

## 60W Array Laser Diode

*Preliminary***Description**

The SLD433S4 is a high power laser diode with an array structure, which achieves 60W high power. The package is high efficiency water cooling package.

Module customizing is available.

**Features**

- High power  
Recommended optical power output:  $P_o = 60W$
- Array structure
- Open package
- High efficiency water cooling package

**Applications**

Solid state laser excitation

**Structure**

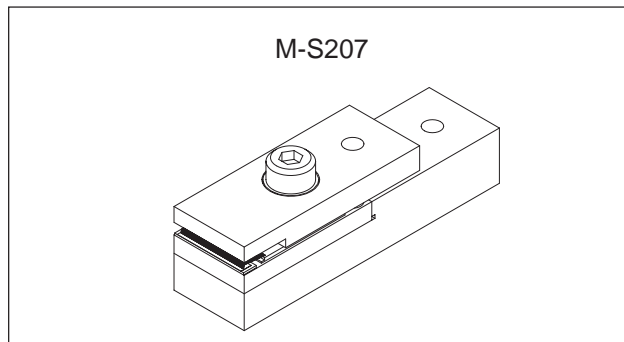
AlGaAs quantum well structure laser diode

**Absolute Maximum Ratings** ( $T_w = 25^\circ C$   $T_w$ : cooling water temperature)

- |                                   |           |                     |            |
|-----------------------------------|-----------|---------------------|------------|
| • Optical power output            | $P_{max}$ | 66                  | W          |
| • Reverse voltage                 | $V_R$ LD  | 2                   | V          |
| • Operating temperature ( $T_w$ ) | $T_{opr}$ | -10 to +30          | $^\circ C$ |
| • Storage temperature             | $T_{stg}$ | -10 to +60          | $^\circ C$ |
| • Storage humidity                |           | No dew condensation |            |

**Operating Lifetime**

MTTF 10,000H (effective value) at  $P_o = 60W$ ,  $T_w = 25^\circ C$



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**Electrical and Optical Characteristics**

( $T_w = 25^\circ\text{C}$ ,  $T_w$ : Cooling water temperature)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Threshold current	$I_{th}$		—	10	15	A	
Operating current	$I_{op}$	$P_o = 60\text{W}$	—	75	85	A	
Operating voltage	$V_{op}$	$P_o = 60\text{W}$	—	—	2.5	V	
Wavelength	$\lambda_p$	$P_o = 60\text{W}$	805	—	811	nm	
Wavelength spectrum width	$\lambda_w$	$P_o = 60\text{W}$ (FWHM)	—	—	3	nm	
Radiation angle	Perpendicular	$\theta_{\perp}$	$P_o = 60\text{W}$ (FWHM)	18	24	28	degree
	Parallel	$\theta_{//}$		—	8	12	degree
Positional accuracy	Position	$\Delta X$		—	—	$\pm 300$	$\mu\text{m}$
		$\Delta Y$		—	—	$\pm 100$	$\mu\text{m}$
		$\Delta Z$		—	—	$\pm 100$	$\mu\text{m}$
	Angle	$\Delta\phi_{\perp}$		—	—	5	degree
		$\Delta\phi_{//}$		—	—	1	degree
Differential efficiency	$\eta_D$	$P_o = 60\text{W}$	—	1.0	1.5	W/A	

Cooling water flow rate:  $\geq 0.4$  L/min

Cooling water type:

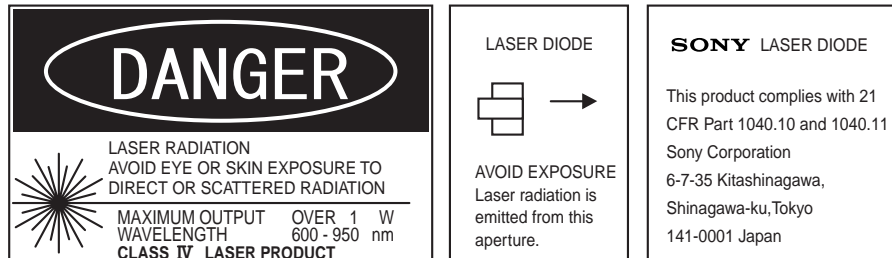
Deionized water: conductivity  $< 3\mu\text{S/cm}$

Particle filter:  $< 30\mu\text{m}$

## Notes on Operation

Care should be taken for the following points when using this product.

- (1) This product corresponds to a Class 4 product under IEC60825-1 and JIS standard C6802 "Laser Product Emission Safety Standards".



- (2) Eye protection against laser beams

Take care not to allow laser beams to enter your eyes under any circumstances.

For observing laser beams, ALWAYS use safety goggles that block laser beams. Usage of IR scopes, IR cameras and fluorescent plates is also recommended for monitoring laser beams safely.

- (3) Gallium Arsenide

This product uses gallium arsenide (GaAs). This is not a problem for normal use, but GaAs vapors may be potentially hazardous to the human body. Therefore, never crush, heat to the maximum storage temperature or higher, or place the product in your mouth.

In addition, the following disposal methods are recommended when disposing of this product.

1. Engaging the services of a contractor certified in the collection, transport and intermediate treatment of items containing arsenic.
2. Managing the product through to final disposal as specially managed industrial waste which is handled separately from general industrial waste and household waste.

- (4) Prevention of surge current and electrostatic discharge

Laser diodes are most sensitive to electrostatic discharge among semiconductors. When a large current is passed through the laser diode for even an extremely short time, the strong light emitted from the laser diode promotes deterioration and then destruction of the laser diode. Therefore, note that surge current should not flow to the laser diode driving circuit from switches and others. Also, if the laser diode is handled carelessly, it may be destroyed instantly because electrostatic discharge is easily applied by a human body. Therefore, be extremely careful about overcurrent and electrostatic discharge.

- (5) Use for special applications

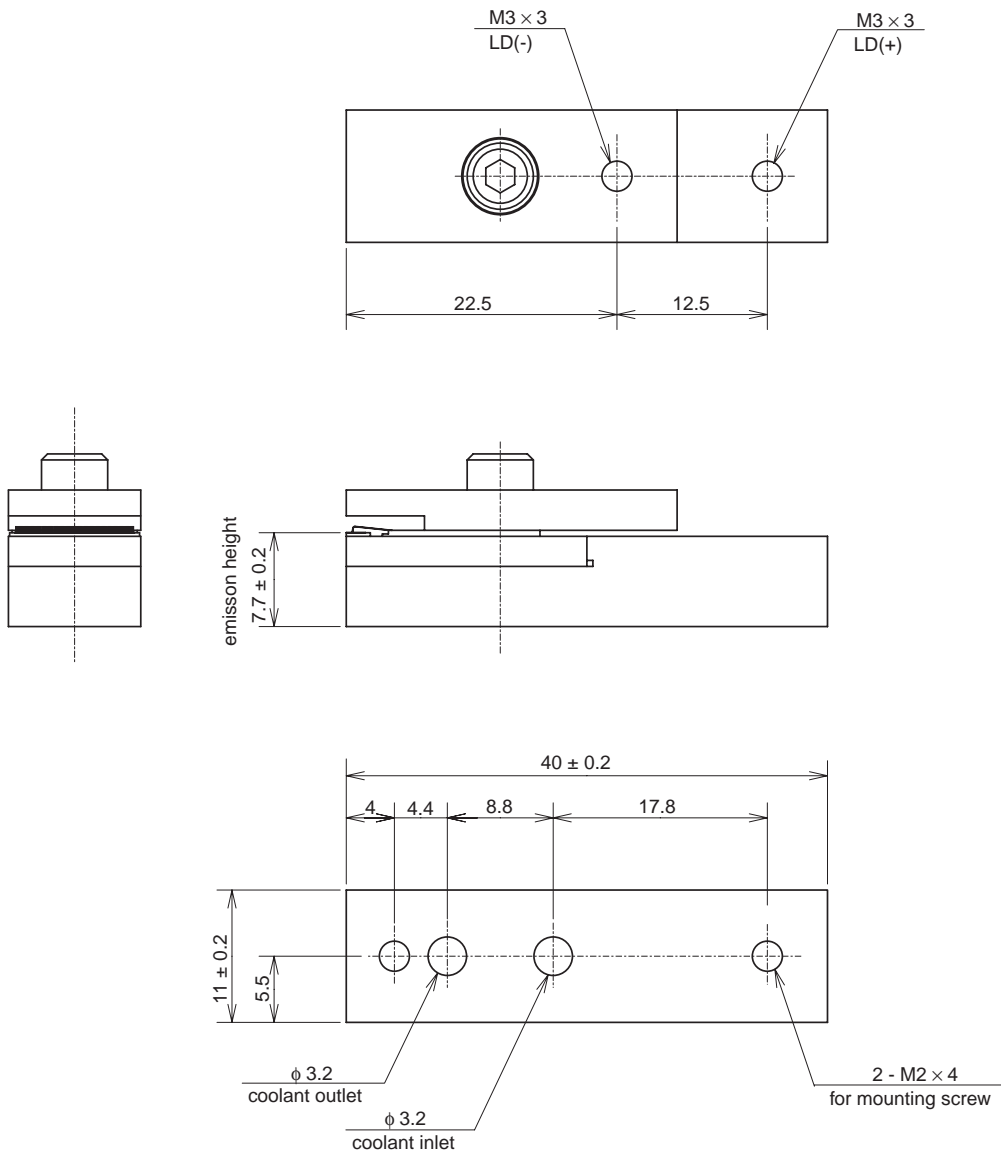
This product is not designed or manufactured for use in equipment used under circumstances where failure may pose a risk to life and limb, or result in significant material damage, etc.

Consult your Sony sales representative when investigating use for medical, vehicle, nuclear power control or other special applications. Also, use the power supply that was designed not to exceed the optical power output specified at the absolute maximum ratings.

Package Outline

Unit: mm

M-S027



SONY CODE	M-S027
EIAJ CODE	_____
JEDEC CODE	_____

PACKAGE MASS	50g
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