



SMD   ■   CHIP  
SP1605PP-02

### Features

- .0502 package
- .Top view LED
- .Compatible with infrared and vapor phase reflow solder process.
- .Wide viewing angle
- .Pb-free
- .RoHS compliant

### Description

- .The CIEL 1605package has high efficacy, high power consumption, wide viewing angle and a compact form factor.
- .These features make this package an ideal LED for all lighting applications

### Applications

- .General lighting
- .Decorative and Entertainment Lighting
- .Indicators
- .Automotive Telecommunication
- .Switch lights

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Continuous Forward Current	I <sub>F</sub>	20	mA
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Peak Forward Current (T=1.3s, tp=0.3s)	I <sub>FP</sub>	100	mA
Soldering Temperature*1	T <sub>sol</sub>	Reflow Soldering : 260 °C Hand Soldering : 350 °C	for 10 sec. for 3 sec.
Power Dissipation at(or below) 25°C Free Air Temperature	P <sub>d</sub>	75	mW
Electrostatic Discharge(HBM)	ESD	1000	V

**Notes:** \*1: Soldering time ≦ 5 seconds.

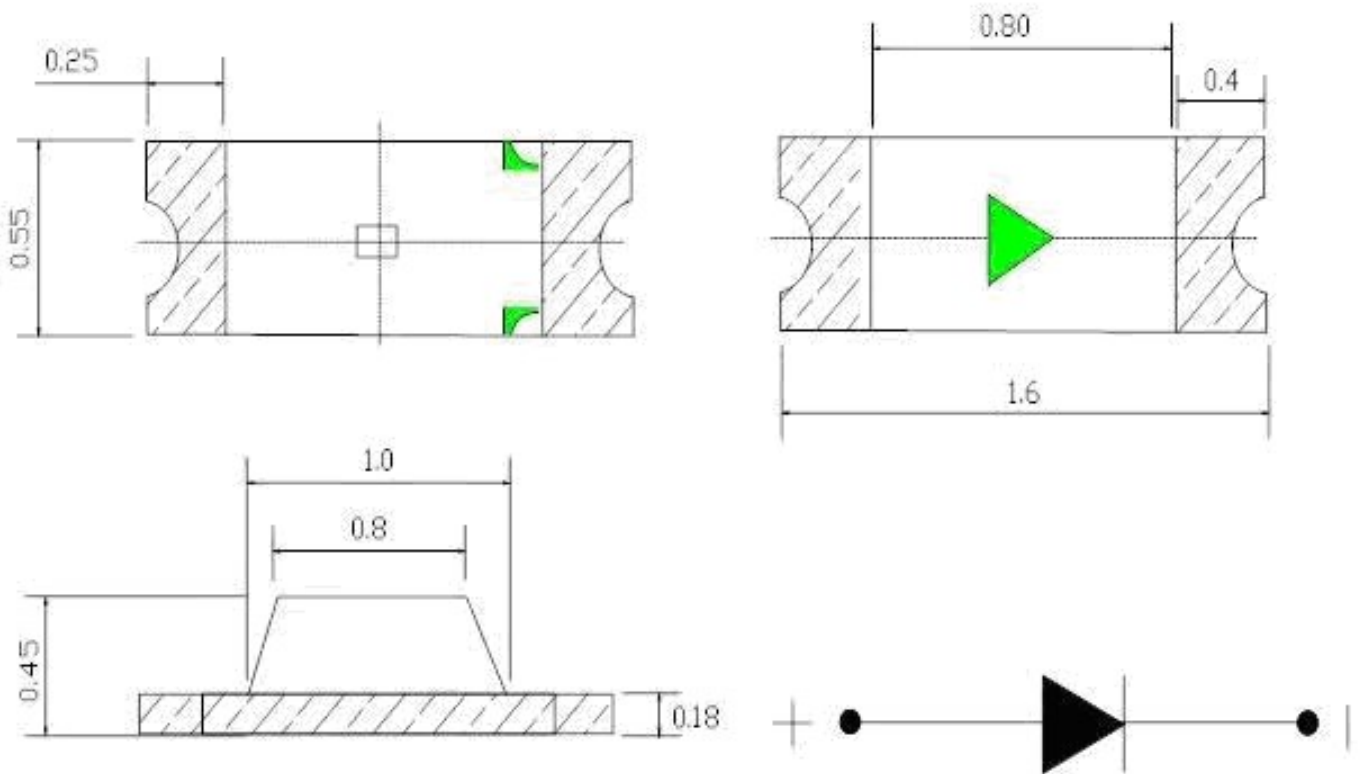
### Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V <sub>F</sub>	2.7	---	3.2	V	I <sub>F</sub> =20mA
Reverse Current	I <sub>R</sub>	---	---	2	μ A	V <sub>R</sub> =9V
Luminous Intensity	Φ	650	---	1100	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =20mA
Color rendering index	Ra	80	90	---	/	I <sub>F</sub> =20mA

**Notes:**

1. Tolerance of Luminous Intensity ±10%.
2. Tolerance of Forward Voltage : ±0.05V.

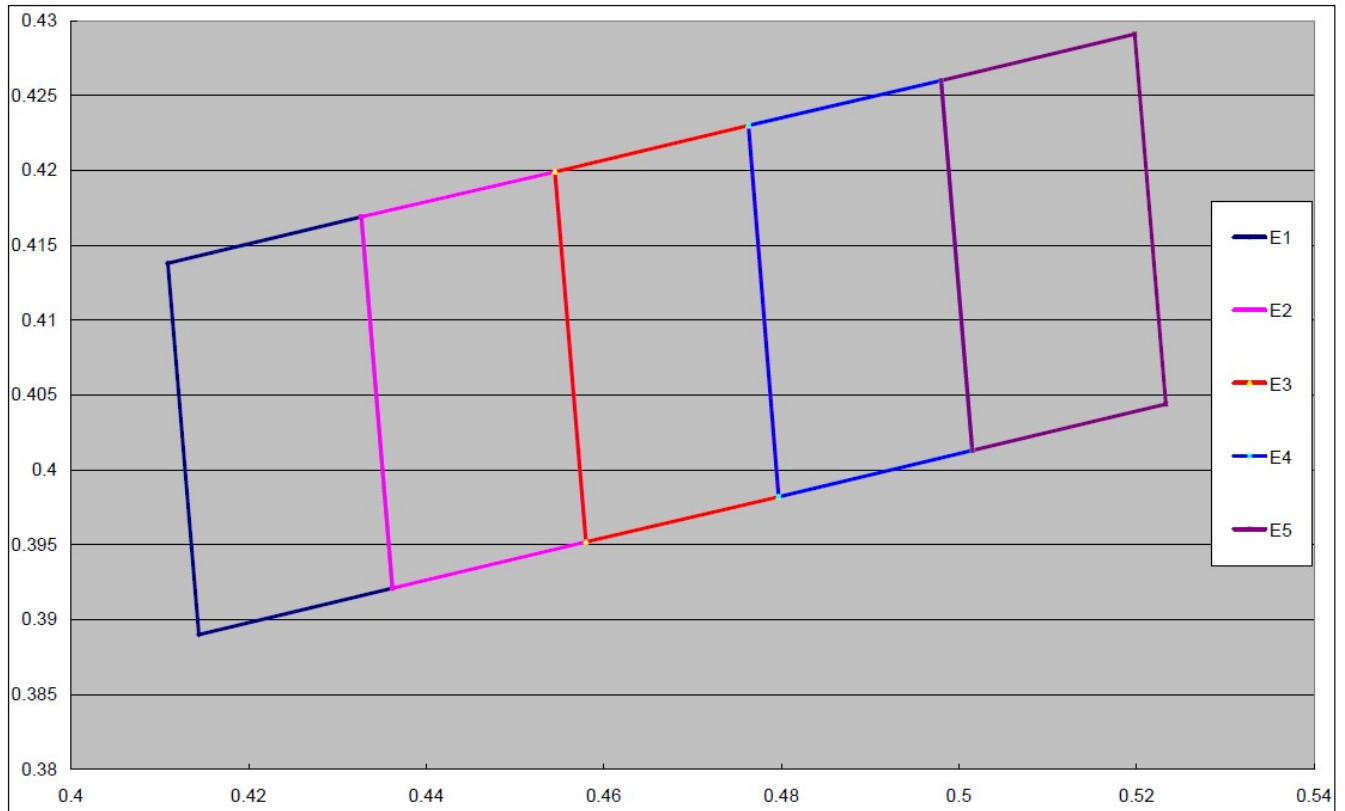
### Package Dimensions



### Note:

Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm

## Bin Range of Chromaticity Coordinates



## Label Form Specification

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

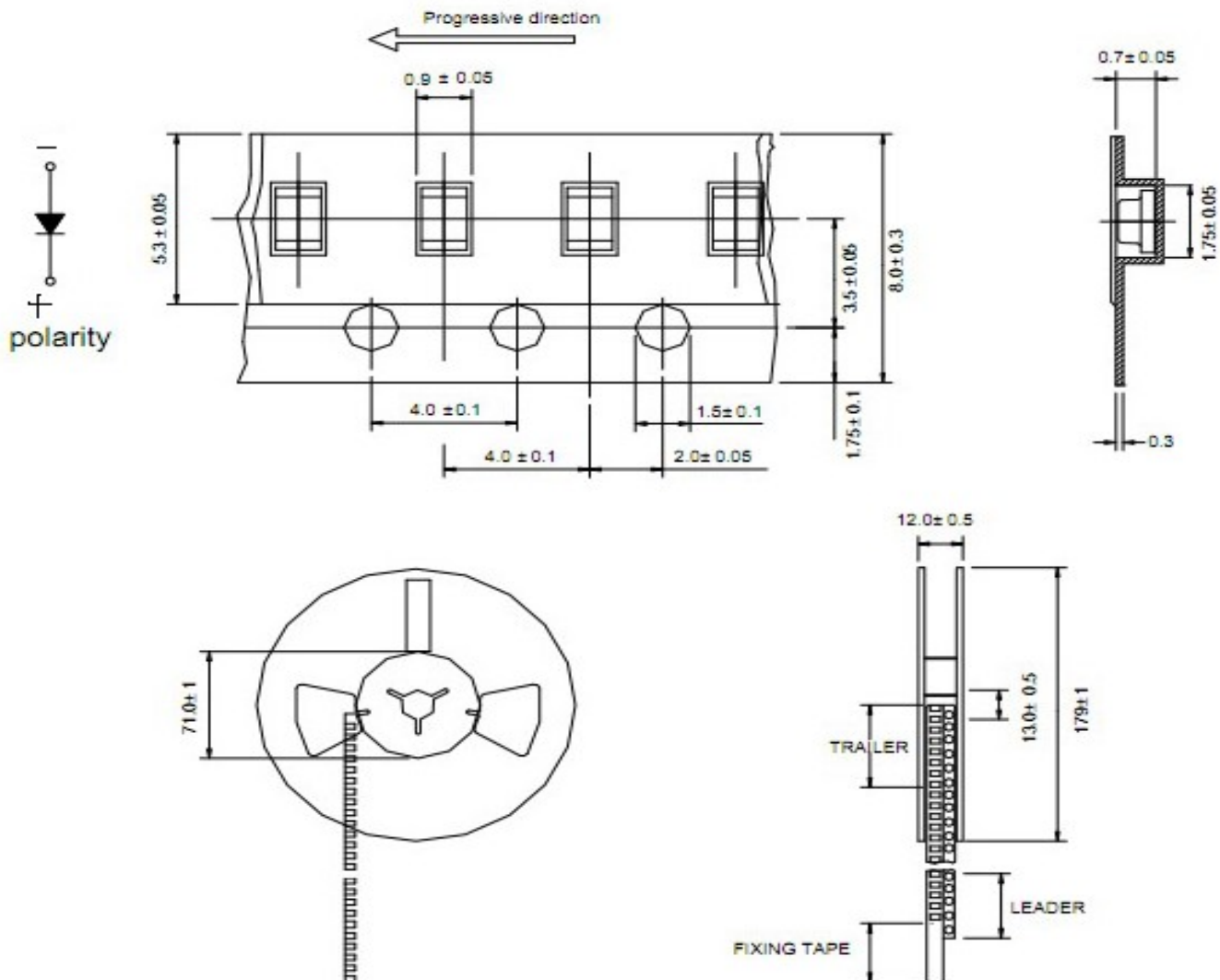
CAT: Ranks

HUE: Peak Wavelength

REF: Reference

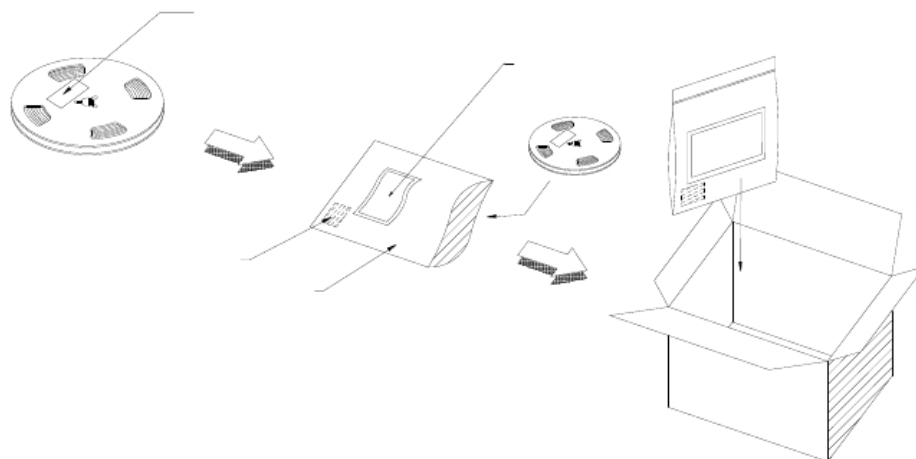
LOT No: Lot Number

## Reel Dimensions



**Note:**

- 1.Tolerance unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm.
- 2.Minimum packing amount is 1000/2000 pcs per reel.

**Moisture Resistant Packing Process**

**Reliability Test Items and Conditions**

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

Confidence level: 90%

LTPD: 10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260°C/10sec.	6 Min	22 PCS	0/1
2	Thermal Shock	H : +100°C 5min / 10 sec L : -10°C 5min	300 Cycles	22 PCS	0/1
3	Temperature Cycle	H : +100°C 15min / 5 min L : -40°C 15min	300 Cycles	22 PCS	0/1
4	High Temperature/Humidity Reverse Bias	Ta=85°C,85%RH	1000 Hrs.	22 PCS	0/1
5	Low Temperature Storage	Ta=-40°C	1000 Hrs.	22 PCS	0/1
6	High Temperature Storage	Ta=100°C	1000 Hrs.	22 PCS	0/1
7	DC Operation Life	Ta=25°C If = 20 mA	1000 Hrs.	22 PCS	0/1

## Precautions For Use

### 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.

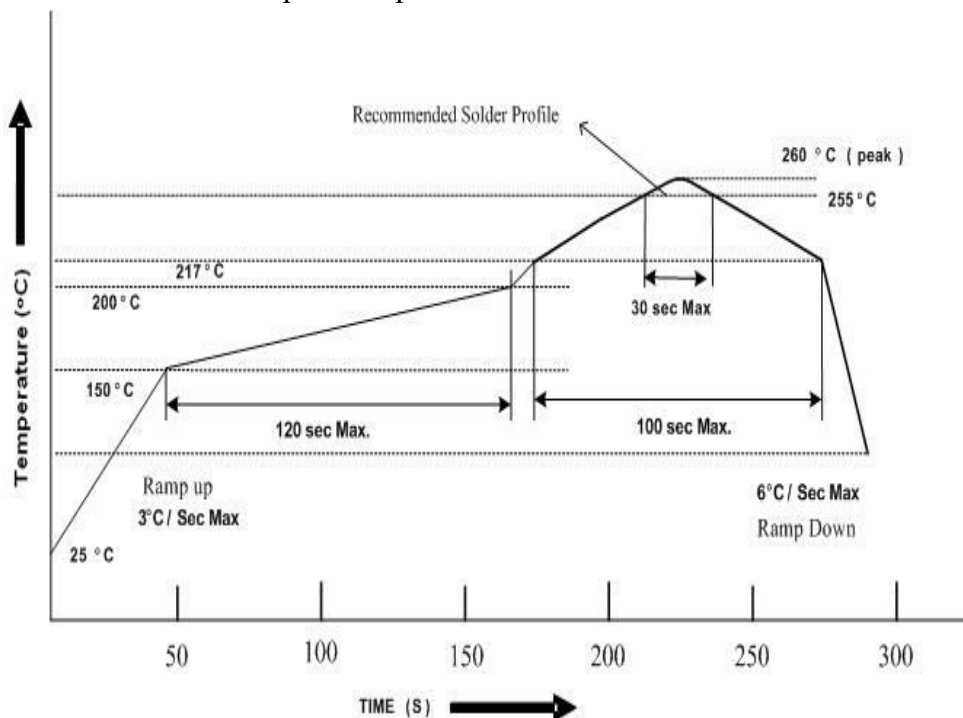
2.5 The LEDs should be used within 168 hours (7 days) after opening the package

2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment :  $60 \pm 5^{\circ}\text{C}$  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 350°C for 3 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.