

1.10mm Height 1206 Package
Phototransistor
Technical Data Sheet

Part No.: LL-S150PTC-1A

Features:

- ◇ Fast response time.
- ◇ High photo sensitivity.
- ◇ Small junction capacitance.
- ◇ Package in 8mm tape on 7" diameter reel.
- ◇ The product itself will remain within RoHS compliant Version.

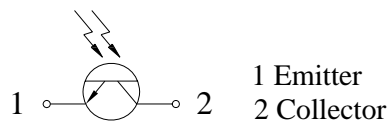
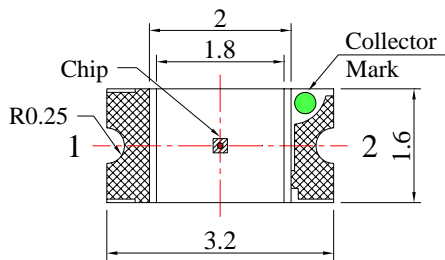
Descriptions:

- ◇ The S150PT is a high speed and high sensitive silicon NPN phototransistor in miniature SMD package which is molded in a water clear epoxy with flat top view lens.
- ◇ Due to its water clear epoxy, the device is spectrally matched to visible and infrared emitting diode.

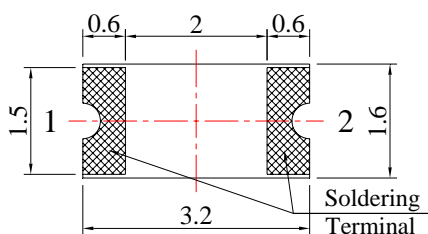
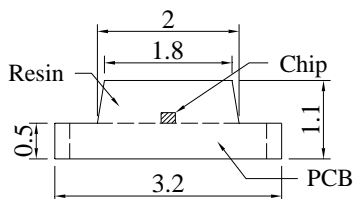
Applications:

- ◇ Automatic door sensor.
- ◇ Infrared applied system.
- ◇ Counters and sorters.
- ◇ Encoders.
- ◇ Floppy disk drive.
- ◇ Optoelectronic switch.
- ◇ Video camera, tape and card readers.
- ◇ Position sensors.
- ◇ Copier.
- ◇ Game machine.

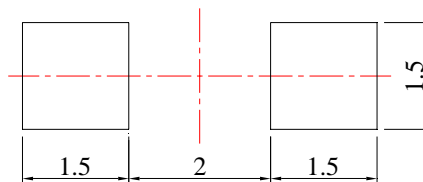
Package Dimension:



Polarity



Recommended Soldering Pad Dimensions



Unit: mm
Tolerance: $\pm 0.10\text{mm}$

Part No.	Chip Material	Lens Color	Source Color
LL-S150PTC-1A	Silicon	Water Clear	Phototransistor

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.10\text{ mm}$ (.004") unless otherwise specified.
3. Specifications are subject to change without notice.

Absolute Maximum Ratings (Ta=25°C)

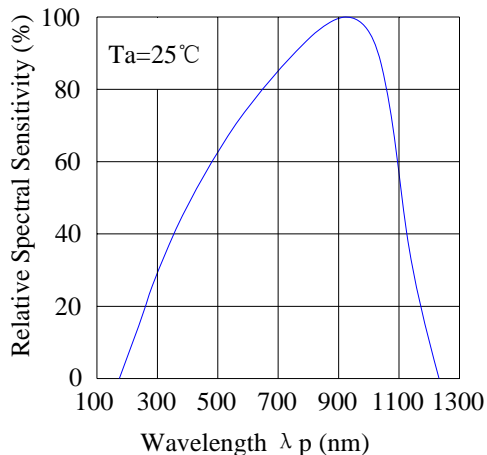
Parameters	Symbol	Rating	Unit
Power Dissipation At (or below) 25°C free Air Temperature	P_D	75	mW
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector-Voltage	V_{ECO}	5	V
Collector Current	I_C	20	mA
Operating Temperature	T_{opr}	-40 to +80	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Soldering Temperature	T_{sol}	260°C for 5 Seconds	

Electrical Optical Characteristics at Ta=25°C

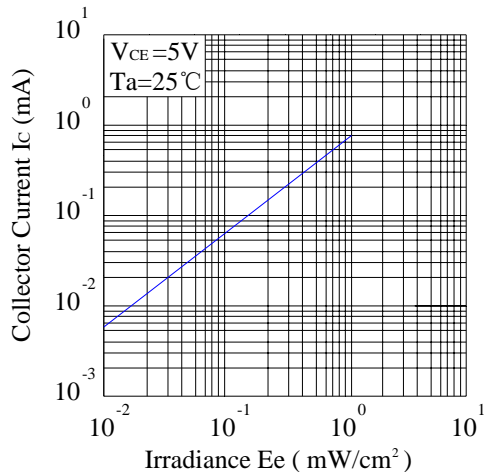
Parameters	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-Emitter Breakdown Voltage	BV_{CEO}	30	---	---	V	$I_C=100\mu A$, $E_e=0mW/cm^2$
Emitter-Collector Breakdown Voltage	BV_{ECO}	5	---	---	V	$I_E=100\mu A$, $E_e=0mW/cm^2$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	---	---	0.40	V	$I_C=2mA$, $E_e=1mW/cm^2$
Collector Dark Current	I_{CEO}	---	---	100	nA	$V_{CE}=20V$, $E_e=0mW/cm^2$
On State Collector Current	$I_{C(ON)}$	0.10	0.50	---	mA	$V_{CE}=5V$, $E_e=1mW/cm^2$
Optical Rise Time (10% to 90%)	T_R	---	15	---	μs	$V_{CE}=5V$, $I_C=1mA$, $R_L=1000\Omega$
Optical Fall Time (90% to 10%)	T_F	---	15	---		
Reception Angle	$2\theta_{1/2}$	---	120	---	Deg	
Wavelength Of Peak Sensitivity	λ_P	---	940	---	nm	
Rang Of Spectral Bandwidth	$\lambda_{0.5}$	400	---	1100	nm	

Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)

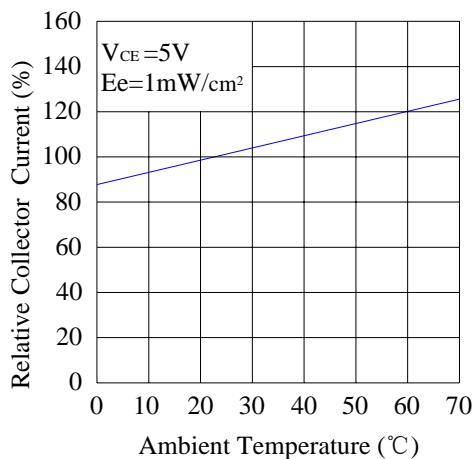
Spectral Sensitivity



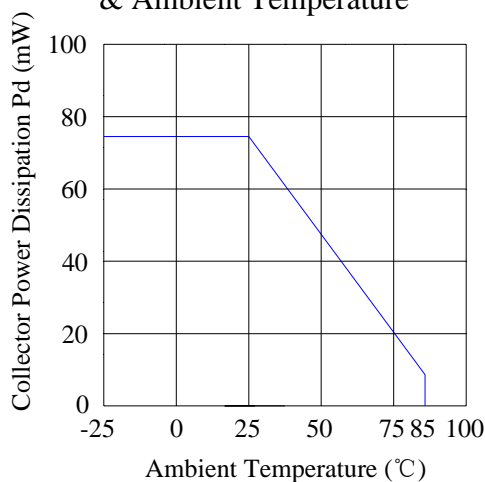
Collector Current & Irradiance



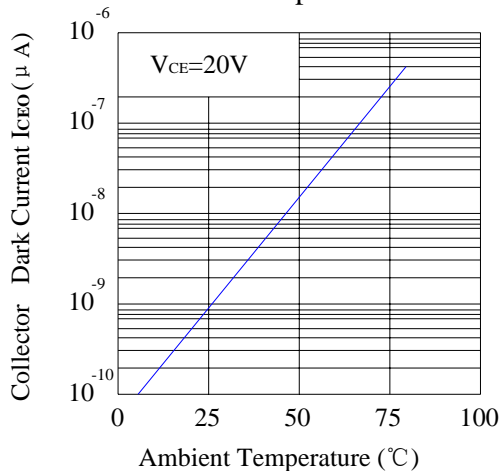
Relative Collector Current & Ambient Temperature



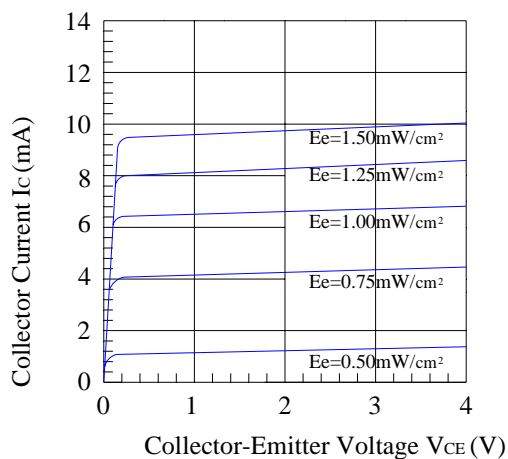
Collector Power Dissipation & Ambient Temperature



Collector Dark Current & Ambient Temperature



Collector Current & Collector-Emitter Voltage



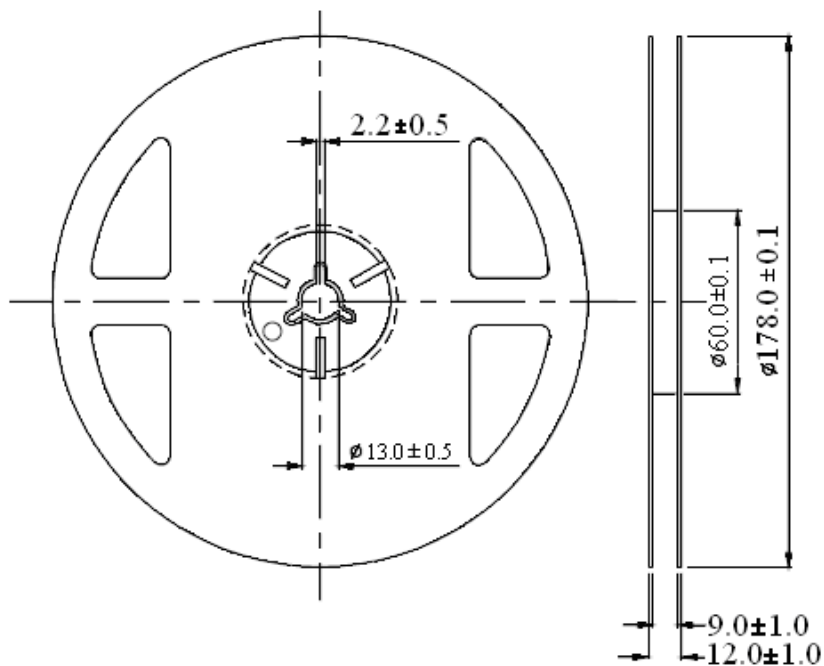
Reliability Test Item And Condition:

The reliability of products shall be satisfied with items listed below:

Confidence level: 90%.

LTPD: 10%.

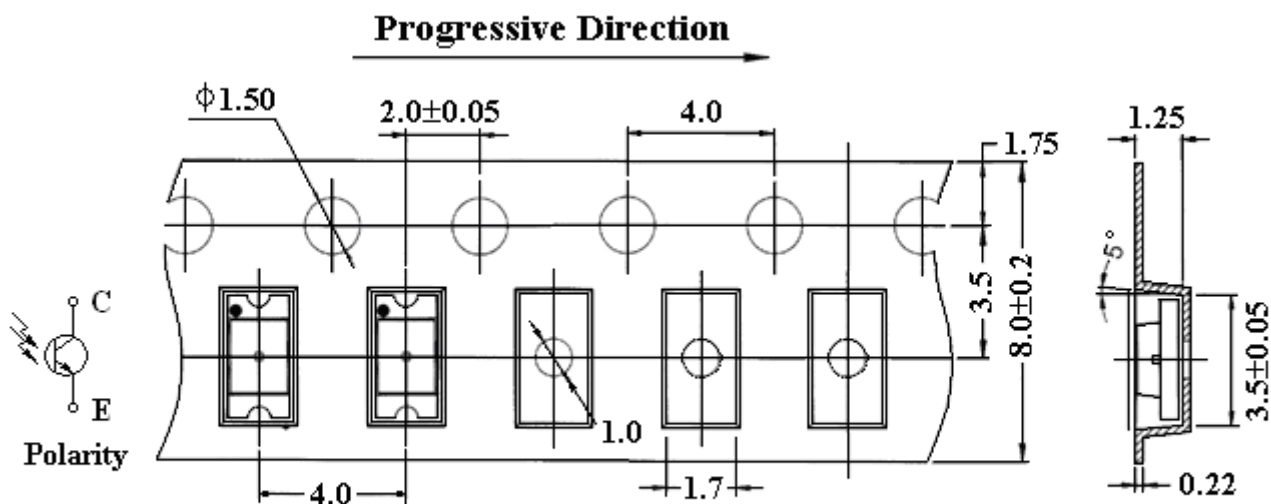
No.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgment Criteria	Ac/ Re
1	Reflow Soldering	TEMP.: 260°C±5°C 5secs	6mins	22pcs	$I_{C(ON)} \leq L \times 0.8$ L: Lower Specification Limit	0/1
2	Temperature Cycle	H: +100°C 15mins ↑ 5 mins ↓ L: -40°C 15mins	50Cycles	22pcs		0/1
3	Thermal Shock	H: +100°C 15mins ↑ 10mins ↓ L: -10°C 5mins	50Cycles	22pcs		0/1
4	High Temperature Storage	TEMP.: +100°C	1000hrs	22pcs		0/1
5	Lower Temperature Storage	TEMP.: -40°C	1000hrs	22pcs		0/1
6	DC Operating Life	$V_{CE}=5V$	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85°C / 85% R.H	1000hrs	22pcs		0/1

Reel Dimensions:


Unit: mm
Tolerance: ± 0.25 mm

Carrier Tape Dimensions:

Loaded quantity 3000 PCS Per reel.



Unit: mm
Tolerance: ± 0.10 mm

Please read the following notes before using the product:

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

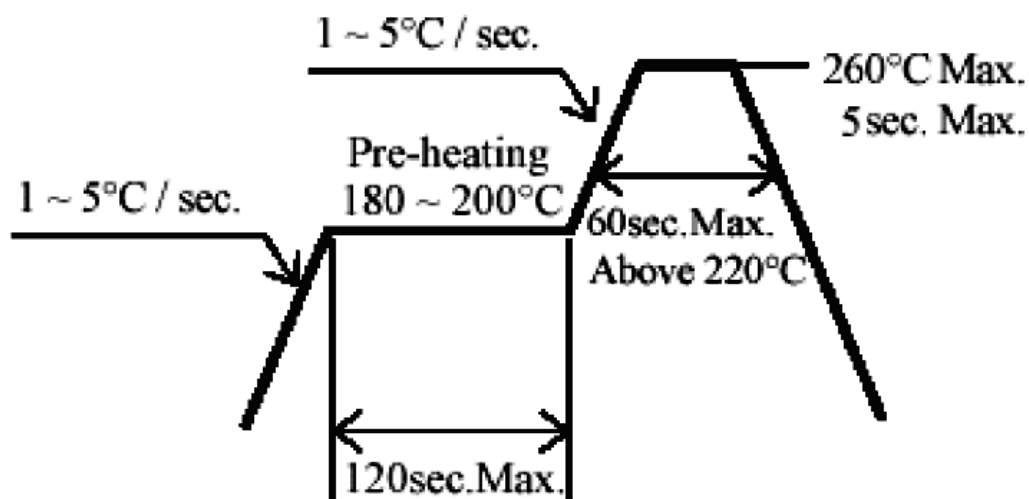
2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture adsorbent material (silica gel) has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile.



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

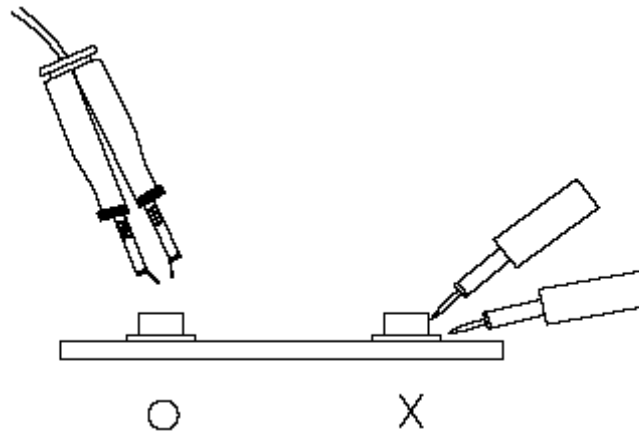
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260°C for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



6. Caution in ESD

Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.