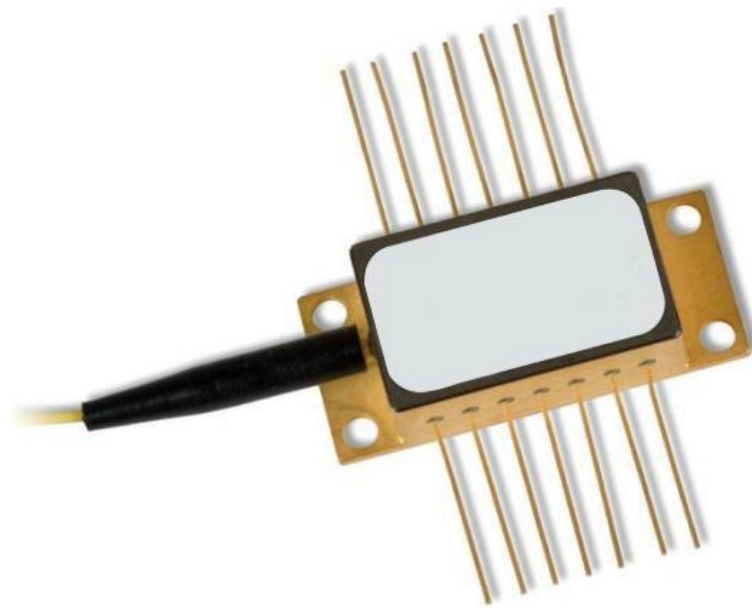


# 1064nm 300mW 50ps SM Pulsed DFB Laser

## Diode



- **Product Description**

This product offers a broad portfolio of high-power single-spatial-mode laser diodes, suitable for any wavelength within the 780nm to 1340nm range. It is available with a TO-9 (9mm) free-space light output package or a standard 14-pin butterfly package with fiber pigtail output (both single-mode and polarization-maintaining pigtails are optional). The polarization extinction ratio (PER) of laser diodes with polarization-maintaining (PM) pigtail output is typically >18dB. These



fiber-coupled laser diodes can be configured for CW (up to 600mW) or pulsed operation, and are optionally available with fiber Bragg grating (FBG) versions for spectral stabilization. The pulsed laser diodes from Idealphotonics are specifically designed for seed source applications, featuring low-noise peak optical power up to 1.2W, and a broadened spectrum that suppresses stimulated Brillouin scattering (SBS) in high-power fiber lasers. Each laser diode product line undergoes a qualification program to demonstrate high reliability. All provided lasers pass individual screening procedures and are accompanied by detailed factory test reports.

## ● Product features

High peak power; Single-longitudinal-mode narrow linewidth; Fast response;  
Low thermal effect; Industrial-grade packaging

## ● Part Number

MP-DFB-PL-1064-300-14BF-SA

## ● Application area

Laser ranging | Distributed fiber-optic acoustic sensing | Optical coherence tomography | Industrial processing | Laser-induced breakdown spectroscopy



## ● Core parameters

Peak Wavelength	Output Power	Pulse Duration (Width)	Fiber Type
1027-1080 nm	300 mW	50 ps	HI-1060

## ● General Parameters

### Specifications

Test operating conditions						
Parameters	symbol	Min.	Typ.	Max.	unit	
Pulse current amplitude	I <sub>amp</sub>		600		mA	
DC current (via Bias-T)	I <sub>DC</sub>		3		mA	
Pulse current duration (FWHM)	τ <sub>el</sub>		350		ps	
Pulse repetition rate	F	1		250	MHz	
Chip temperature	T <sub>op</sub>	15	25	40	°C	

Light pulse						
Test conditions: @operating point, T <sub>case</sub> =25°C.						
Parameters	symbol	Min.	Typ.	Max.	unit	
Peak power	P <sub>peak</sub>	250	300		mW	
Pulse duration (FWHM).	τ		50	60	ps	
Center wavelength	λ	1028		1080	nm	



Wavelength tolerance	$\lambda_t$		1		nm
Spectrum width (-10dB).	$\Delta\lambda_{-10dB}$	0.1	0.150	0.2	nm
Wavelength heat coefficient	$\Delta\lambda/\Delta T$		90	110	pm/°C

due to Max. Rating			
Parameters	Min.	Max.	unit
LD Forward Current (CW)		250	mA
LD forward current (pulse, 2% duty cycle) (Pulse, 2% duty cycle)		2	A
Laser diode reverse voltage		1	V
TEC current		3	A
TEC voltage		4	V
Storage temperature range (in original sealed packaging)	5	80	°C
Wire soldering temperature (Max. 5 seconds).		250	°C
Enclosure operating temperature range	10	50	°C

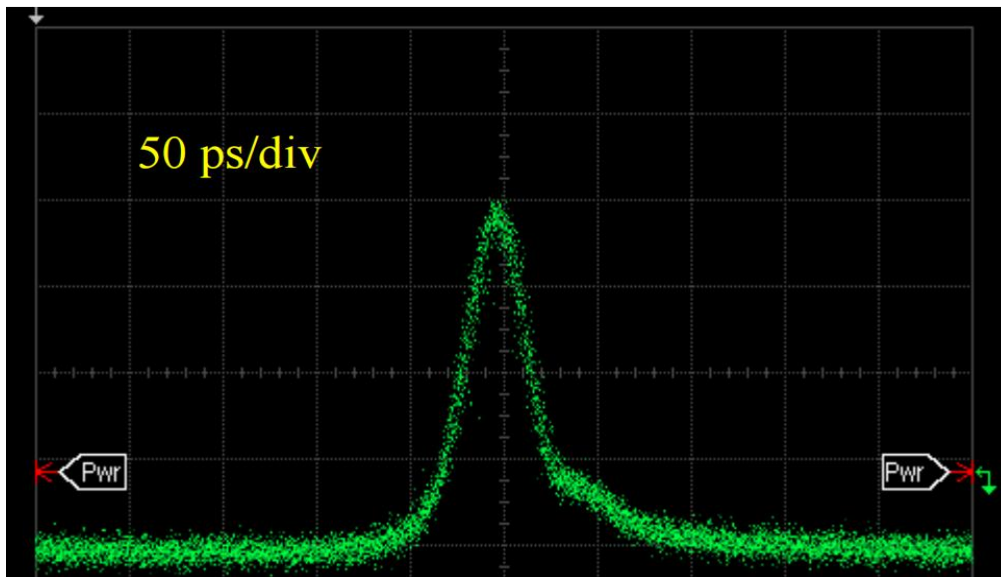
## Product characteristics:

Typical performance is for reference only

Test conditions: @ operating point, Tcase=25°C

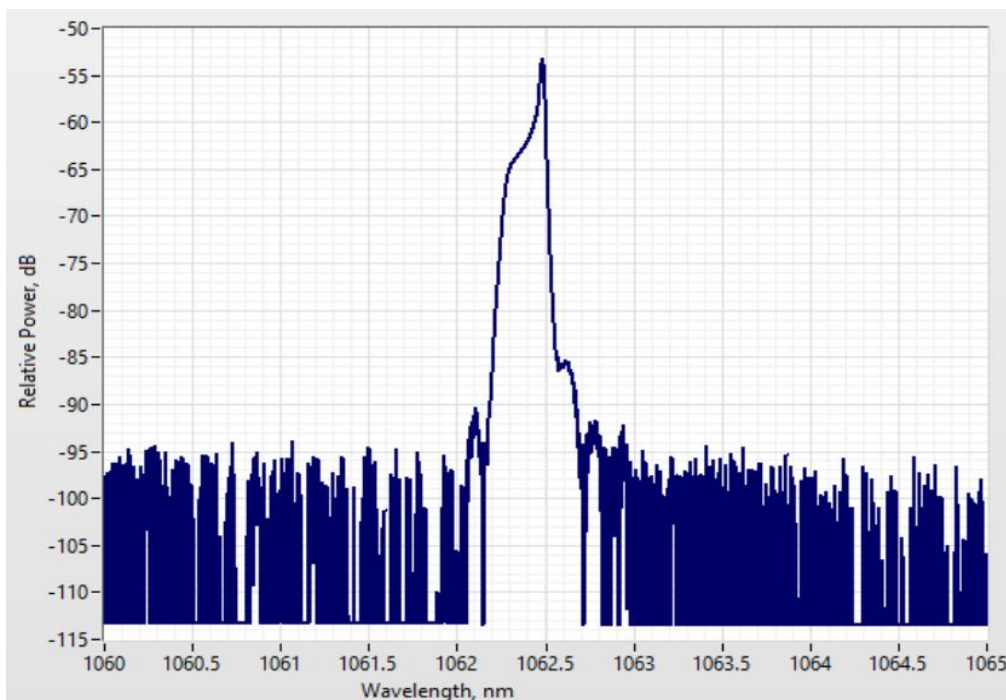
## Pulse shape

RF module, pulse generator; Triggered by splitting light signals; 50ps/div

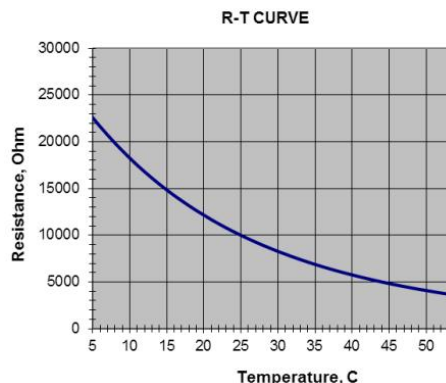


## Laser spectroscopy

10pm resolution

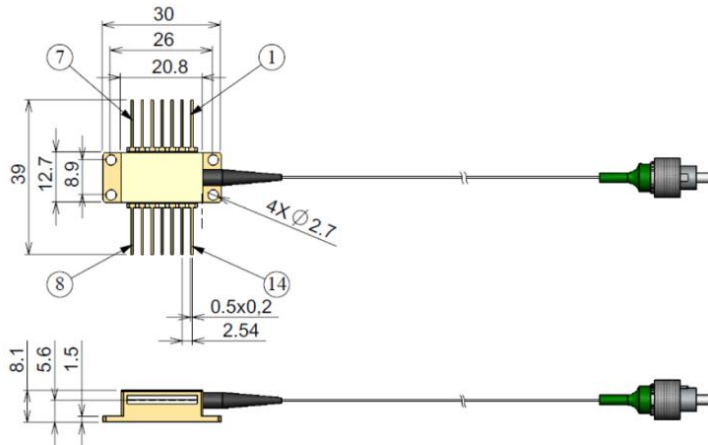




Thermistor specifications			Fiber Specifications			
Parameters	value	unit	Parameters	HI1060	PM980	unit
Thermistor type	NTC		Numerical aperture (Typical).	0.14	0.12	-
Impedance @ 25°C	10 ± 0.1	kOhm	Cut-off wavelength	920±50	900±70	nm
Beta 0-50°C	3375	K	Mold field diameter (@1060nm).	6.2±0.3	6.6±0.3	µm
			Cladding diameter	125±1	125±1	µm
			Offset from core layer to cladding Core-to-cladding offset	≤0.5	≤0.5	µm
			Fiber length	1.0 ± 0.1	1.0 ± 0.1	m
			connectors	FC/APC (Narrow Key)		
			Slow axis alignment			

## Dimensional drawings

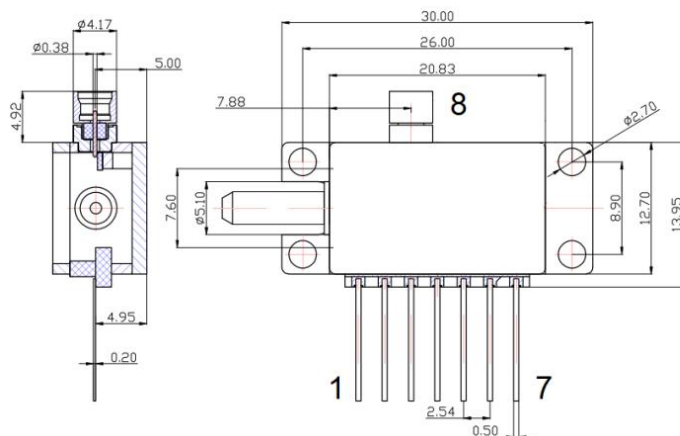
14-pin diode size (all sizes are in mm).



**Pin identification:**

1. TEC "+"
2. Thermistor
3. Monitor PD anode (optional)
4. Monitor PD cathode (optional)
5. Thermistor
- 6.
- 7.
- 8.
- 9.
10. Laser Diode anode "+"
11. Laser Diode cathode "-"
- 12.
13. Case
14. TEC "-"

Dimensions with RF connectors (all dimensions are in mm).



**Pin identification:**

1. Thermistor
2. Thermistor
3. -
4. -
5. -
6. TEC "-"
7. TEC "+"
8. RF connector (SMB, positive pulse)

## Model parameters

Peak wavelength range 3	Output pulse power 4	Pulse duration	Spectral width 4 (-10dB).	Wavelength temperature adjustability	Operating current
nm	mW		nm	pm/K	mA
1027 – 1080	300	50 ps	0.150	90	600
1027 – 1080	300	60 ps	0.150	90	600
1027 – 1080	300	1-10 ns	0.150	90	1000

3 – Any wavelength in this range is available with a tolerance of  $\pm 1\text{nm}$

4 – In Gain Switching Mode

5–Picosecond (gain switching) and nanosecond laser diode drivers can be ordered with the laser or separately

The light emitted by the device is invisible and may be harmful to the human eye. When the device is in operation, avoid looking directly at the fiber optic connector. When operating with the connector open, it is essential to wear appropriate laser safety glasses.

Absolute Max. ratings should only be applied to laser diodes for short periods of time. Prolonged exposure to Max. ratings or exposure to more than one Max. rating may cause damage to the device or affect its reliability. Operating a laser



diode outside of the Max. rating may result in equipment failure or safety

hazards

The power supply used with the part must be used to ensure that the Max.

forward current is not exceeded

An appropriate heat sink needs to be provided for the laser diode on the heat sink. The laser diode must be mounted on the heat sink with 4 screws (tightened in an X-shaped manner, with an initial torque set to 0.075 Nm and a final X-bolt to 0.15 Nm) or a clamp. The deviation of the surface flatness of the radiator must be less than 0.05mm. It is recommended to use indium foil or thermally conductive soft material as a thermal interface between the bottom of the housing and the radiator. Hot grease is not desired

Avoid back reflections from laser diodes. It can have an impact on device performance in terms of spectrum and power stability. It can also lead to fatal laser diode end face damage. Optical isolators are highly recommended to block back reflections. Do not pull the fiber. Do not bend fibers with a radius of less than 3 cm.

Only the laser module can be operated with clean fiber optic connectors. If necessary, regularly inspect and clean the fittings. To clean the connector, only use a cleanroom-compatible paper towel, place some isopropyl alcohol on it and carefully clean the end face of the connector, or use a special fiber optic cleaning tool. Cleaning is carried out only with the laser current turned off.



**Electrostatic discharge can cause equipment failure. Take the necessary precautions to prevent ESD.**