No. LH07309

TECHNICAL LITERATURE
FOR
LASER DIODE

MODEL No. GH04P21A2GE

30 March 2007

◆ This technical literature is subject to change without notice. ◆

SHARP CORPORATION
ELECTRONIC COMPONENTS GROUP

Product name : LASER DIODE

Model No. : GH04P21A2GE

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2. When using this product, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets, as well as the precautions mentioned below. Sharp assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets, and the precautions mentioned below.

   (Precautions)

   (1) This products is designed for use in the following application areas;
   * OA equipment * Audio visual equipment * Home appliance
   * Telecommunication equipment (Terminal) * Measuring equipment
   * Tooling machines * Computers
   If the use of the product in the above application areas is for equipment listed in paragraphs (2) or (3), please be sure to observe the precautions given in those respective paragraphs.

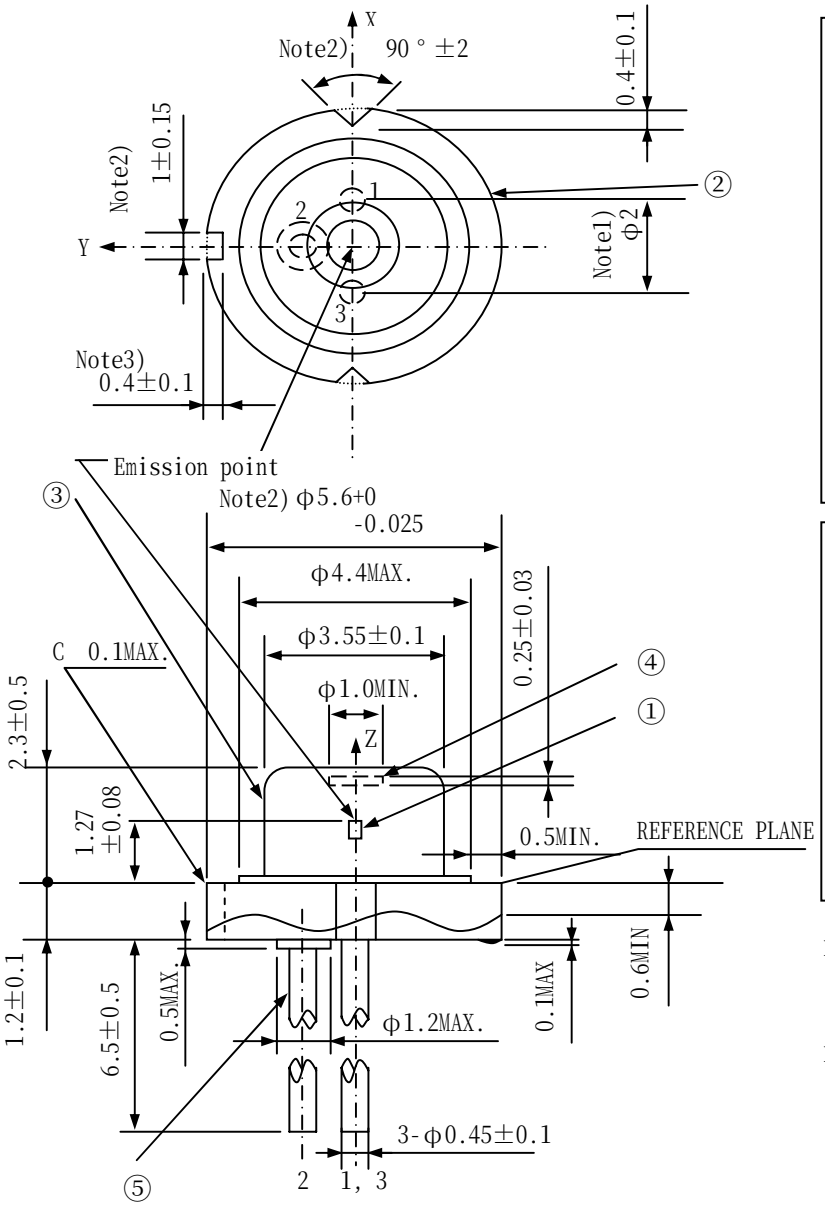
   (2) Appropriate measures, such as fail-safe design and redundant design considering the safety design of the overall system and equipment, should be taken to ensure reliability and safety when this product is used for equipment which demands high reliability and safety in function and precision, such as ;
   * Transportation control and safety equipment (aircraft, train, automobile etc.)
   * Traffic signals * Gas leakage sensor breakers * Rescue and security equipment
   * Other safety equipment

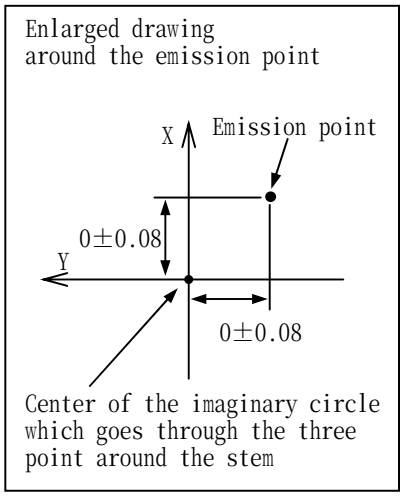
   (3) Please do not use this product for equipment which require extremely high reliability and safety in function and precision, such as ;
   * Space equipment * Telecommunication equipment (for trunk lines)
   * Nuclear power control equipment * Medical equipment

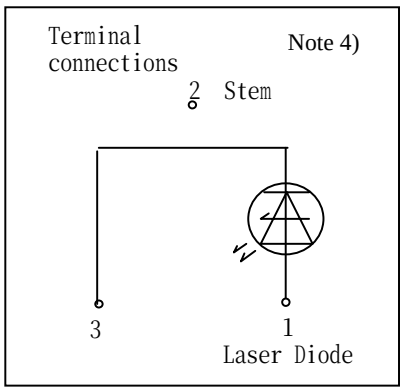
   (4) Please contact and consult with a Sharp sales representative if there are any questions regarding interpretation of the above three paragraphs.

3. Please contact and consult with a Sharp sales representative for any questions about this product.

Outline dimensions and Terminal connections **No. LH07309**







Mass of the product :
0.31g (reference value)

Marking
Position : side of a cap
Printed contents : TBD

Note 1) Dimension of the bottom of leads.
Note 2) These dimensions are valid only in the range of 0 ～ 0.6mm below from the reference plane.
Note 3) These dimensions are defined from the imaginary circle which goes through the three points around the stem to the bottom of cut off parts.
Note 4) Please don't connect the lead pin No.2 to the driving circuit.

GENERAL TOLERANCES ±0.2
UNIT:mm

No.	Component	Material	Finish
①	Laser Diode Chip	InAlGaN	-
②	Stem	Fe,Cu	Gold-plated
③	Cap	Kovar	Nickel-plated
④	Window glass	Borosilicated glass	-
⑤	Lead pins	Kovar	Gold-plated

Ratings and characteristics

Absolute Maximum Ratings (Tc=25°C(Note 1))

Parameter		Symbol	Ratings	unit
Optical power output(CW) (Note 2)		Po	105	mW
Optical power output(Pulse) (Note 3)		Pp	210	mW
Reverse voltage	Laser diode	Vrl	2	V
Operatings temperature	CW (Note 2)	Topc(c)	-10～+70	°C
(case temp.)	Pulse (Note3)	Topp(c)	-10～+70	°C
Storage temperature(case temp.)		Tstg	-40～+85	°C
Soldering temperature (Note 4)		Tsld	300	°C

(Note 1) Tc :Case temperature
(Note 2) CW :Continuous Wave Operation
(Note 3) Pulse :Pulse Operation(Pulse Width 50ns Duty:50%)
(Note 4) Soldering position is 1.6mm apart from bottom edge of the case.(Immersion time: 3s)

Electro-optical Characteristics (Note 1) (Tc=25°C (Note 2))

Parameter		Symbol	Conditions	min	typ	max	unit
Threshold current		Ith	-	-	40	60	mA
Operating current		Iop	Po=105mW	-	110	150	mA
Operating voltage		Vop		-	5.4	6.5	V
Wavelength		λp		400	406	415	nm
Radiation Characte-ristics	Angle (Note 3) (Note 4)	θ ∥		6	9	12	°
		θ ⊥		16	19	22	°
Radiation Characte-ristics	Angle (Note 3) (Note 4)	θ ∥	Po=5mW	5.5	8.5	11.5	°
		θ ⊥		16	19	22	°
Emission point accuracy	Angle (Note 4)	Δ θ ∥		-2.5	0	2.5	°
		Δ θ ⊥		-3	0	3	°
Differential efficiecy		ηd	$\frac{95mW}{I(105mW)-I(10mW)}$	1.1	1.5	-	mW/mA
Kink (Note 5, Note 6)		K-LI	P1=42mW P2=126mW P3=210mW	-10	-	10	%

(Note 1) Initial value, Continuous Wave Operation.
(Note 2) Tc : Case temperature
(Note 3) Angle of 50% peak intensity.(Full angle at half-maximum)
(Note 4) Paralel to the junction plane.(X-Z plane)
Perpendicular to the junction plane.(Y-Z plane)
(Note 5) Pulse :Pulse Operation(Pulse Width 50ns Duty:50%)

(Note 6) Definition of Kink
Kink : K-LI=(P4-P3)/P3