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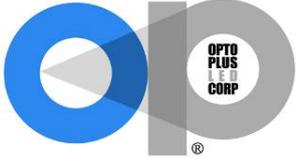
**Opto Plus LED Corp.**  
**0.39" SMD Type LED Display**  
**OPS-T3920SB-STT(R)-1.0-G(B)W**  
**OPS-T3921SB-STT(R)-1.0-G(B)W**

● **EDIT HISTORY**

Version A: Mar. 24, 2025

Preliminary Spec.

Confidential Document



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# Opto Plus LED Corp.

## 0.39" SMD Type LED Display

### OPS-T3920SB-STT(R)-1.0-G(B)W

### OPS-T3921SB-STT(R)-1.0-G(B)W

#### ● FEATURES

- 0.39 inch (10.0 mm) Digit Height.
- Low current operation.
- Excellent character appearance.
- Super thin SMD type.
- RoHS compliant, Pb Free.

#### ● DESCRIPTION

The device are 0.39 inch (10.00 mm) height triple digits 7-segment display.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright Blue LED chip which are made from InGaN

On a transparent GaN, substrate.

The device has face and segment option, please refer to **PRODUCT APPEARANCE**.

#### ● DEVICE

| PART NO.               | DESCRIPTION   |
|------------------------|---|
| OPS-S3920SB-STT-1.0-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-S3921SB-STT-1.0-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-S3920SB-STT-1.0-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-S3921SB-STT-1.0-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-S3920SB-STR-1.0-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-S3921SB-STR-1.0-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-S3920SB-STR-1.0-BW | Common Anode   Black face   White segment   Reverse mount   |
| OPS-S3921SB-STR-1.0-BW | Common Cathode   Black face   White segment   Reverse mount |

**RoHS Compliance**

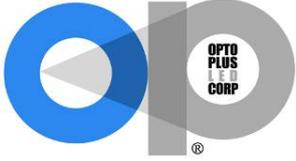


**Pb Free.**



Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)  
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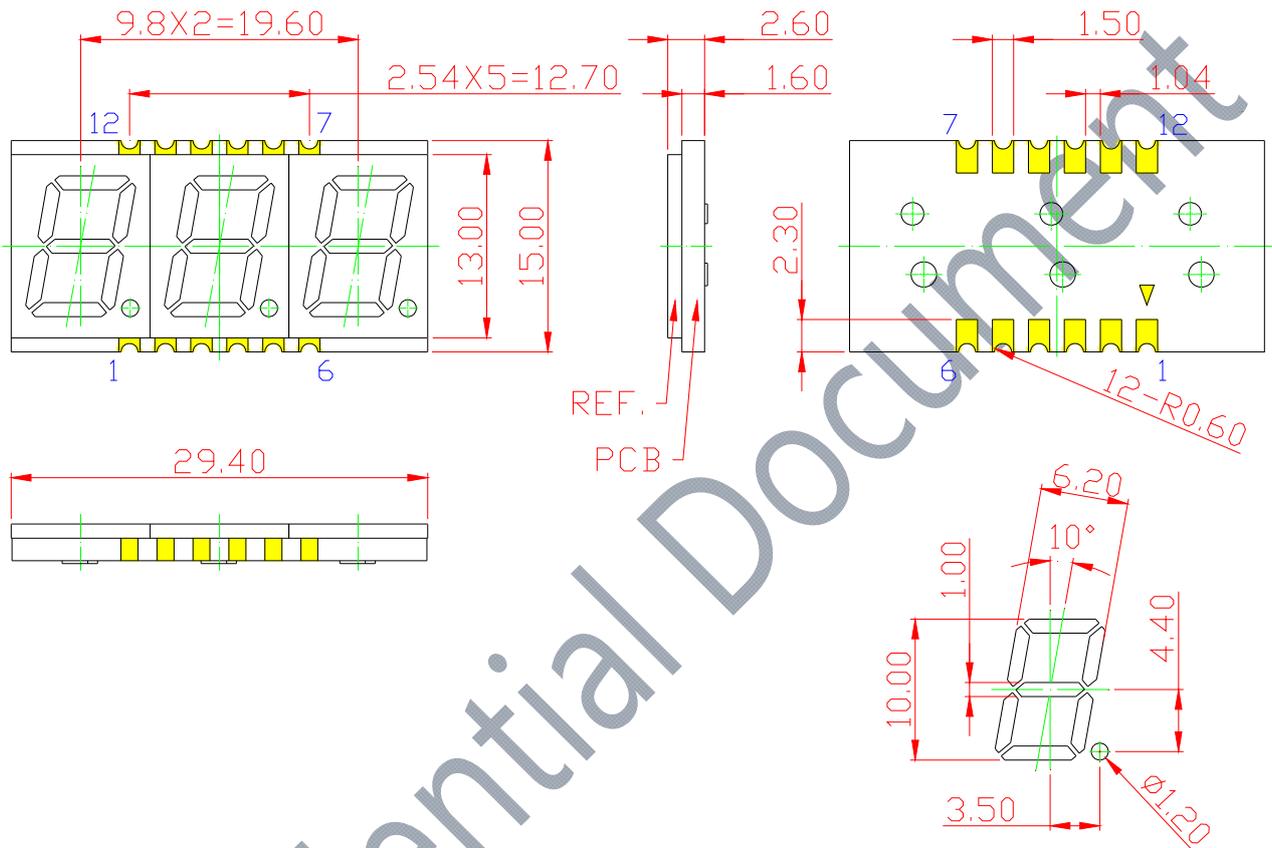
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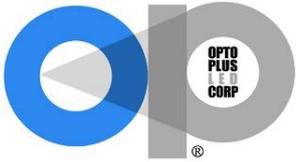
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● **MECHANICAL DIMENSIONS**



NOTES: All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm unless otherwise noted.



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# Opto Plus LED Corp.

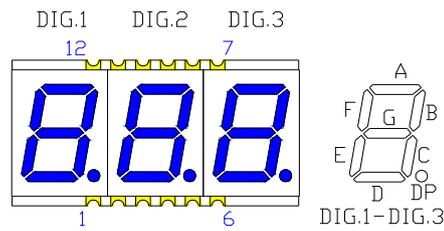
## 0.39" SMD Type LED Display

### OPS-T3920SB-STT(R)-1.0-G(B)W

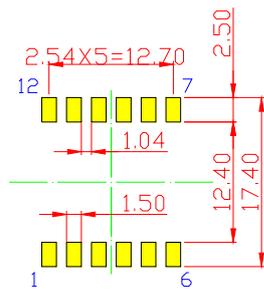
### OPS-T3921SB-STT(R)-1.0-G(B)W

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT

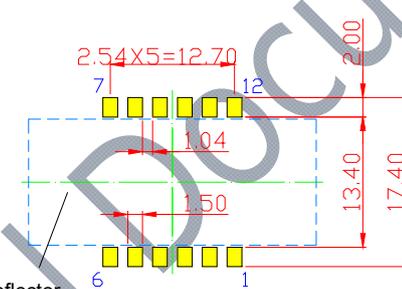
Turn On Color



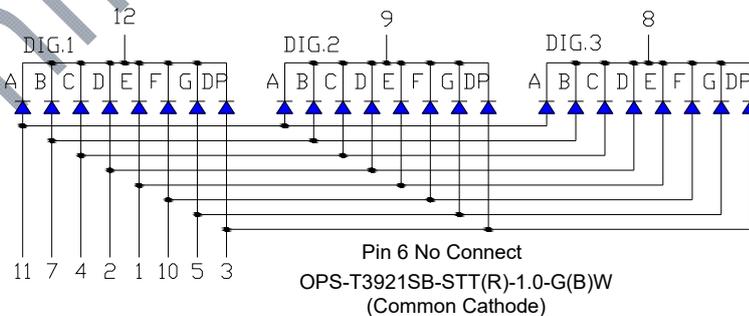
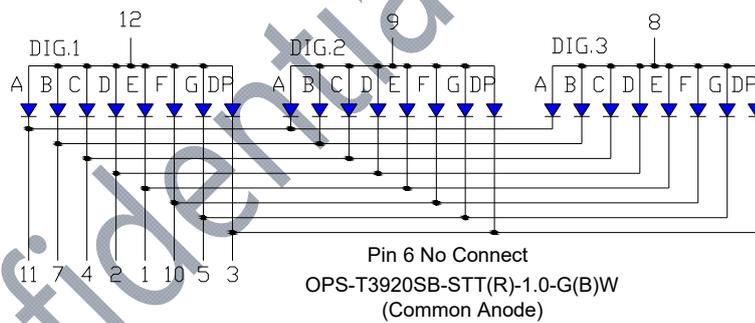
Recommended  
Top Mount  
Soldering Pattern



Recommended  
Reverse Mount  
Soldering Pattern



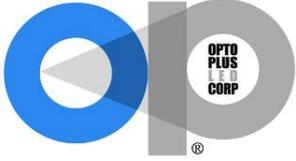
Reflector  
(Mounting Hole)



※EMITTED COLOR : SUPER BRIGHT BLUE

Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)  
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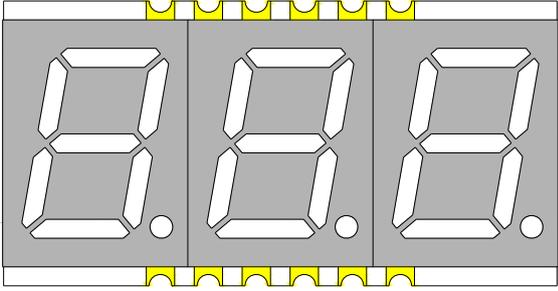
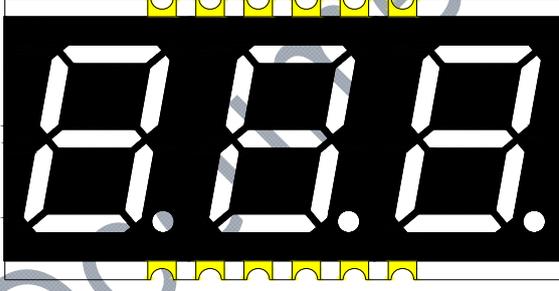


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● **PRODUCT APPEARANCE**

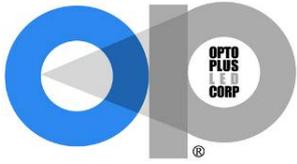
The most common reflector color and segment color are show in below diagram.

| -GW  | -BW   |
|--|---|
|  |  |
| ※ REFLECTOR COLOR: Gray<br>※ SEGMENT COLOR: White                                  | ※ REFLECTOR COLOR: Black<br>※ SEGMENT COLOR: White                                  |

Opto Plus can customize reflector and segment colors by customer's request. If you have these request please visit [www.opledtw.com](http://www.opledtw.com) or contact [sales@opledtw.com](mailto:sales@opledtw.com) for more **Standard Product Customization** information.

Part NO. related to reflector and segment colors show as table below.

| PART NO.               | DESCRIPTION   |
|------------------------|---|
| OPS-S3920SB-STT-1.0-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-S3921SB-STT-1.0-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-S3920SB-STT-1.0-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-S3921SB-STT-1.0-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-S3920SB-STR-1.0-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-S3921SB-STR-1.0-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-S3920SB-STR-1.0-BW | Common Anode   Black face   White segment   Reverse mount   |
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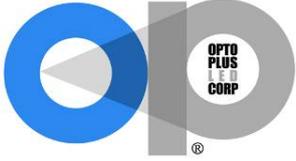
● **SB: SUPER BRIGHT BLUE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

| Parameter                            | Symbol           | Maximum Rating | Unit |
|--------------------------------------|------------------|----------------|------|
| Power dissipation                    | P <sub>AD</sub>  | 90             | mW   |
| Continuous forward current           | I <sub>AF</sub>  | 30             | mA   |
| Peak current (duty cycle 1/10, 1kHz) | I <sub>PF</sub>  | 60             | mA   |
| Reverse voltage                      | V <sub>R</sub>   | 5              | V    |
| Operating temperature                | T <sub>OPR</sub> | -40 to +105    | °C   |
| Storage temperature                  | T <sub>STG</sub> | -40 to +105    | °C   |

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

| Characteristic               | Symbol         | Condition             | Min. | Type. | Max. | Unit |
|------------------------------|----------------|-----------------------|------|-------|------|------|
| Forward Voltage, (Per Dice)  | V <sub>F</sub> | I <sub>F</sub> = 20mA | -    | 3.0   | 3.4  | V    |
| Reverse Current, (Per Dice)  | I <sub>R</sub> | V <sub>R</sub> = 5V   | -    | -     | 10   | μA   |
| Dominant Wavelength          | λ <sub>D</sub> | I <sub>F</sub> = 20mA | 464  | -     | 474  | nm   |
| Luminous Intensity           | I <sub>v</sub> | I <sub>F</sub> = 20mA | 15   | -     | 50   | mcd  |
| Spectral Line Half-Bandwidth | Δλ             | I <sub>F</sub> = 20mA | -    | 20    | -    | nm   |



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● **SB: BIN GRADE (Unit : mcd ) 20Ma**

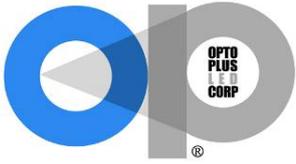
|                   |             |             |             |
|-------------------|-------------|-------------|-------------|
| Super Bright Blue | <b>H</b>    | <b>I</b>    | <b>J</b>    |
|                   | 15.0 – 27.0 | 27.1 – 38.0 | 38.1 – 50.0 |

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

|               |               |               |
|---------------|---------------|---------------|
| <b>1</b>      | <b>2</b>      | <b>3</b>      |
| 464.0 - 467.0 | 467.1 - 470.0 | 470.1 - 474.0 |

● **AVAILABLE BIN / HUE TABLE**

|    |    |    |
|----|----|----|
| H1 | I1 | J1 |
| H2 | I2 | J2 |
| H3 | I3 | J3 |



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### OPS-T3921SB-STT(R)-1.0-G(B)W

#### ● SB: SUPER BRIGHT BLUE (InGaN/GaN) CURVE

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

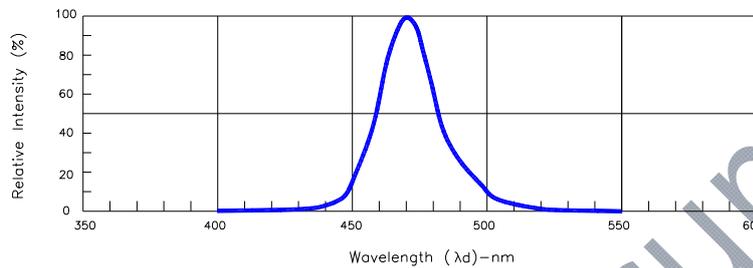


Fig.1-Relative Intensity VS. Wavelength

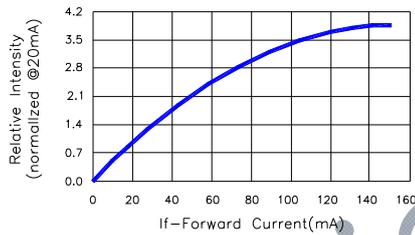


Fig.2-Relative Luminous Intensity vs. Forward Current

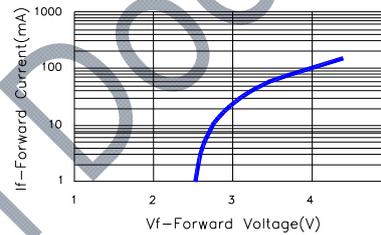


Fig.3-Forward Current vs. Forward Voltage

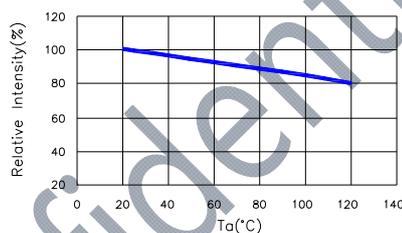


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

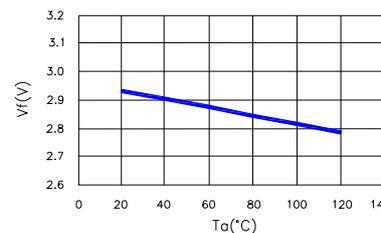


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

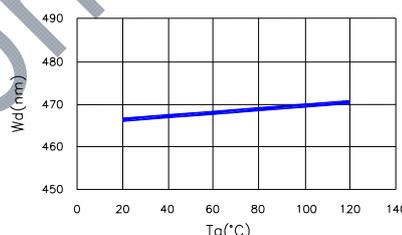


Fig.6-Dominant Wavelength(@20mA) VS. Ambient Temperature

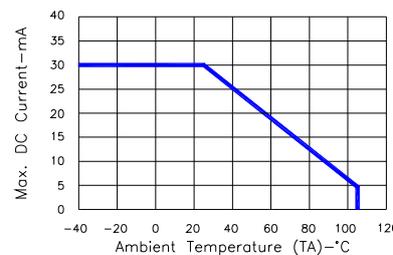
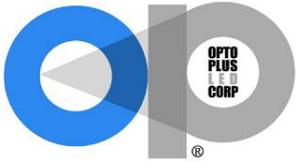


Fig.7-Max. Allowable DC Current VS. Ambient Temperature



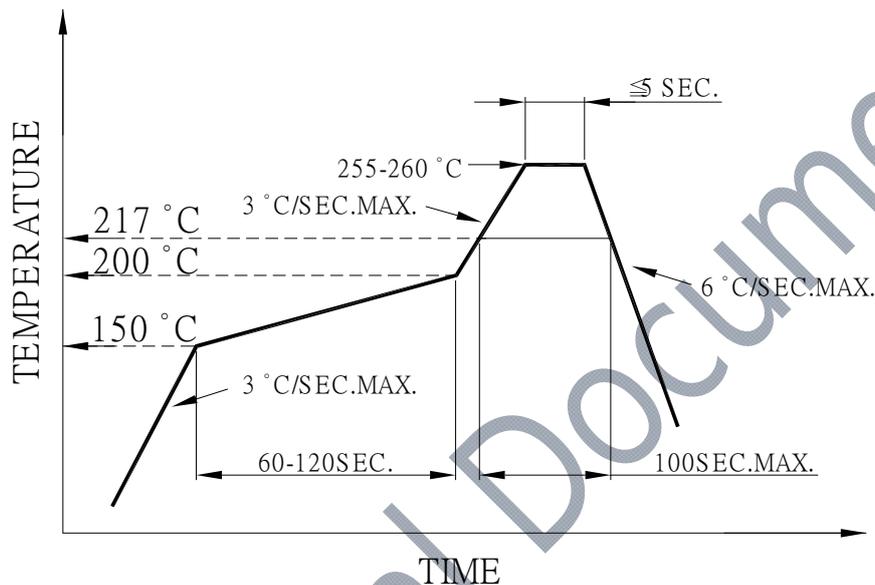
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● **SMT REFLOW SOLDERING INSTRUCTIONS**

SMT Soldering Profile

Pb free reflow soldering Profile



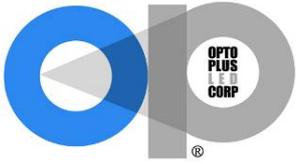
- We recommend the reflow temperature 245°C (+/- 5°C).  
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

● **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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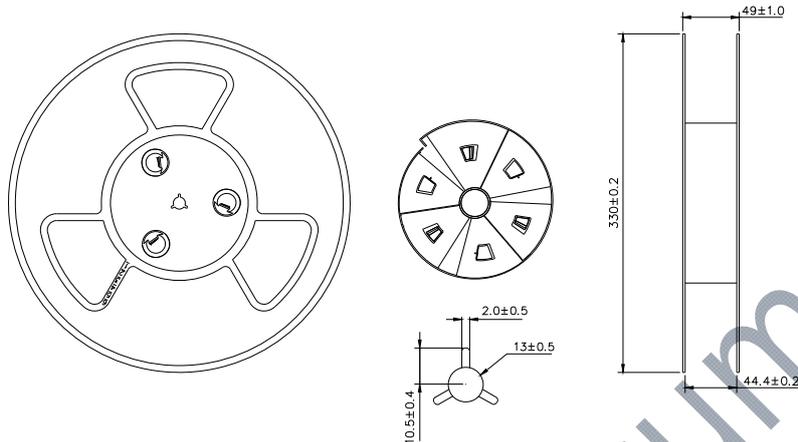
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### OPS-T3921SB-STT(R)-1.0-G(B)W

### ● REEL DIMENSIONS



### ● PACKING & LABEL SPECIFICATIONS

| OPS-T3920(1)XX-STT-1.0-BW<br>Top Mount | OPS-T3920(1)XX-STR-1.0-BW<br>Reverse Mount | OPS-T3920(1)XX-STT-1.0-BW<br>OPS-T3920(1)XX-STR-1.0-BW  |
|--|--|---|
| <p>Circle</p> <p>750PCS / 1REEL</p>    | <p>Circle</p> <p>750PCS / 1REEL</p>        | <p>1REEL / 1 SILVER ESD BAG<br/>450X430 mm</p> <p>OUTSIDE LABEL</p> <p>5REEL / 1BOX<br/>3750PCS / 1BOX<br/>BOX SIZE:<br/>430X390X300 mm</p> |

### ● STORAGE CONDITION

In factory original sealed bag package

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

After opened and not in factory original sealed bag package

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