Operation notes
Laser diodes

● Absolute maximum ratings
If an excessively large current flows in a laser diode, a large optical output will occur and the emitting facet may sustain damage. This optical damage can occur even with momentary over-current. For this reason, absolute maximum ratings which must not be exceeded even momentarily have been established. Exercise particular caution with respect to the drive voltage supply and static electricity. We guarantee use within the absolute maximum ratings. These ratings are established for a case temperature of 25°C. As the temperature of a laser diode increases, its maximum output will decrease and the operating range will shrink. Even when operated within the absolute maximum ratings, operation high temperature will result in a shorter than operation at low temperature. For this reason, the design should include sufficient margin for heat radiation and light output.

● Heat radiation conditions
Like other semiconductors, prolonged operation of a laser diode will cause heat to build up at junctions and increased case temperature. For this reason, attach aluminum (or other) heat sinks (at least 30×30×3mm) to the stem of the laser.

● Protection against damage due to electrostatic discharge and other current surges
Electrostatic discharge and other current surges can cause deterioration and damage in laser diodes, resulting in reduced reliability (Fig.25). We advise taking the following protective measures:
1) Ground the device and circuits. Install surge filters, surge reduction transformers, or other electrostatic discharge protectors in the power supply inputs.
2) When working with laser diodes wear anti-static clothing, including footwear and caps. Fig.26 shows how footwear and flooring mutually affect static buildup, thus materials should be selected carefully. Grounded wrist straps should always be worn while working with laser diodes, and the strap should be grounded through a 1MΩ resistance.
3) Use anti-static containers for transport and storage.
4) Laser deterioration and damage can occur due to excessive current spikes when the power is turned on or off. Design circuits to avoid the generation of excessive current spikes.
5) Inductive surges near equipment that emits high-frequency EMI can damage or destroy lasers. Avoid using lasers near fluorescent lamps or other sources of EMI emissions.

● Soldering
Use a grounded soldering iron to solder laser leads. Solder at a temperature of no more than 350°C for a maximum of 3 seconds, at a point at least 2mm from the base of the leads.

● In the use of the glue
There is the possibility that the volatilization component of the glue exerts the influence on the characteristic of LD. Please use it after it confirms sufficiently.

● Handling laser diodes
Never touch the glass parts of the laser, the laser diode chip or wire.

● Handling packages
Packages must not be dropped or subjected to excessive pressure.

● Handling packages
It is extremely dangerous to look, either directly or through a lens, at the laser beam emitted from a laser diodes. Use a TV camera or other similar device to adjust the optical axis.
Data sheet

Operation notes

Description of testing:
200V was applied to groups of the following test circuits to increase up to (80°C and 5 mW).

Test circuits:
Model ES50-503, manufactured by Noise Laboratory.

Fig. 25 Effect of electrostatic discharge on laser life (test)

Fig. 26 Electrostatic buildup on human body
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