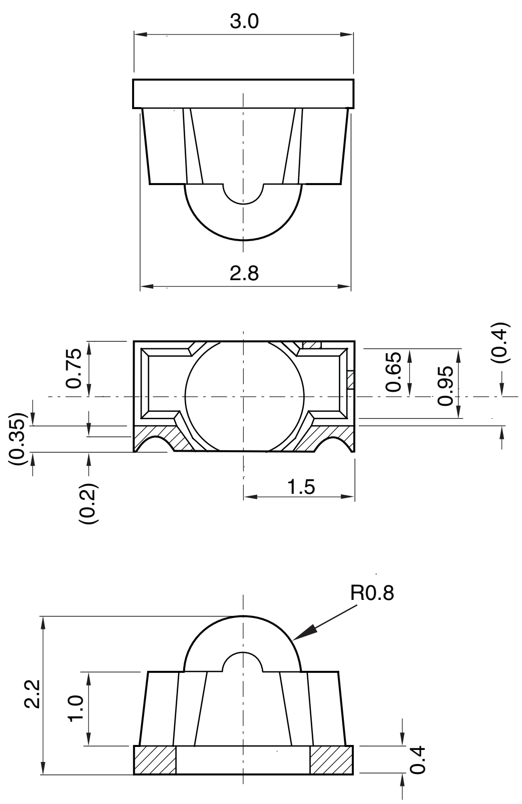
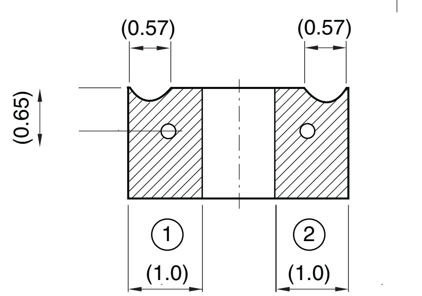
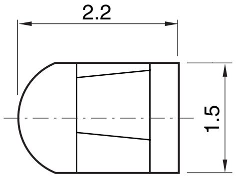
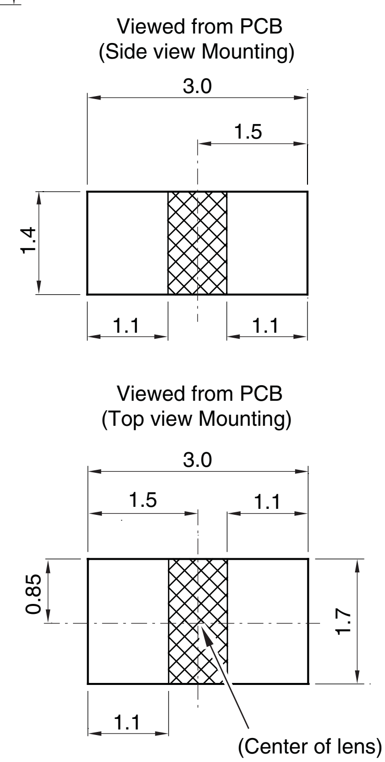
■ External Dimensions

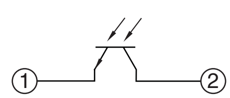








Terminal connection



Pin Arrangement

No.	Name
1	Emitter
2	Collector

NOTES:
1. Unit: mm
2. Unspecified tolerance: ±0.2 mm
3. ( ): Reference dimensions
4. [hatched] Au plated area
5. Do not allow circuit runs in [cross-hatched] area

Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CEO}	35	V
Emitter-collector voltage	V_{ECO}	6	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	75	mW
Operating temperature	Topr	-30 to +85	°C
Storage temperature	Tstg	-40 to + 95	°C
Soldering temperature *1	Tsol	240	°C

*1 Within 10 s (MAX.) see reflow profile on page 7.

Electro-optical Charactertistics

(Ta = 25°C)

Parameter	Symbol	Conditions *1	MIN.	TYP.	MAX.	Unit
Collector current	I_C	Ee = 1 mW/cm^2, V_{CE} = 5 V	1.15	2	3.45	mA
Collector dark current	I_{CEO}	Ee = 0, V_{CE} = 20 V	–	1.0	100	nA
Collector-emitter saturation voltage	V_{CE}(sat)	Ee = 10 mW/cm^2, I_C = 0.5 mA	–	0.1	0.4	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 0.1 mA, Ee = 0	35	–	–	V
Emitter-collector breakdown voltage	BV_{ECO}	I_E = 0.01 mA, Ee = 0	6	–	–	V
Peak sensitivity wavelength	λp	–	–	910	–	nm
Response time (Rise)	tr	V_{CE} = 2 V, I_C = 2 mA, R_L = 100 Ω	–	5.0	–	μs
Response time (Fall)	tf		–	6.0	–	μs
Angle of half intensity	Δθ	–	–	±15	–	degrees

*1 Ee: Irradiance by CIE standard light source A (tungsten lamp)

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

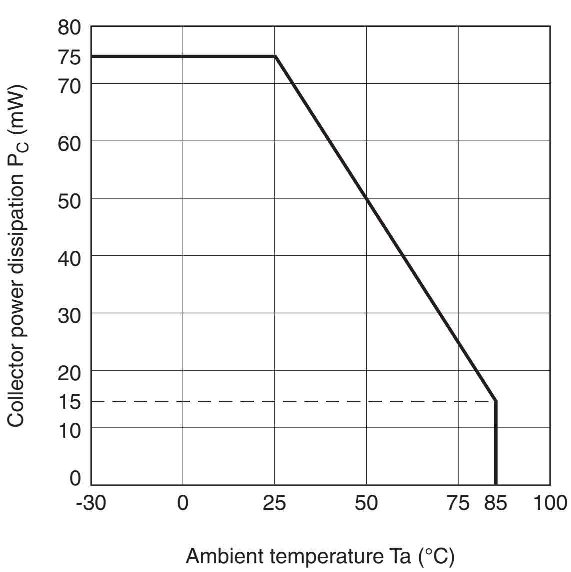


Fig. 2 Collector Dark Current vs. Ambient Temperature

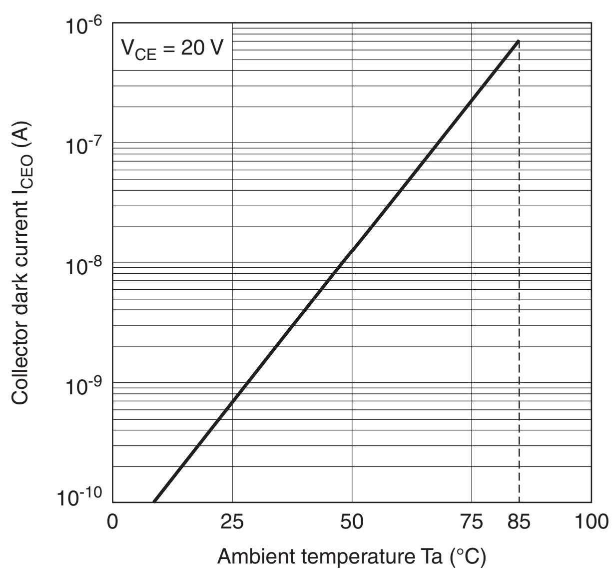


Fig. 3 Relative Collector Current vs. Ambient Temperature

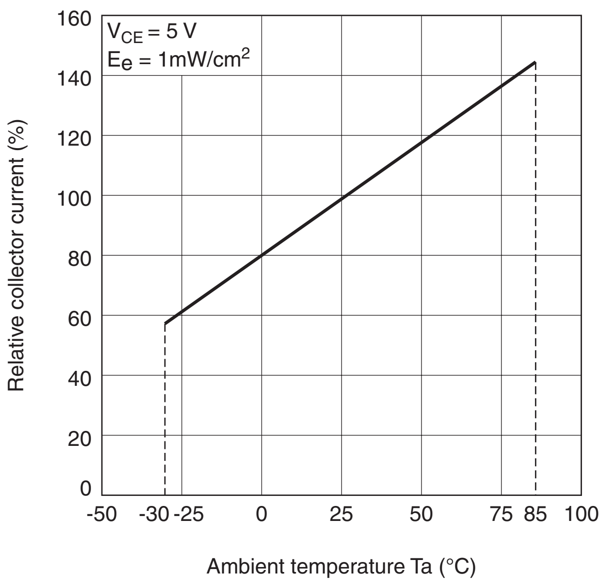


Fig. 5 Collector Current vs. Collector-emitter Voltage

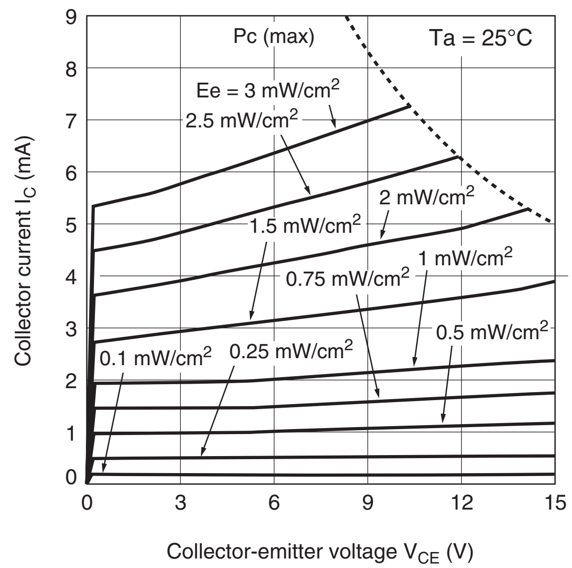


Fig. 4 Collector Current vs. Irradiance

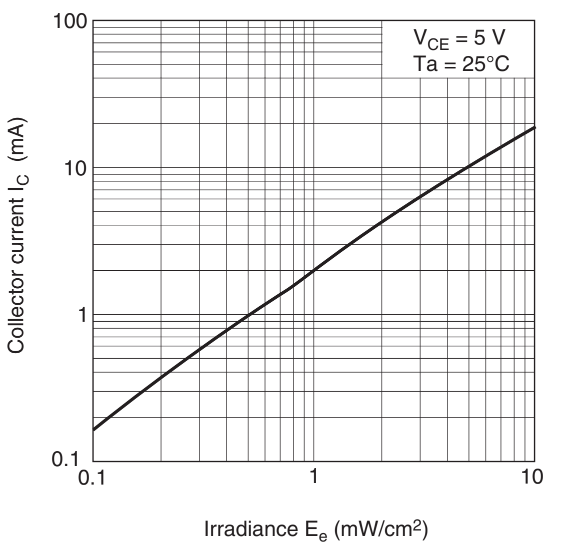


Fig. 6 Relative Sensitivity vs. Wavelength (TYP.)

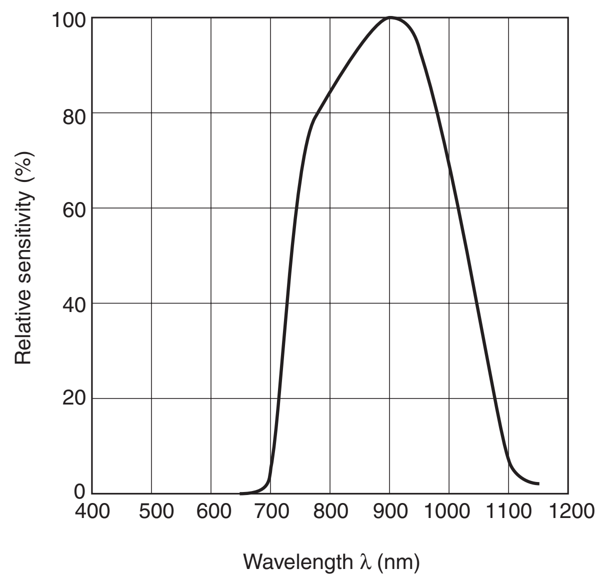


Fig. 7 Radiation Diagram (TYP.)

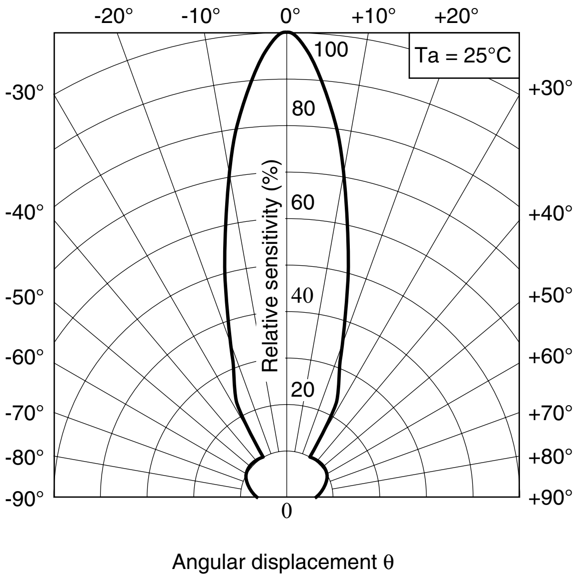


Fig. 8 Collector-emitter Saturation Voltage vs. Irradiance

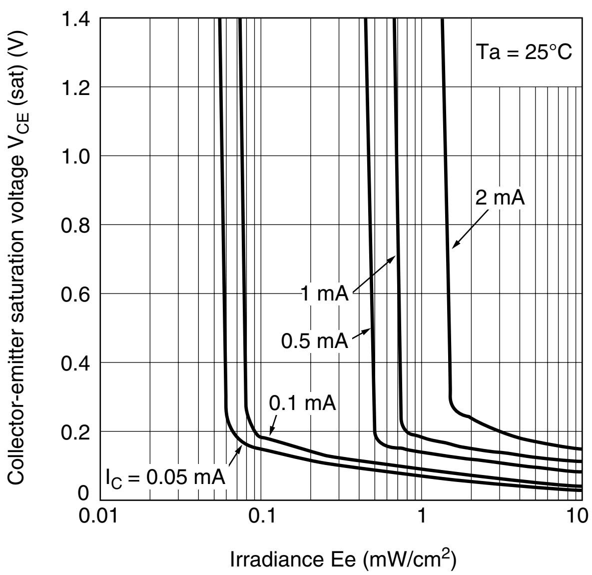
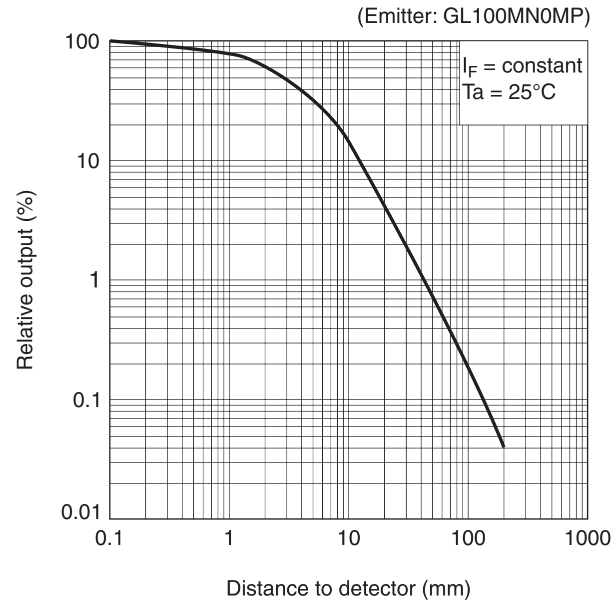


Fig. 9 Relative Output vs. Distance to Detector



■ Design Considerations

Design Guidelines

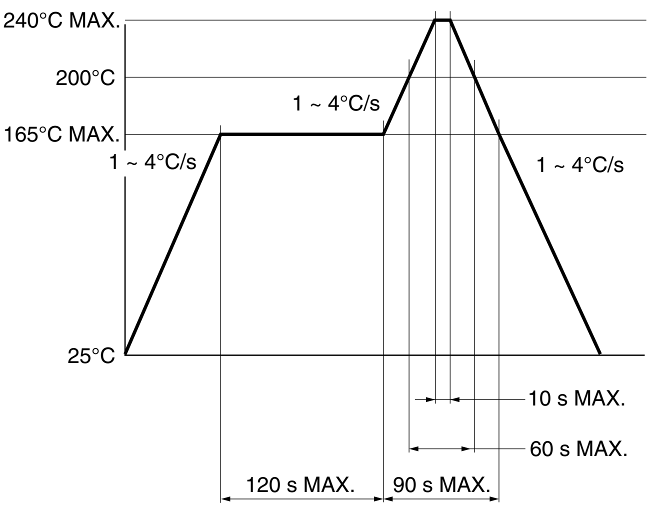
1. This product is not designed to be electromagnetic- and ionized-particle-radiation resistant.

■ Manufacturing Guidelines

Soldering Instructions

1. Sharp recommends soldering no more than once when using solder reflow methods.
2. When using solder reflow methods, follow the Reflow Soldering Temperature Profile shown in Fig. 10. Sharp recommends checking the process to make sure these parameters are not exceeded; exceeding these parameters can cause substrate bending or other mechanical stresses leading to debonding of the internal gold wires, or other similar failure modes.
3. If using an infrared lamp to preheat the parts, such heat sources may cause localized high temperatures in the part's resin. Be sure to keep the temperature profile within the guidelines shown in Fig. 10.
4. If hand soldering, use temperatures ≤260° for ≤3 seconds. Do not dip-solder or VPS-solder this part.
5. 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.

Fig. 10 Reflow Soldering Temperature Profile



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.

Storage and Handling

1. Store these parts between 5°C and 30°C, at a relative humidity of less than 70%.
2. After breaking the package seal, maintain the environment within 5°C to 25°C, at a relative humidity of less than 60%, and mount the parts within two days. If unable to do so, bake before mounting.
3. When storing the parts after breaking the seal, Sharp recommends storage of no longer than two weeks in a dry box or by resealing the parts in a moisture-proof bag with a desiccant. If unable to do so, bake before mounting.
4. When baking the parts before mounting, Sharp recommends baking the parts only once and only if in a metal tray or mounted on a PCB. Recommended conditions are for 16 to 24 hours, at a temperature of 125°C.

■ 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 Hazdardous Substances					
	Lead (Pb)	mercury (Hg)	Cadmium (Cd)	Hexavalent chromiun (Cr^{6+})	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Photo Transistor	✓	✓	✓	✓	✓	✓

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.

■ Taping Specifications

1. Tape structure and dimensions conforms to those shown in Fig. 11 to 16.
2. Product insertion will have the collector to the hole side of the tape.
3. Cover tape peel-separation force: F = 0.2 to 1.0 N (where θ 160° to 180°)
4. Quantity per reel = 2000 pcs. (PT100MF0MP) or 1500 pcs. (PT100MF0MP1)
5. Product mass: 0.01 g (approx.)
6. Packaging:
   a. Reels are sealed inside an aluminum bag, along with a humidity indicator card.
   b. Bags are labeled and securely packed.

■ Packing Specifications

● PT100MF0MPx (Side view mount, 2000 pcs/reel)

Fig. 11 Tape Shape and Dimension

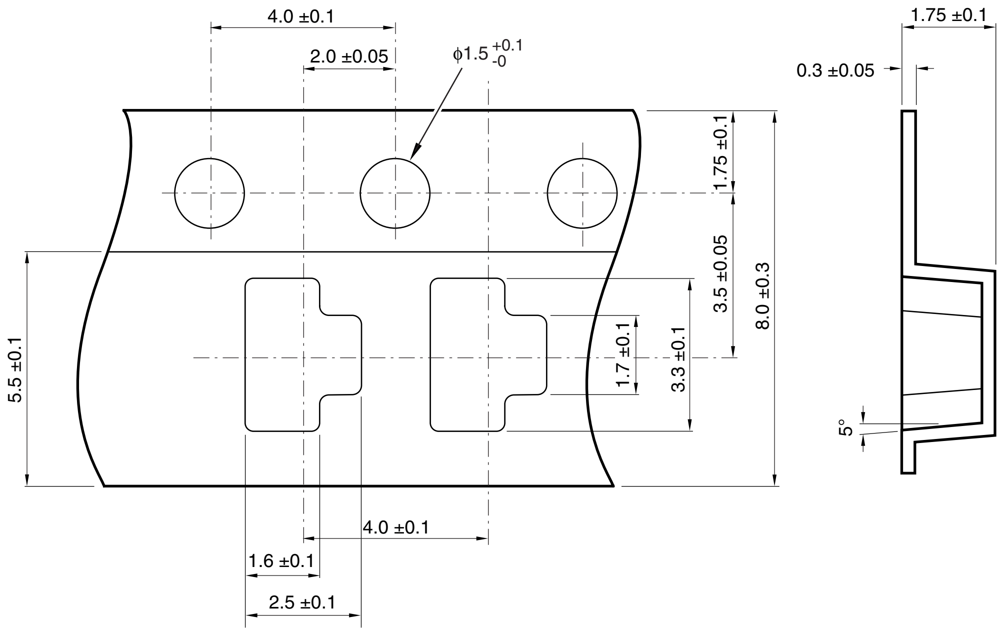
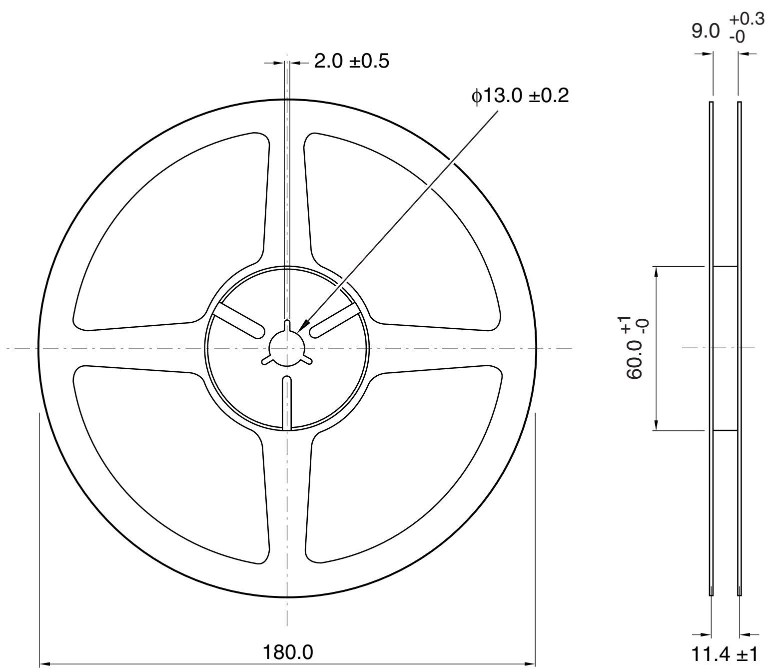
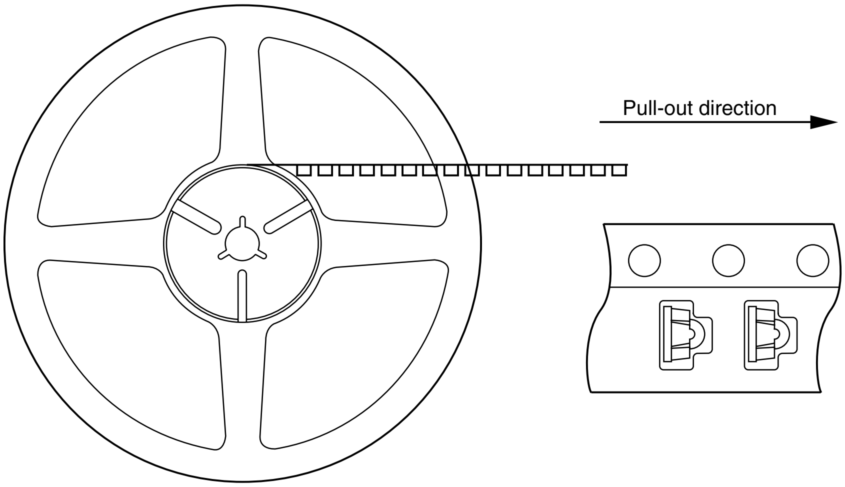


Fig. 12 Reel Shape and Dimension



NOTE: Unit: mm

Fig. 13 Product Insertion Direction



● PT100MF0MP1 (Top view mount, 1500 pcs/reel)

Fig. 14 Tape Shape and Dimension

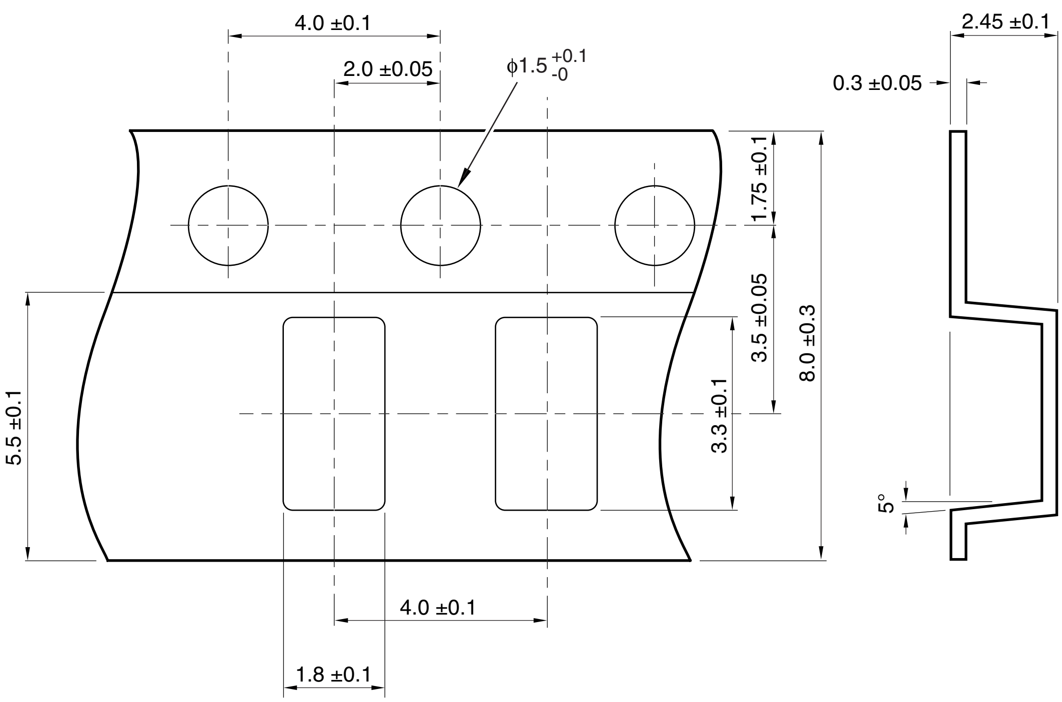
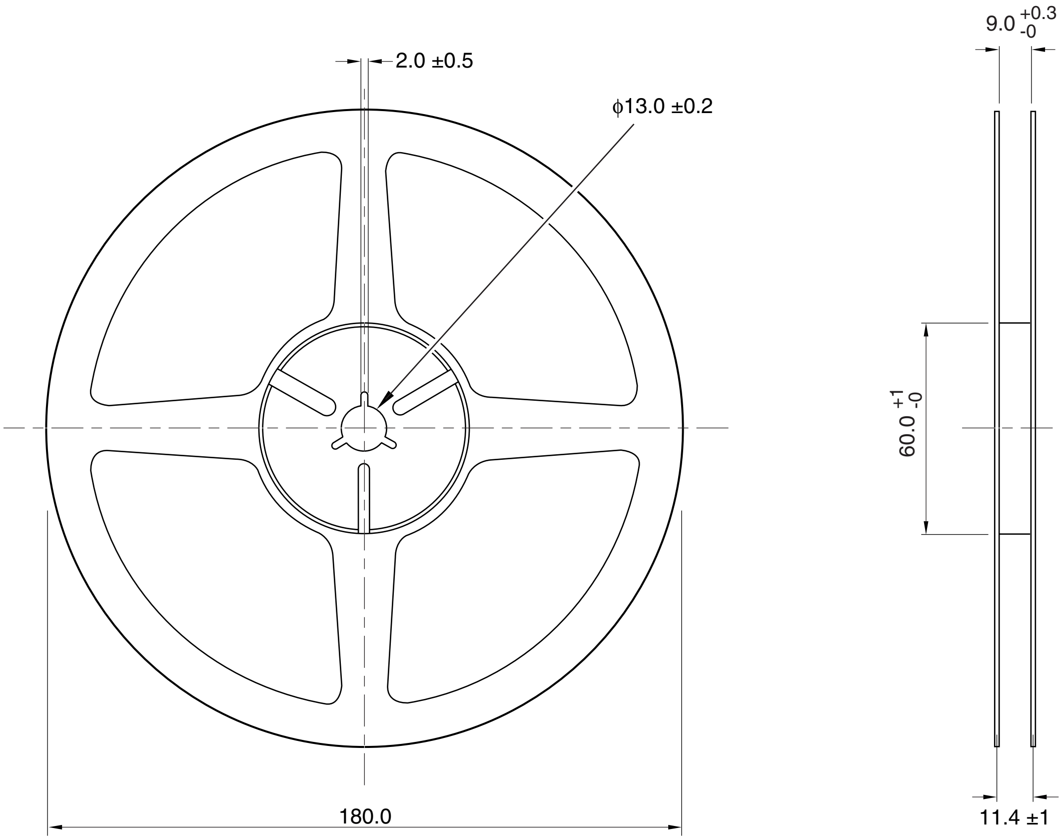
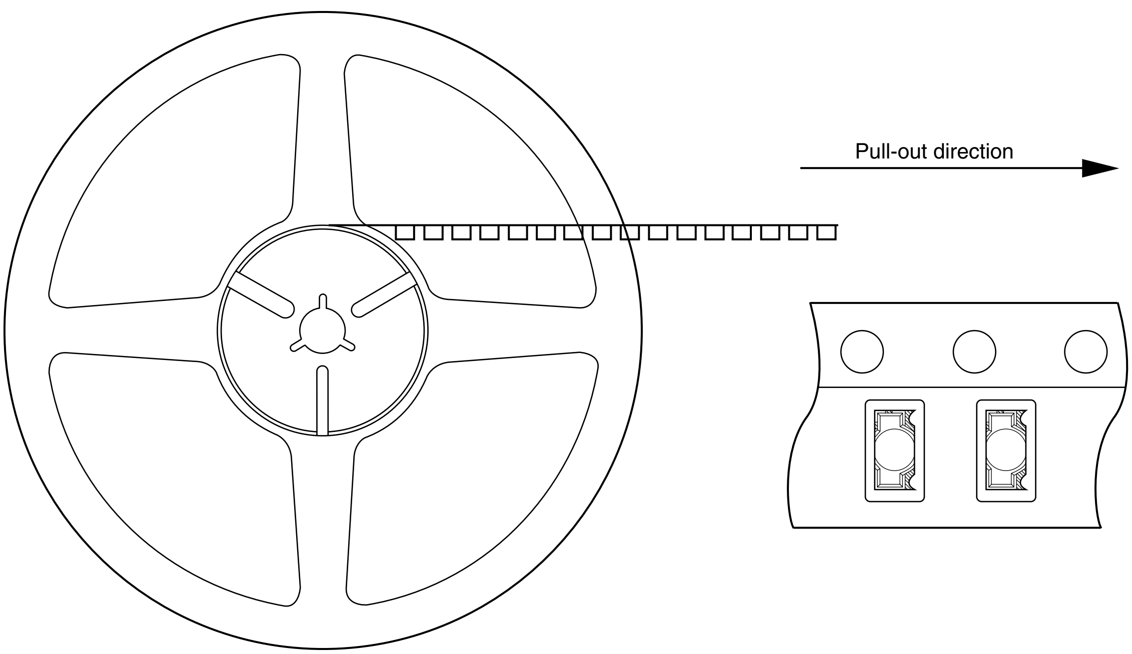


Fig. 15 Reel Shape and Dimension



NOTE: Unit: mm

Fig. 16 Product Insertion Direction



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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 reliabilty 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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