

# 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  $\phi_e: 0.7 \text{ mW MIN.}$
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

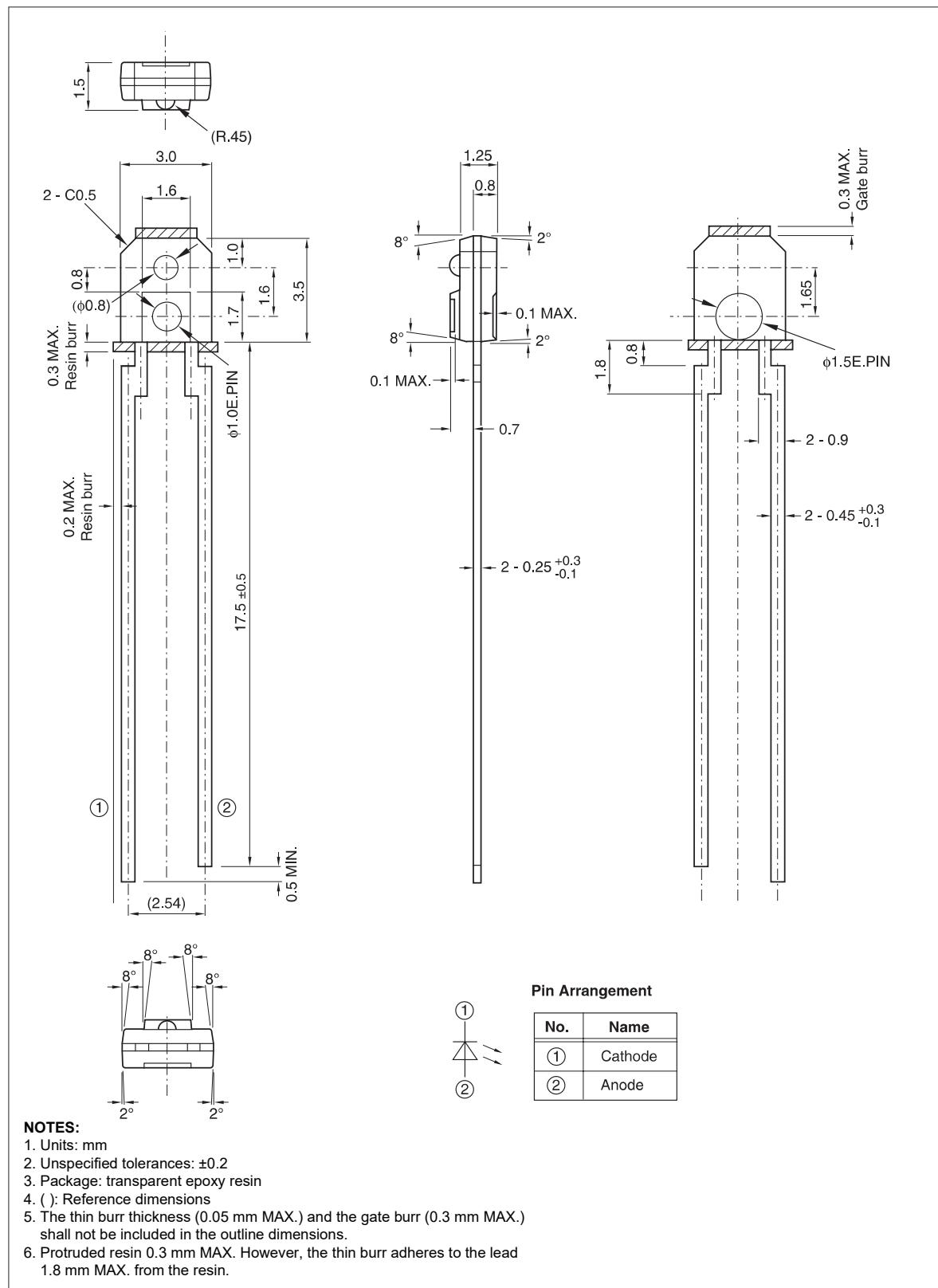
### ■ Applications

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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## ■ Outline Dimensions



## ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Forward current	I <sub>F</sub>	50	mA
Peak forward current *1	I <sub>FM</sub>	1	A
Reverse voltage	V <sub>R</sub>	6	V
Power dissipation	P	75	mW
Operating temperature	T <sub>opr</sub>	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +85	°C
Soldering temperature *2	T <sub>sol</sub>	260	°C

\*1 Pulse width: 100 µs, Duty ratio: 0.01

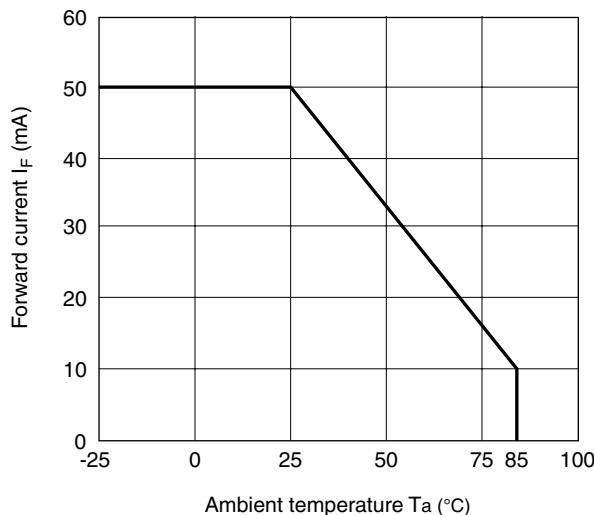
\*2 3 s (MAX.) positioned 1.8 mm from the resin edge.

## ■ Electro-optical Characteristics

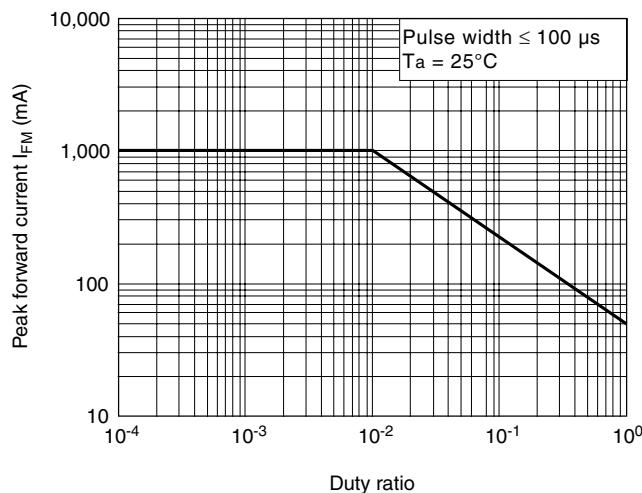
(Ta = 25°C)

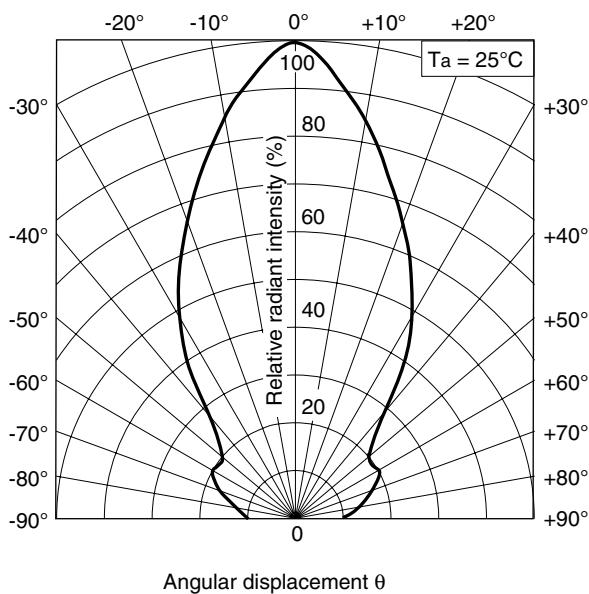
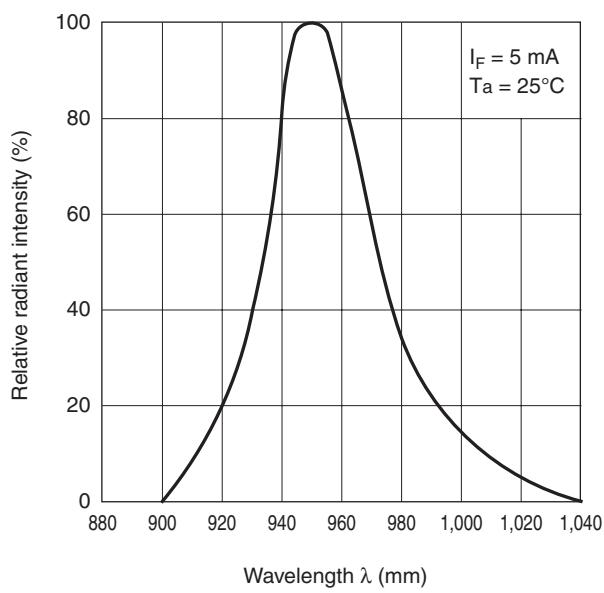
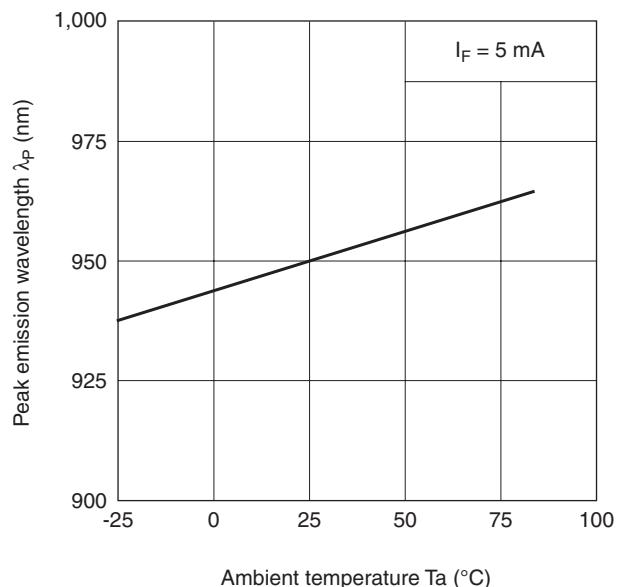
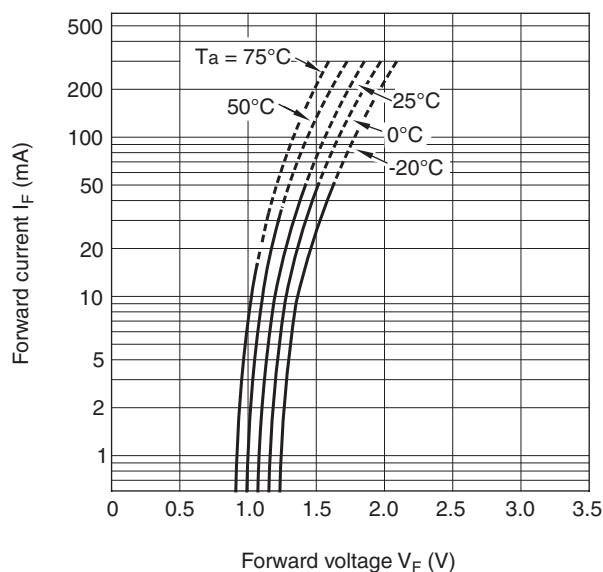
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 20 mA	–	1.2	1.4	V
Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = 0.5 A	–	3.0	4.0	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> = 3 V	–	–	10	µA
Radiant flux	Φ <sub>e</sub>	I <sub>F</sub> = 20 mA	0.7	1.6	3.0	mW
Peak emission wavelength	λ <sub>p</sub>	I <sub>F</sub> = 5 mA	–	950	–	nm
Half intensity wavelength	Δλ	I <sub>F</sub> = 5 mA	–	45	–	nm
Terminal capacitance	C <sub>t</sub>	V <sub>R</sub> = 0, f = 1 MHz	–	70	–	pF
Cut-off frequency	f <sub>C</sub>	–	–	300	–	kHz

**Fig. 1 Forward Current vs. Ambient Temperature**

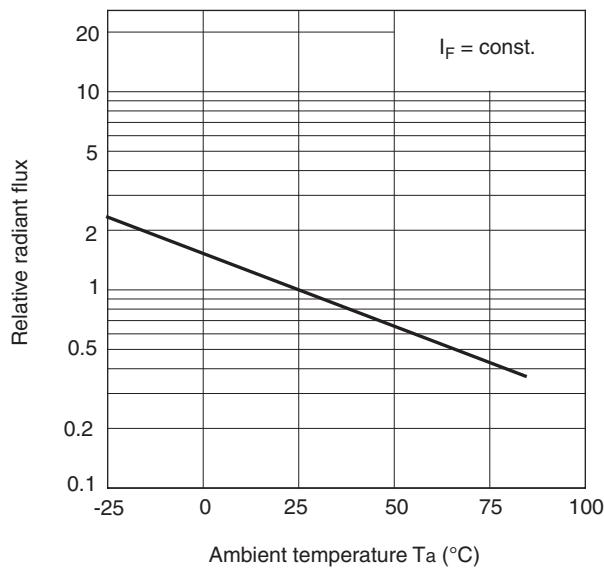


**Fig. 2 Peak Forward Current vs. Duty Ratio**

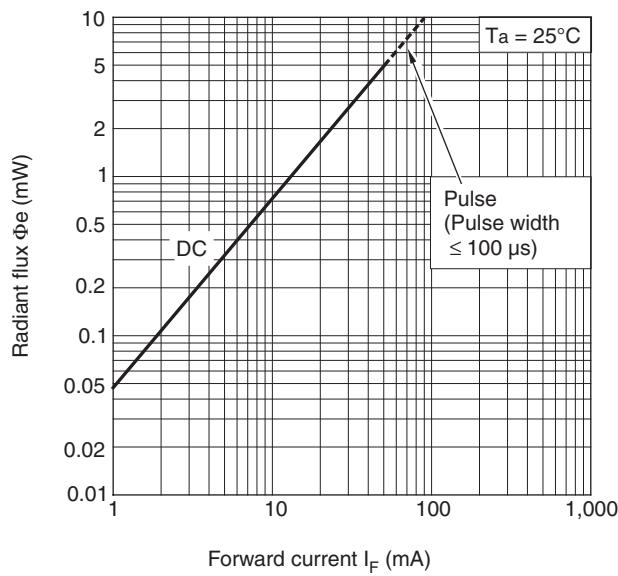


**Fig. 3 Radiation Diagram****Fig. 4 Spectral Distribution****Fig. 5 Peak Emission Wavelength vs. Ambient Temperature****Fig. 6 Forward Current vs. Forward Voltage**

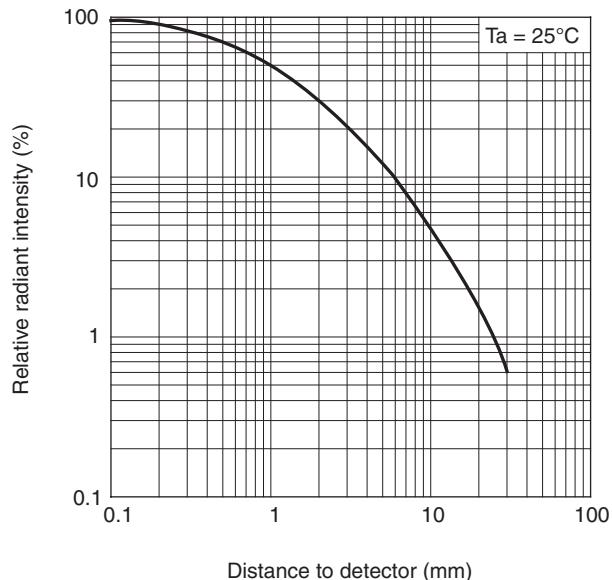
**Fig. 7 Relative Radiant Flux vs. Ambient Temperature**



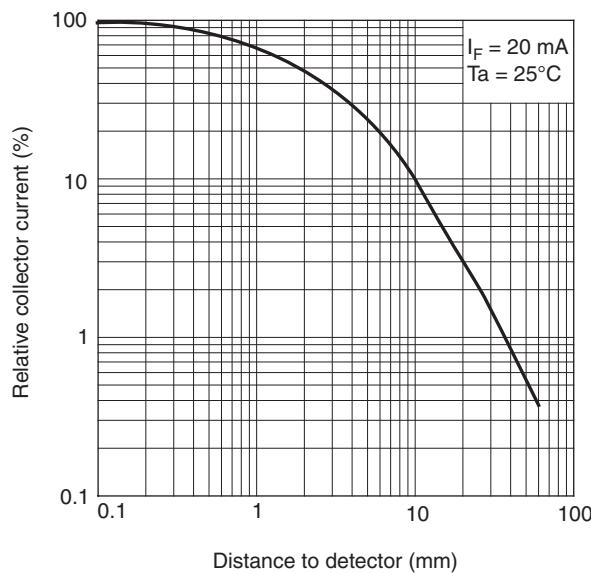
**Fig. 8 Radiant Flux vs. Forward Current**



**Fig. 9 Relative Radiant Intensity vs. Distance**



**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  $\leq 3$  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  $5^{\circ}\text{C}$  and  $30^{\circ}\text{C}$ , at a relative humidity of less than 60%.
2. After breaking the package seal, Sharp recommends maintaining the environment within  $5^{\circ}$  to  $30^{\circ}\text{C}$ , 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 PBBOs 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).

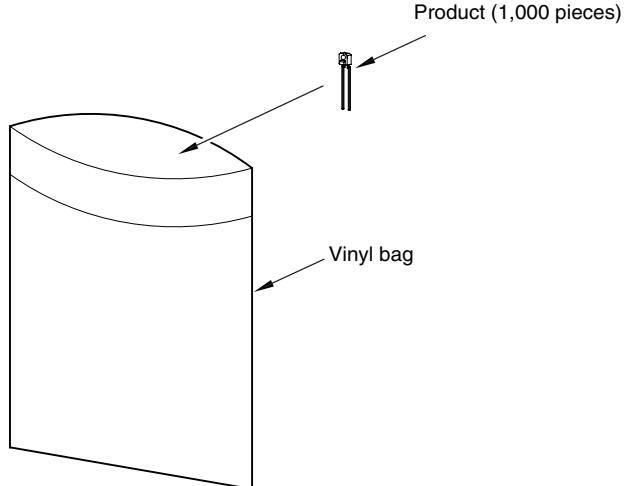
- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE).
- Content information about the six substances specified in "Management Methods for Control of Pollution Caused by Electronic Information Products Regulation" (Chinese: 电子信息产品污染控制管理办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

Category	Toxic and Hazardous Substances					
	Lead (Pb)	mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr <sup>6+</sup> )	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

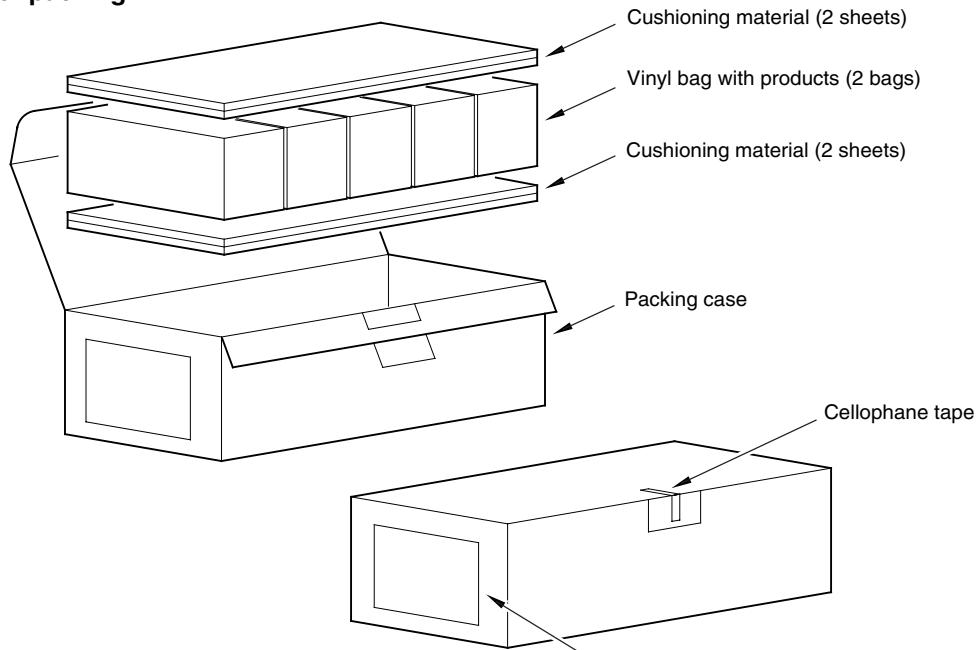
### Inner packing



#### 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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- 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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