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**American Opto Plus LED Corp.**  
**0.56" SMD Type LED Display**  
**SMA561LY-ST-1.5 G/W**  
**SMC561LY-ST-1.5 G/W**

● **EDIT HISTORY**

Version A: Jul. 15, 2015

Preliminary spec.

Version B: Jul. 22, 2015

1. Modify mechanical dimensions.
2. Modify typical internal equivalent circuit.

Version C: Apr. 25, 2019

1. Modify absolute maximum rating.
2. Modify forward voltage max data, from 2.6V to 2.4V.
3. Modify mechanical dimensions.
4. Modify curve graph.
5. Add packing spec.



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## 0.56" SMD Type LED Display

### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

#### ● FEATURES

- 0.56 inch (14.22 mm) Digit Height.
- Low current operation.
- Super thin SMD type.
- Gray face, White segment.
- RoHS compliant, Pb Free.

#### ● DESCRIPTION

The SMA561LY-ST-1.5 G/W & SMC561LY-ST-1.5 G/W

Are 0.56 inch (14.22mm) height single digit 7-segment display.

This device utilizes Super Bright Yellow LED chip which are made from AlGaInP on a transparent GaAs substrate.

The display has Gray face, White segment.

#### ● DEVICE

| PART NO             | DESCRIPTION    |
|---------------------|----------------|
| SMA561LY-ST-1.5 G/W | Common Anode   |
| SMC561LY-ST-1.5 G/W | Common Cathode |

**RoHS Compliance**



**Pb free.**





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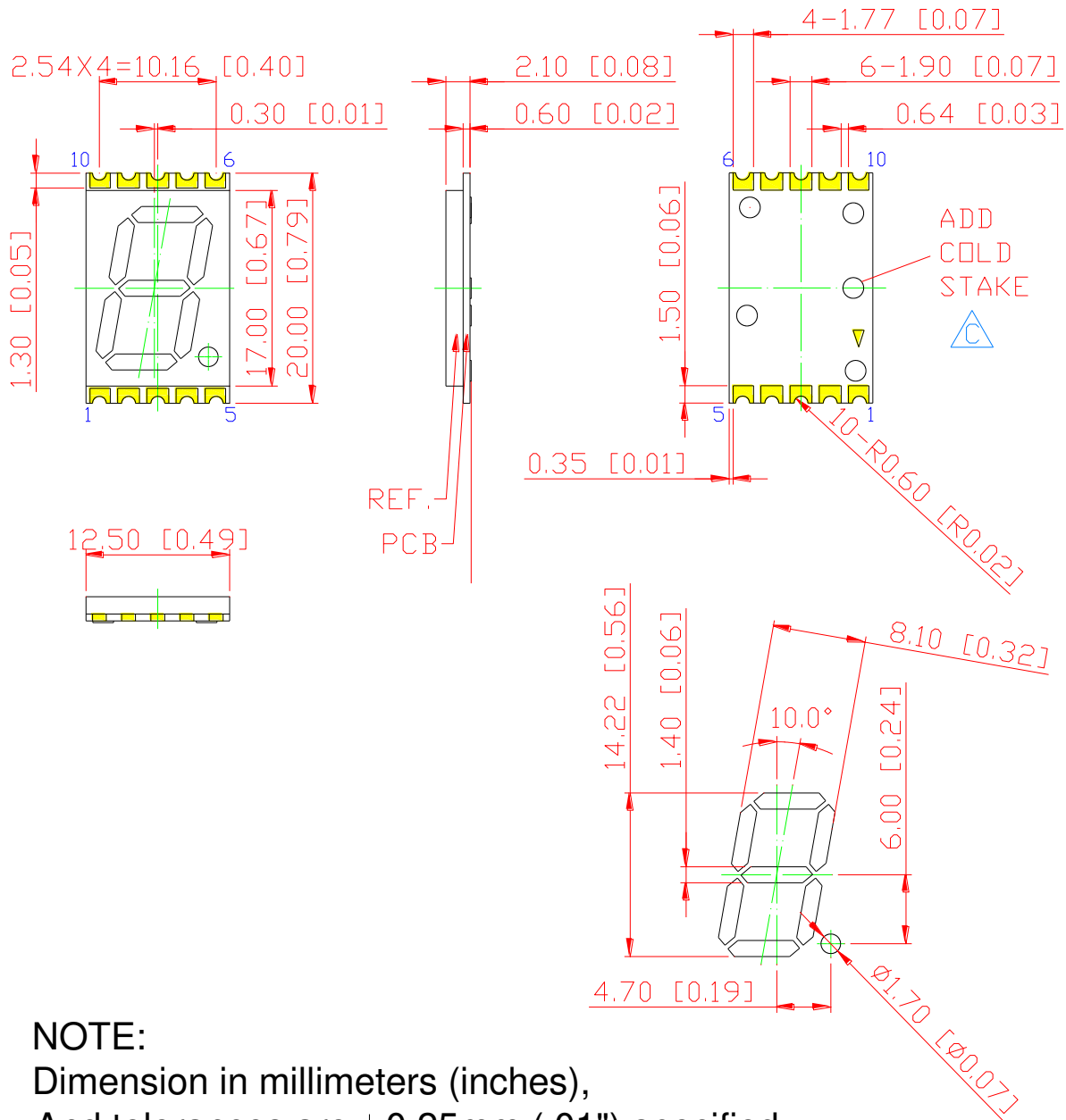
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## 0.56" SMD Type LED Display

### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

## MECHANICAL DIMENSIONS



### NOTE:

Dimension in millimeters (inches),

And tolerances are  $\pm 0.25\text{mm}$  (.01") specified.



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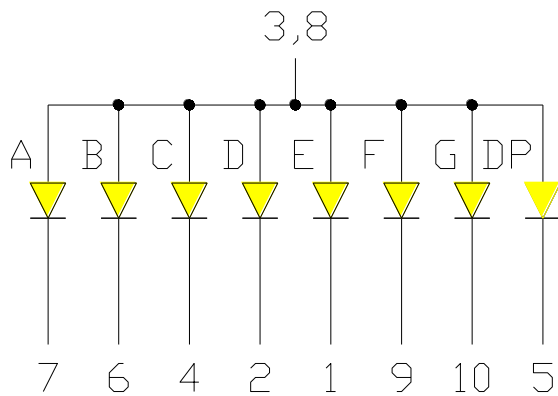
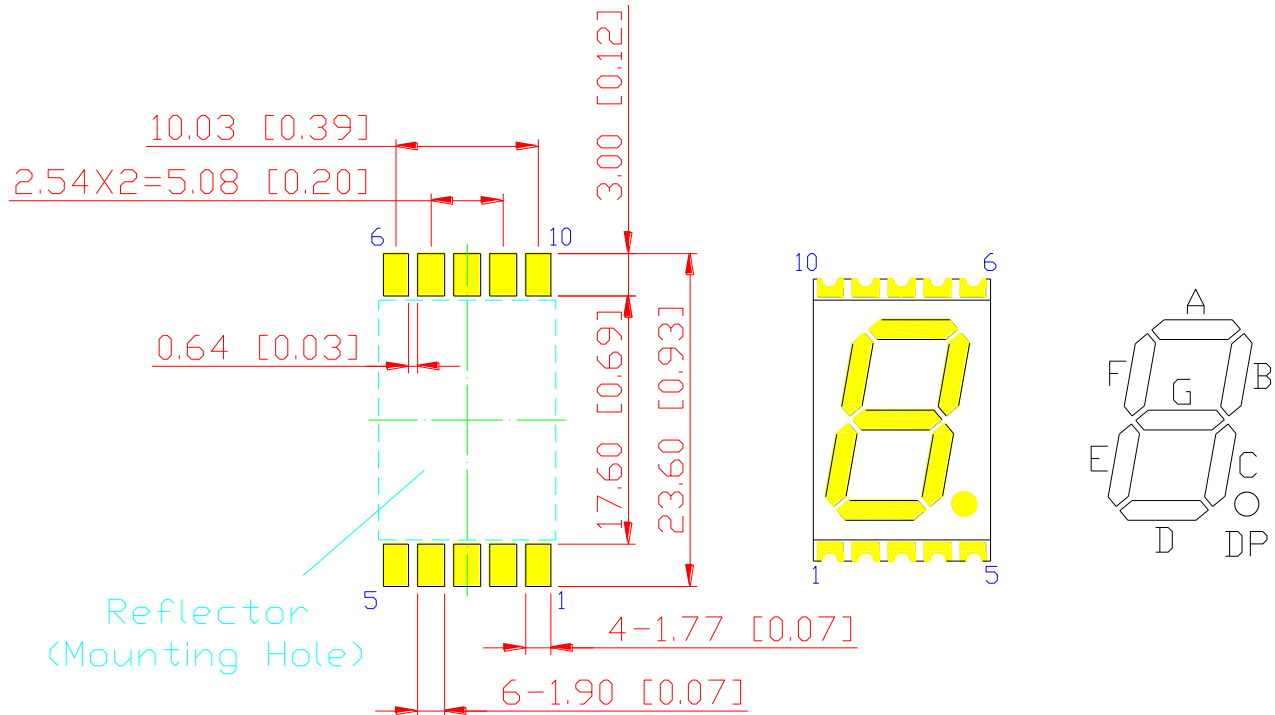
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## 0.56" SMD Type LED Display

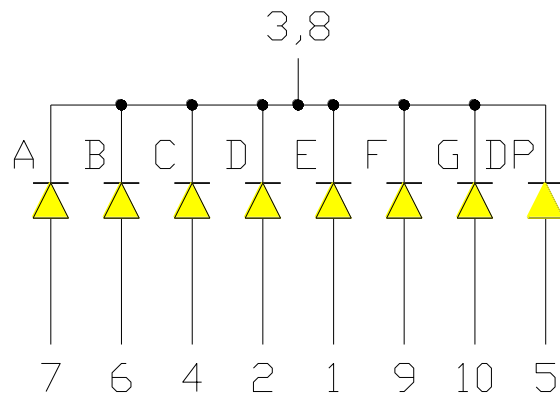
### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



SMA561LY-ST-1.5 G/W



SMC561LY-ST-1.5 G/W



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● **LY: SUPER BRIGHT YELLOW (AlGaInP/GaAs)**

ABSOLUTE MAXIMUM RATING AT  $T_a=25^{\circ}\text{C}$

| Parameter                            | Symbol    | Maximum Rating | Unit               |
|--------------------------------------|-----------|----------------|--------------------|
| Power dissipation                    | $P_{AD}$  | 48             | mW                 |
| Continuous forward current           | $I_{AF}$  | 20             | mA                 |
| Peak current (duty cycle 1/10, 1kHz) | $I_{PF}$  | 40             | mA                 |
| Reverse voltage                      | $V_R$     | 5              | V                  |
| Operating temperature                | $T_{OPR}$ | -40 to +85     | $^{\circ}\text{C}$ |
| Storage temperature                  | $T_{STG}$ | -40 to +85     | $^{\circ}\text{C}$ |

ELECTRICAL - OPTICAL CHARACTERISTICS AT  $T_a=25^{\circ}\text{C}$

| Characteristic               | Symbol          | Condition         | Min. | Type. | Max. | Unit          |
|------------------------------|-----------------|-------------------|------|-------|------|---------------|
| Forward Voltage, (Per Dice)  | $V_F$           | $I_F=20\text{mA}$ | -    | 2.1   | 2.4  | V             |
| Reverse Current, (Per Dice)  | $I_R$           | $V_R=5\text{V}$   | -    | -     | 10   | $\mu\text{A}$ |
| Peak Wavelength              | $\lambda_P$     | $I_F=20\text{mA}$ | -    | 593   | -    | nm            |
| Dominant Wavelength          | $\lambda_D$     | $I_F=20\text{mA}$ | 585  | -     | 595  | nm            |
| Luminous Intensity           | $I_V$           | $I_F=10\text{mA}$ | 10   | -     | 40   | mcd           |
| Spectral Line Half-Bandwidth | $\Delta\lambda$ | $I_F=20\text{mA}$ | -    | 20    | -    | nm            |



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● **LY: BIN GRADE (Unit : mcd) 10mA**

|                            | <b>G</b>    | <b>H</b>    | <b>I</b>    |
|----------------------------|-------------|-------------|-------------|
| <b>Super Bright Yellow</b> | 10.0 – 20.0 | 20.1 – 30.0 | 30.1 – 40.0 |

● **LY: HUE GRADE ( $\lambda_D$  : nm)**

| <b>1</b>      | <b>2</b>      | <b>3</b>      |
|---------------|---------------|---------------|
| 585.0 – 588.0 | 588.1 – 592.0 | 592.1 – 595.0 |

● **AVAILABLE BIN / HUE TABLE**

|    |    |    |
|----|----|----|
| G1 | H1 | I1 |
| G2 | H2 | I2 |
| G3 | H3 | I3 |



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### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

## ● LY: SUPER BRIGHT YELLOW (AlGaInP/GaAs) CURVE

Typical Electro-optical Characteristic Curves  
(25 °C Free Air Temperature Unless Otherwise Specified)

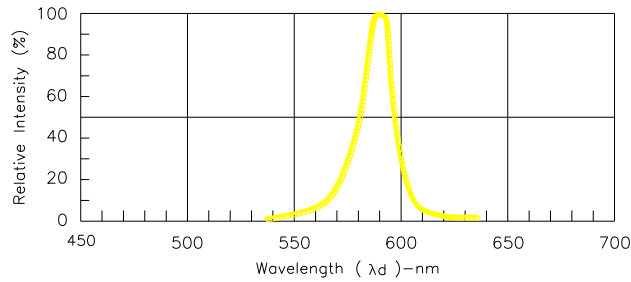


Fig.1-Relative Intensity VS. Wavelength

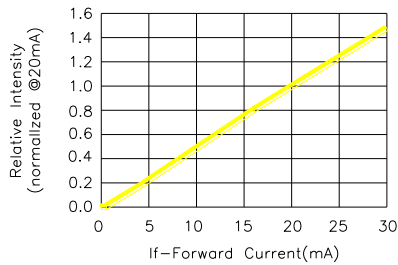


Fig.2-Relative Luminous Intensity vs. Forward Current

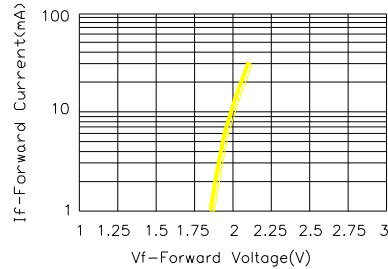


Fig.3-Forward Current vs. Forward Voltage

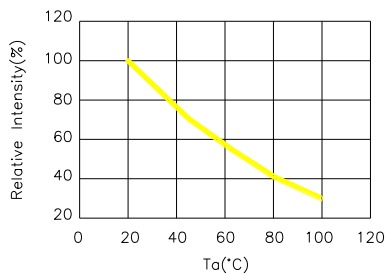


Fig.4-Relative Intensity(@20mA) vs. Ambient Temperature

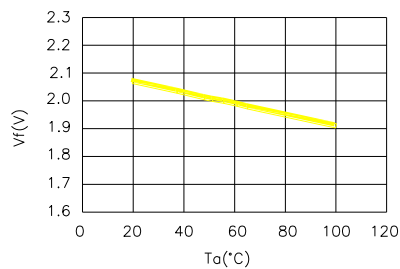


Fig.5-Forward Voltage(@20mA) vs. Ambient Temperature

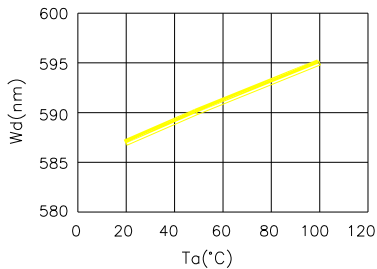


Fig.6-Dominant Wavelength(@20mA)  
VS. Ambient Temperature

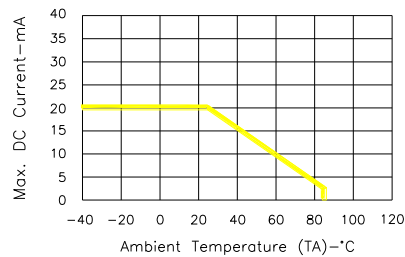


Fig.7-Max. Allowable DC Current  
VS. Ambient Temperature



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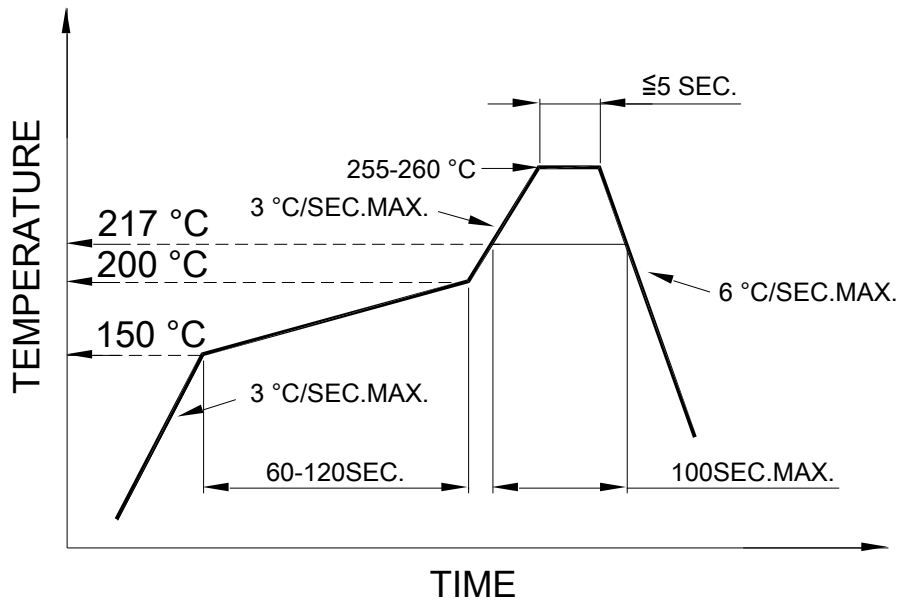
### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

## ● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



- We recommend the reflow temperature 245°C (+/- 5°C).  
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

## ● SOLDERING IRON

Basic spec is  $\leq 4$  sec when 260°C. If temperature is higher, time should be shorter (+10°C → 1 sec). Power dissipation of Iron should be smaller Than 15W, and temperature should be controllable. Surface temperature Of the device should be under 230°C.

## ● REWORK

- Customer must finish rework within 3 sec. under 350°C.
- The head of soldering iron cannot touch copper foil.





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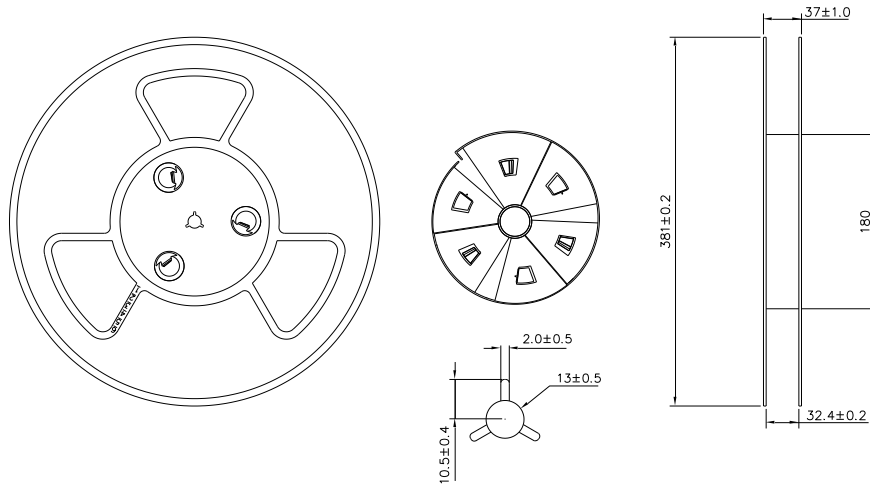
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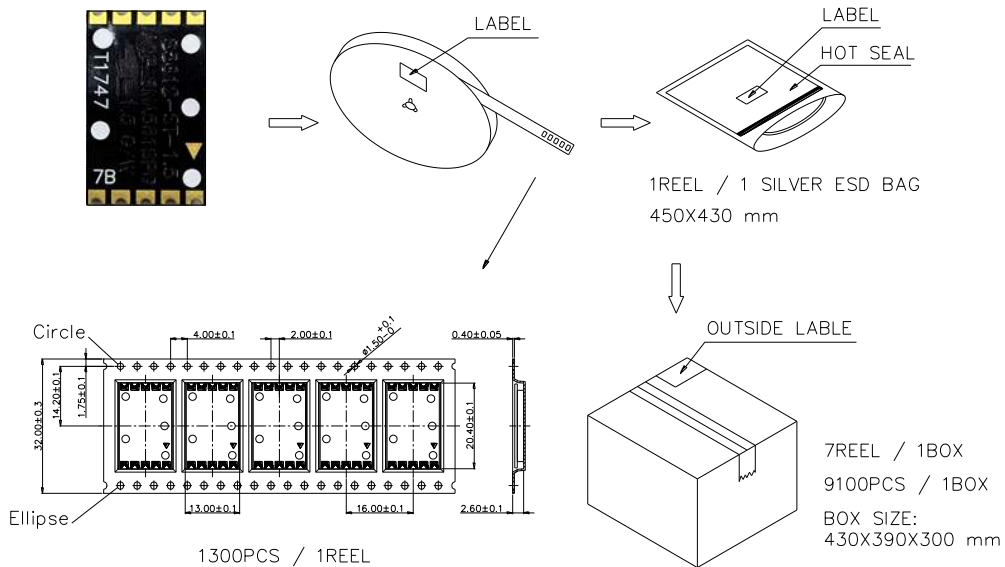
### SMA561LY-ST-1.5 G/W

### SMC561LY-ST-1.5 G/W

#### ● REEL DIMENSIONS



#### ● PACKING & LABEL SPECIFICATIONS



The leader and trailer length of actual tape with no component in it are 400 mm each.

#### ● STORAGED CONDITION

In factory original sealed bag package

| TEMPERATURE CONDITION | HUMIDITY CONDITION |
|-----------------------|--------------------|
| 5℃ ~ 30℃              | Below 60%RH        |

After opened and not in factory original sealed bag package

| TEMPERATURE CONDITION | HUMIDITY CONDITION | STORAGE TIME                     |
|-----------------------|--------------------|----------------------------------|
| 5℃ ~ 30℃              | Below 60%RH        | Within 4 weeks (MSL as level 2a) |