GH30707A2A

(Under development)

Dual-wavelength Laser Diode for DVD-ROM/DVD Video(654nm-7mW, 788nm-7mW)

■ Features

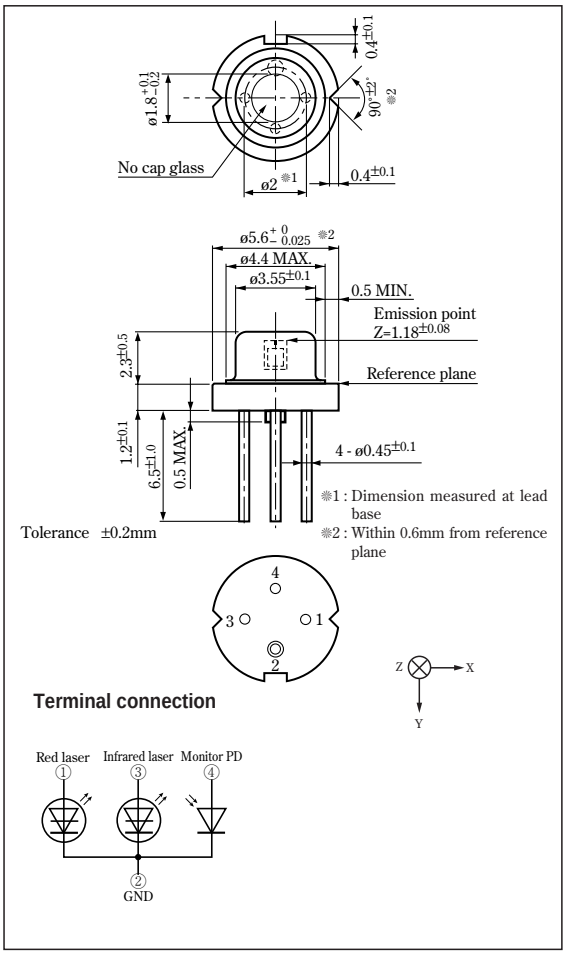
(1) Monolithic dual-wavelength laser diode
(2) Wavelength : TYP. 788nm/654nm
(3) Optical power output (MAX.): 7mW/7mW
(4) High emitting point accurancy by monolithic structure ($110 \pm 3\mu m$)
(5) Operating temperature : MAX. 70˚C
(6) ϕ5.6mm package (4 - lead)

■ Applications

(1) DVD-ROM drives
(2) DVD video players

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Tc=25˚C ※1)

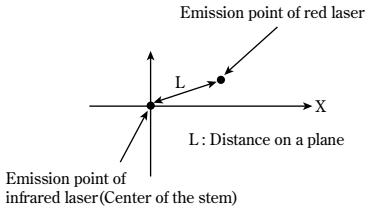
Parameter		Symbol	Rating		Unit
			Red laser	Infrared laser	
※3 Optical power output		P_O	7	7	mW
Reverse voltage	Laser	V_{rl}	2		V
	Monitor photodiode	V_{rd}	30		V
※1 Operating temperature		$T_{op(c)}$	-10 to +70		˚C
※1 Storage temperature		T_{stg}	-40 to +85		˚C
※2 Soldering temperature		T_{sld}	300		˚C

※1 Case temperature
※2 At the position of 1.6mm or more from the lead base (Within 3s)
※3 CW (Continuous Wave) drive

■ Distance between Laser Emission Points and Emission Point Accuracy

Distance between laser emission points Unit : μm

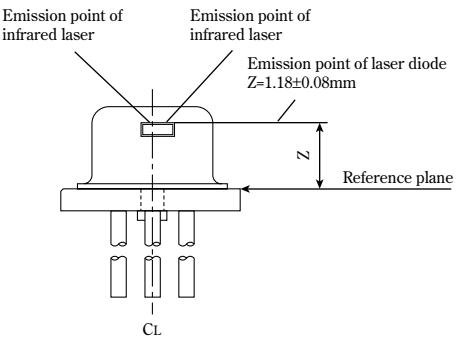
	MIN.	TYP.	MAX.
L	107	110	113



Emission point accuracy Unit : μm

X ※1	0 ±80
Y ※2	0 ±80
Z ※3	1.18 ±80

※1 Emission point position of infrared laser to the stem center(X direction)
※2 Emission point position of infrared laser to the stem center(Y direction)
※3 Emission point position of laser to the reference plane (Z)



■ Electro-optical Characteristics※1

(Tc=25°C)

Parameter		Symbol	Red laser				Infrared laser				Unit
			Conditions	MIN.	TYP.	MAX.	Conditions	MIN.	TYP.	MAX.	
Threshold current		I_{th}	–	-	36	55	-	-	32	55	mA
Operating current		I_{op}		-	46	65		-	42	70	mA
Operating voltage		V_{op}		-	2.2	2.7		-	1.9	2.3	V
Wavelength		λ_p		640	654	660		783	788	793	nm
Half intensity angle	※2※3 Parallel	θ//	Po=5mW	7	8.5	10	Po=5mW	8	11	14	°
	※2※3 Perpendicular	θ⊥		25	29	35		28	32	42	°
Misalignment angle	※3 Parallel	Δθ//		-2	0	+2		-2	0	+2	°
	※3 Perpendicular	Δθ⊥		-2	0	+2		-3	0	+3	°
Differential efficiency		η_d	$\frac{3mW}{I(5mW)-I(2mW)}$	0.3	0.55	0.8	$\frac{5mW}{I(5mW)-I(2mW)}$	0.14	0.45	0.57	mW/mA
Interference pattern intensity		α	Po=5mW	-	-	1	Po=5mW	-	-	1	-

※1 Initial value, CW (Continuous Wave) drive
※2 Angle at 50% peak intensity (full-width at half-maximum)
※3 Parallel to the junction plane (X-Z plane), Perpendicular to the junction plane (Y-Z plane)

■ Electrical Characteristics of Photodiode

(Tc=25°C)

Parameter	Symbol	Red laser				Infrared laser				Unit
		Conditions	MIN.	TYP.	MAX.	Conditions	MIN.	TYP.	MAX.	
Output current	I_m	Po=5mW V_{rd}=5V	0.04	0.18	0.4	Po=5mW V_{rd}=5V	0.04	0.13	0.4	mA
Dark current	I_D	V_{rd}=5V	-	-	150	V_{rd}=5V	-	-	150	nA

• Please refer to the chapter "Handling Precautions"

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
- Personal computers
- Office automation equipment
- Telecommunication equipment [terminal]
- Test and measurement equipment
- Industrial control
- Audio visual equipment
- Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
- Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
- Traffic signals
- Gas leakage sensor breakers
- Alarm equipment
- Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
- Space applications
- Telecommunication equipment [trunk lines]
- Nuclear power control equipment
- Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.