SONY

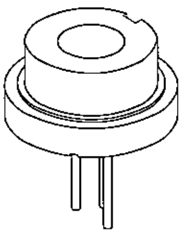
SLD301V

100mW High Power Laser Diode

Description

The SLD301V is a gain-guided, high-power laser diode fabricated by MOCVD.

MOCVD: Metal Organic Chemical Vapor Deposition



Features

- High power
  Recommended power output Po = 90mW
- Low operating current

Applications

- Solid state laser excitation
- Medical use

Structure

GaAlAs double-hetero-type laser diode

Operating Lifetime

MTTF 10,000H (effective value) at Po = 90mW, Tc = 25°C

Absolute Maximum Ratings (Tc = 25°C)

• Optical power output	Pomax		100	mW
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature	Topr		–10 to +50	°C
• Storage temperature	Tstg		–40 to +85	°C

Warranty

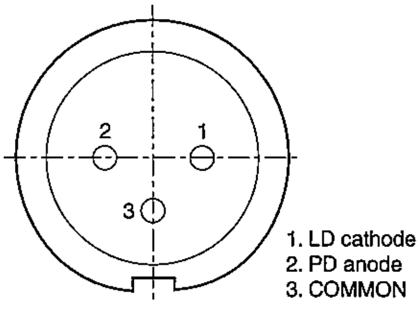
This warranty period shall be 90 days after receipt of the product or 1,000 hours operation time whichever is shorter.

Sony Quality Assurance Department shall analyze any product that fails during said warranty period, and if the analysis results show that the product failed due to material or manufacturing defects on the part of Sony, the product shall be replaced free of charge.

Laser diodes naturally have differing lifetimes which follow a Weibull distribution.

Special warranties are also available.

Pin Configuration



Bottom View

Electrical and Optical Characteristics (Tc: Case temperature, Tc = 25°C)

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold current		Ith			150	200	mA
Operating current		Iop	Po = 90mW		250	400	mA
Operating voltage		Vop	Po = 90mW		1.9	3.0	V
Wavelength*1		λp	Po = 90mW	770		840	nm
Monitor current		Imon	Po = 90mW V_R = 10V		0.15		mA
Radiation angle (F. W. H. M.*)	Perpendicular	θ⊥	Po = 90mW		28	40	degree
	Parallel	θ//			12	17	degree
Positional accuracy	Position	ΔX, ΔY	Po = 90mW			±50	µm
	Angle	Δφ⊥				±3	degree
Differential efficiency		η_D	Po = 90mW	0.65	0.9		mW/mA

* F. W. H. M. : Full Width at Half Maximum

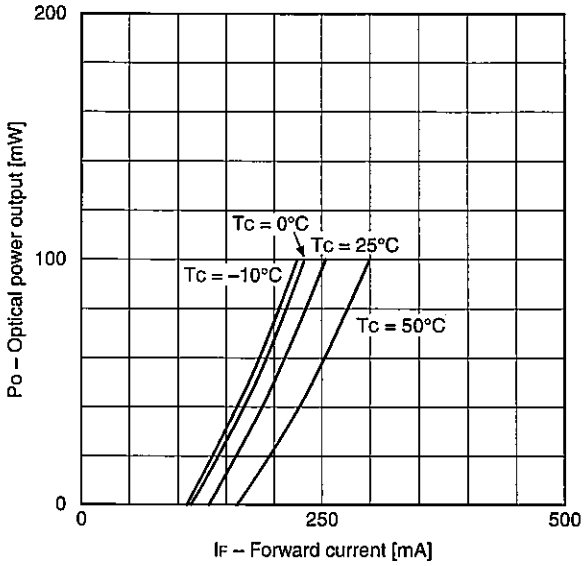
*1 Wavelength Selection Classification

Type	Wavelength (nm)
SLD301V-1	785 ± 15
SLD301V-2	810 ± 10
SLD301V-3	830 ± 10

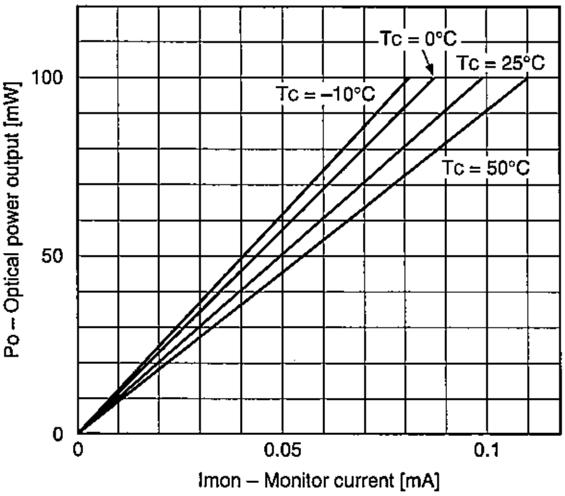
Type	Wavelength (nm)
SLD301V-21	798 ± 3
SLD301V-24	807 ± 3
SLD301V-25	810 ± 3

Example of Representative Characteristics

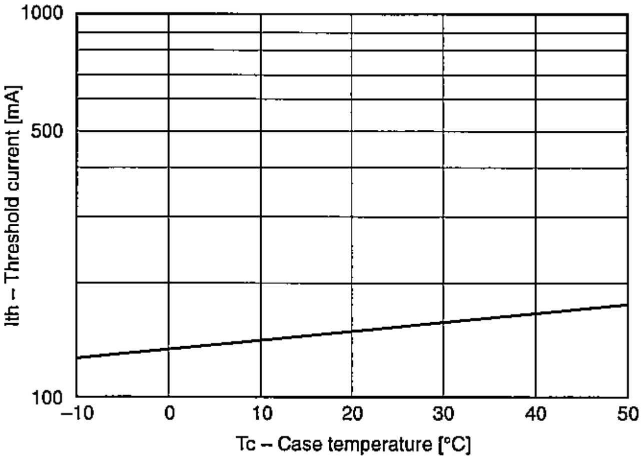
Optical power output vs. Forward current characteristics



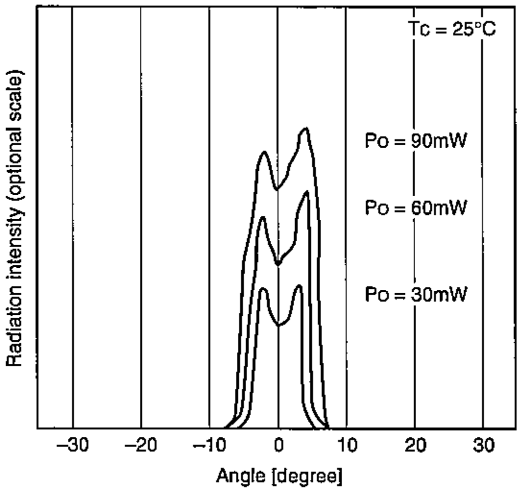
Optical power output vs. Monitor current characteristics



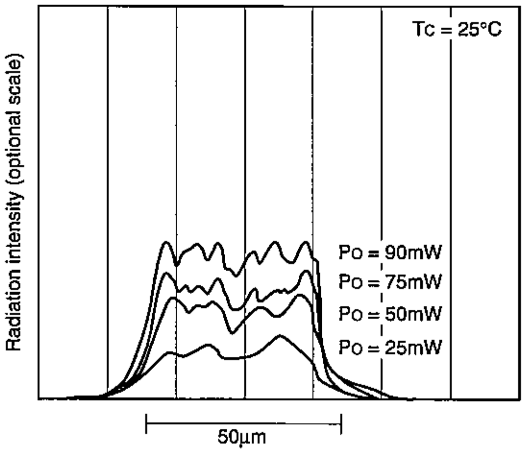
Threshold current vs. Temperature characteristics



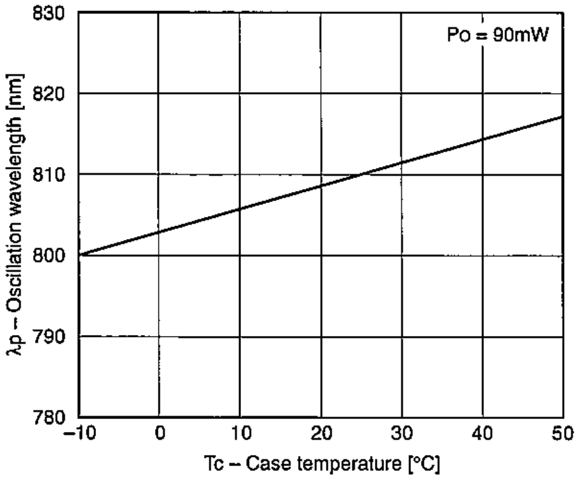
Power dependence of far field pattern (parallel to junction)



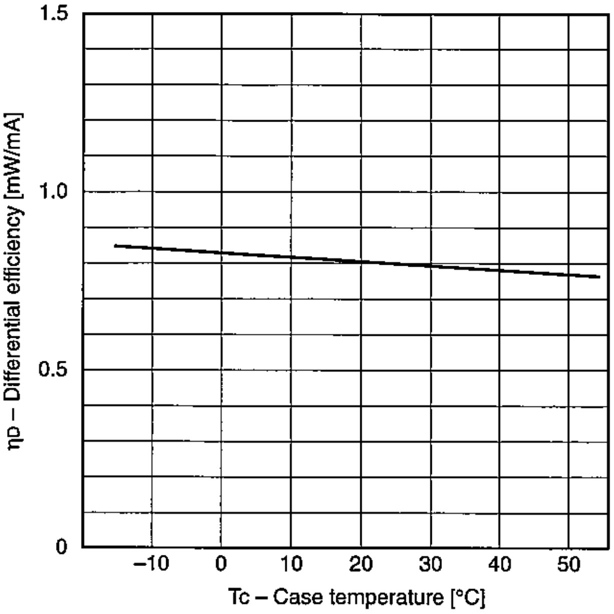
Power depecdence of near field pattern



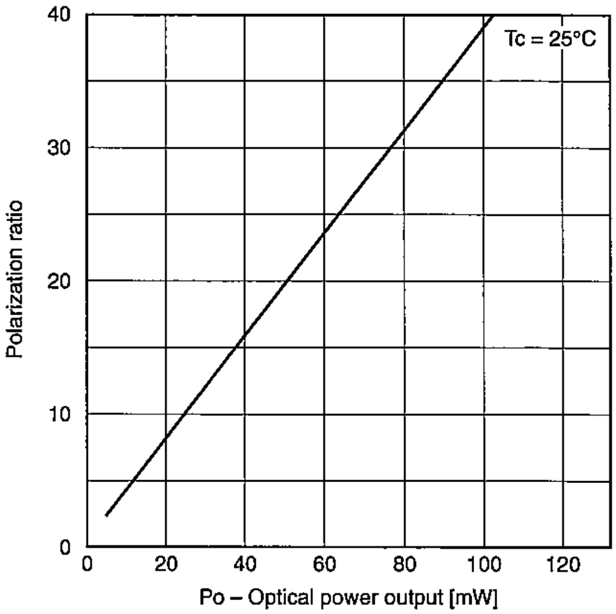
Oscillation wavelength vs. Temperature characteristics



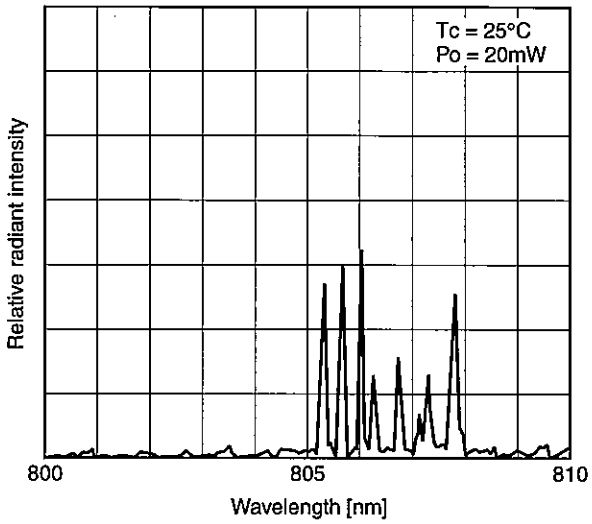
Differential efficiency vs. Temperature characteristics

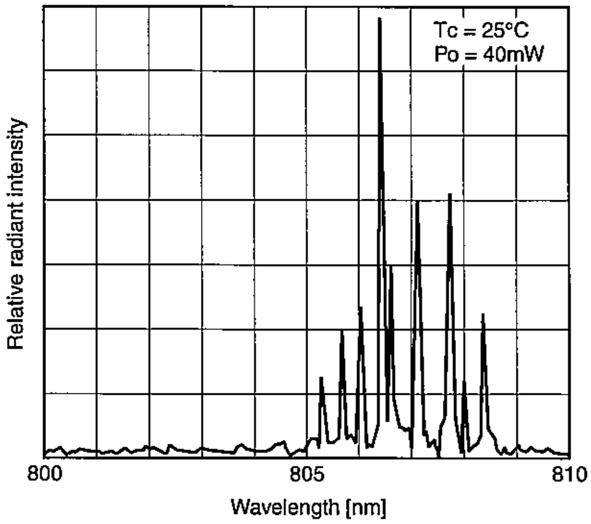


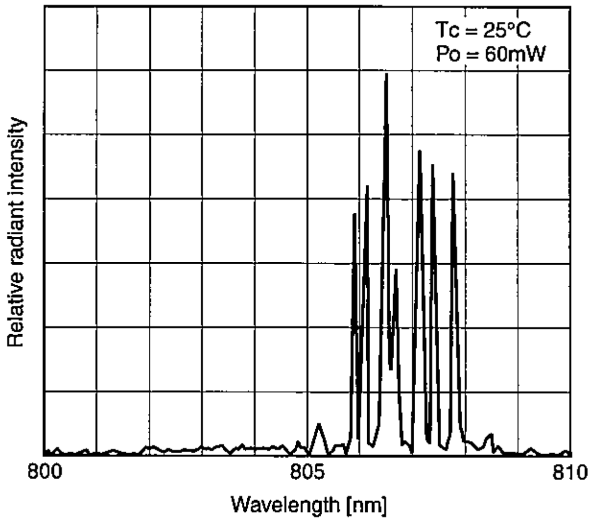
Power dependence of polarization ratio

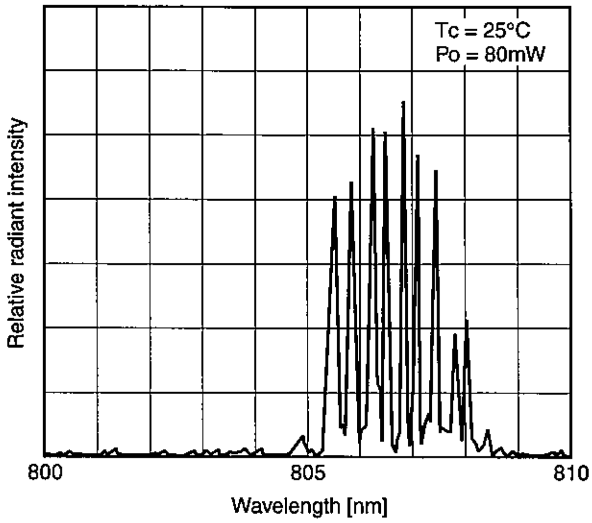


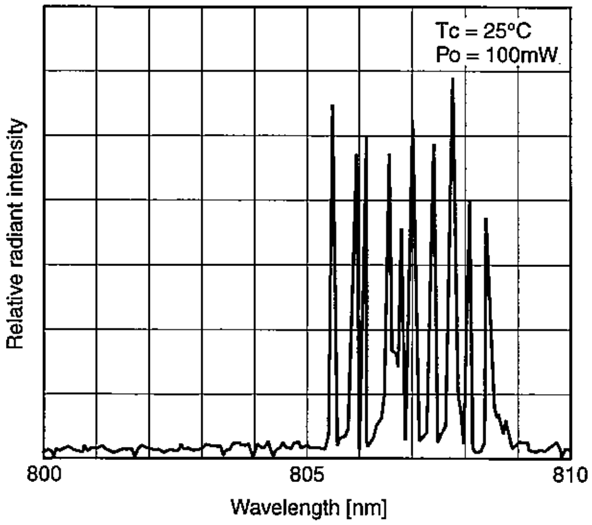
Power dependence of wavelength (Spectrum)



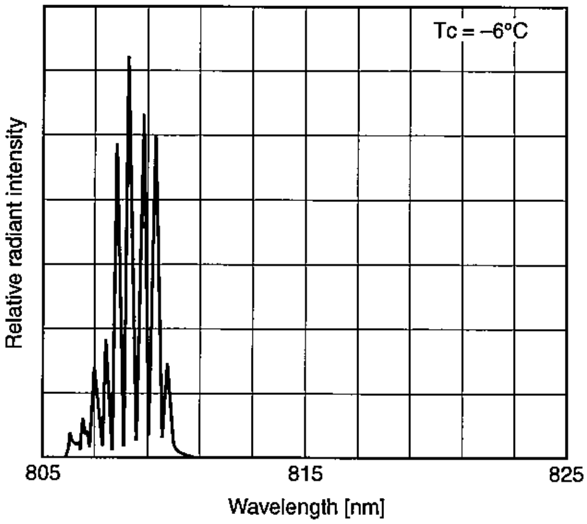


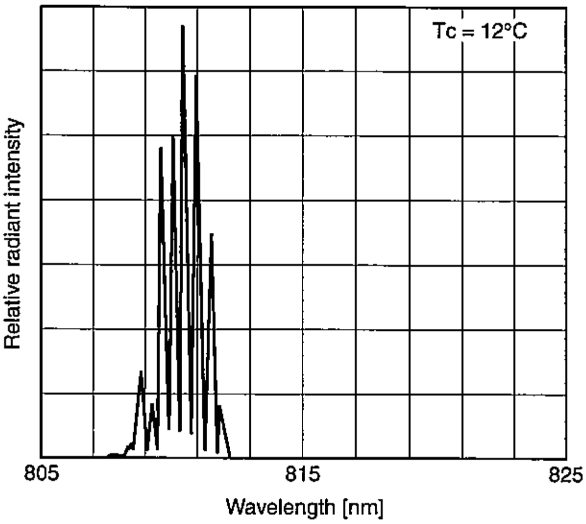


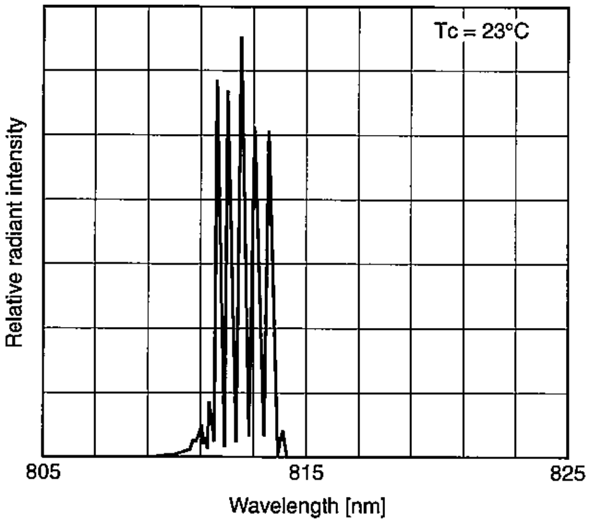


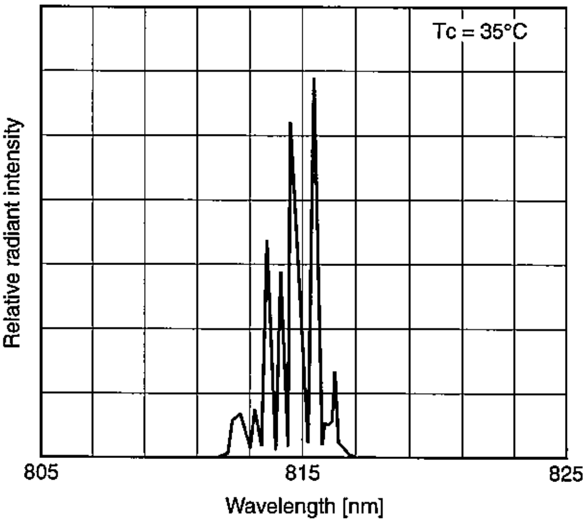


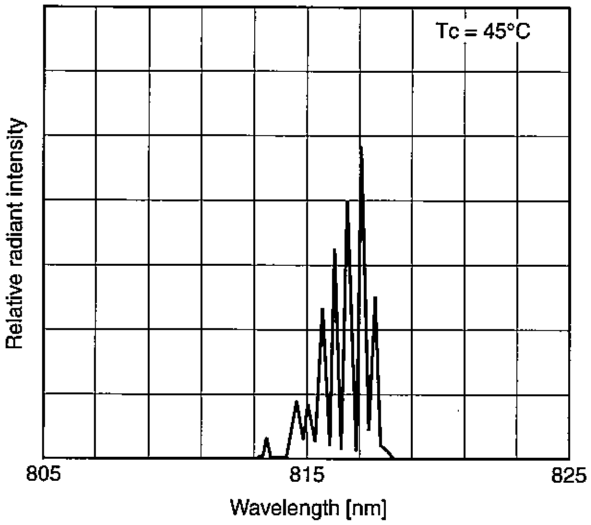
Temperature dependence of wavelength (Po = 90mW)











Notes on Operation

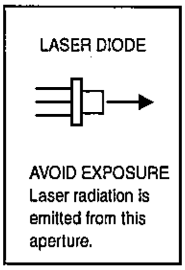
Care should be taken for the following points when using this product.

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

DANGER

LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

MAXIMUM OUTPUT OVER 1 W
WAVELENGTH 600 - 950 nm
CLASS IV LASER PRODUCT



LASER DIODE

AVOID EXPOSURE
Laser radiation is
emitted from this
aperture.

SONY LASER DIODE

This product complies with 21
CFR Part 1040.10 and 1040.11
Sony Corporation
1-7-1 Konan,
Minato-ku,Tokyo
108-0075 Japan

(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.
Also, use the power supply that was designed not to exceed the optical power output specified at the absolute maximum ratings.

(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.

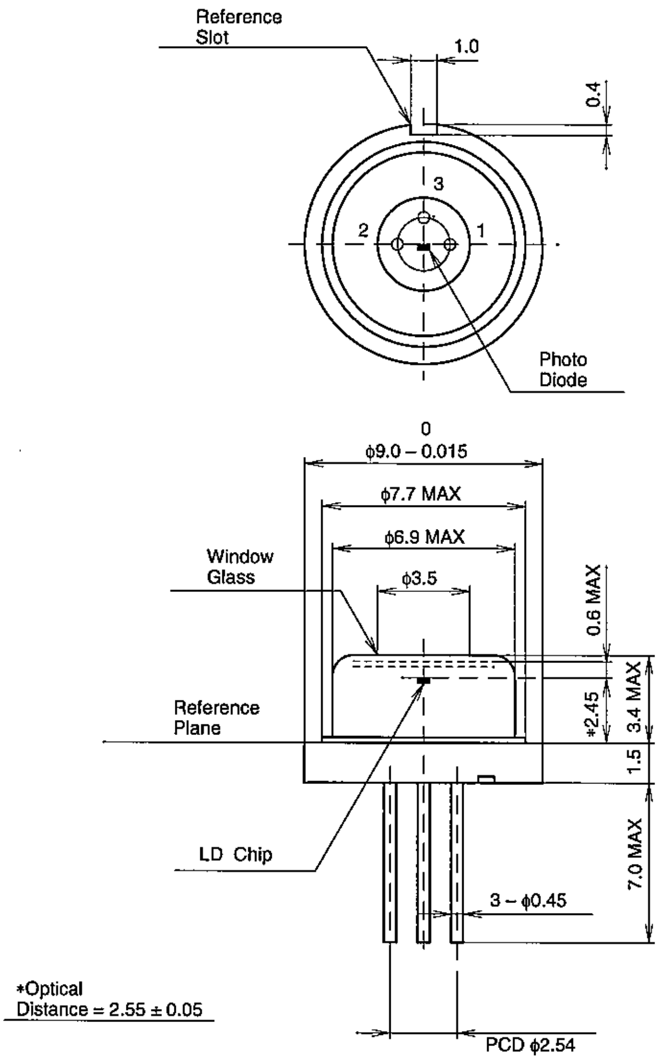
(6) Environment-related Substances to be Controlled

No substances classified at level 1 (immediate ban) of Sony Technical Standard, SS-00259, "Management regulations for the Environment-related Substances to be Controlled". The excerpt from SS-00259 is introduced on following URL.

http://www.sony.net/SonyInfo/procurementinfo/ss00259/

Package Outline Unit: mm

M-248 (LO-11)



*Optical Distance = 2.55 ± 0.05

SONY CODE	M-248
EIAJ CODE	————
JEDEC CODE	————

PACKAGE MASS	1.2g