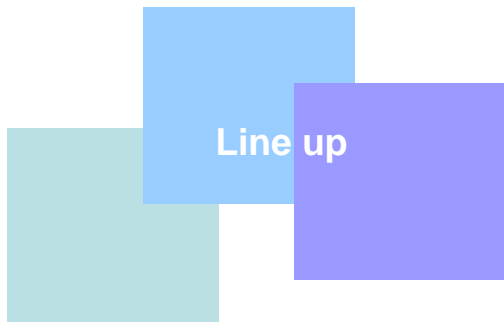


Oct. 2007



Guide for Red & Infrared Laser Diodes



Safety Considerations

Be sure to avoid direct exposure of human eyes to high power laser beams emitted from laser diodes. Even though barely visible and/or invisible to the human eye, they can be quite harmful. In particular, avoid looking directly into a laser diode or collimated beam along its optical axis when the diode is activated. One simple way to determine the optical path is to use a phosphor plate or infrared sensitive camera.

Opnext certifies compliance with US Safety Regulations (21 CFR Subchapter J) on laser products, as stipulated by the U.S. Department of Health and Human Services. The opnext products shown here correspond to the category "CLASS IIIb LASER PRODUCT" in this regulation.

DANGER

VISIBLE AND/OR INVISIBLE LASER RADIATION—
AVOID DIRECT EXPOSURE TO BEAM

PEAK POWER 60 mW
WAVELENGTH 625 to 1600 nm
CLASS IIIb LASER PRODUCT

This product conforms to FDA regulations 21 CFR Chapter I, Subchapter J.

AVOID EXPOSURE—Visible and/or invisible laser radiation is emitted from glass window.

beam direction

Because of the small size of the device, the required labels and these instructions are provided on this label rather than printed on the device.

Hitachi, Ltd.
Semiconductor and I.C. Division
Nippon Bldg., 2-6-2, Ohte-machi,
Crayida-ku, Tokyo 100, JAPAN
Tel: +81-3-3270-2111

USER INSTRUCTIONS:
This laser device in operation produces visible and/or invisible laser radiation. Be sure to avoid direct exposure of human eyes to beams emitted from laser diode. Even though they are barely visible and/or invisible to the human eye, they can be quite harmful. In particular, avoid looking directly into a laser diode or collimated beam along its optical axis when it is in operation. One simple way to determine the optical path is to use a phosphor plate or infrared sensitive camera.

These devices are components to be used in producing complete laser systems. They do not emit radiation unless combined by the end user with other components. Please consult the Hitachi Optodevice Databook for some of the possible uses of these devices.

Cautions

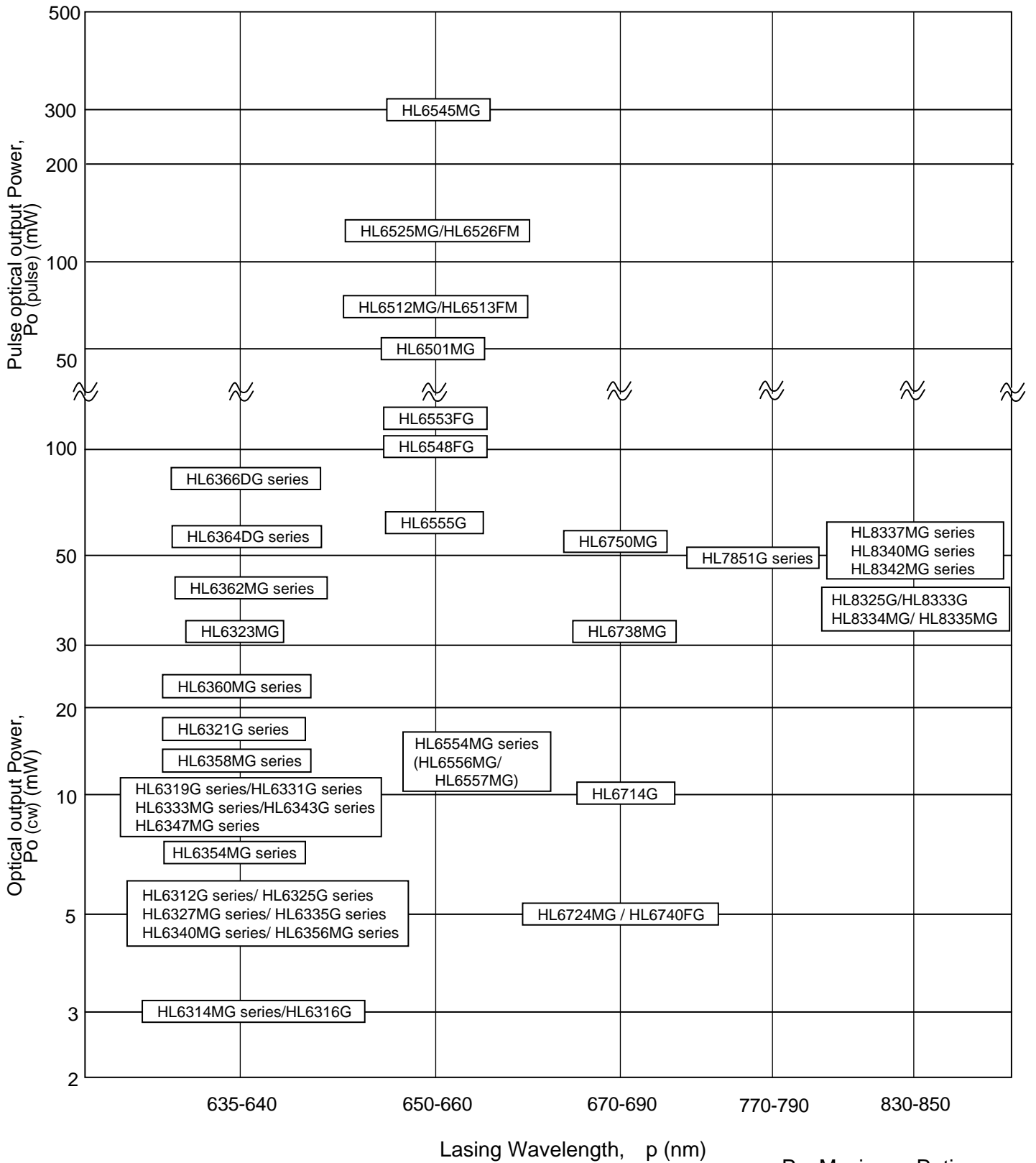
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2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. OPJ makes every attempt to ensure that its products are of high quality and reliability. However, contact our sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by OPJ particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. OPJ bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating OPJ product does not cause bodily injury, fire or other consequential damage due to operation of the OPJ product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from OPJ.
7. Contact our sales office for any questions regarding this document or OPJ products.

1. The laser light is harmful to human body especially to eye no matter what directly or indirectly. The laser beam shall be observed or adjusted through infrared camera or equivalent.
2. This product contains gallium arsenide (GaAs), which may seriously endanger your health even at very low doses. Please avoid treatment which may create GaAs powder or gas, such as disassembly or performing chemical experiments, when you handle the product.
When disposing of the product, please follow the laws of your country and separate it from other waste such as industrial waste and household garbage.
3. Definition of items shown in this CAS is in accordance with that shown in Opto Device Databook issued by OPJ unless otherwise specified.

Contents

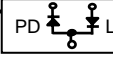
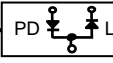
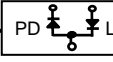
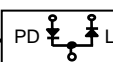

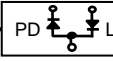
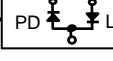
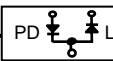
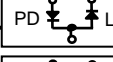
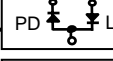
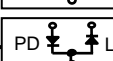
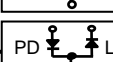

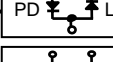
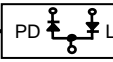
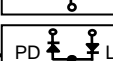
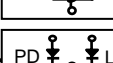

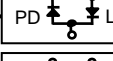
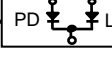


| | | |
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Lasering Wavelength vs. Optical Output Power for Red and Infrared LDs



Po: Maximum Ratings

Section 2 Product Lineup of Red and Infrared LDs

| | Wavelength | Optical power * | Internal circuit | Type No. | Main application | |
|-------------|---|---|---|---|------------------|----------------|
| Visible LDs | 635nm | 3mW |  | HL6324MG | Marker | |
| | | |  | HL6314MG HL6316G | Marker | |
| | | 5mW |  | HL6313G HL6325G HL6327MG HL6336G HL6341MG HL6357MG | Leveler/ Marker | |
| | | |  | HL6312G HL6326G HL6328MG HL6335G HL6340MG HL6356MG | Leveler/Marker | |
| | | 7mW |  | HL6354MG | Leveler/Marker | |
| | | |  | HL6355MG | Leveler/Marker | |
| | | 10mW |  | HL6319G HL6331G HL6333MG HL6343G HL6347MG | Leveler/Marker | |
| | | |  | HL6320G HL6332G HL6334MG HL6344G HL6348MG | Leveler/Marker | |
| | | 639nm | 12mW |  | HL6358MG | Leveler/Marker |
| | | | |  | HL6359MG | Leveler/Marker |
| | | | 15mW |  | HL6321G | Leveler/Marker |
| | | | |  | HL6322G | Leveler/Marker |
| | 25mW | |  | HL6360MG | Leveler/Marker | |
| | | |  | HL6361MG | Leveler/Marker | |
| | 35mW |  | HL6323MG | Leveler/Marker | | |
| | | 640nm | 45mW |  | HL6362MG | Marker/Display |
| |  | | | HL6363MG | Marker/Display | |
| | 642nm | 65mW |  | HL6364DG | Marker/Display | |
| | | |  | HL6365DG | Marker/Display | |
| | | |  | HL6376DG | Marker/Display | |
| 90mW | |  | HL6366DG | Marker/Display | | |
| | |  | HL6367DG | Marker/Display | | |
| | | | HL6378DG | Marker/Display | | |

| Wavelength | Optical power * | Internal circuit | Type No. | Main application |
|------------------|-----------------|------------------------------------|----------|------------------|
| 650 - 660nm | 12mW | PD LD | HL6554MG | Marker, LBP* |
| | | PD LD | HL6556MG | Marker, LBP* |
| | | PD LD | HL6557MG | Marker, LBP* |
| | 70mW | PD LD | HL6555G | Measurement |
| | | LD Flange PD | HL6548FG | Measurement |
| | 100mW | LD Flange PD | HL6553FG | Measurement |
| | 130mW | LD Flange PD | HL6553FG | Measurement |
| | 50mW パルス | PD LD | HL6501MG | Measurement |
| | 70mW パルス | LD | HL6512MG | Measurement |
| | | LD | HL6513FM | Measurement |
| | 140mW パルス | LD | HL6525MG | Optical Disc |
| | | LD | HL6526FM | Optical Disc |
| | 300mW パルス | LD | HL6545MG | Optical Disc |
| | 670 - 690nm | 5mW | PD LD | HL6724MG |
| 5mW x 2 | | LD _B PD LD _A | HL6740FG | LBP, PPC*** |
| 10mW | | PD LD | HL6714G | Measurement |
| 35mW | | PD LD | HL6738MG | Measurement |
| 55mW | | PD LD | HL6750MG | Measurement |
| 785nm | 50mW | PD LD | HL7851G | Measurement |
| | | PD LD | HL7852G | Measurement |
| 830nm | 40mW | PD LD | HL8325G | Measurement |
| | | PD LD | HL8333G | Measurement |
| | | PD LD | HL8334MG | Measurement |
| 830nm | 50mW | PD LD | HL8337G | Measurement |
| | | PD LD | HL8338G | Measurement |
| 850nm | 50mW | PD LD | HL8335MG | Measurement |
| 852nm (±10nm) | 50mW | PD LD | HL8340MG | Measurement |
| | | PD LD | HL8341MG | Measurement |
| 852nm (±4nm) | 50mW | PD LD | HL8342MG | Measurement |
| | | PD LD | HL8343MG | Measurement |

* : Maximum ratings optical output power

** : LBP : Laser Beam Printer

*** : PPC : plain paper copier

Optical and electrical Characteristics of Red and Infrared LDs

(Tc=25)

| Type No. | Mark | Mark Layout | Internal Circuit | Maximum Ratings | | Optical and Electrical Characteristics (Typ) | | | | | | |
|----------|------|-------------|------------------|-----------------|------------|--|----------|----------|---------|------------|------------|----------|
| | | | | Po (mW) | Topr () | Po (mW) | Ith (mA) | Iop (mA) | Is (mA) | λp (nm) | θ// (deg.) | θ (deg.) |
| HL6312G | DF | I | AC | 5 | -10 to 50 | 5 | 45 | 55 | 0.4 | 635 | 8 | 31 |
| HL6313G | DM | I | CC | 5 | -10 to 50 | 5 | 45 | 55 | 0.4 | 635 | 8 | 31 |
| HL6314MG | B | II | AC | 3 | -10 to 50 | 3 | 25 | 30 | 0.15 | 635 | 8 | 30 |
| HL6316G | DP | I | AC | 3 | -10 to 50 | 3 | 25 | 30 | 0.3 | 635 | 8 | 30 |
| HL6319G | DT | I | CC | 10 | -10 to 50 | 10 | 50 | 70 | 0.17 | 635 | 8 | 31 |
| HL6320G | DU | I | AC | 10 | -10 to 50 | 10 | 50 | 70 | 0.17 | 635 | 8 | 31 |
| HL6321G | HV | I | CC | 15 | -10 to 50 | 15 | 55 | 85 | 0.2 | 635 | 8 | 30 |
| HL6322G | HW | I | AC | 15 | -10 to 50 | 15 | 55 | 85 | 0.2 | 635 | 8 | 30 |
| HL6323MG | AU | II | AC | 35 | -10 to 50 | 30 | 45 | 95 | 0.15 | 639 | 8.5 | 30 |
| HL6324MG | M | II | CC | 3 | -10 to 50 | 3 | 25 | 30 | 0.15 | 635 | 8 | 30 |
| HL6325G | DX | I | CC | 5 | -10 to 60 | 5 | 30 | 40 | 0.1 | 635 | 8 | 31 |
| HL6326G | DY | I | AC | 5 | -10 to 60 | 5 | 30 | 40 | 0.1 | 635 | 8 | 31 |
| HL6327MG | AL | II | CC | 5 | -10 to 50 | 5 | 30 | 40 | 0.07 | 635 | 8 | 31 |
| HL6328MG | AM | II | AC | 5 | -10 to 50 | 5 | 30 | 40 | 0.07 | 635 | 8 | 31 |
| HL6331G | DZ | I | CC | 10 | -10 to 60 | 10 | 40 | 55 | 0.15 | 635 | 8 | 31 |
| HL6332G | EA | I | AC | 10 | -10 to 60 | 10 | 40 | 55 | 0.15 | 635 | 8 | 31 |
| HL6333MG | AS | II | CC | 10 | -10 to 50 | 10 | 40 | 55 | 0.08 | 635 | 8 | 31 |
| HL6334MG | AT | II | AC | 10 | -10 to 50 | 10 | 40 | 55 | 0.08 | 635 | 8 | 31 |
| HL6335G | EC | I | AC | 5 | -10 to 50 | 5 | 20 | 25 | 0.07 | 635 | 17 | 20 |
| HL6336G | ED | I | CC | 5 | -10 to 50 | 5 | 20 | 25 | 0.07 | 635 | 17 | 20 |
| HL6340MG | EF | II | AC | 5 | -10 to 50 | 5 | 20 | 25 | 0.03 | 635 | 17 | 20 |
| HL6341MG | EG | II | CC | 5 | -10 to 50 | 5 | 20 | 25 | 0.03 | 635 | 17 | 20 |
| HL6343G | EM | I | CC | 10 | -10 to 50 | 10 | 20 | 35 | 0.14 | 635 | 17 | 20 |
| HL6344G | EN | I | AC | 10 | -10 to 50 | 10 | 20 | 35 | 0.14 | 635 | 17 | 20 |
| HL6347MG | EP | II | CC | 10 | -10 to 50 | 10 | 20 | 35 | 0.06 | 635 | 17 | 20 |
| HL6348MG | EQ | II | AC | 10 | -10 to 50 | 10 | 20 | 35 | 0.06 | 635 | 17 | 20 |
| HL6354MG | EU | III | AC | 7 | -10 to 50 | 5 | 20 | 27 | 0.4 | 635 | 8 | 25 |
| HL6355MG | EW | III | CC | 7 | -10 to 50 | 5 | 20 | 27 | 0.4 | 635 | 8 | 25 |
| HL6356MG | EX | III | AC | 5 | -10 to 50 | 3 | 20 | 25 | 0.25 | 635 | 8 | 25 |
| HL6357MG | EY | III | CC | 5 | -10 to 50 | 3 | 20 | 25 | 0.25 | 635 | 8 | 25 |
| HL6358MG | HB | III | AC | 12 | -10 to 50 | 10 | 30 | 40 | 1.0 | 639 | 8 | 21 |
| HL6359MG | HC | III | CC | 12 | -10 to 50 | 10 | 30 | 40 | 1.0 | 639 | 8 | 21 |
| HL6360MG | HD | III | AC | 25 | -10 to 50 | 20 | 45 | 65 | 0.2 | 639 | 9 | 21 |
| HL6361MG | HE | III | CC | 25 | -10 to 50 | 20 | 45 | 65 | 0.2 | 639 | 9 | 21 |
| HL6362MG | EZ | III | AC | 45 | -10 to 50 | 40 | 45 | 90 | 0.3 | 640 | 10 | 21 |
| HL6363MG | HA | III | CC | 45 | -10 to 50 | 40 | 45 | 90 | 0.3 | 640 | 10 | 21 |
| HL6364DG | HF | III | AC | 65 | -10 to 50 | 60 | 65 | 125 | 0.4 | 642 | 10 | 21 |
| HL6365DG | HG | III | CC | 65 | -10 to 50 | 60 | 65 | 125 | 0.4 | 642 | 10 | 21 |
| HL6376DG | HM | III | BC | 65 | -10 to 50 | 60 | 65 | 125 | 0.4 | 642 | 10 | 21 |
| HL6366DG | HJ | III | AC | 90 | -10 to 50 | 80 | 80 | 155 | 0.3 | 642 | 10 | 21 |
| HL6367DG | HK | III | CC | 90 | -10 to 50 | 80 | 80 | 155 | 0.3 | 642 | 10 | 21 |
| HL6378DG | HN | III | BC | 90 | -10 to 50 | 80 | 80 | 155 | 0.3 | 642 | 10 | 21 |
| HL6501MG | W | II | CC | 50* | -10 to 60 | 30 | 45 | 85 | 0.2 | 658 | 8.5 | 22 |
| HL6512MG | AZ | II | LN | 70* | -10 to 70* | 50 | 45 | 115 | - | 658 | 8.5 | 21 |
| HL6513FM | BG | II | FN | 70* | -10 to 70* | 50 | 45 | 115 | - | 658 | 8.5 | 21 |
| HL6525MG | BM | II | LN | 140* | -10 to 75* | 70 | 40 | 100 | - | 658 | 10 | 17 |
| HL6526FM | BN | II | FN | 140* | -10 to 75* | 70 | 40 | 100 | - | 658 | 10 | 17 |
| HL6545MG | CE | III | LN | 300* | -10 to 75* | 120 | 60 | 175 | - | 660 | 10 | 17 |
| HL6548FG | CL | III | FC | 100 | -10 to 60 | 90 | 55 | 140 | 0.6 | 660 | 10 | 17 |
| HL6553FG | CM | III | FC | 130 | -10 to 60 | 120 | 55 | 175 | 0.8 | 660 | 10 | 17 |
| HL6554MG | CD | III | AC | 12 | -10 to 70 | 10 | 45 | 60 | 0.07 | 658 | 8.5 | 22 |
| HL6556MG | EX | III | BC | 12 | -10 to 70 | 10 | 45 | 60 | 0.07 | 658 | 8.5 | 22 |
| HL6557MG | EY | III | CC | 12 | -10 to 70 | 10 | 45 | 60 | 0.07 | 658 | 8.5 | 22 |
| HL6555G | CN | III | AC | 70 | -10 to 60 | 60 | 60 | 120 | 0.4 | 664 | 10 | 17 |
| HL6714G | DD | I | AC | 10 | -10 to 50 | 10 | 35 | 50 | 0.8 | 670 | 8 | 22 |
| HL6724MG | A | II | AC | 5 | -10 to 50 | 5 | 25 | 35 | 0.9 | 670 | 8 | 30 |
| HL6738MG | Q | II | CC | 35 | -10 to 70 | 30 | 45 | 90 | 0.1 | 690 | 8.5 | 19 |
| HL6740FG | Z | I | CC** | 5 | -10 to 50 | 5 | 35 | - | - | 675 | 8 | 30 |
| HL6750MG | CK | III | CC | 55 | -10 to 70 | 50 | 30 | 75 | 0.15 | 685 | 9 | 21 |
| HL7851G | BD | I | AC | 50 | -10 to 60 | 50 | 45 | 135 | 0.045 | 785 | 9.5 | 23 |
| HL7852G | BE | I | CC | 50 | -10 to 60 | 50 | 45 | 135 | 0.045 | 785 | 9.5 | 23 |
| HL8325G | GE | I | CC | 40 | -10 to 60 | 40 | 40 | 120 | 0.04 | 830 | 10 | 22 |
| HL8333G | FN | I | AC | 40 | -10 to 60 | 40 | 40 | 120 | 0.1 | 830 | 10 | 22 |
| HL8334MG | FP | III | AC | 40 | -10 to 60 | 40 | 40 | 120 | 0.2 | 830 | 10 | 22 |
| HL8335MG | FQ | III | AC | 40 | -10 to 60 | 40 | 40 | 120 | 0.2 | 850 | 10 | 22 |
| HL8337MG | FR | III | AC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 830 | 9 | 22 |
| HL8338MG | FS | III | CC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 830 | 9 | 22 |
| HL8340MG | FT | III | AC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 852(+/-10) | 9 | 22 |
| HL8341MG | FU | III | CC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 852(+/-10) | 9 | 22 |
| HL8342MG | FV | III | AC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 852(+/-4) | 9 | 22 |
| HL8343MG | FW | III | CC | 50 | -10 to 60 | 50 | 20 | 75 | 0.25 | 852(+/-4) | 9 | 22 |

*: pulse optical power and pulse operation

** : exceptional cathode common

: new product

Note:

| | |
|---|----------------------------------|
| AC-connection: LD: anode common | PD: cathode common |
| BC-connection: LD: cathode common | PD: cathode common |
| CC-connection: LD: cathode common | PD: anode common |
| FC-connection: LD electrode is isolated from stem(common) | PD: cathode is frange connection |
| FN-connection: LD electrode is isolated from stem(common) | PD: none |
| LN-connection: LD: cathode common | PD: none |



According to Optical Power for your Application

| Maximum Ratings | | Φ9mm Package (G/FG-type) | | | Φ5.6mm Package (MG/DG/FM-type) | | | | |
|-----------------|-------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Optical Power | Wavelength | AC- | CC- | FC- | AC- | BC- | CC- | FN- | LN- |
| Po(mW) | λp (nm) | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} | connection ^{Note)} |
| 3 | 635 | HL6316G | | | HL6314MG | | HL6324MG | | |
| 5 | 635 | HL6312G | HL6313G | | | | | | |
| | | HL6326G | HL6325G | | HL6328MG | | HL6327MG | | |
| | | HL6335G | HL6336G | | HL6340MG | | HL6341MG | | |
| 5 | 670 | | | | HL6356MG | | HL6357MG | | |
| | 675 | | HL6740FG** | | HL6724MG | | | | |
| 7 | 635 | | | | HL6354MG | | HL6355MG | | |
| 10 | 635 | HL6320G | HL6319G | | HL6334MG | | HL6333MG | | |
| | | HL6332G | HL6331G | | HL6348MG | | HL6347MG | | |
| | | HL6344G | HL6343G | | | | | | |
| | 670 | HL6714G | | | | | | | |
| 12 | 639 | | | | HL6358MG | | HL6359MG | | |
| | 658 | | | | HL6554MG | HL6556MG | HL6557MG | | |
| 15 | 635 | HL6322G | HL6321G | | | | | | |
| 25 | 639 | | | | HL6360MG | | HL6361MG | | |
| 35 | 639 | | | | HL6323MG | | | | |
| | 690 | | | | | | HL6738MG | | |
| 40 | 830 | HL8333G | HL8325G | | HL8334MG | | | | |
| | 850 | | | | HL8335MG | | | | |
| 45 | 640 | | | | HL6362MG | | HL6363MG | | |
| 50 | 785 | HL7851G | HL7852G | | | | | | |
| | 830 | | | | HL8337MG | | HL8338MG | | |
| | 852 (+/-10) | | | | HL8340MG | | HL8341MG | | |
| | 852 (+/-4) | | | | HL8342MG | | HL8343MG | | |
| 50* | 658 | | | | | HL6501MG | | | |
| 55 | 685 | | | | | HL6750MG | | | |
| 65 | 642 | | | | HL6364DG | HL6376DG | HL6365DG | | |
| 70 | 664 | HL6555G | | | | | | | |
| 70* | 658 | | | | | | | | HL6512MG |
| | | | | | | | | HL6513FM | |
| 90 | 642 | | | | HL6366DG | HL6378DG | HL6367DG | | |
| 100 | 660 | | | HL6548FG | | | | | |
| 130 | 660 | | | HL6553FG | | | | | |
| 140* | 658 | | | | | | | | HL6525MG |
| | | | | | | | | HL6526FM | |
| 300* | 660 | | | | | | | | HL6545MG |

*: pulse optical power and pulse operation

**: exceptional cathode common

Note:

| | |
|---|----------------------------------|
| AC-connection: LD: anode common | PD: cathode common |
| BC-connection: LD: cathode common | PD: cathode common |
| CC-connection: LD: cathode common | PD: anode common |
| FC-connection: LD electrode is isolated from stem(common) | PD: cathode is fringe connection |
| FN-connection: LD electrode is isolated from stem(common) | PD: none |
| LN-connection: LD: cathode common | PD: none |

According to Wavelength for your Application

| Maximum Ratings | | Φ9mm Package (G/FG-type) | | | Φ5.6mm Package (MG/DG/FM-type) | | | | |
|-----------------------|-------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Wavelength λp (nm) | Optical Power Po(mW) | AC- connection ^{Note)} | CC- connection ^{Note)} | FC- connection ^{Note)} | AC- connection ^{Note)} | BC- connection ^{Note)} | CC- connection ^{Note)} | FN- connection ^{Note)} | LN- connection ^{Note)} |
| 635 | 3 | HL6316G | | | HL6314MG | | HL6324MG | | |
| | 5 | HL6312G | HL6313G | | | | | | |
| | | HL6326G | HL6325G | | HL6328MG | | HL6327MG | | |
| | | HL6335G | HL6336G | | HL6340MG | | HL6341MG | | |
| | 7 | | | | HL6356MG | | HL6357MG | | |
| | | | | | HL6354MG | | HL6355MG | | |
| | 10 | HL6320G | HL6319G | | HL6334MG | | HL6333MG | | |
| | | HL6332G | HL6331G | | HL6348MG | | HL6347MG | | |
| | | HL6344G | HL6343G | | | | | | |
| | 15 | HL6322G | HL6321G | | | | | | |
| 639 | 12 | | | | HL6358MG | | HL6359MG | | |
| | 25 | | | | HL6360MG | | HL6361MG | | |
| | 35 | | | | HL6323MG | | | | |
| 640 | 45 | | | HL6362MG | | HL6363MG | | | |
| 642 | 65 | | | | HL6364DG | HL6376DG | HL6365DG | | |
| | 90 | | | | HL6366DG | HL6378DG | HL6367DG | | |
| 658 | 12 | | | | HL6554MG | HL6556MG | HL6557MG | | |
| | 50* | | | | | | HL6501MG | | |
| | 70* | | | | | | | | HL6512MG |
| | 140* | | | | | | | HL6513FM | |
| | | | | | | | HL6526FM | | |
| 660 | 100 | | | HL6548FG | | | | | |
| | 130 | | | HL6553FG | | | | | |
| | 300* | | | | | | | | HL6545MG |
| 664 | 70 | HL6555G | | | | | | | |
| 670 | 5 | | | | HL6724MG | | | | |
| | 10 | HL6714G | | | | | | | |
| 675 | 5 | | HL6740FG** | | | | | | |
| 685 | 55 | | | | | | HL6750MG | | |
| 690 | 35 | | | | | | HL6738MG | | |
| 785 | 50 | HL7851G | HL7852G | | | | | | |
| 830 | 40 | HL8333G | HL8325G | | HL8334MG | | | | |
| | 50 | | | | HL8337MG | | HL8338MG | | |
| 850 | 50 | | | | HL8335MG | | | | |
| 852(+/-10) | 50 | | | | HL8340MG | | HL8341MG | | |
| 852(+/-4) | 50 | | | | HL8342MG | | HL8343MG | | |

*: pulse optical power and pulse operation

**: exceptional cathode common

Note:

| | |
|---|----------------------------------|
| AC-connection: LD: anode common | PD: cathode common |
| BC-connection: LD: cathode common | PD: cathode common |
| CC-connection: LD: cathode common | PD: anode common |
| FC-connection: LD electrode is isolated from stem(common) | PD: cathode is frange connection |
| FN-connection: LD electrode is isolated from stem(common) | PD: none |
| LN-connection: LD: cathode common | PD: none |

Select for your Application

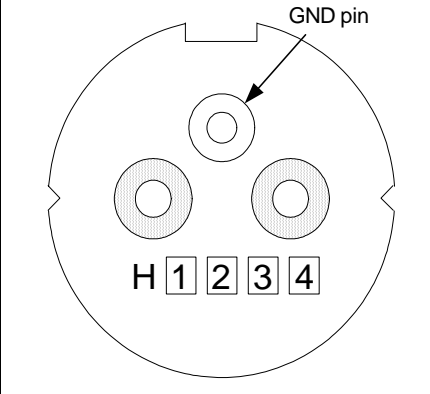
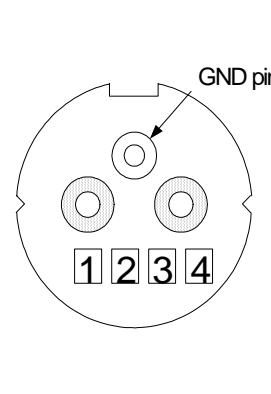
| Main Application | | | | | | | | | | Maximum Rating Optical Power Po (mW) | Wavelength P(nm) | Φ9mm Package (G/FG-type) | Φ5.6mm Package (MG/DG/FM-type) |
|------------------|--------|---------|----------------|-----------------------------|--------------------|---------|----------------|-----------------|----------------|--|---------------------|-----------------------------|-----------------------------------|
| Experiments etc. | Marker | Leveler | Distance meter | Measurement (Bio, Analysis) | Scanner (PPC, LBP) | Display | Optical strage | Infrared sensor | | | | | |
| | | | | | | | | | | 3 | | HL6316G | HL6314MG series |
| | | | | | | | | | | 5 | 635 | HL6312G series | |
| | | | | | | | | | HL6325G series | | | HL6327MG series | |
| | | | | | | | | | HL6335G series | | | HL6340MG series | |
| | | | | | | | | | | | | HL6356MG series | |
| | | | | | | | | | | | 670 | | HL6724MG |
| | | | | | | | | | | | 675 | HL6740FG** | |
| | | | | | | | | | | 7 | | | HL6354MG series |
| | | | | | | | | | | 10 | 635 | HL6319G series | |
| | | | | | | | | | HL6331G series | | | HL6333MG series | |
| | | | | | | | | | HL6343G series | | | HL6347MG series | |
| | | | | | | | | | | | 670 | HL6714G | |
| | | | | | | | | | | 12 | 639 | | HL6358MG series |
| | | | | | | | | | | | 658 | | HL6554MG series |
| | | | | | | | | | | 15 | 635 | HL6321G series | |
| | | | | | | | | | | 25 | | | HL6360MG series |
| | | | | | | | | | | 35 | 639 | | HL6323MG |
| | | | | | | | | | 690 | | | HL6738MG | |
| | | | | | | | | | | 40 | 830 | HL8325G | HL8334MG |
| | | | | | | | | | 850 | | | | HL8335MG |
| | | | | | | | | | | 45 | 640 | | HL6362MG series |
| | | | | | | | | | | 50 | 785 | HL7851G series | |
| | | | | | | | | | 830 | | | | HL8337MG series |
| | | | | | | | | | 852(+/-10) | | | | HL8340MG series |
| | | | | | | | | | 852(+/-4) | | | | HL8342MG series |
| | | | | | | | | | | 50* | 658 | | HL6501MG |
| | | | | | | | | | | 55 | 685 | | HL6750MG |
| | | | | | | | | | | 65 | 642 | | HL6364DG series |
| | | | | | | | | | | 70 | 664 | HL6555G | |
| | | | | | | | | | | 70* | 658 | | HL6512MG |
| | | | | | | | | | | | | | |
| | | | | | | | | | | 90 | 642 | | HL6366DG series |
| | | | | | | | | | | 100 | 660 | HL6548FG | |
| | | | | | | | | | | 130 | 660 | HL6553FG | |
| | | | | | | | | | | 140* | 658 | | HL6525MG |
| | | | | | | | | | | | | | |
| | | | | | | | | | | 300* | 660 | | HL6545MG |

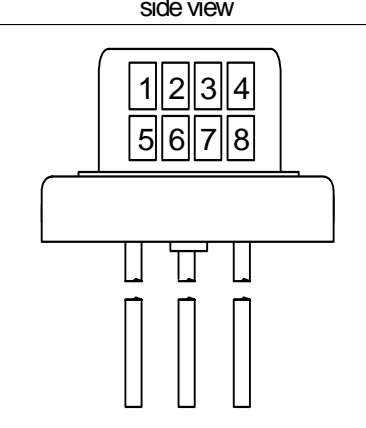
*: pulse optical power and pulse operation

** : exceptional cathode common

Section 7 Mark Layout and Internal Circuit

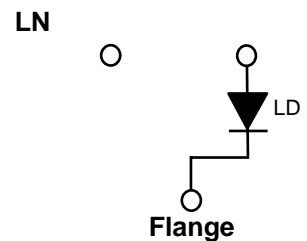
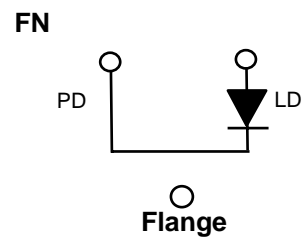
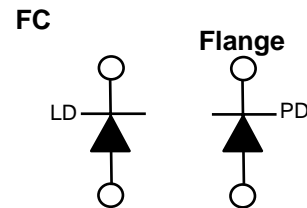
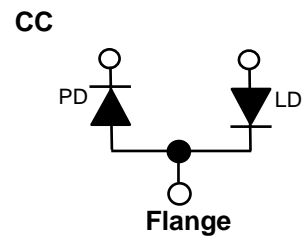
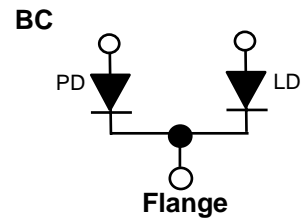
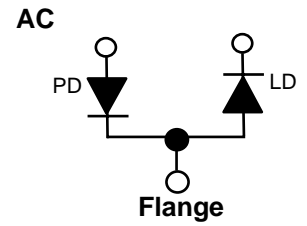
Mark Layout

| | | |
|----------------------|---|--|
| Layout | I | II |
| Outline | G | MG / FM |
| Mark Method | Stamp Mark | |
| Mark Layout | bottom view | |
| |  |  |
| The first character | Mark No. | ← |
| The second character | | ← |
| The third character | | ← |
| The fourth character | | ← |

| | | |
|---------------------------|---|----------------------------|
| Layout | III | |
| Outline | G / DG / FG / MG / FM / SU | |
| Mark Method | Laser Mark | |
| Mark Layout | side view | |
| |  | |
| The first character | Mark No. | |
| The second character | | |
| The third character | | Year code : last character |
| The fourth character | | Monthly code : below table |
| The five-eight characters | | Management code of Opnext |

| | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|
| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Code | A | B | C | D | E | F | G | H | J | K | L | M |

Internal Circuit



Note : Each specification of LDs is on Section 3 "Optical and Electrical Characteristics of Visible LDs" .

Section 8 Package Outlines



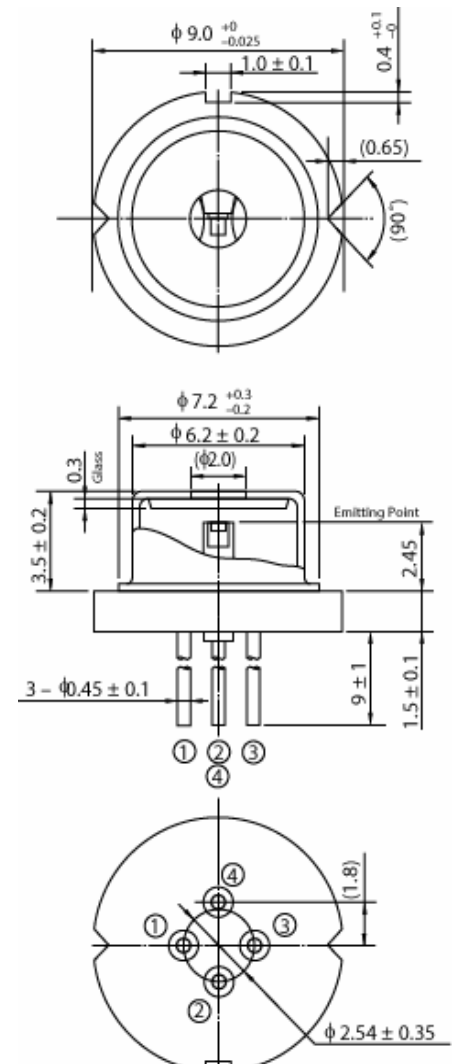
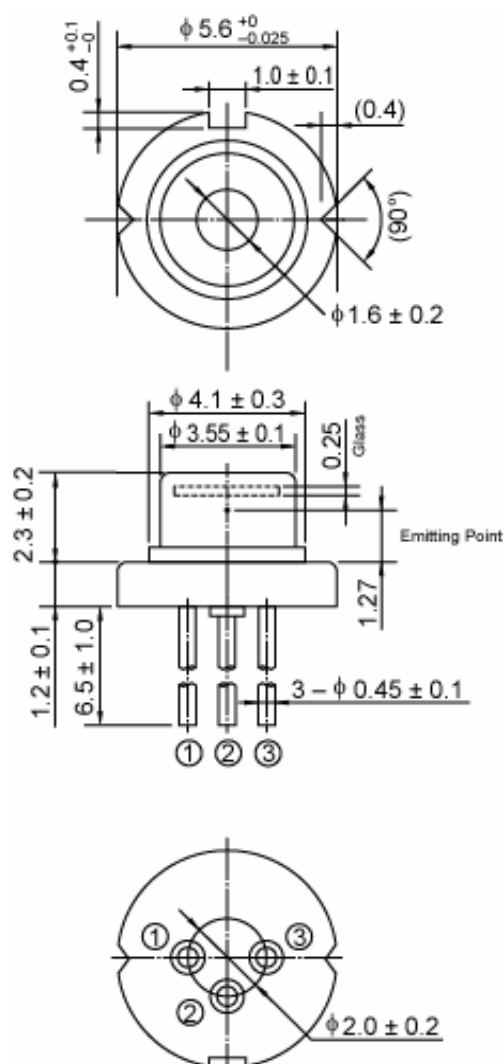
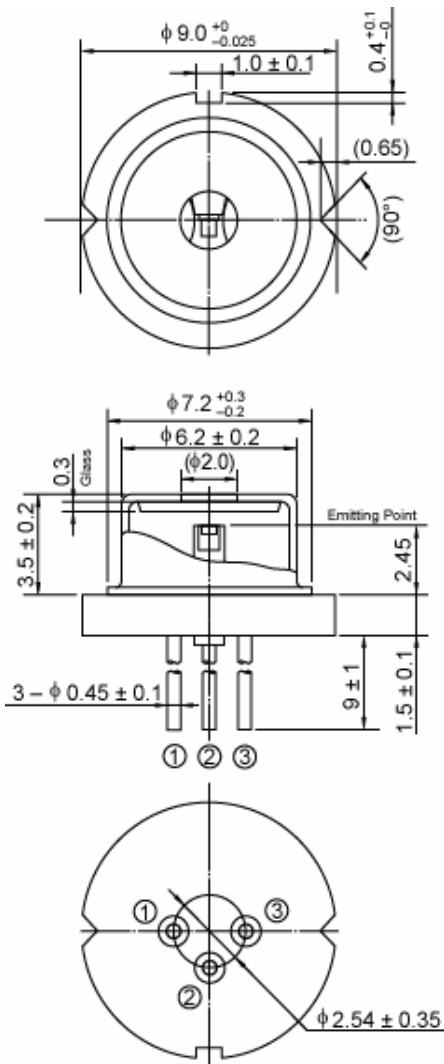
G-outline



MG/F M-outline



FG-outline

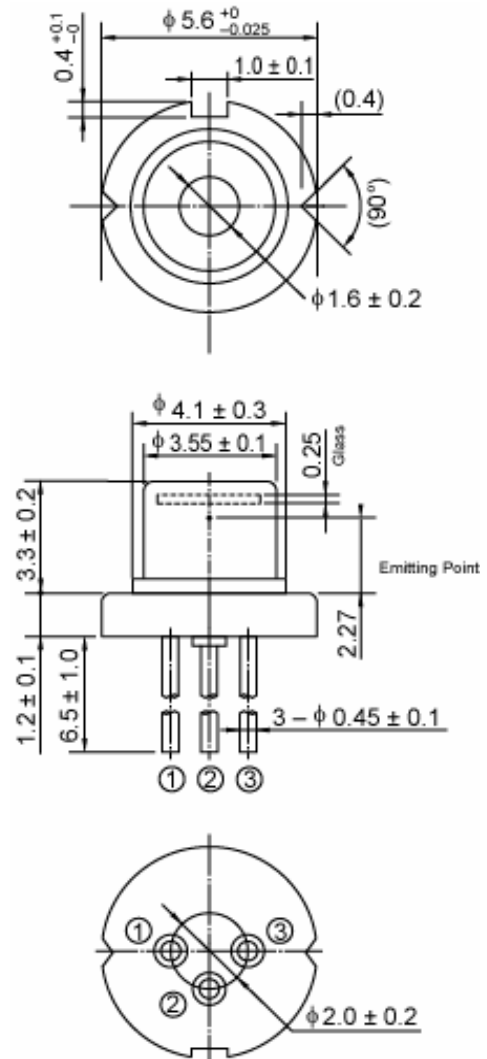
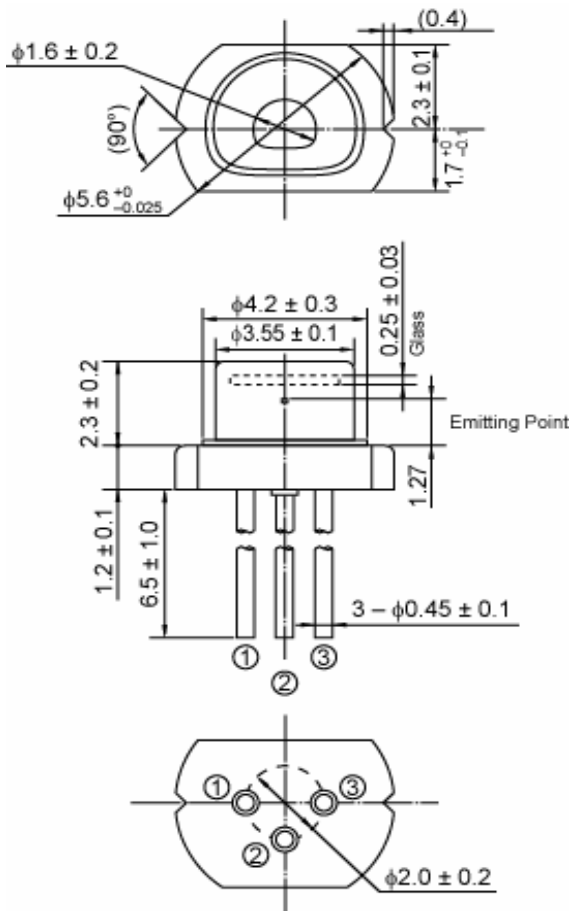


Note : Beam point (Emitting point) is measured by mechanical dimension from datum plane.



SU-outline

DG-outline



Note: Beam point (Emitting point) is measured by mechanical dimension from datum plane.

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