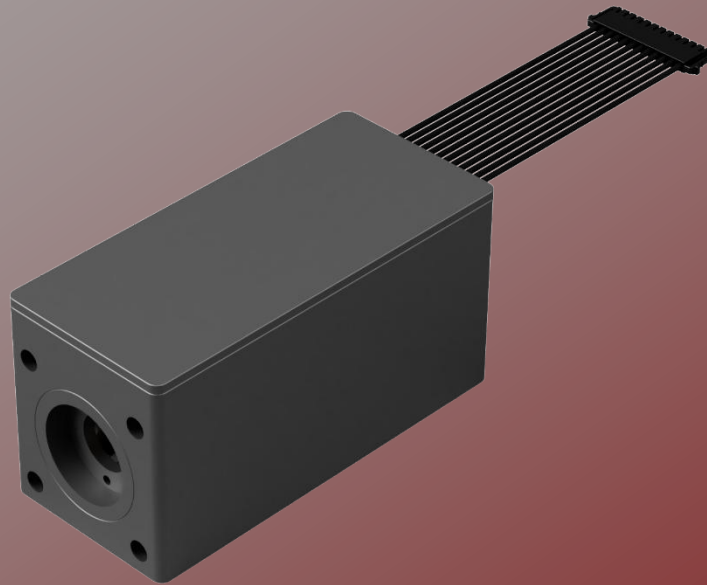


# Datasheet (preliminary)



## ELM1064

### Description

The microchip laser module is a passive Q-switched microchip laser that can generate nanosecond and picosecond pulses at high peak powers. It offers cutting-edge capabilities and excellent performance in an exceptionally compact form factor. Ideal for integration into space-constrained and mobile applications.

### Applications

LiDAR (Atmospheric, Underwater)  
3D Imaging  
Nonlinear Optics  
Atmospheric Sensing  
Laser-Induced Breakdown Spectroscopy  
Micromachining, Marking  
Biophotonics and Medical Diagnostics

### Features

- 1064 nm
- Output peak power up to 70 kW
- Typical pulse energy up to 80  $\mu$ J
- Repetition rate up to 100 kHz
- Sync output for pulse monitoring
- 2 GPIO pins for flexible control
- UART communication interface
- Integrated control electronics
- Ultra compact form factor

## Specifications

### Absolute Maximum Ratings

Parameter	Symbol	Conditions	Min.	Max.	Unit
Supply Voltage	$V_{DD}$	—	-0.5	+32	V
Logic Input Voltage	$V_L$	UART, GPIO $V_{DD} = 0$	-0.3	+5.5	V
		I/O Pins $V_{DD} = 0$	-0.3	+0.3	
		$V_{DD} = 28$	-0.3	+5.5	
Storage Temperature	$T_{STG}$	—	-20	+60	°C
Operating Temperature	$T_{OP}$	Non-condensing	+10	+40	°C

### Optical Specifications — ELM1064 nm configuration

$V_{DD} = +28V$ ,  $T_{amb} = 25\text{ °C}$ , unless otherwise specified.

Parameter	Symbol	Min.	Typ.	Max.	Unit
Center Wavelength	$\lambda$	—	1064	—	nm
Average Output Power	$P_v$	—	—	2000	mW
Pulse Duration	$t_{FWHM}$	—	1 ~ 5	—	ns
Pulse Energy	$E_p$	—	—	80	$\mu J$
Divergence (half angle)	$\Theta_0$	—	3	—	mrad
Beam waist	$\omega_0$	—	240	—	$\mu m$
Pulse to Pulse Jitter (rms) @ 10 kHz	—	—	< 3	—	%
Beam Quality Product	$M^2$	—	—	1.3	—

### Electrical Specifications

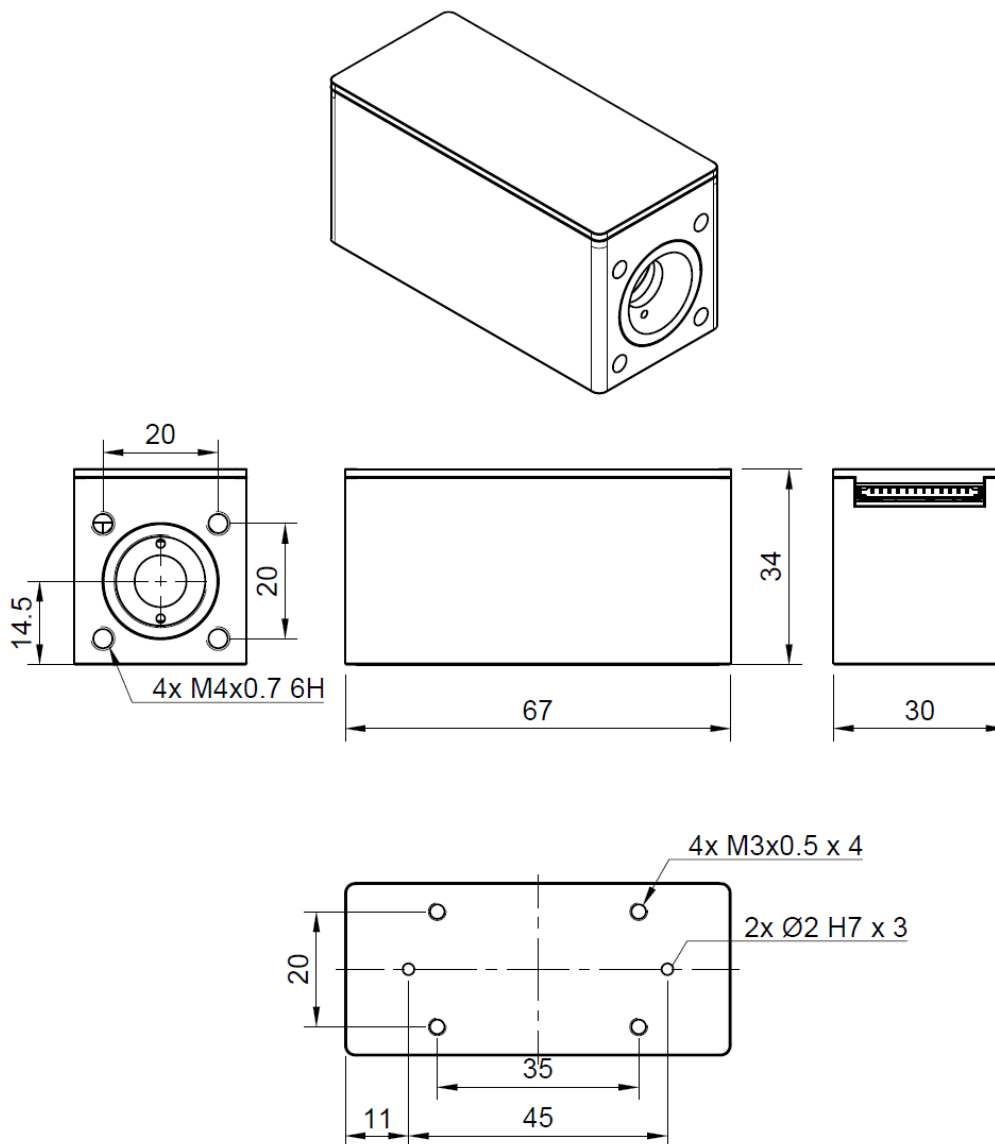
$V_{DD} = +28V$ ,  $T_{amb} = 25\text{ °C}$ , unless otherwise specified.

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	$V_{DD}$	+18	+28	+30	V
Logic Input Voltage	$V_L$	-	3.3	5	V
Supply Current	$I_{IN}$	—	—	500	mA
UART Baud Rate	$BR_{UART}$	—	115200	—	—
Pulse to Sync Out Jitter		—	—	0.5	ns
Pulse to Sync Out Delay		—	—	80	ns

## Mechanical Specifications

Parameter	Symbol	Conditions	Typ.	Unit
Weight	M	—	180	g
Dimensions	D	(L x W x H)	67x30x34	mm
Heat Dissipation			10	W
Optical Tube Connector	—	—	M16x0.5 – 4	mm
Optical Cage Mount	—	—	20mm pitch, 4 x M4	mm

## Technical Drawing



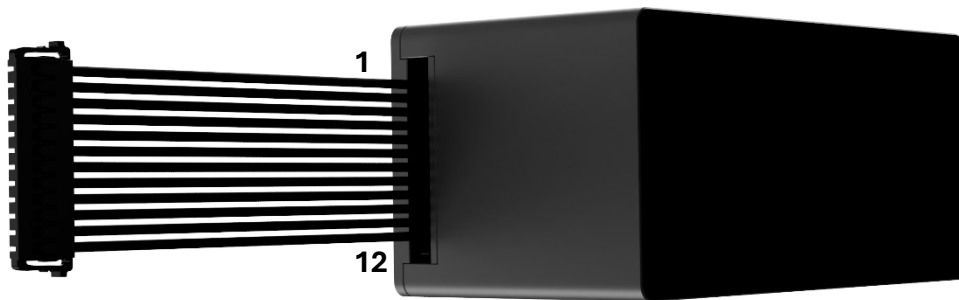
**NOTE:** All dimensions are in mm. 3D CAD files available upon request.

## Main Connector

The main connector on the microchip laser module provides different input and output signals such as power input, auxiliary power output, trigger-I/O and serial communication via UART.

The connector on the microchip laser module is a Molex 504050-1291.

The connector can be used with a matching cable assembly, Molex 15132-1203.



The following table describes all the interface pins. Contact us for custom pinout.

Table 1: Interface Pin Descriptions

Pin Number	Signal Name	Type	Description
1	SYNC_DP	O	LVDS Synchronization Output +
2	SYNC_DN	O	LVDS Synchronization Output -
3	GND	I	Signal Ground
4	GPIO1	I/O	General Purpose IO
5	GPIO2	I/O	General Purpose IO
6	UART_TxD	O	Transmitter Output for UART
7	UART_RxD	I	Receiver Input for UART
8	GND	PWR	Power Ground
9	AUX_SUPPLY	PWR	Auxiliary +12V Output
10	SAFETY_INTERLOCK	I	Safety Interlock Input
11	GND	PWR	Power Ground
12	POWER_IN	I/O	28 V Power Input