

GL4800E0000F

Infrared Emitting Diode



■ Features

1. Side view emission type
2. Plastic mold with resin lens
3. Medium directivity angle ($\Delta\theta$: $\pm 30^\circ$ TYP.)
Peak emission wavelength: 950 nm TYP.
4. Radiant flux ϕ_e : 0.7 mW MIN.
5. Lead free and RoHS directive component

■ Agency Approvals/Compliance

1. Compliant with RoHS directive (2002/95/EC)
2. Content information about the six substances specified in "Management Methods for Control of Pollution Caused by Electronic Information Products Regulation" (popular name: China RoHS) (Chinese: 电子信息产品污染控制管理办法); refer to page 7

■ Applications

1. Optoelectronic switching
2. Office automation equipment
3. Audio visual equipment
4. Home appliances
5. Telecommunication equipment
6. Measuring equipment
7. Tooling machines
8. Computers

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The technical drawing illustrates the 0603 package with various views and dimensions:

- Top View:** Shows a rectangular body with a width of 3.0 mm and a length of 1.6 mm. It features two circular pins with a diameter of $\phi 0.8$ mm, spaced 2 - C0.5 apart. A fillet radius of R.45 is indicated at the corners.
- Front View:** Displays the profile of the package with a total height of 3.5 mm. The top flange has a thickness of 1.0 mm and a central opening of 1.7 mm. The lead length is specified as 17.5 ± 0.5 mm. Resin burs are noted as 0.3 MAX. at the top and 0.2 MAX. along the leads. A minimum gate burr of 0.5 MIN. is shown at the base of the leads.
- Side View:** Shows the side profile with a lead thickness of 0.7 mm and a lead angle of 8° . The distance between the leads is 2 - 0.25 (+0.3/-0.1) mm.
- Bottom View:** Illustrates the underside of the package with a lead thickness of 0.8 mm and a lead angle of 2° .
- Pin Arrangement:** A diagram shows the cathode (①) and anode (②) pins. The cathode is on the left and the anode is on the right.
- Table:** A table titled "Pin Arrangement" lists the pin numbers and their names: ① Cathode and ② Anode.

NOTES:

- Units: mm
- Unspecified tolerances: ± 0.2
- Package: Pink transparent epoxy resin
- (): Reference dimensions
- The thin burr thickness (0.05 mm MAX.) and the gate burr (0.3 mm MAX.) shall not be included in the outline dimensions.
- Protruded resin 0.3 mm MAX. However, the thin burr adheres to the lead 1.8 mm MAX. from the resin.

Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Forward current	I_F	50	mA
Peak forward current *1	I_{FM}	1	A
Reverse voltage	V_R	6	V
Power dissipation	P	75	mW
Operating temperature	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +85	°C
Soldering temperature *2	Tsol	260	°C

*1 Pulse width: 100 μ s, Duty ratio: 0.01

*2 3 s (MAX.) positioned 1.8 mm from the resin edge.

Electro-optical Characteristics

(Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	V_F	$I_F = 20$ mA	—	1.2	1.4	V
Peak forward voltage	V_{FM}	$I_{FM} = 0.5$ A	—	3.0	4.0	V
Reverse current	I_R	$V_R = 3$ V	—	—	10	μ A
Radiant flux	ϕ_e	$I_F = 20$ mA	0.7	1.6	3.0	mW
Peak emission wavelength	λ_p	$I_F = 5$ mA	—	950	—	nm
Half intensity wavelength	$\Delta\lambda$	$I_F = 5$ mA	—	45	—	nm
Terminal capacitance	C_t	$V_R = 0$, $f = 1$ MHz	—	70	—	pF
Cut-off frequency	f_C	—	—	300	—	kHz

Fig. 1 Forward Current vs. Ambient Temperature

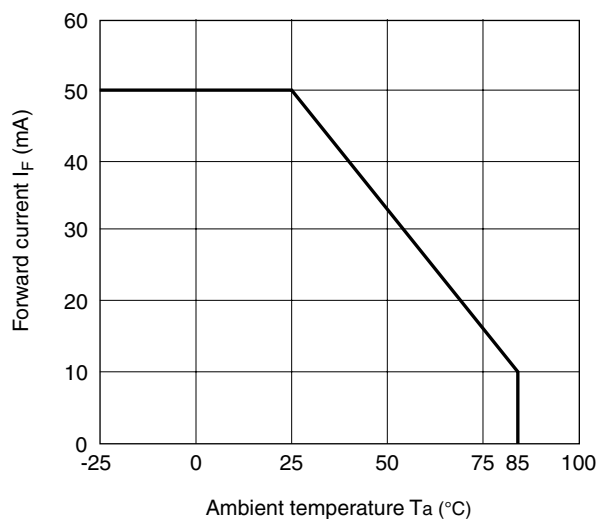


Fig. 2 Peak Forward Current vs. Duty Ratio

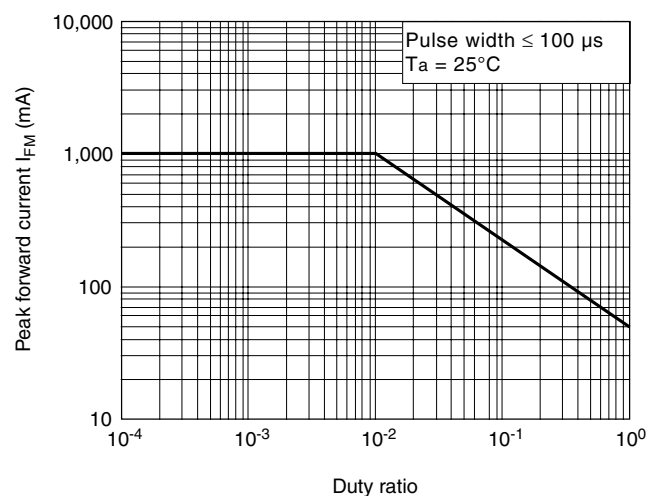


Fig. 3 Radiation Diagram

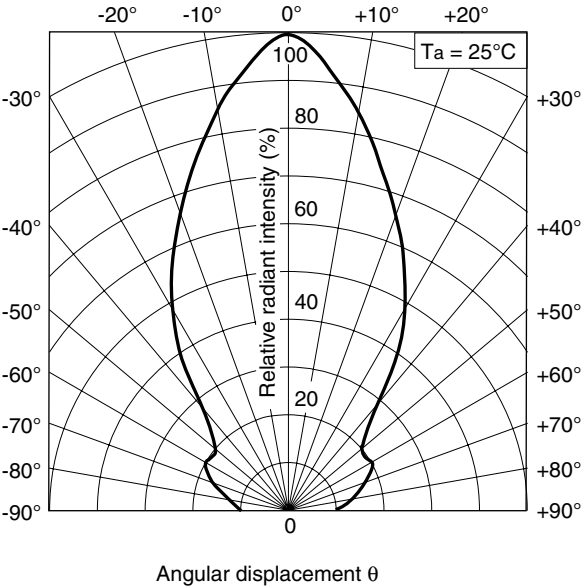


Fig. 4 Spectral Distribution

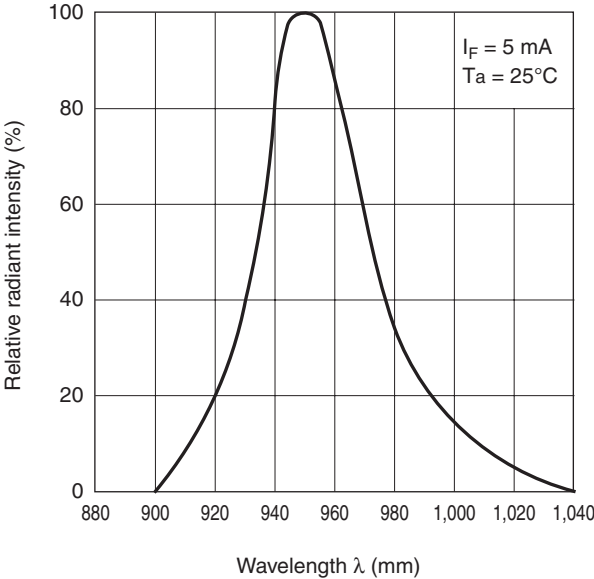


Fig. 5 Peak Emission Wavelength vs. Ambient Temperature

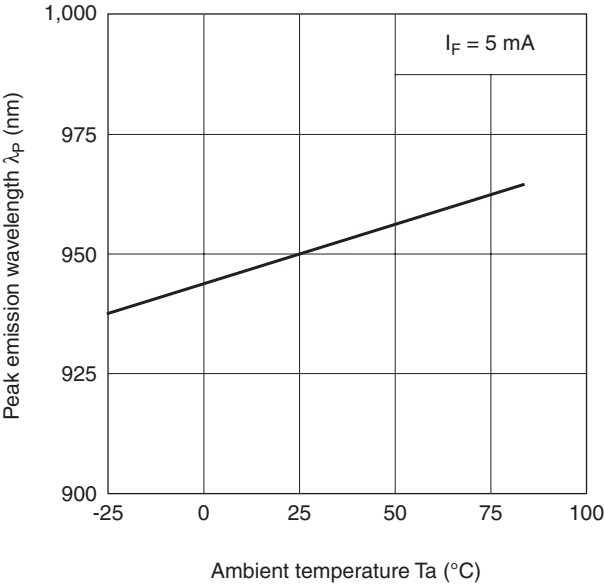


Fig. 6 Forward Current vs. Forward Voltage

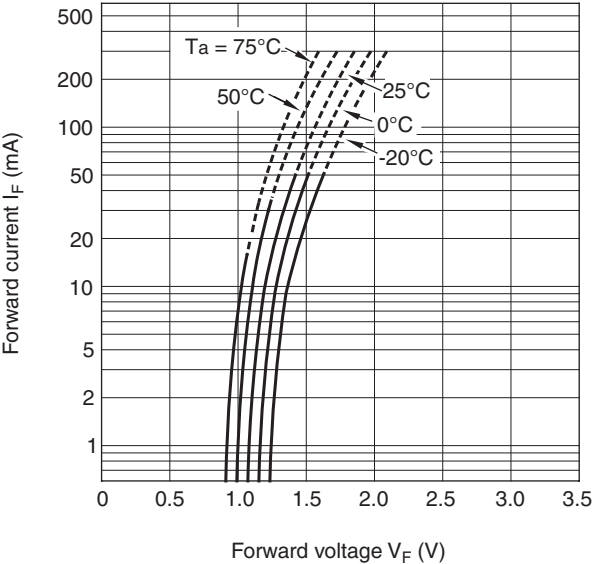
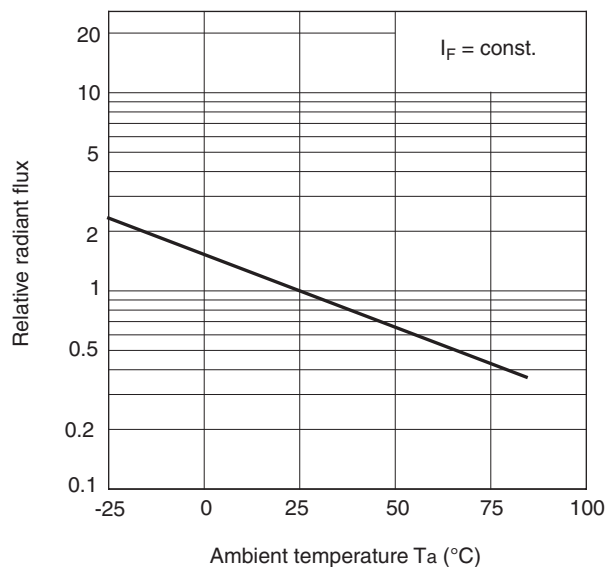
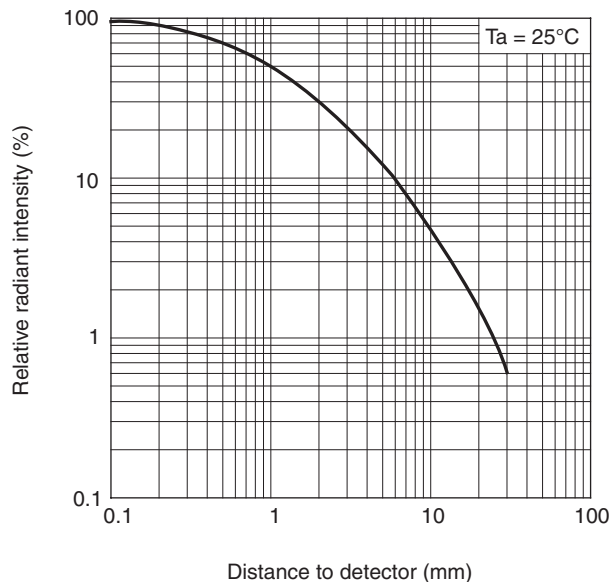
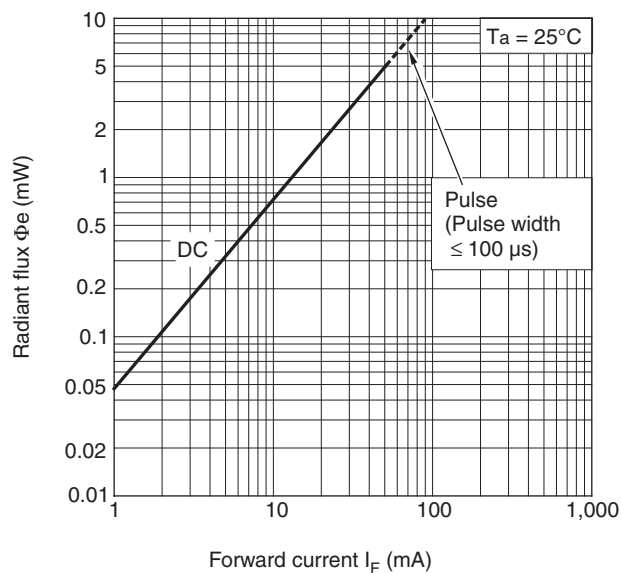
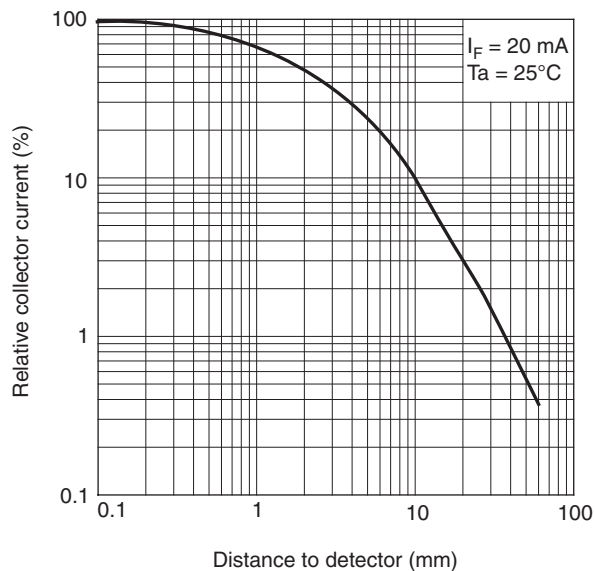


Fig. 7 Relative Radiant Flux vs. Ambient Temperature**Fig. 9 Relative Radiant Intensity vs. Distance****Fig. 8 Radiant Flux vs. Forward Current****Fig. 10 Relative Collector Current vs. Distance (Detector: PT4800)**

■ Design Considerations

Design Guidelines

1. Allow for natural degradation of the LED as a result of long continuous operation. This part will have 50% degradation in output after 5 years of continuous use.
2. This product is not designed to be electromagnetic- and ionized-particle-radiation resistant.

■ Manufacturing Guidelines

Cleaning Instructions

1. Confirm this device's resistance to process chemicals before use, as certain process chemicals may affect the optical characteristics.
2. Solvent cleaning: Solvent temperature should be 45°C or below. Immersion time should be 3 minutes or less.
3. Ultrasonic cleaning: The effect upon devices varies due to cleaning bath size, ultrasonic power output, cleaning time, PCB size and device mounting circumstances. Sharp recommends testing using actual production conditions to confirm the harmlessness of the ultrasonic cleaning methods.
4. Recommended solvent materials: Ethyl alcohol, Methyl alcohol, and Isopropyl alcohol.

Soldering Instructions

1. Sharp recommends not soldering this part using preheat or solder reflow methods.
2. If hand soldering, use temperatures $\leq 260^{\circ}\text{C}$ for ≤ 3 seconds.
3. When mounting this device, care should be taken to prevent any boundary exfoliation (pad lifting) between the solder, the pad, and the circuit board.
4. Do not subject the package to excessive mechanical force during soldering as it may cause deformation or defects in plated connections. Internal connections may be severed due to mechanical force placed on the package due to the PCB flexing during the soldering process.

Storage and Handling

1. Sharp recommends storing these parts between 5°C and 30°C, at a relative humidity of less than 60%.
2. After breaking the package seal, Sharp recommends maintaining the environment within 5° to 30°C, at a relative humidity of less than 60%.

■ Packing Specifications

1. Parts are packed in a vinyl bag, at an average quantity of 1,000 pieces per bag.
2. Bags are secured in a box as shown in illustration on page 7.
3. Product mass: 0.07 g (approximately)
4. Sharp guarantees the following:
 - a. Missing parts will not make up more than 0.1% of the total quantity.
 - b. Parts will be easily removed from the packing.

■ Presence of ODCs (RoHS Compliance)

This product shall not contain the following materials, and they are not used in the production process for this product:

- Regulated substances: CFCs, Halon, Carbon tetrachloride, 1,1,1-Trichloroethane (Methylchloroform). Specific brominated flame retardants such as the PBBs and PBBs are not used in this product at all.

This product shall not contain the following materials banned in the RoHS Directive (2002/95/EC).

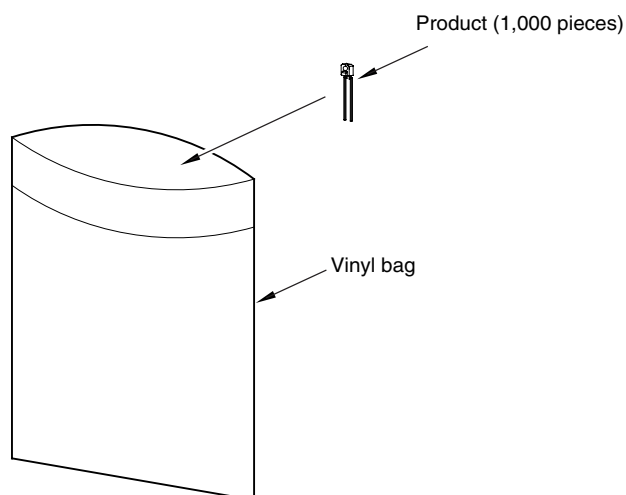
- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE).
- Content information about the six substances specified in “Management Methods for Control of Pollution Caused by Electronic Information Products Regulation” (Chinese: 电子信息产品污染控制管理办法)

Category	Toxic and Hazardous Substances					
	Lead (Pb)	mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr ⁶⁺)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Infrared Emitting Diode	✓	✓	✓	✓	✓	✓

NOTE: ✓ indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement as described in SJ/T 11363-2006 standard.

■ Package Specification

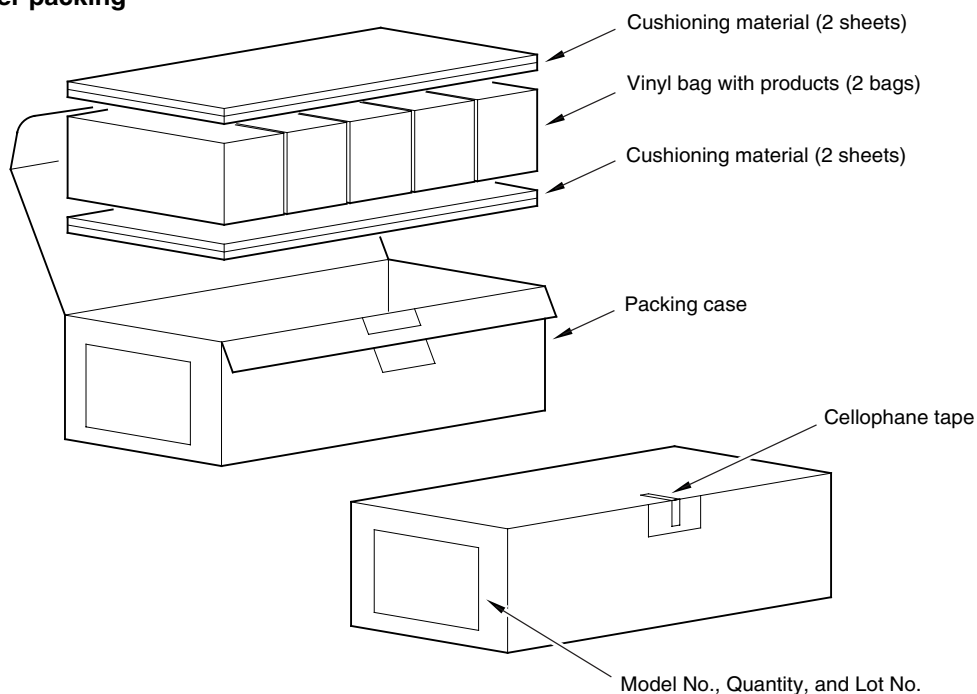
Inner packing



NOTES:

1. Inner packing material : Vinyl bag (Polyethylene)
2. Quantity: 1,000 pieces/bag

Outer packing



NOTES:

1. Outer material : Packing case (Corrugated cardboard),
Cushioning material (Urethane), Cellophane tape
2. Quantity: 5,000 pieces/box
3. Regular packaged mass: Approximately 460 g
4. Indication: Model No., quantity, and Lot No.

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(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)

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