearable Laser-induced breakdown spectroscopy (LIBS) analyzers, portable and wearable LiDAR systems, and micro-scale material processing.

Please note, that this product is laser-head-only for OEM. Driver electronics and pulse generator come separately within μFlash Integrator's kit (contact Integrated Optics support for more info) or can be implemented by end-user.

### Current configurations in production:

| Variant | Pulse duration, ns | Pulse energy, μJ | Peak power, kW | Polarization |
|---------|--------------------|------------------|----------------|--------------|
|         | 1.3                | 100 to 120       | 77 to 92       | Random       |

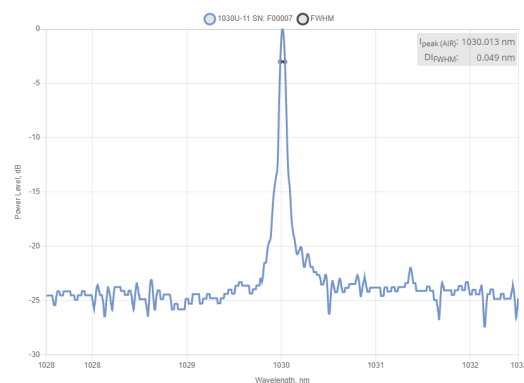
*\*Other parameters can be developed based on customer specifications. Please refer to the specifications table below for possible parameter ranges.*



Specifications updated: 30 April 2022

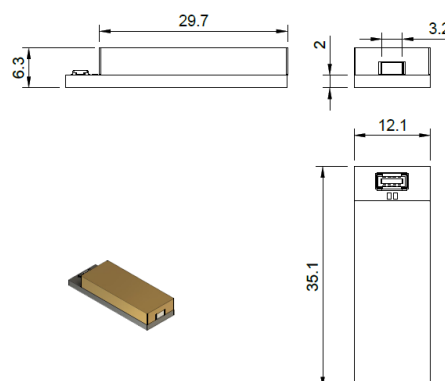
| Parameter   | Minimum Value   | Typical Value   | Maximum Value            |
|---|-----------------|---|--------------------------|
| Central Wavelength, nm                            | 1028            | 1030  | 1032                     |
| Longitudinal modes                                | -               | Multiple  | -                        |
| Spectral line width FWHM, nm                      | -               | 0.7   | 1                        |
| Average output power, mW                          | -               | 20  | Heat dissipation limited |
| Pulse duration, ns                                | -               | 1.3   | -                        |
| Repetition rate, Hz (pulse-on-demand mode)        | Pulse on demand | 50  | 100                      |
| Pulse energy, μJ                                  | 20              | 100 <sup>1</sup>                                      | 150                      |
| Pulse-to-pulse stability, %                       | -               | 20  | 40                       |
| Transversal modes                                 | -               | TEM00   | -                        |
| Beam Diameter at Aperture (1/e <sup>2</sup> ), mm | -               | 0.2   | -                        |
| Beam divergence (full angle), mrad                | -               | 5 <sup>2</sup>  | 10                       |
| Polarization direction                            | -               | Horizontal / unpolarized                              | -                        |
| Polarization contrast (in polarized version)      | -               | 100:1   | 500:1                    |
| Control interface type                            | -               | SlimStack Hybrid Power Receptacle (Molex 104249-0810) | -                        |

### TYPICAL SPECTRUM



Typical spectrum of 1030U-11C nm passive Q-Switch DPSS laser. Measured with 10 pm resolution.

### DRAWING



|  |   |   |   |
|--|---|---|---|
| Operation mode                           | -   | APC, pulse detection  | -   |
| Input voltage, VDC                       | -   | 1.65  | 2   |
| External laser diode driver requirement  | -   | +2 V DC, 12A <sup>3</sup>   | -   |
| Dimensions (L-W-H), mm                   | -   | 35.1 x 12.1 x 6.3 <sup>4</sup>  | -   |
| Beam height from the base, mm            | -   | 3   | -   |
| Heat-sinking requirement, °C/W           | not needed (for low duty cycle single shot operation) | -   | 1 (needed for higher rep. rate operation) |
| Operating temperature, °C                | 20  | 30  | 40  |
| Warm up time                             | -   | Instantly operational at operating temperature  | -   |
| Temperature stabilization                | -   | No  | -   |
| Overheat protection                      | -   | NTC in laser head   | -   |
| Reverse voltage protection               | -   | No  | -   |
| Storage temperature, °C (non-condensing) | -20   | -   | 70  |
| Net weight, kg                           | -   | 0.008   | -   |
| Electrical energy consumption, mJ        | -   | 48 <sup>5</sup>   | -   |
| Warranty, months                         | -   | 14 (Limited) <sup>6</sup>   | -   |
| RoHS                                     | -   | Yes   | -   |
| CE compliance                            | -   | - General Product Safety Directive (GPSD) 2001/95/EC<br>- (EMC) Directive 2004/108/EC | -   |
| Laser Safety Class                       | -   | 3B  | -   |
| OEM lasers are not compliant with        | -   | IEC60825-1:2014 (compliant using additional accessories)                              | -   |

<sup>1</sup> Peak power limitations apply. Max. peak power currently is 300 kW in for unpolarized radiation and 100 kW for polarized radiation. We put constant R&D efforts to increase this further.

<sup>2</sup> The laser is not collimated internally.

<sup>3</sup> A demo electronics board is provided with the first order of 5 pcs.

<sup>4</sup> Only laser head.

<sup>5</sup> e.g. 1W @20Hz pulse repetition rate in single-pulse triggering mode.

<sup>6</sup> Warranty is not applicable to faults of the pump laser diode - a component which is sensitive to electronics circuitry design and operational regimes. Please consult with Integrated Optics regarding most appropriate driving circuit design, duty cycles, etc.

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.