

## Features

Package	Smaller, thinner, right angle (side view) package, Visible ray cut resin Photo diode (Photo detector) <b>(Peak wavelength : 900nm)</b> Outer Dimension 2.4 x 1.35 x 0.6mm ( L x W x H )
Product features	<ul style="list-style-type: none"> <li>• 68% cubage reduction compared to current product (PP1199FB)</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>

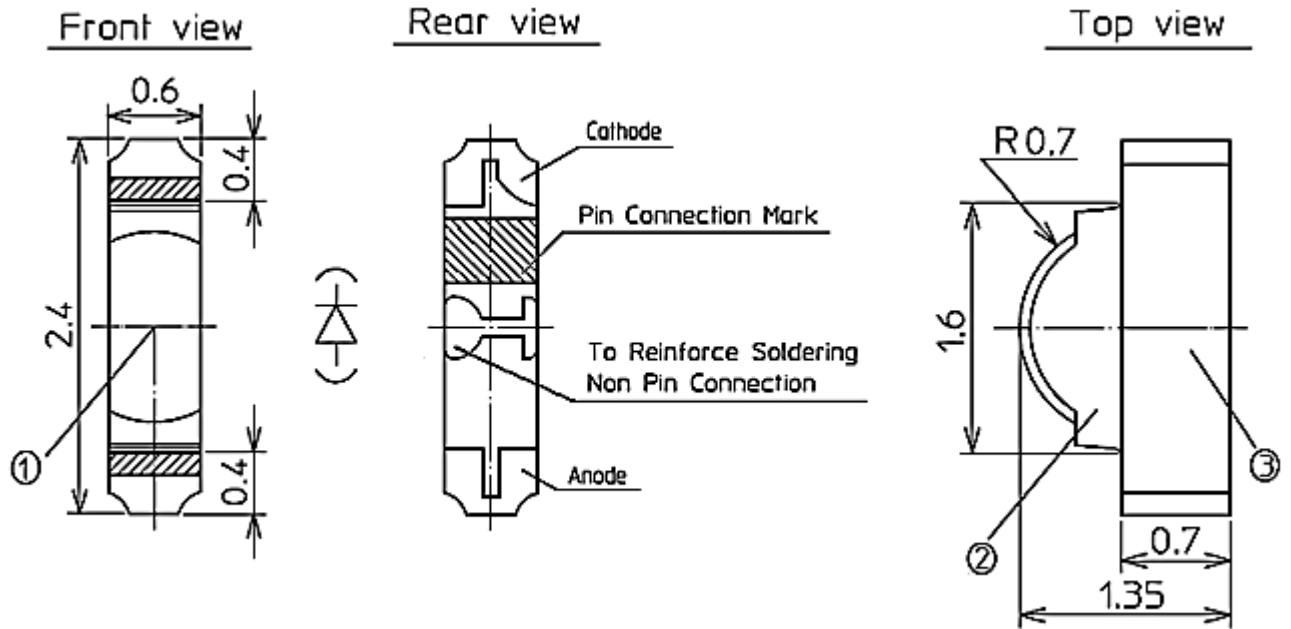
## Recommended Applications

- Photo detector for touch screen, remote controller, etc.

# Outline Dimensions

# PP1199FB-TR

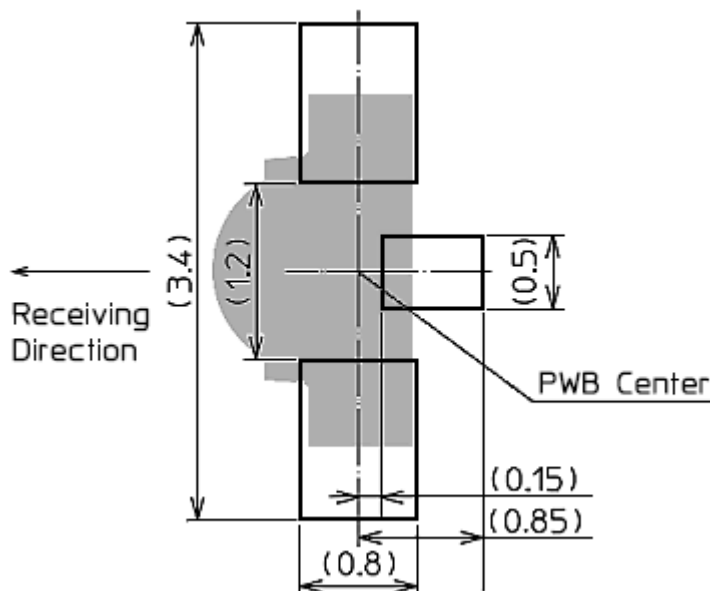
Unit :mm  
Weight :2.9mg  
Tolerance :±0.15



NO.	PART NAME	MATERIAL	QTY.
①	LED die	Si	1
②	Lens	Epoxy Resin (Black)	1
③	Substrate	Glass Fabrics	1

## Recommended Pad

Unit :mm



## 【 Absolute Maximum Ratings 】

(Ta=25°C)

ITEM	SYMBOL	MAXIMUM RATINGS	UNITS
Power dissipation	Pd	15	mW
Reverse voltage	V <sub>R</sub>	12	V
Operating temperature	T <sub>opr</sub>	-30 ~ +85	°C
Storage temperature	T <sub>stg</sub>	-40 ~ +100	°C

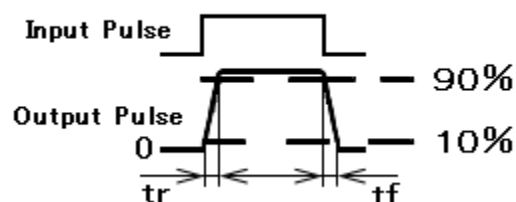
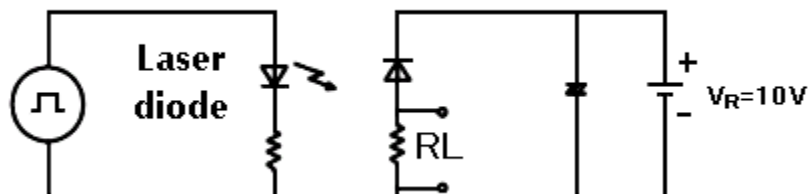
## 【 Electro and Optical Characteristics 】

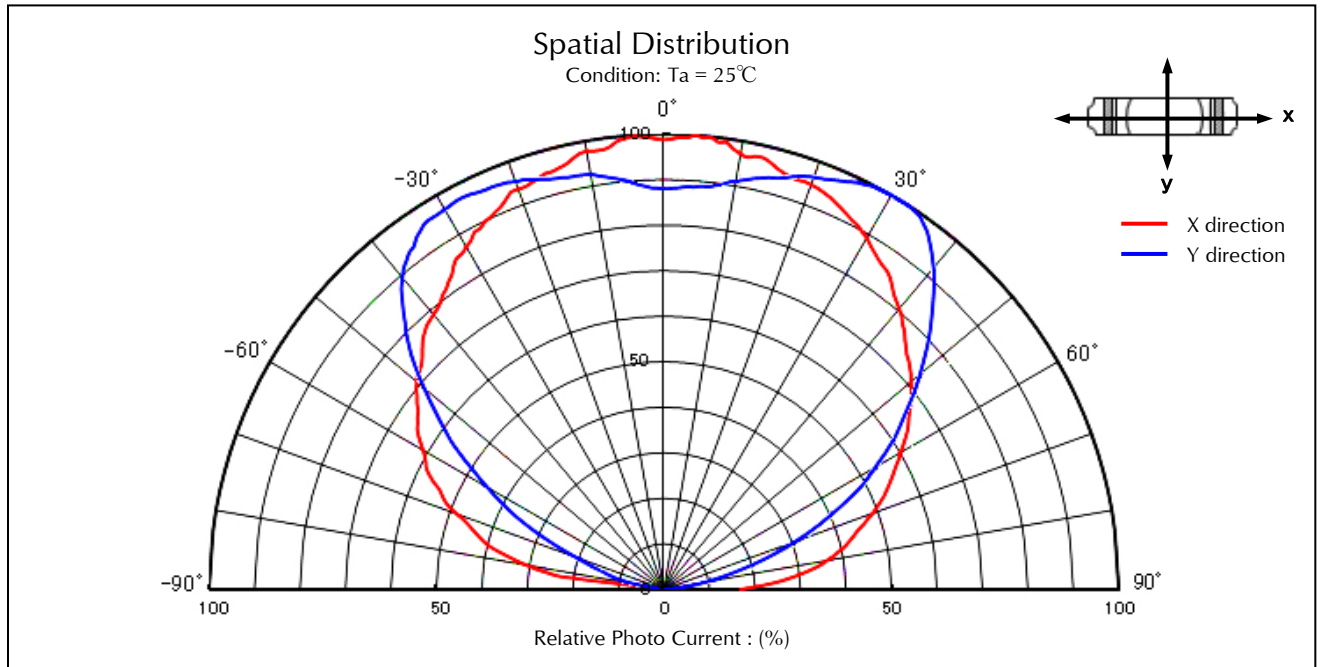
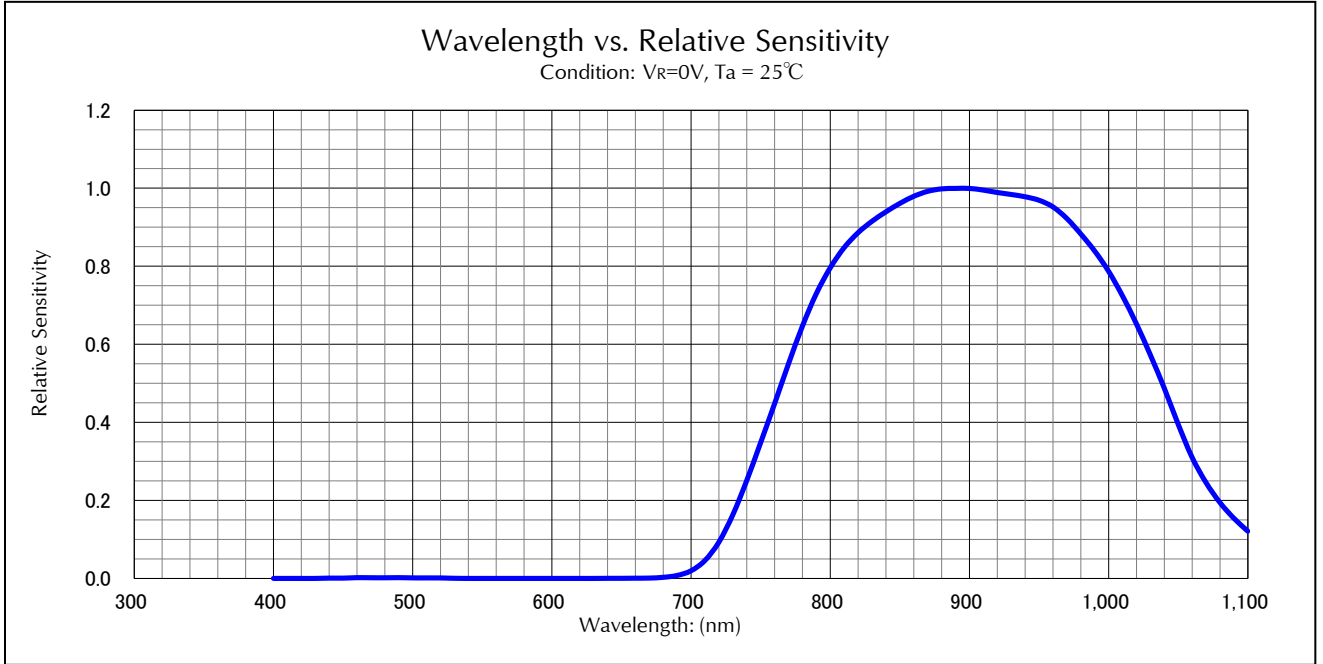
(Ta=25°C)

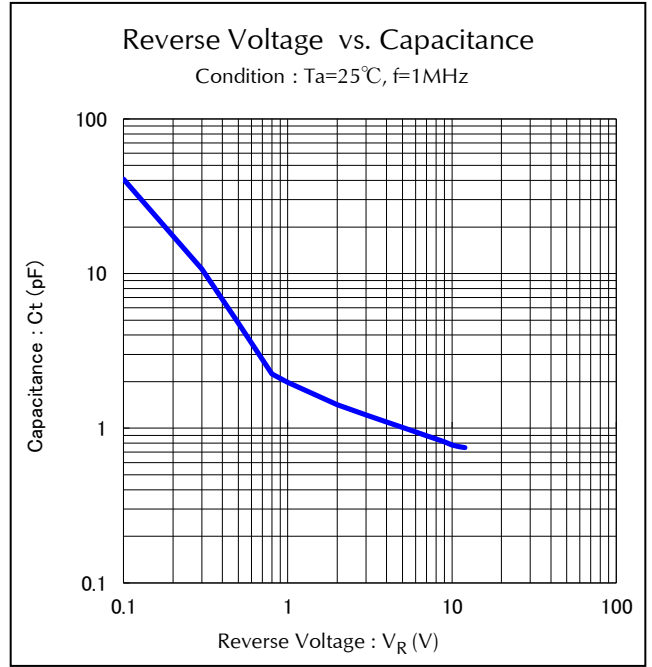
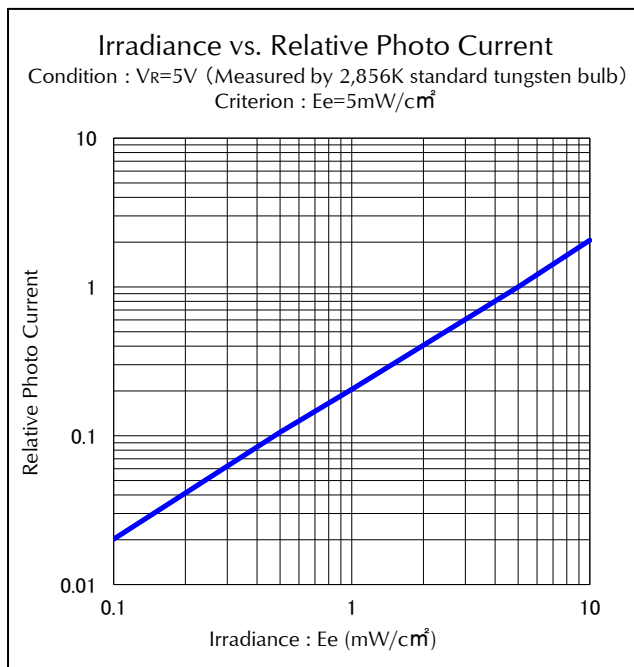
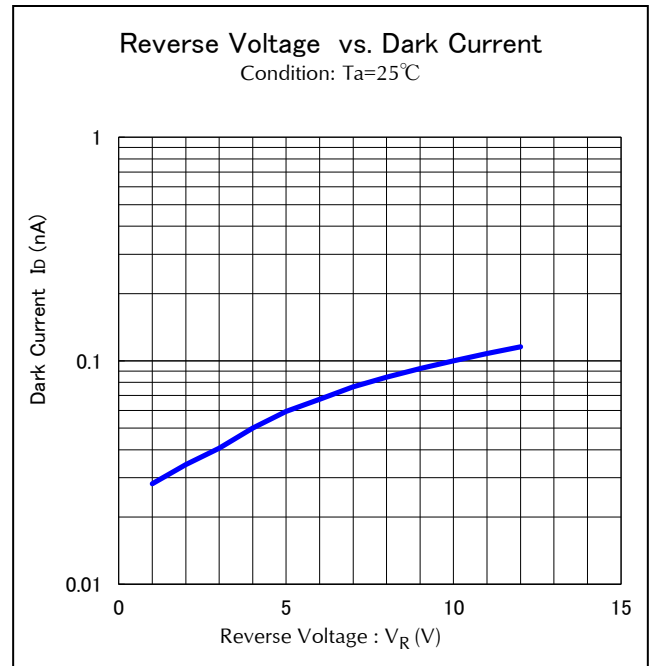
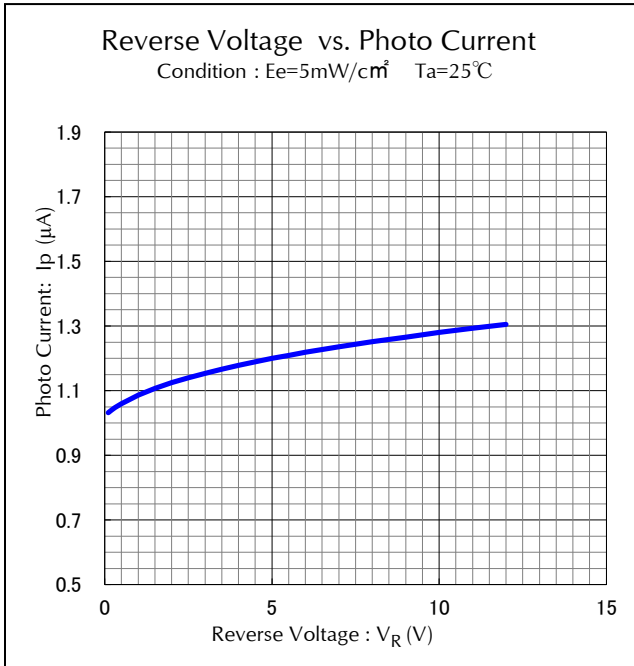
ITEM	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Dark current	I <sub>D</sub>	V <sub>R</sub> = 10V	-	0.1	20	nA
Photo current	I <sub>P</sub>	V <sub>R</sub> = 5V, Ee = 5mW/cm <sup>2</sup> ※1	0.9	1.2	1.8	μA
Response time	Rise time	V <sub>R</sub> = 10V ※2, R <sub>L</sub> = 1kΩ	-	60	-	nsec
	Fall time		-	60	-	nsec
Peak wavelength	λ <sub>p</sub>	V <sub>R</sub> = 0V	-	900	-	nm
Capacitance	C <sub>T</sub>	V <sub>R</sub> = 5V, f = 1MHz	-	1.0	-	pF
Half-intensity angle	Δθ <sub>(X)</sub>	-	-	130	-	deg
	Δθ <sub>(Y)</sub>	-	-	120	-	deg

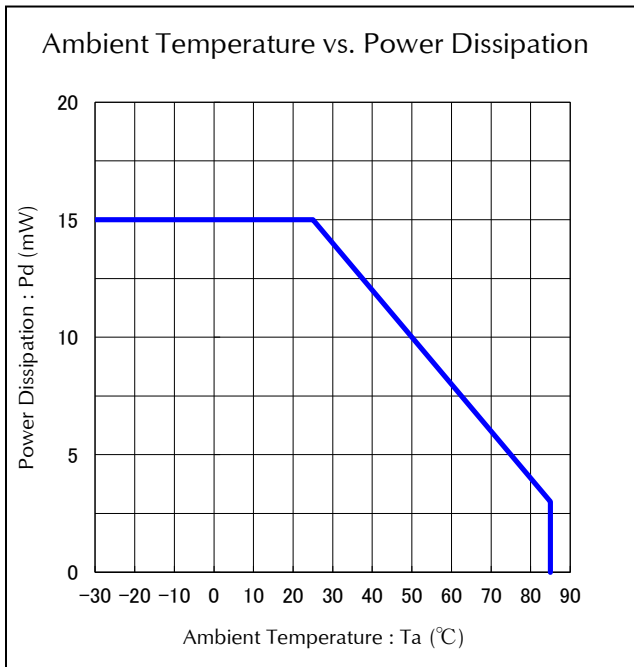
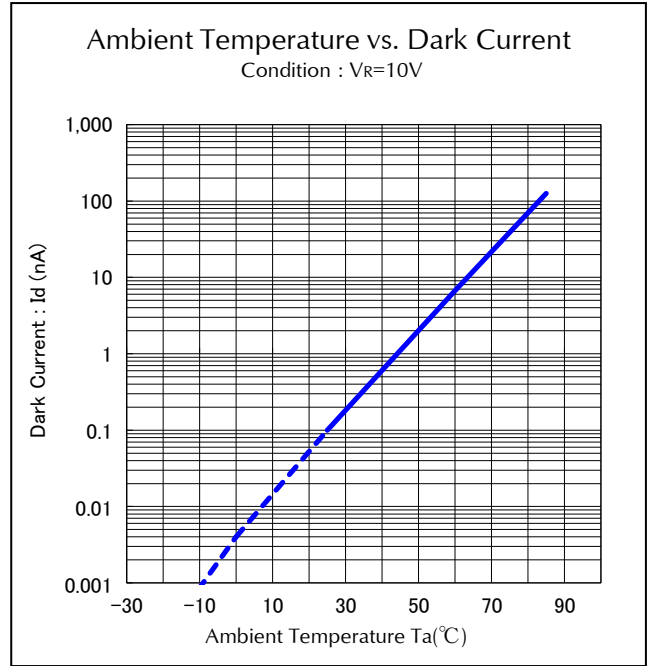
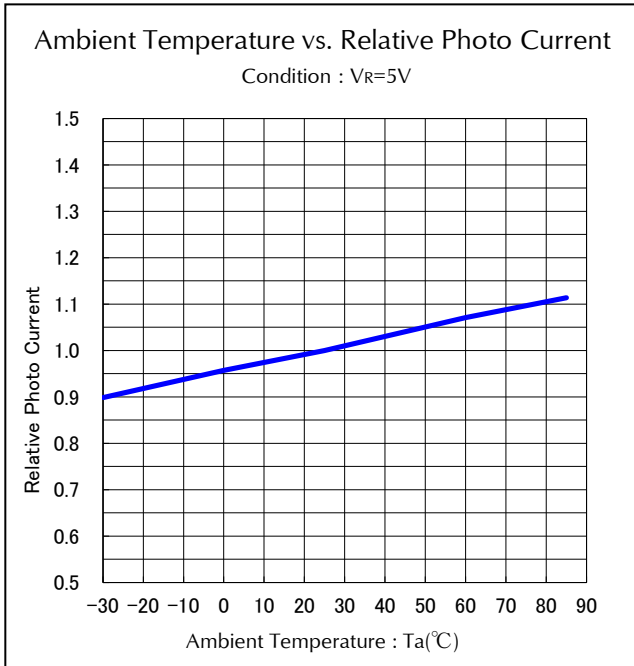
※1 The illuminances refer unfiltered radiation of a tungsten filament lamp at a color temperature of 2856K. The automatic sorting is selected with 940nm infrared emitting diode.

※2 Response time test circuit.







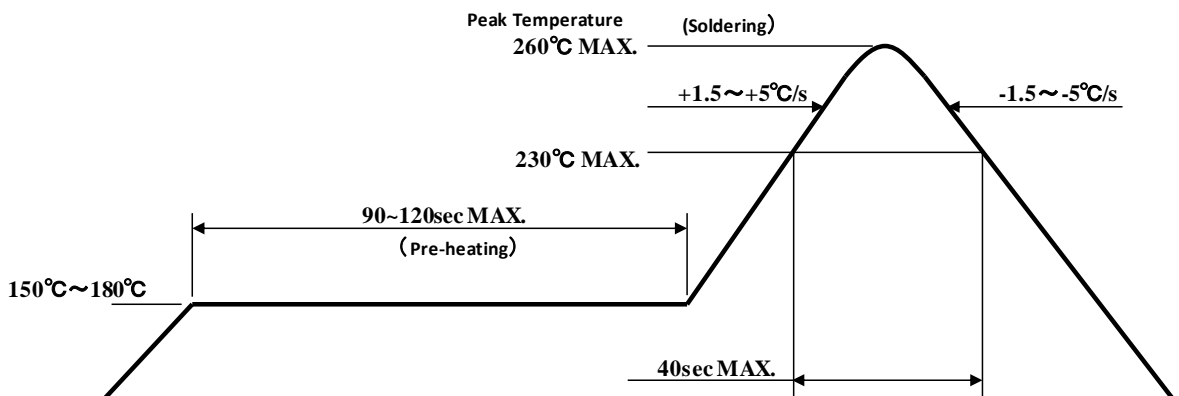


## 【Soldering Precaution】

(acc.to:EIAJ-4701/300)

1. Heat stress during soldering will influence the reliability of LEDs, however that effect will vary on heating method. Also, if components of varying shape are soldered together, it is recommended to set the soldering pad temperature according to the component most vulnerable to heat (e.g., surface mount LED).
2. LED parts including the resin are not stable immediately after soldering ( when they are not at room temperature), any mechanical stress may cause damage to the product. Please avoid such stress after soldering, especially stacking of the boards which may cause the boards to warp and any other types of friction with hard materials.
3. Recommended temperature profile for the Reflow soldering is listed as the temperature of the resin surface. Temperature distribution varies on heating method, PCB material, other components in the assembly, and mounting density.  
Please do not repeat the heating process in Reflow process more than twice.

## 【Recommended Reflow Soldering Condition】



Notes 1 Temperature Profile for the reflow should be set to the surface temperature of resin which is on the top of LED. This should be the maximum temperature for soldering. Lowering the heating temperature and decreasing heating time is very effective in achieving higher reliability.

Notes 2 The reflow soldering process should be done up to twice(2 times Max). When second process is performed, interval between first and second process should be as short as possible to prevent absorption of moisture to resin of LED. The second soldering process should not be done until LEDs have returned to room temperature (by nature-cooling) after first soldering process.

4. If soldering manually, Stanley recommends using a soldering iron equipped with temperature control. During the actual soldering process, make sure that the soldering iron never touches the LED itself, and avoid the LED's electrode heating temperature reaching above the heating temperature of the solder pad. All repairs must be performed only once in the same spot, and please avoid reusing components.
5. In soldering process, immediately after iron tip is cleaned, please make sure that the soldering iron reaches the appropriate temperature before using. Also, please avoid applying any types of pressure to the soldered components before the solder has been cooled and hardened, as it may deteriorate solder performance and solder quality.

## 【Recommended Manual Soldering Condition】

Temperature of Iron Tip	350°C MAX.
Soldering Duration, Time	3sec. Max., 1 time

6. When using adhesive material for tentative fixatives, thermosetting resin or Ultraviolet radiation (UV) setting resin with heat shall be recommended.  
《The curing condition, Temperature:150°C Max./Time:120sec. Max.》
7. Flow soldering (dip soldering) is not recommended for this product.
8. Isopropyl alcohol is recommended for cleaning. Some chemicals, including Freon substitute detergent could corrode or affect the optical characteristics of the lens or the casing surface. Please review the reference chart below for cleaning. Cleaning with ultrasonic shall not be recommended.

Chemical	○ / ×
Isopropyl Alcohol	○
Ethyl Alcohol	○
Pure water	○
Trichloroethylene	×
Chloroethene	×
Acetone	×
Thinner	×



## 【 Other Precautions 】

1. Stanley LED Lamps have semiconductor characteristics and are designed to ensure high reliability. However, the performance may vary depending on usage conditions.
2. Absolute Maximum Ratings are set to prevent LED lamps from failing due to excess stress( temperature, current, voltage, etc.). Usage conditions must not exceed the ratings for a moment, nor do reach one item of absolute maximum rating s simultaneously.
3. In order to ensure high reliability from LED Lamps, variable factors that arise in actual usage conditions should be taken it to account for designing. ( Derating of TYP., MAX Forward Voltage, etc.)
4. Please insert Straight Protective Resistors into the circuit in order to stabilize LED operation and to prevent the device from igniting due to excess current.
5. Please check the actual performance in the assembly because the Specification Sheets are described for LED device only.
6. Please refrain from looking directly at the light source of LED at high output, as it may harm your vision.
7. The products are designed to operate without failure in recommended usage conditions. However, please take the necessary precautions to prevent fire, injury, and other damages should any malfunction or failure arise
8. The products are manufactured to be used for ordinary electronic equipment. Please contact our sales staff beforehand when exceptional quality and reliability are required, and the failure or malfunction of the products might directly jeopardize life or health ( such as for airplanes, aerospace, transport equipment, medical applications, nuclear reactor control systems and so on).
9. The formal specification sheets shall be valid only by exchange of documents signed by both parties.

This product is baked (moisture removal) before packaging, and is shipped in moisture-proof packaging (as shown below) to minimize moisture absorption during transportation and storage. However, with regard to storing the products, Stanley recommends the use of dry-box under the following conditions is recommended. Moisture-proof bag as the packaging is made of anti-static material but packaging box is not.

## 【Recommended Storage Condition / Products Warranty Period】

Temperature	+5~30°C
Humidity	Under 70%

In the case of the package unopened , 6 months under 【 Recommended Storage Condition 】. Please avoid rapid transition from low temp. condition to high temp. condition and storage in corroding and dusty environment.

## 【Time elapsed after Package Opening.】

The package should not be opened until immediately prior to its use, and please keep the time frame between package opening and soldering which is **【maximum 72h】**. If the device needs to be soldered twice, both soldering must be completed within the 168h.

If any components should remain after their use, please seal the package and store them under the conditions described in the 【 Recommended Storage Condition 】.

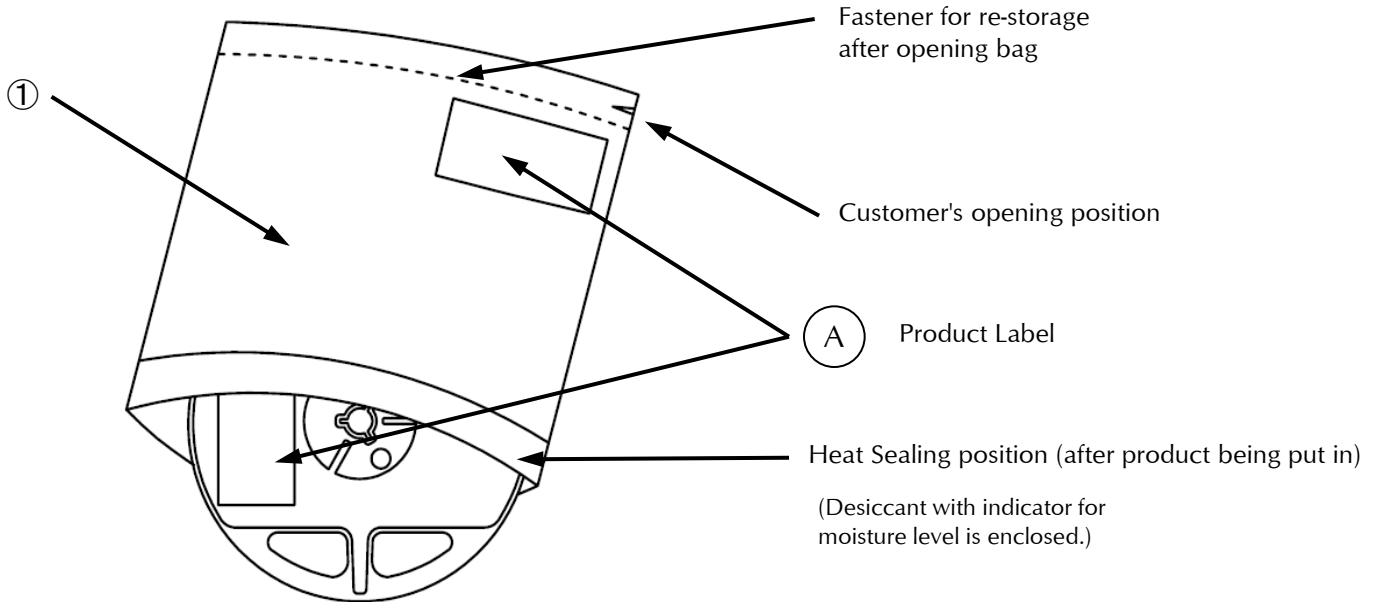
This product must be required to perform baking process (moisture removal) for **at least 23h,not exceed for 48h**, at 60±5 degrees Celsius if following conditions apply.

1. In the case of silica gel (blue) which indicates the moisture level within the package, changes or loses its blue color.
2. In the case of time is passed for 72h after the package is opened once.

Baking process should be performed after LED having been taken out of the package.

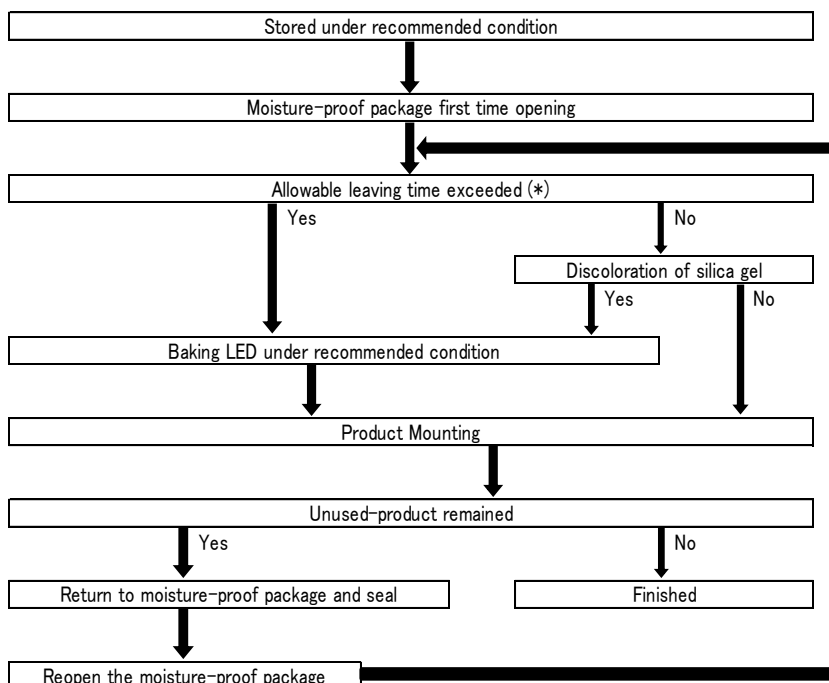
Baking may be performed in the tape-reel form , however if it is performed with the reel stacked over one another, it may cause deformation of the reels and taping materials and later obstruct mounting. Please handle only once it has returned to room temperature. Provided that, baking process shall be 2 times MAX.

**【Moisture-proof Packaging Specification】**



SYM.	PART NAME	MATELRIAL	REMARKS
①	Moisture-proof bag with Aluminum layer	PET+Al+PE	with ESD protection

**【Flow Chart-package Opening to Mounting】**



Allowable leaving time means the maximum allowable leaving time after opening package, which depends on each LED type. The allowable leaving time should be calculated from the first opening of package to the time when soldering process is finished. When judging if the allowable leaving time has exceeded or not, please subtract the soldering time. The allowable leaving time after reopening should be calculated from the first opening of package, or from the time when baking process is finished.

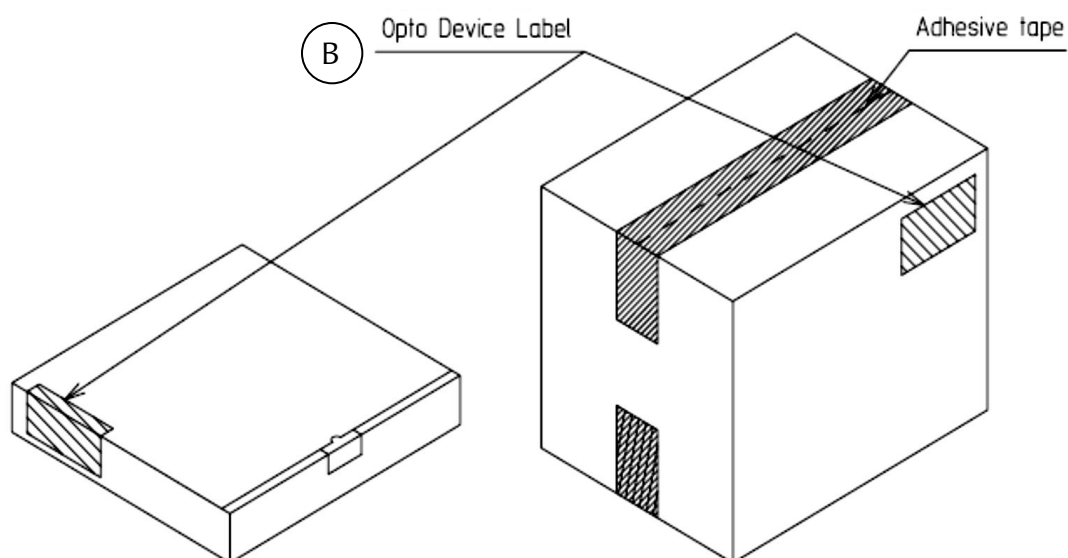
## 【 Packing box 】

(RoHS•ELV Compliant)

Box TYPE	Outline dimension L × W × H (mm)	Capacity of the box
Type A	280 × 265 × 45	3 reels
Type B	310 × 235 × 265	15 reels
Type C	440 × 310 × 265	30 reels

The above measure is all the reference value.

Box for shipment is selected out of the above table, according to the shipping quantity.



Type A

Material / box : Cardboard C5BF

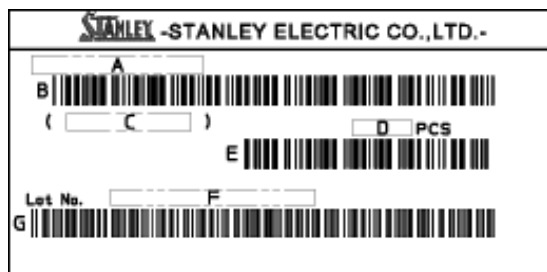
Type B,C

Material / box : Cardboard K5AF  
Partition : Cardboard K5BF

## 【Label Specification】

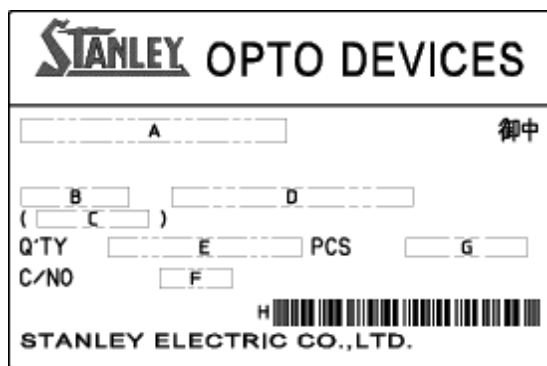
( acc.to JIS-X0503(Code-39) )

### A Product label



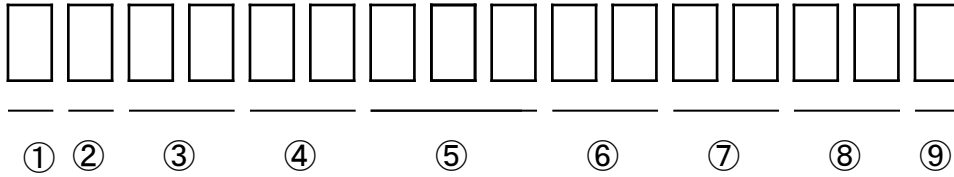
- A. Parts number
- B. Bar-code for parts number
- C. Parts code (In-house identification code for each parts number)
- D. Packed parts quantity
- E. Bar-Code for packed parts quantity
- F. Lot number & Rank  
(refer to Lot Number Notational System for details)
- G. Bar-Code for Lot number & Rank

### B Opto device label



- A. Customer Name
- B. Parts Type
- C. Parts Code
- D. Parts Number
- E. Packed Parts Quantity
- F. Carton Number
- G. Shipping Date
- H. Bar-Code for In-house identification Number

<Remarks> Bar-code font : acc.to Code-39(JIX0503)



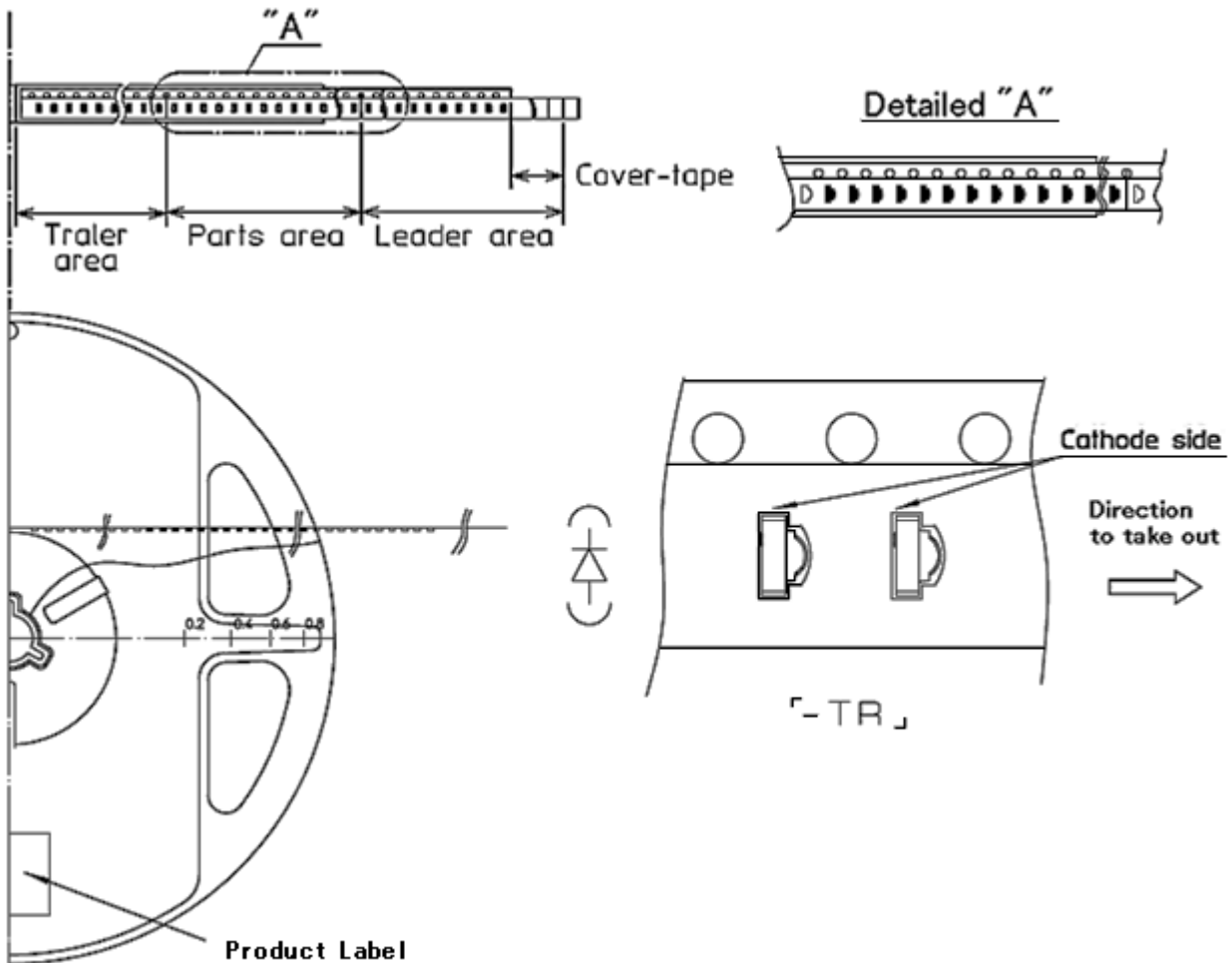
- ① - 1digit : Production Location (Mark identify alphabet)
- ② - 1digit : Production Year (Last Digit of Production Year shall be indicate as 2009→9,2010→0,2011→1,···)
- ③ - 2digits : Production Month (Jan. to Sep. ,shall be indicated as 01,02,03,····)
- ④ - 2digits : Production Date
- ⑤ - 3digits : Serial Number
- ⑥ - 2digits : Tape and Reel following Number
- ⑦ - 2digits : Luminous Intensity Rank.  
(If luminous intensity rank is 1 digit, "-" shall be dashed on the place for the second digit.  
If there is no identified rank, "- -" shall be used to indicate.)
- ⑧ - 2digits : Chromaticity Rank  
(If chromaticity rank is 1 digit, "-" shall be dashed on the place for the second digit.  
If there is no identified rank, "- -" shall be used to indicate.)
- ⑨ - 1digit : Option Rank (Stanley normally print "-" to indicate.)

# Taping and Reel Specifications

PP1199FB-TR

(acc.to JIS-C0806-03)

## 【Appearance】



Note "-TR" means cathode side of LEDs should be placed on the sprocket-hole side.

Items		Specifications	Remarks
Leader area	Cover-tape	Cover-tape shall be longer than 200mm without carrier-tape	The end of cover-tape shall be held with adhesive tape.
	Carrier-tape	Empty pocket shall be more than 10 pieces.	Please refer to the above figure for Taping & reel orientation .
Trailer area		Empty pocket shall be more than 15 pieces.	The end of taping shall be inserted into a slit of the hub.

(acc.to JIS-C0806-03)

## 【Qty. per Reel】

4,000parts/reel

## 【Mechanical strength】

Cover-tape adhesive strength shall be 0.1 ~ 1.0N ( An angle between carrier-tape and cover-tape shall be 170 deg. ) Both tapes shall be so sealed that the contained parts will not come out from the tape when it is bent at a radius of 15mm.

## 【Others】

Reversed-orientation, Up-side down placing, side placing and out of spec. parts mix shall not be held.  
No more than 2 connecting empty pockets of taping.



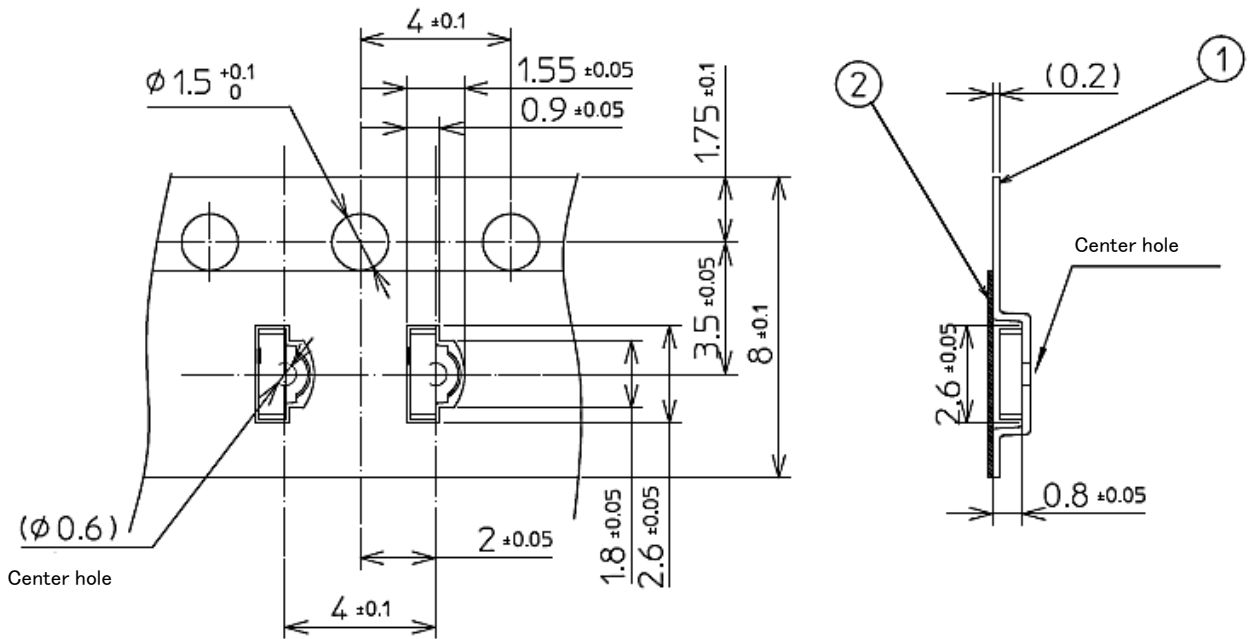
# Taping and Reel Specifications

PP1199FB-TR

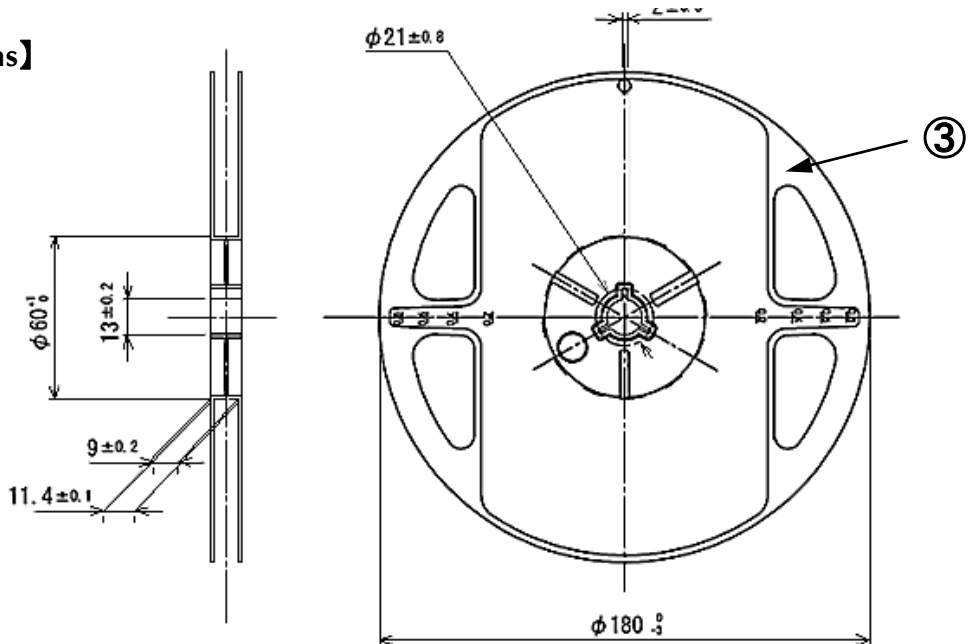
(acc.to JIS-C0806-03)

Unit :mm

## 【Taping Dimensions】



## 【Reel Dimensions】



NO.	PART NAME	REMARKS
①	Carrier-tape	Anti-Static Grade
②	Cover-tape	Anti-Static Grade
③	Carrier-reel	Conductive Grade

# Correspondence to RoHS•ELV instruction

PP1199FB-TR

This product is in compliance with RoHS•ELV.

Prohibition substance and its criteria value of RoHS•ELV are as follows.

- RoHS instruction ..... Refer to following (1)~(6).
- ELV instruction ..... Refer to following (1)~(4).

	Substance Group Name	Criteria Value
(1)	Lead and its compounds	1,000ppm Max
(2)	Cadmium and its compounds	100ppm Max
(3)	Mercury and its compounds	1,000ppm Max
(4)	Hexavalent chromium	1,000ppm Max
(5)	PBB	1,000ppm Max
(6)	PBDE	1,000ppm Max

# Reliability Testing Result

PP1199FB-TR

## 1. Reliability Testing Result

Test Item	Reference Standard	Test Condition	Duration	Failure
Steady state operating life	EIAJ ED-4701 /100(101)	Ta=25°C, Maximum Voltage (Dark conditon)	1,000h	0 / 15
High temperature operating life	EIAJ ED-4701 /100(101)	Ta=85°C V <sub>R</sub> =5V (Dark conditon)	1,000h	0 / 15
Low temperature operating life	EIAJ ED-4701 /100(101)	Ta=-30°C V <sub>R</sub> =5V (Dark conditon)	1,000h	0 / 15
Temperature humidity operating life	EIAJ ED-4701 /100(102)	Ta=60°C Rh=90% V <sub>R</sub> =5V (Dark conditon)	1,000h	0 / 15
High temperature storage	EIAJ ED-4701 /200(201)	Ta = 100°C	1,000h	0 / 15
Low temperature storage	EIAJ ED-4701 /200(202)	Ta = -40°C	1,000h	0 / 15
Temperature humidity storage	EIAJ ED-4701 /100(103)	Ta=60°C Rh=90%	1,000h	0 / 15
Temperature cycle	EIAJ ED-4701 /100(105)	Ta=-40°C(30min.)~25°C(15min.) ~100°C(30min.)~25°C(15min.)	5cycle	0 / 15
Resistance to soldering heat	EIAJ ED-4701 /300(301)	Moisture Soak : 30°C 70% 72h Preheating : 150~180°C 120sec MAX. Soldering : 230~260°C 40sec. Max.	2times	0 / 15
Human body model electrostatic discharge ※1	EIAJ ED-4701 /300(304)	C=100pF R2=1.5KΩ ±2,000V	once each polarity	0 / 10

※1 Reference test

## 2. Failure Criteria

Item	Symbol	Condition	Failure Criteria
Relative Photocurrent	I <sub>P</sub>	V <sub>R</sub> = 5 V , Ee=5mW/cm <sup>2</sup>	Testing Max. Value ≥ Initial Value × 1.3 Testing Min. Value < Initial Value × 0.7
Dark Current	I <sub>D</sub>	V <sub>R</sub> = 10 V	Testing Max. Value ≥ 20nA × 2.5
Cosmetic Appearance	-	-	Notable discoloration, deformation and cracking

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- 2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.
- 3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.
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