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**Opto Plus LED Corp.**  
**0.70" SMD Type LED Display**  
**OPS-Q7010SB-STT(R)-1.5-G(B)W**  
**OPS-Q7011SB-STT(R)-1.5-G(B)W**

● **EDIT HISTORY**

Version A: Mar. 24, 2025

Preliminary Spec.

Confidential Document



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## 0.70" SMD Type LED Display

### OPS-Q7010SB-STT(R)-1.5-G(B)W

### OPS-Q7011SB-STT(R)-1.5-G(B)W

#### ● FEATURES

- 0.70 inch (17.78 mm) digit height.
- Super thin SMD type.
- Low current operation.
- RoHS Compliant, Pb Free.

#### ● DESCRIPTION

The device are 0.70 inch (17.78 mm) height quadruple digit 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-Q7010SB-STT-1.5-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-Q7011SB-STT-1.5-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-Q7010SB-STT-1.5-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-Q7011SB-STT-1.5-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-Q7010SB-STR-1.5-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-Q7011SB-STR-1.5-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-Q7010SB-STR-1.5-BW | Common Anode   Black face   White segment   Reverse mount   |
| OPS-Q7011SB-STR-1.5-BW | Common Cathode   Black face   White segment   Reverse mount |

**RoHS Compliance**



**Pb Free.**

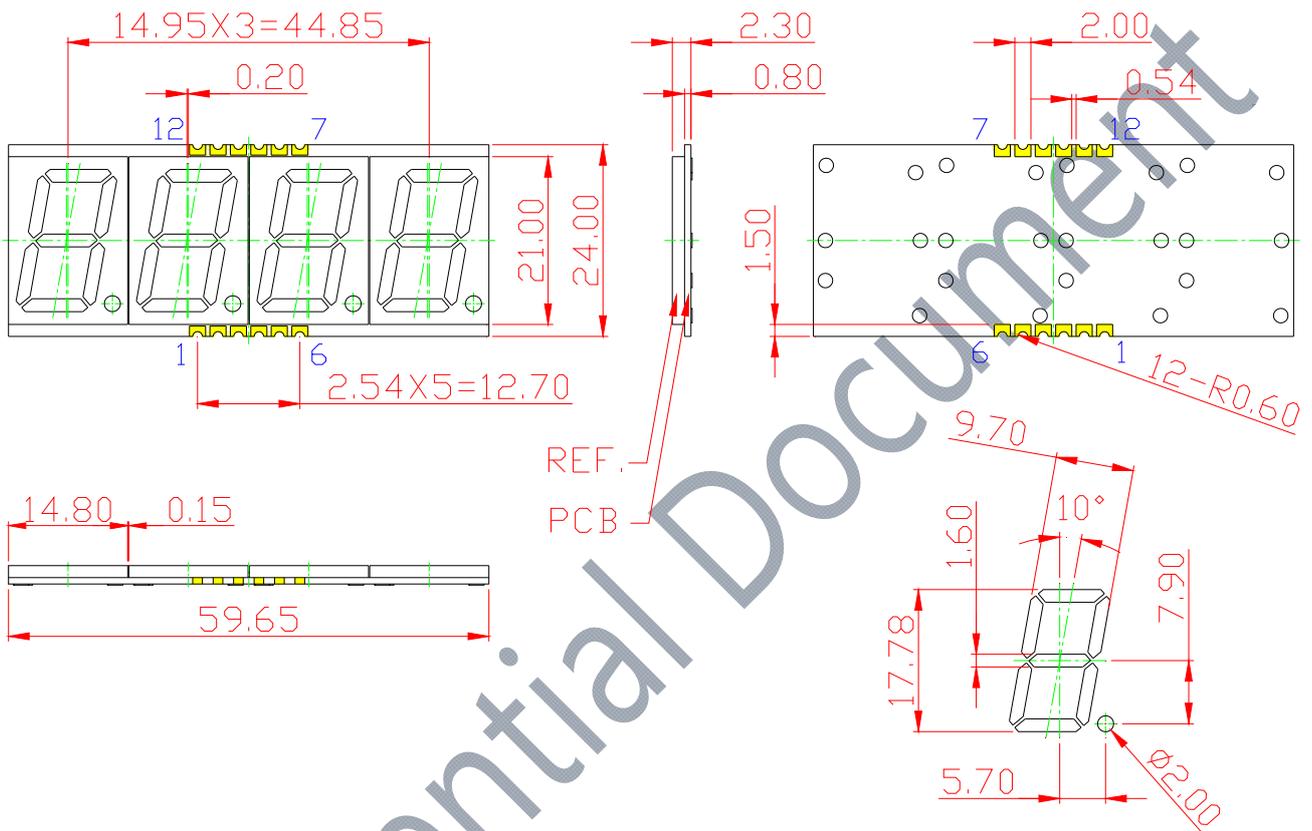




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● **MECHANICAL DIMENSIONS**



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



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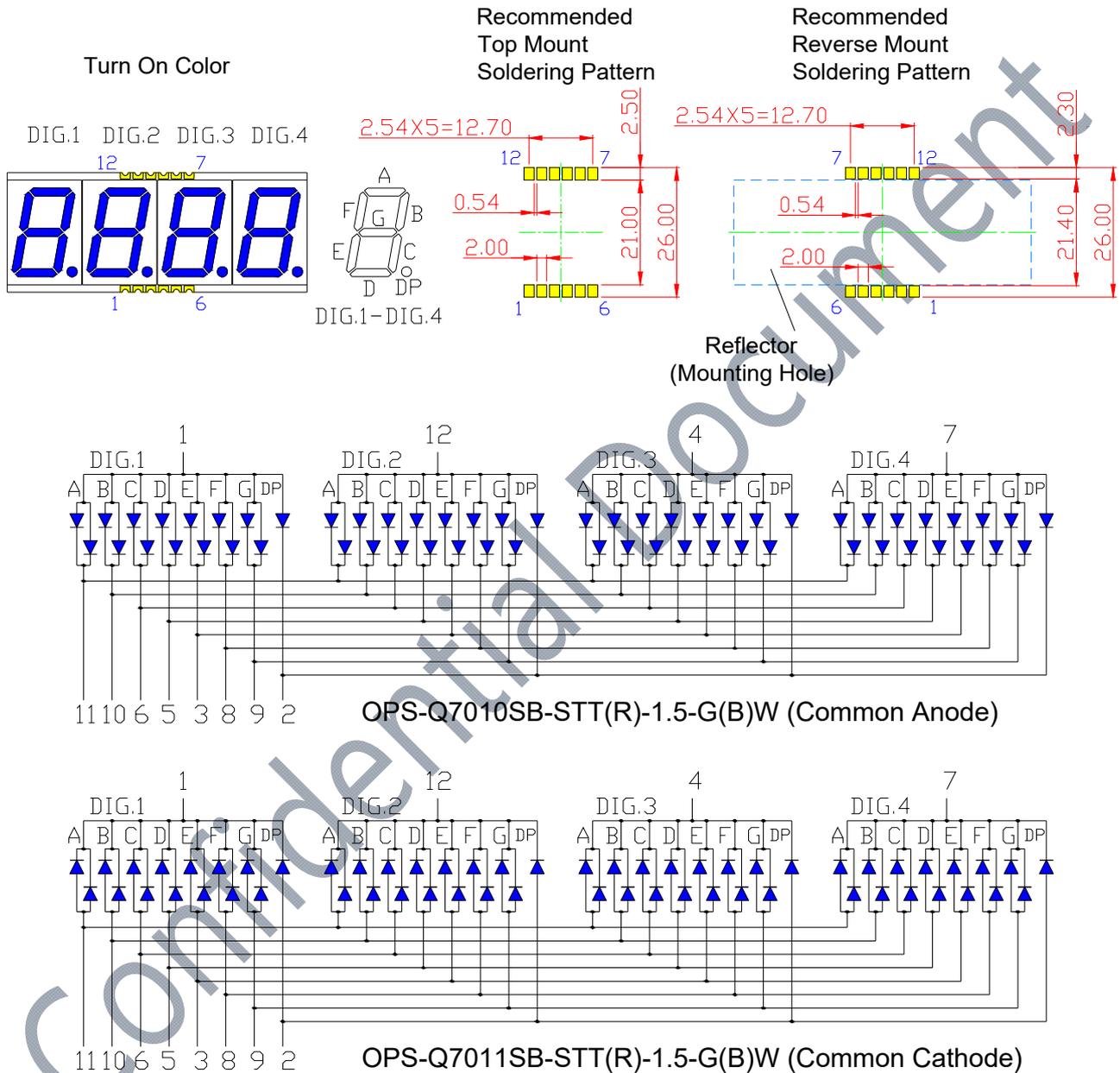
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#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



※EMITTED COLOR : SUPER BRIGHT BLUE



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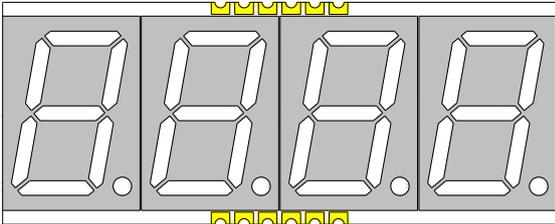
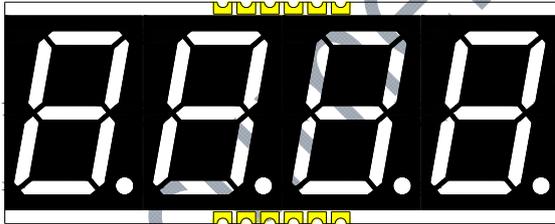
### 0.70" SMD Type LED Display

#### OPS-Q7010SB-STT(R)-1.5-G(B)W

#### OPS-Q7011SB-STT(R)-1.5-G(B)W

### ● 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-Q7010SB-STT-1.5-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-Q7011SB-STT-1.5-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-Q7010SB-STT-1.5-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-Q7011SB-STT-1.5-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-Q7010SB-STR-1.5-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-Q7011SB-STR-1.5-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-Q7010SB-STR-1.5-BW | Common Anode   Black face   White segment   Reverse mount   |
| OPS-Q7011SB-STR-1.5-BW | Common Cathode   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 | 30   | -     | 90   | 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 | J           | K           | L           |
|-------------------|-------------|-------------|-------------|
|                   | 30.1 – 50.0 | 50.1 – 70.0 | 70.1 – 90.0 |

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

| 1             | 2             | 3             |
|---------------|---------------|---------------|
| 464.0 - 467.0 | 467.1 - 470.0 | 470.1 - 474.0 |

● **AVAILABLE BIN / HUE TABLE**

|    |    |    |
|----|----|----|
| J1 | K1 | L1 |
| J2 | K2 | L2 |
| J3 | K3 | L3 |



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### OPS-Q7011SB-STT(R)-1.5-G(B)W

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

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

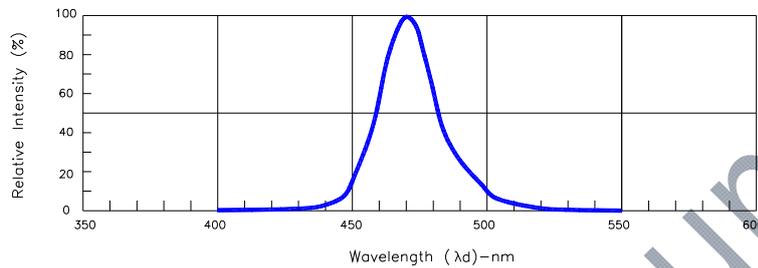


Fig.1-Relative Intensity VS. Wavelength

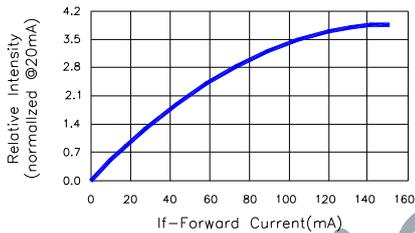


Fig.2-Relative Luminous Intensity vs. Forward Current

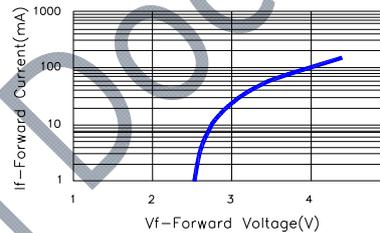


Fig.3-Forward Current vs. Forward Voltage

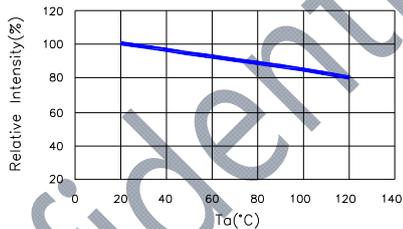


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

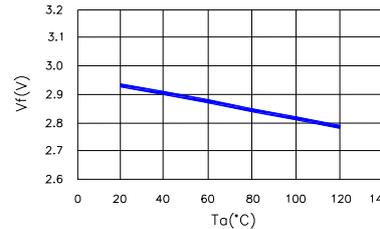


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

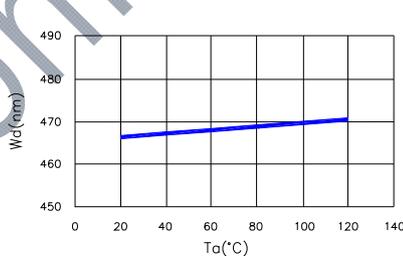


Fig.6-Dominant Wavelength(@20mA) VS. Ambient Temperature

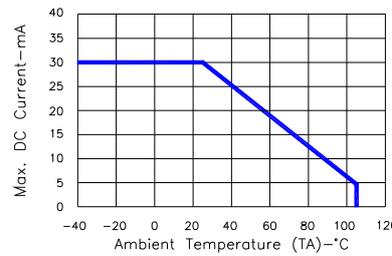


Fig.7-Max. Allowable DC Current VS. Ambient Temperature



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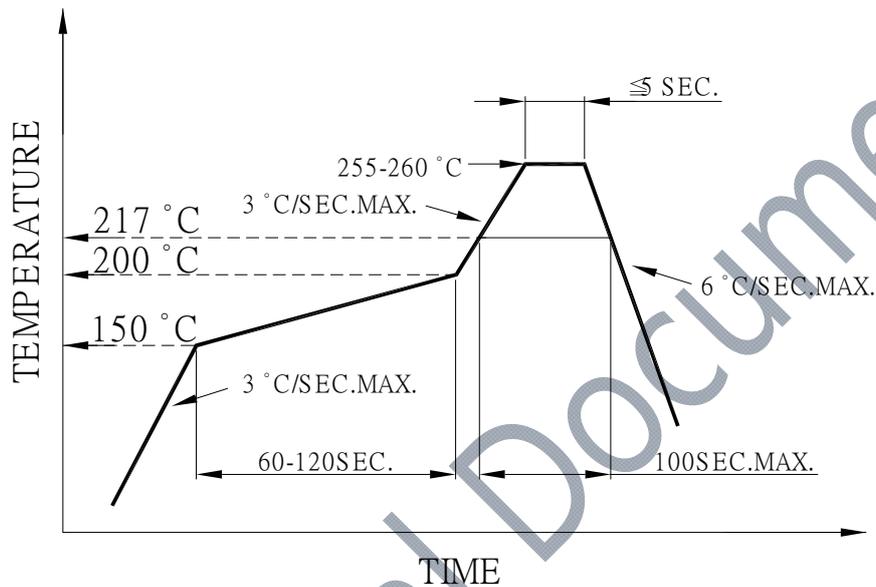
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### OPS-Q7011SB-STT(R)-1.5-G(B)W

#### ● 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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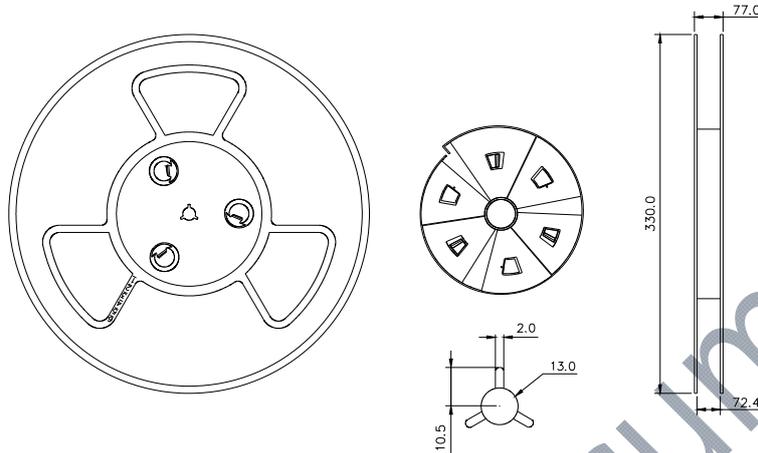
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### OPS-Q7011SB-STT(R)-1.5-G(B)W

### ● REEL DIMENSIONS



### ● PACKING & LABEL SPECIFICATIONS

| OPS-Q7010(1)XX-STT-1.5-BW<br>Top Mount | OPS-Q7010(1)XX-STR-1.5-BW<br>Reverse Mount | OPS-Q7010(1)XX-STT-1.5-BW<br>OPS-Q7010(1)XX-STR-1.5-BW   |
|--|--|--|
| <p>Circle</p> <p>610PCS / 1REEL</p>    | <p>Circle</p> <p>610PCS / 1REEL</p>        | <p>1REEL / 1 SILVER ESD BAG<br/>450X430 mm</p> <p>OUTSIDE LABEL<br/>3REEL / 1BOX<br/>1830PCS / 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) |