

### FEATURES

- Peak Output Power :  $\geq 10$  W
- Peak Emission Wavelength : 870 nm
- Emission Area Size :  $100 \mu\text{m} \times 1 \mu\text{m}$

### APPLICATIONS

- Laser Range Finder (Entertainment, Measuring Instrument)
- Security (Traffic, Anti-collision)
- Surveillance (Robot, Alignment)



### OUTLINES

Pulsed Laser Diode L6690-53 is a high efficiency multimode laser of peak power more than 10 W from  $100 \mu\text{m} \times 1 \mu\text{m}$  emitting area. It can be applied for various applications such as Laser Range Finders, Security, Surveillance etc.

### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Pulsed Forward Current	$I_{fp}$	15	A
Reverse Voltage	$V_r$	2	V
Pulse Duration (FWHM)	$t_w$	100	ns
Duty Ratio	DR	0.075	%
Operating Temperature	$T_{op(c)}$	-40 to +85	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-40 to +100	$^{\circ}\text{C}$

### ELECTRICAL AND OPTICAL CHARACTERISTICS ( $T_{op(c)}=25^{\circ}\text{C}$ )

Parameter	Symbol	Condition	Value			Unit
			Min.	Typ.	Max.	
Pulsed Radiant Power (Peak Power)	$\Phi_{ep}$	$I_{fp} = 10$ A	9	11	-	W
Forward Voltage	$V_f$		-	4	-	V
Peak Emission Wavelength	$\lambda_p$		860	870	880	nm
Spectral Radiation Half Bandwidth	$\Delta\lambda$		-	4	-	nm
Rise Time	$t_r$	$I_{fp} = 10$ A FWHM	-	-	2	ns
Beam Spread Angle : Parallel	$\theta_{//}$		7	10	13	degree
: Vertical	$\theta_{\perp}$		25	30	35	degree
Lasing Threshold Current	$I_{th}$	-	-	0.5	-	A
Emission Area	-	Value at designing	-	$100 \times 1$	-	$\mu\text{m}$

Note: General operating condition: Pulse Width  $t_w = 50$  ns, Repetition frequency  $f_r = 1$  kHz

# PULSED LASER DIODE L6690-53

Figure 1: Radiant Power vs. Pulsed Forward Current (Typ.)

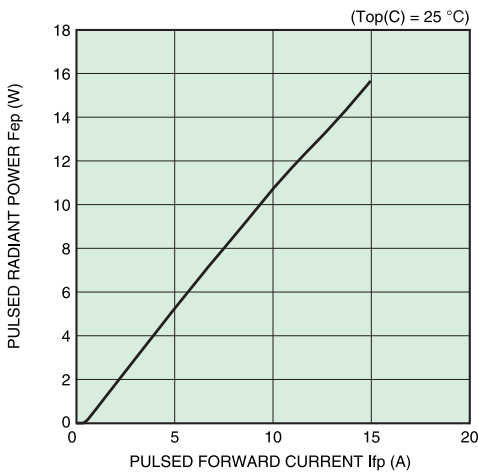


Figure 2: Emission Spectrum (Typ.)

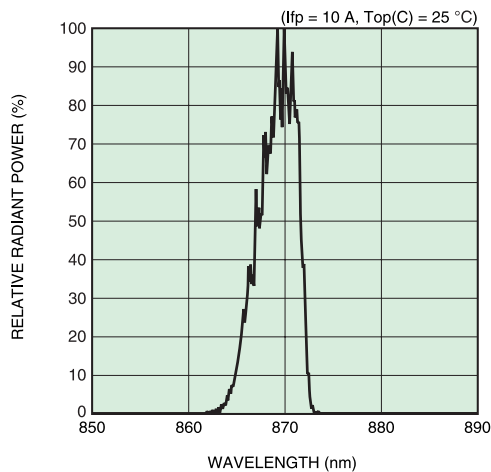


Figure 3: Directivity (Typ.)

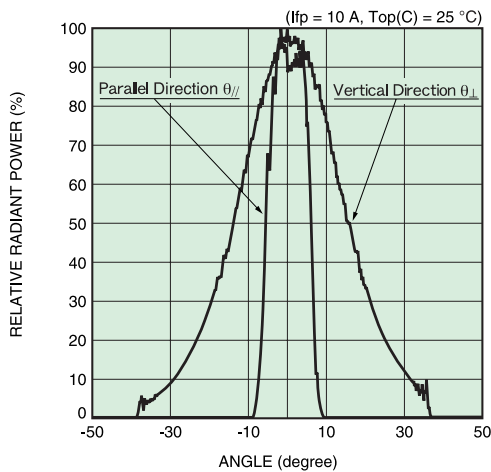
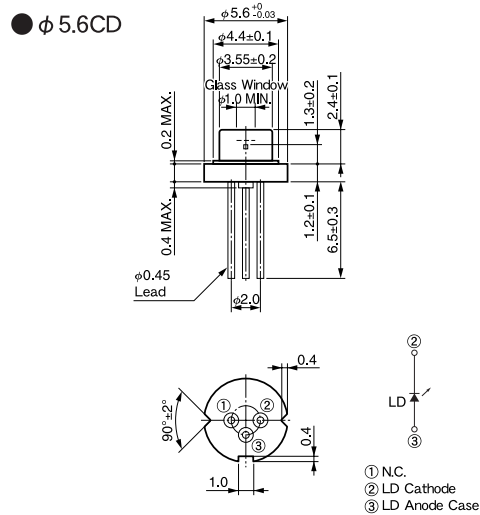


Figure 4: Dimensional Outline (unit: mm)



## Handling Precautions for L6690-53

### 1. Precautions for handling

The LD (laser diode) may be damaged or its performance may deteriorate due to such factors as electrostatic discharge from the human body, surge voltages from measurement equipment, leakage voltages from soldering irons, and packing materials. As a countermeasure against static electricity, the device, operator, work place and measuring jigs must all be set at the same electric potential. In using LD, observe the following precautions:

- To protect the device from static electricity charges which accumulate on the operator or the operator's clothes, use a wrist strap etc. to ground the operator's body via a high impedance resistor (1 M $\Omega$ ).
- A semiconductive sheet should be laid on both the work table and the floor in the work area. When soldering, use an electrically grounded soldering iron with an isolation resistance of more than 10 M $\Omega$ .
- For containers for transportation and packing, use of antistatic material (material that minimizes the generation of static charge when rubbed against or separated from itself or other similar materials).

### 2. Precautions for mounting

#### (1)Lead forming

To form the leads, hold the base of the leads securely and bend them so that no force is applied to the package. Lead forming should be done before soldering.

#### (2)Cutting off the leads

If leads are out when still at a high temperature, this may cause an electrical discontinuity. Always cut off the leads when they are at room temperature. Never cut off the leads immediately after they are soldered.

### (3)Soldering

Using a low-temperature melting solder (below 200 °C), solder the leads at the temperature and dwell time specified as follows.

Maximum Soldering Temperature: 230 °C

Maximum Soldering Time: 5 seconds (1 second for devices having a lead length less than 2 mm)

If these conditions cannot be met, it is recommended that some form of heat sink be used at the base of the lead so that the solder heat is not conducted to the package. Also be careful not to apply excessive force to the leads during soldering.

Soldering at excessive temperatures and dwell times may cause the roots of the leads to crack, resulting in performance deterioration. This sometimes leads to wiring breakage. If the leads are soldered while external force is applied to the device, the residual force tends to degrade device performance. Care should also be taken not to apply force to the leads during soldering.

In addition, when soldering an LD, use a soldering iron with its metallic parts grounded to prevent damage to the device from static discharge.

Do not use any flux which is highly acidic, alkaline or inorganic because it may cause the component leads to erode.

Use a rosin flux.

### 3.Protection against laser beams

The LD is classified into class 3B according to the laser product standards of the IEC825-1 (Radiation safety of laser products Part1: Equipment classification, requirements and user's guide). The operator must avoid eye or skin exposure to the laser beam. When viewing the laser beam, be sure to wear safety goggles that block infrared radiation.

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