



## G131PU001S



### TECHNICAL DATA

## Pigtailed 14-PIN DIL Laser Diode with TEC

#### Features

- 1 mW 1310 nm MQW Laser Diode Module with cooler
- 14pin DIL package with single mode fiber output

#### Applications

- Optical Communication
- Ideal laser source of long-distance optical fiber communication

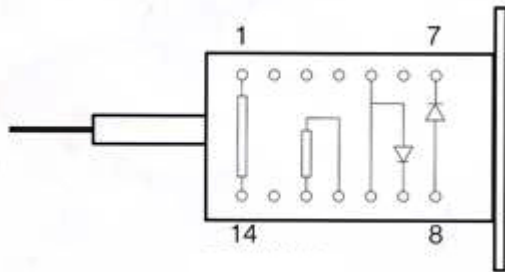
#### Specifications (25°C)

Type	Min.	Typ.	Max.	Unit
<b>Optical Specification</b>				
CW Output Power $P_F$	-	1	-	mW
Center Wavelength $\lambda_C$	1280	1310	1340	nm
Spectral Width $\Delta\lambda$	-	1.5	3	nm
Wavelength Temperature Coefficient	-	0.35	-	nm/°C
<b>Fiber Characteristics</b>				
Fiber Core Size	-	9	-	$\mu\text{m}$
N.A.	-	0.11	-	
Fiber Length	0.9	1	1.1	m
Connector	FC/PC			
<b>Electrical Specification</b>				
Slope Efficiency $E_S$	0.2	-	-	W/A
Threshold Current $I_{th}$	-	10	20	mA
Operation Current $I_O$	-	30	40	mA
Operation Voltage $V_f$	-	-	1.5	V
Monitor Current $I_m$	0.1	0.3	-	mA
Photodiode Dark Current $I_D$	-	10	20	nA
Cooling Capacity $\Delta T$	40	-	-	°C
Cooler Current $I_C$	-	0.5	1	A
Cooler Voltage $V_C$	-	1.2	2.1	V
Thermistor Resistance $R_{tr}$	9	10	11	K $\Omega$
Thermistor Constant $\beta$	3500	3900	4300	K
Package Style	14PINDIP			
<b>Absolute Maximum Ratings</b>				
Reverse Voltage $V_r$	2			V
Operating Temperature $T_O$	-10 ... +75			°C
Storage Temperature $T_{stg}$	-40 ... +85			°C

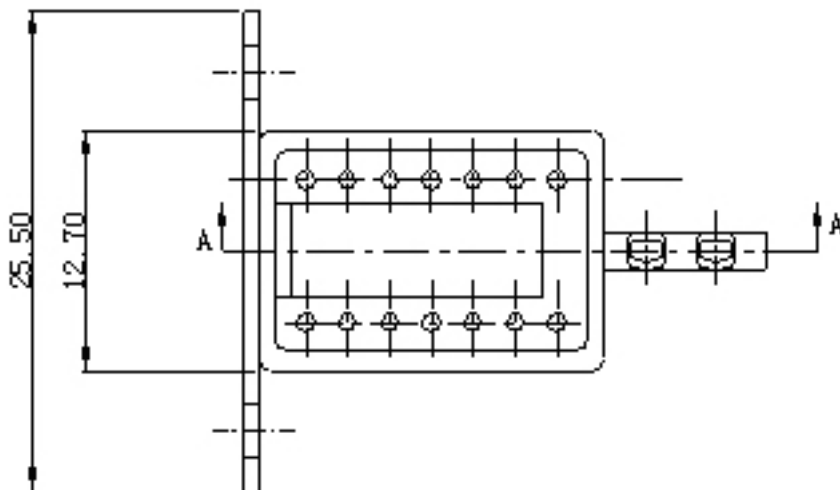
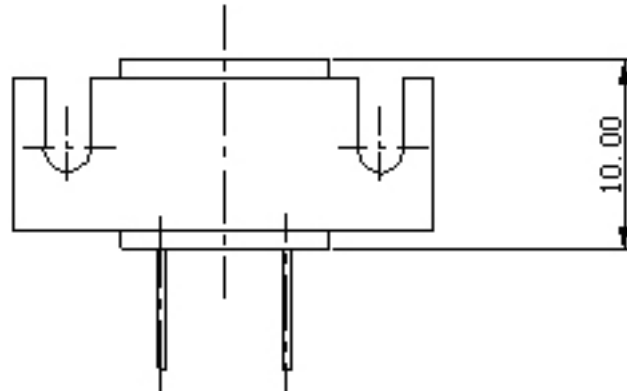
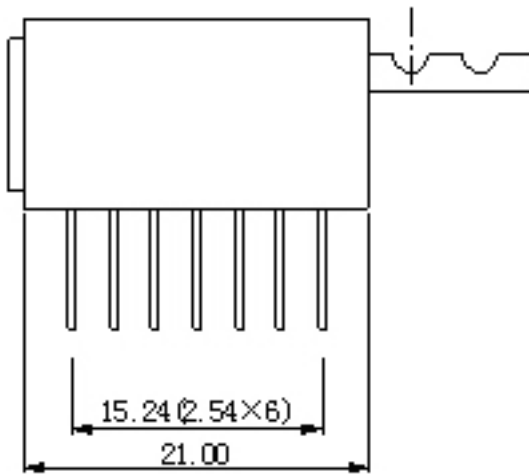




## Package Dimensions

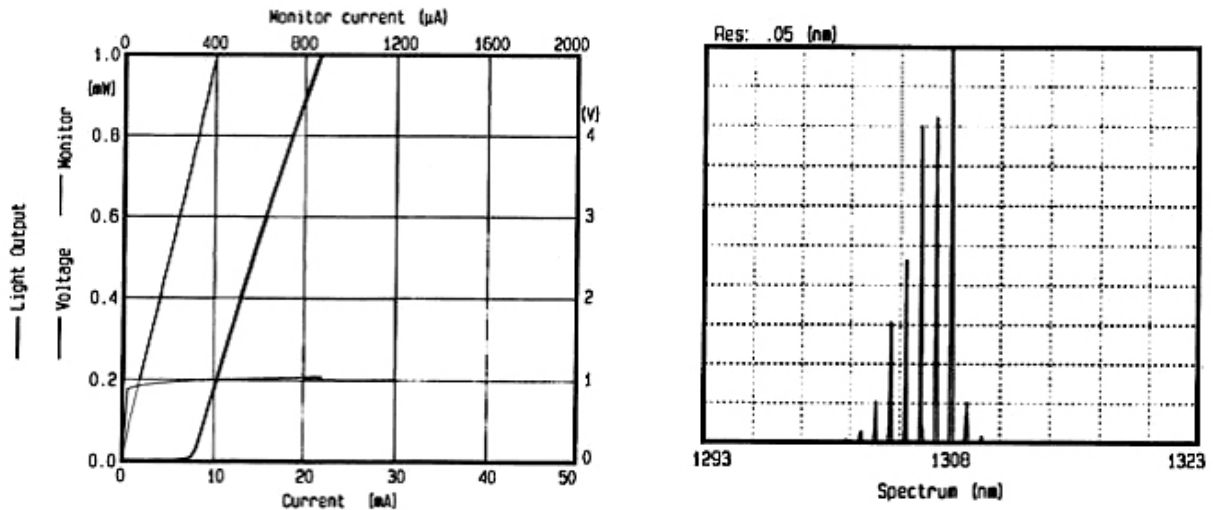


- 1 ... Cooler (+)
- 5 ... Laser (P), Case Ground
- 7 ... Monitor (N)
- 8 ... Monitor (P)
- 9 ... LD (N)
- 10 ... Laser (P), Case Ground
- 11 ... Thermistor
- 12 ... Thermistor
- 14 ... Cooler (-)





## Typical Performance Curves



## Notes

1. Laser beam is harmful especially for your eyes. Don't look at the laser beam directly.
2. Lifetime of the diode laser varied with the operating temperature inversely. We advise that the TEC cooler should be used to keep the temperature suitable.
3. For turning on the diode laser, please increase the current gradually to the specified operating value. For shutting down the diode laser, please decrease the current to zero gradually, and then turn off the power.
4. Please wear static proof bracelet when operating.
5. Please connect the pins of the diode laser correctly as the picture shown in the manual.
6. The operating current must less than the rated current. Otherwise the diode laser should be damaged.
7. The fiber facet should be keep clean before the diode laser is operating.
8. Please use the constant-current source to avoid the surge.
9. Diode laser should be short circuit when stop using.
10. Bend diameter of the fiber must be larger than 4cm temporarily and 8cm permanently.



## Laser safety operating instructions

### Laser usage requirements in environment

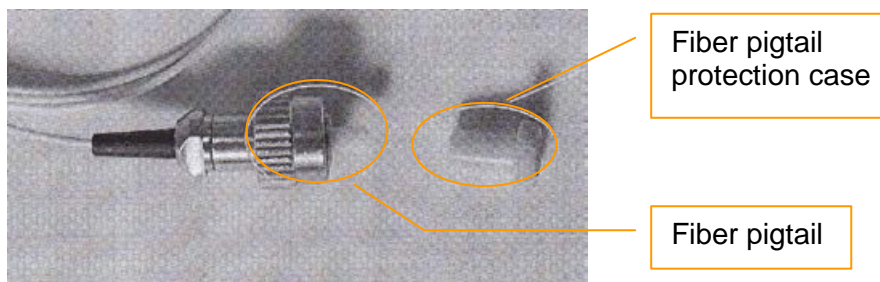
- A ultra-clean environment should be provided for operating the LD. The operating temperature should be controlled at  $-10\text{ }^{\circ}\text{C}$  ...  $45\text{ }^{\circ}\text{C}$ .
- Laser safety warning signs should be posted in the working place.

### The requirements on the power supply driving the LD

- Constant-current should be available for power supply. The power supply should have the ability to avoid current or voltage surge at any condition (during start-up, intermittence or open circuit). The surge would result in instant increase of optical power, which can cause COMD (catastrophic optical mirror damage).
- High power Laser Diodes could operate in forward voltage. The reverse current and voltage should not be higher than  $25\text{ }\mu\text{A}$  and  $3\text{ V}$ , respectively.

### Laser operating requirements

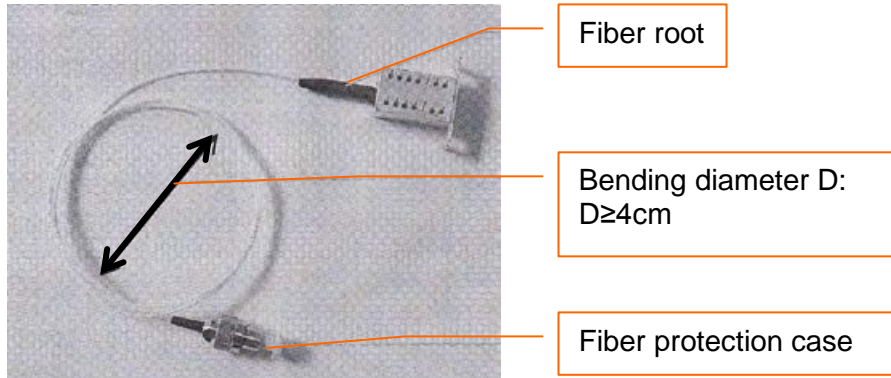
- Please check the laser safeguard before used the LD. More information about the laser safe is mentioned in "laser safe" section of this manual.
- The semiconductor Laser Diode is a sensitive electronic device. Do not ship or store near strong electrostatic, electromagnetic, magnetic or radioactive fields. Please observe precaution for handling electrostatic sensitive devices, such as wearing anti-static wrist straps, use anti-static packaging material and tools when operation.
- Shut off the power supplier before connecting the LD with the power supplier. To shut off the LD please decrease the current to zero gradually then shut off the power supply.
- The operating current of laser must not be higher than the given rate current. The excessive current would accelerate aging and shorten lifetime, even damage the LD.
- Keep the fiber pigtail clean. In non-working environment, you must use the protection case to avoid fiber pigtail from being polluted. If you need to clean the fiber pigtail, use ethanol or water-free alcohol cotton balls and wipe fiber pigtail gently.



- LD must be taken out of the fiber protection case before it starts to work.
- When laser is working, please don't point it straight to the fiber as shown below the yellow part, in order to prevent the fiber protection case from being damaged by high-power laser generated heat.
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- Bending diameter of the fiber cannot be allowed to be less than 4cm. When bending the fiber, please make sure the starting point is away larger than 4cm from the fiber root. When moving the laser, please don't directly use fiber (yellow part). Not obeying these rules may cause fracture of the laser fiber from the root.



- Make sure that the module and the fiber are in the same plane.

## Cooling system

High-power semiconductor Laser Diodes are temperature-sensitive devices. High temperature will affect its performance. Its lifetime may also be shortened by working at high temperature. So the generated heat must be removed in time when the LD is working. Water cooling system or TEC system is recommended for keeping the LD working at appropriate temperature.

## Laser safety instructions

High power laser diodes are high energy laser devices. It is harmful to human body and health. Any personnel working with or around open lasers must be aware of the following:

- Exposure to the laser beam may cause physical burns and can cause severe eye damage. Proper eye protection should be used at all times. All eye protection should be appropriate for the radiation wavelength generated by the laser in use.
- Exposure to the laser beam may cause ignition of volatile or combustible materials.
- Never look directly into the laser output port.
- Interlock all rooms in which open beams may be present and post appropriate warnings on or near the doors. Access to these rooms should be limited to properly trained technicians when lasers are in use.
- Use appropriate protective coverings over all beam paths whenever possible.
- Lasers and optical elements should be positioned to keep the beam and reflections below eye level.