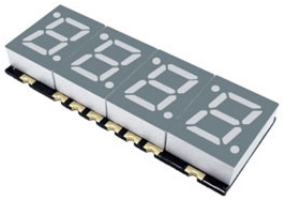
**KD4-S281AGA / KD4-S281CGA**

**0.28-inch (7.00 mm) 4-Digit Seven-Segment Display**
**Yellow-Green Surface-Mount Four-Digit LED Numeric Display**

LuckyLight
Innovative Optoelectronic Solutions

# Technical Data Sheet

## Features



- High reliability
- Low current operation
- Low profile and light weight (for space-saving designs)
- Packaged in tape and reel for automated SMT assembly
- Compatible with IR-reflow soldering
- Excellent character appearance
- RoHS compliant

## Description

KD4-S281AGA (Common Anode) and KD4-S281CGA (Common Cathode) are 0.28-inch (7.00 mm) character height surface-mount (SMD) yellow-green 4-digit seven-segment displays. These devices provide excellent readability at distances up to 7 meters and offer stable performance under high ambient light conditions. The standard version features a gray surface with white segments; a black surface version is also available as an option.

## Applications

- **Consumer Electronics:** Home appliances, Game console systems
- **Commercial Terminals:** Point-of-sale terminals
- **General Use:** Digital readout displays
- **Industrial Equipment:** Instrumentation panels, Test and measurement equipment**,** Control systems

## Device Selection Guide

| Part No. | Emitting Color | Circuit Type |
|---|---|---|
| KD4-S281AGA | Yellow-Green | Common Anode |
| KD4-S281CGA | Yellow-Green | Common Cathode |

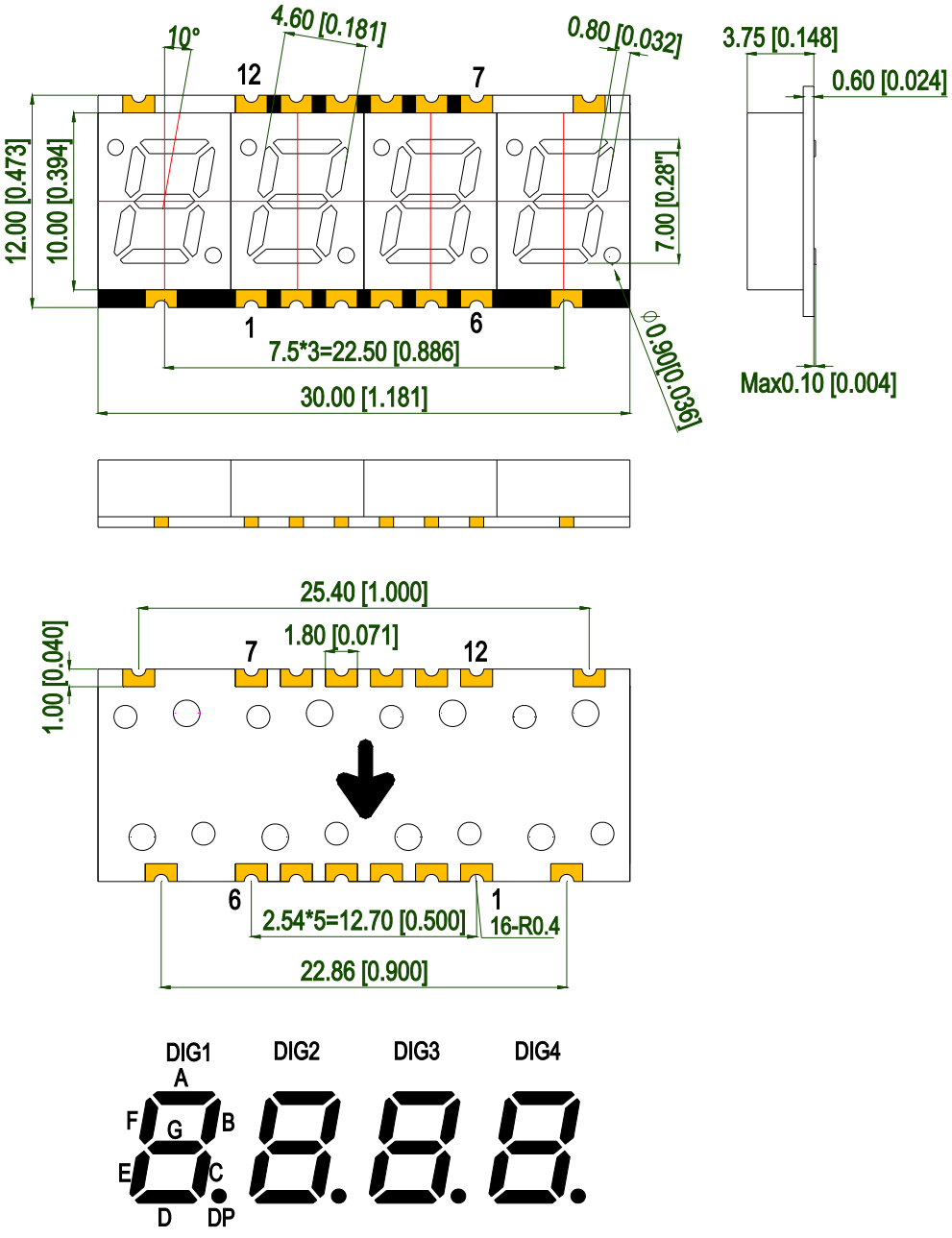

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**0.28-inch (7.00 mm) 4-Digit Seven-Segment Display**
**Yellow-Green Surface-Mount Four-Digit LED Numeric Display**

LuckyLight
Innovative Optoelectronic Solutions

## Technical Data Sheet

### Package Dimension



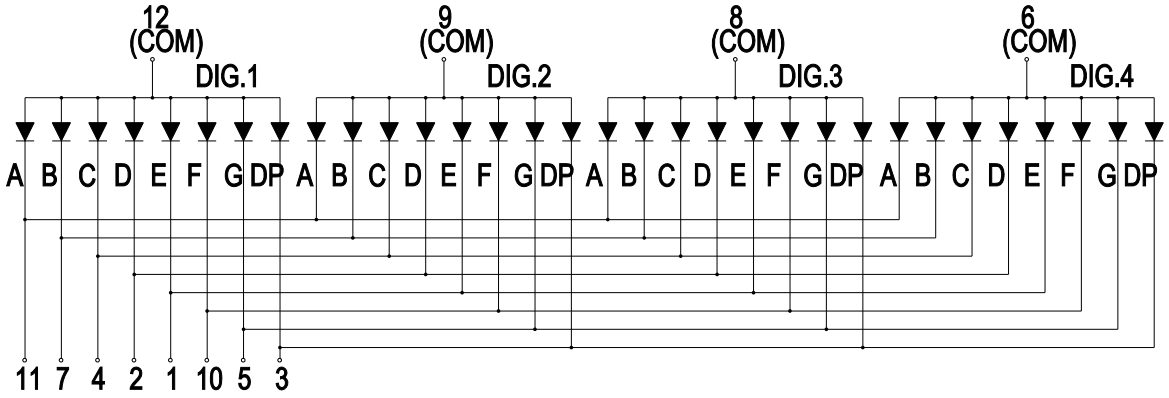

*Notes:*

1. *All dimensions are in millimeters (inches).*
2. *Tolerance is ± 0.25 mm (.010") unless otherwise noted.*
3. *The gap between the reflector and PCB shall not exceed 0.25mm.*

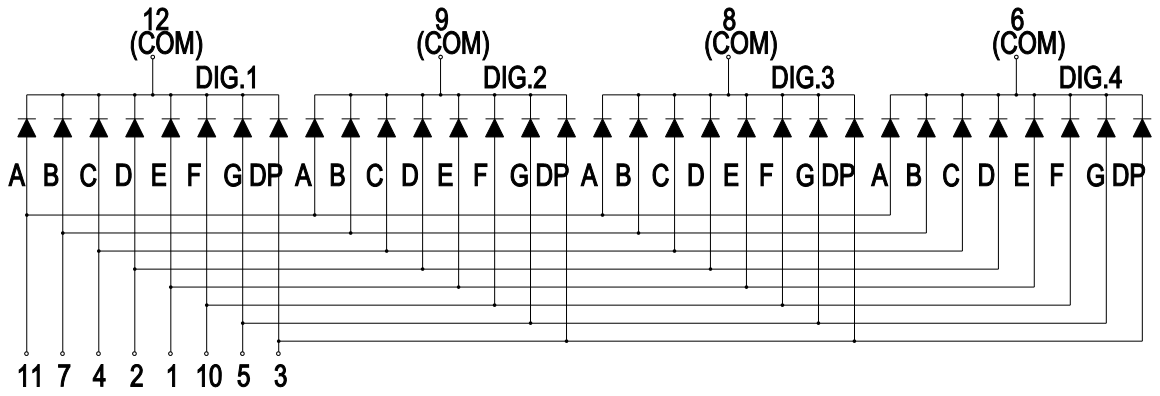

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**Internal Circuit Diagram:**

**KD4-S281AGA (Common Anode)**



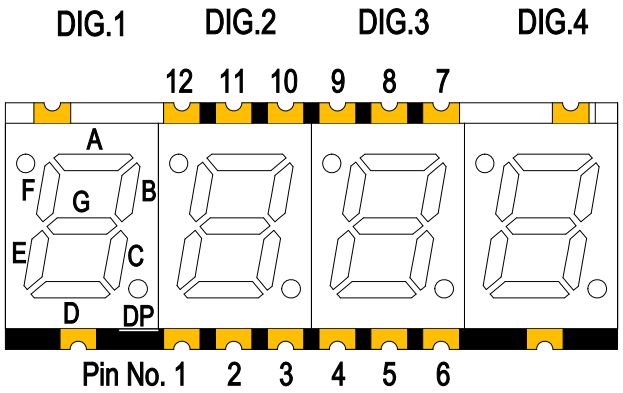

**KD4-S281CGA (Common Cathode)**





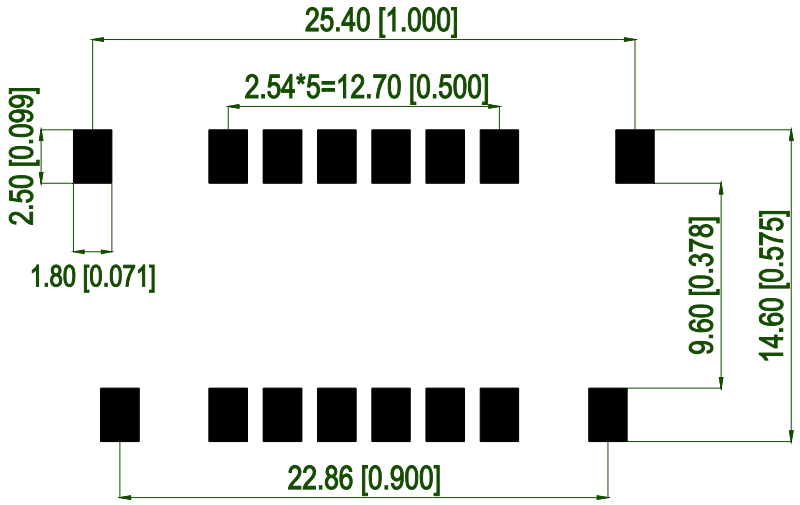
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## Pin Connection




| Pin No. | Function |
|---|---|
| 1 | Segment E |
| 2 | Segment D |
| 3 | DP |
| 4 | Segment C |
| 5 | Segment G |
| 6 | Digit 4 Common |
| 7 | Segment B |
| 8 | Digit 3 Common |
| 9 | Digit 2 Common |
| 10 | Segment F |
| 11 | Segment A |
| 12 | Digit 1 Common |

## Recommended Soldering Pattern





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## Technical Data Sheet

### Absolute Maximum Ratings at $T_a$=25℃

| Parameters | Symbol | Max | Unit |
|---|---|---|---|
| Power Dissipation (Per Segment) | $P_d$ | 48 | mW |
| Peak Forward Current (Per Segment)<br>(1/10 Duty Cycle, 0.1ms pulse width) | $I_{FP}$ | 40 | mA |
| Forward Current (Per Segment) | $I_F$ | 20 | mA |
| Reverse Voltage (Per Segment) | $V_R$ | 5 | V |
| Operating Temperature Range | $T_{opr}$ | -40℃ to +80℃ | |
| Storage Temperature Range | $T_{stg}$ | -40℃ to +85℃ | |
| Soldering Temperature | $T_{sld}$ | 260℃ for 5 Seconds | |

### Electrical Optical Characteristics at $T_a$=25℃

| Parameters | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Average Luminous Intensity (Per Segment) | $I_v$ | 3.2 | 6.3 | --- | mcd | $I_F$=5mA (Note a) |
| | | 6.3 | 12.6 | --- | mcd | $I_F$=10mA (Note a) |
| Luminous Intensity Matching Ratio | $I_{v-m}$ | --- | --- | 2:1 | | $I_F$=20mA |
| Peak Emission Wavelength | $\lambda_p$ | --- | 575 | --- | nm | $I_F$=20mA |
| Dominant Wavelength | $\lambda_d$ | --- | 572 | --- | nm | $I_F$=20mA (Note b) |
| Spectral Line Half-Width | $\Delta\lambda$ | --- | 20 | --- | nm | $I_F$=20mA |
| Forward Voltage (Per Segment) | $V_F$ | --- | 2.0 | 2.4 | V | $I_F$=20mA (Note c) |
| Reverse Current (Per Segment) | $I_R$ | --- | --- | 50 | μA | $V_R$=5V |

*Notes:*

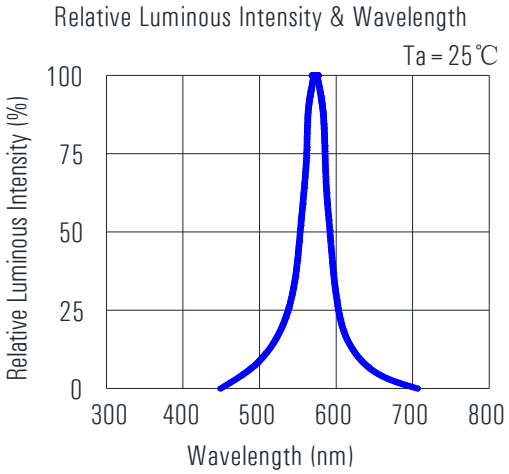
*a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve. Tolerance of Luminous Intensity: ± 10 %*

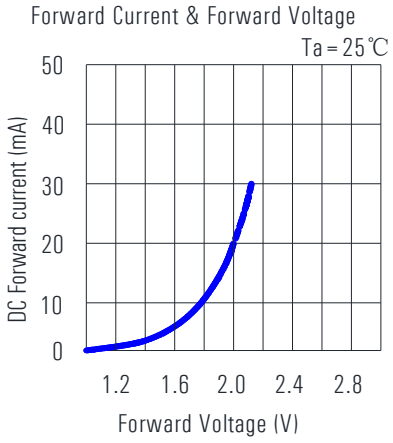
*b. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.*

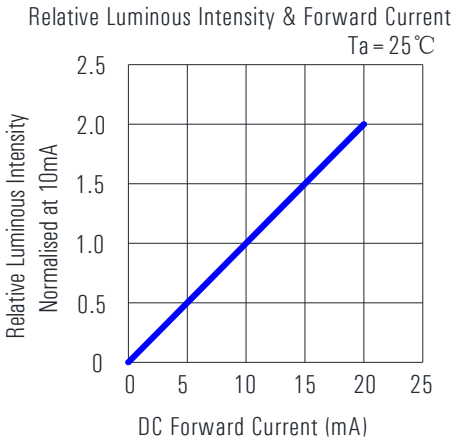
*c. Tolerance of Forward Voltage: ± 0.1V*

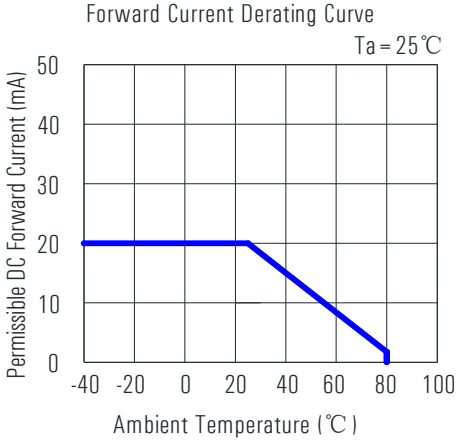

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## Typical Electrical/Optical Characteristics Curves ($T_a$=25 ℃)



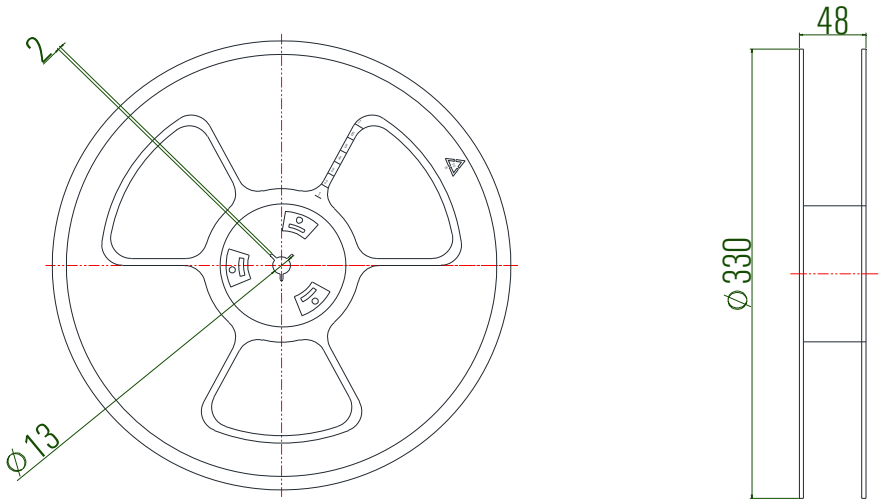





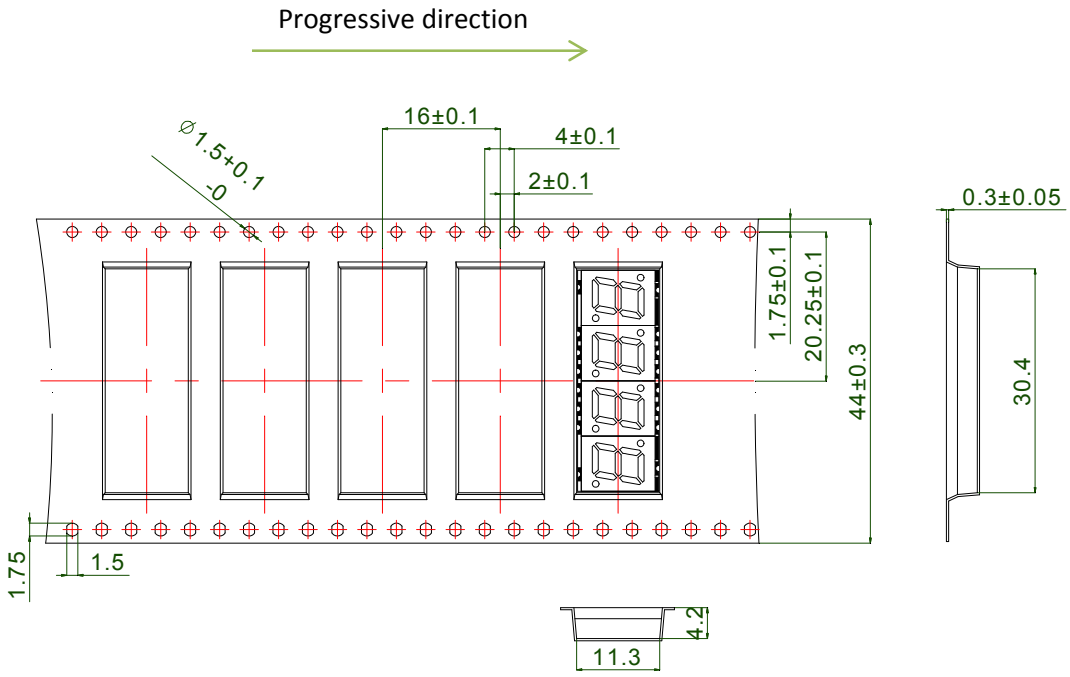
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## Technical Data Sheet

### Reel Dimensions *(units: mm)*




### Tape Specifications (*units: mm):*

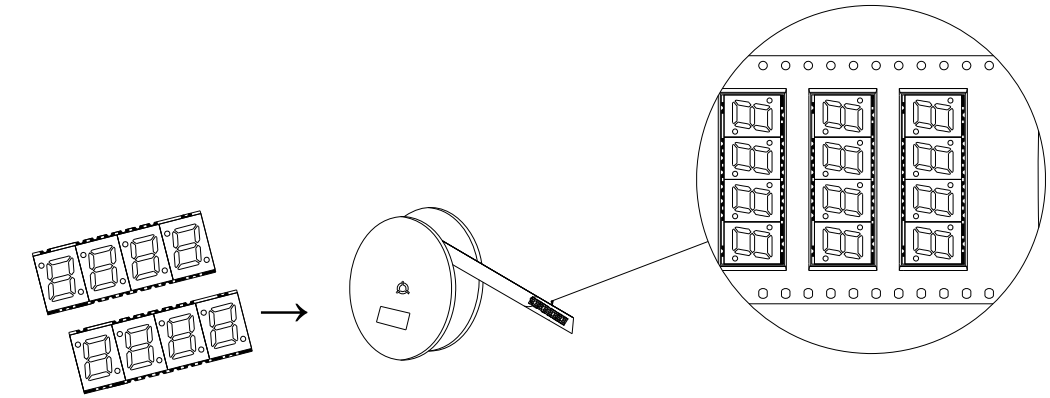



*Note: Tolerances unless mentioned ±0.25mm.*

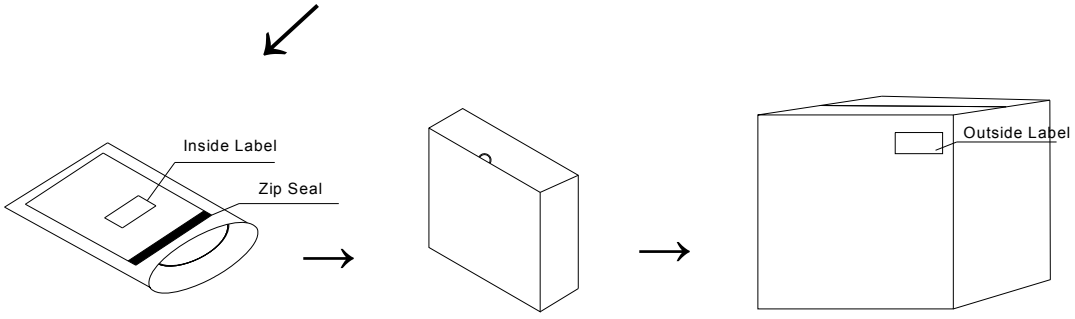

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## Technical Data Sheet

### Packing & Label Specifications



1000 pcs/Reel




1 Reel/Bag

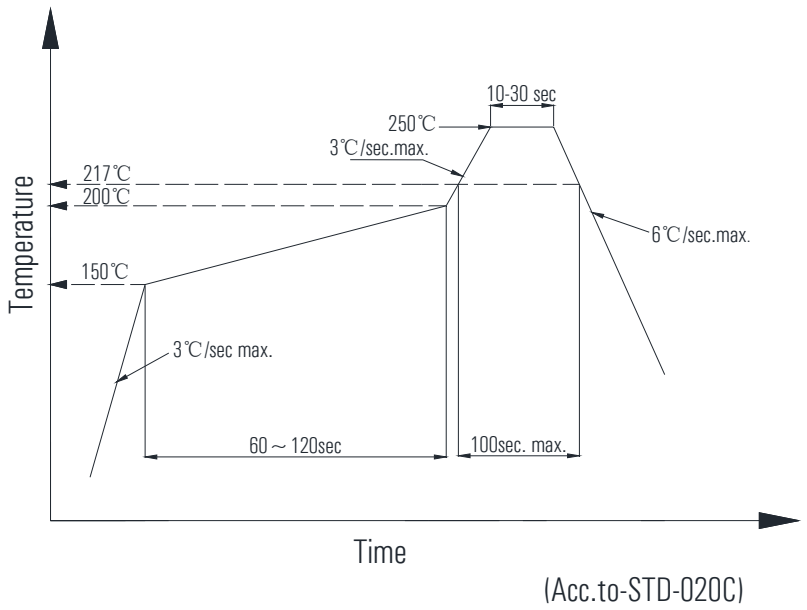
2 Bag/Small Box/2000 pcs

2 Small Boxes/Big Box/4000 pcs


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## Precautions for Use

### 1. Pb-Free Reflow Soldering Profile.




(Acc.to-STD-020C)

| Pre-heat | | Other | |
|---|---|---|---|
| Temperature min | 150 ℃ | Liquidus Temperature | 217℃ |
| Temperature max | 200 °C | Time above Liquidus Temperature | 100sec.max |
| Time | 60-120sec | Peak Temperature | 250℃ |
| Average ramp-up rate | 3 °C/sec.max. | Ramp- Down Rate from Peak Temperature | 6 °C/sec. max. |
| | | Reflow times | 1 time |

*a. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.*

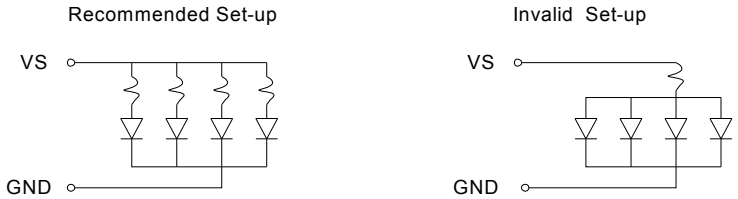
*b. All parameters are maximum body case temperature values and cannot be considered as a soldering profile. The body case temperature was measured by soldering a thermal couple to the soldering point of LEDs.*

*c. No more than one reflows welding is recommended.*


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## 2. Circuit Design Notes:

a. Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
b. LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.
c. The driving circuit should be designed to protect the LED against reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
d. The safe operating current should be chosen after considering the maximum ambient temperature of the operating environment.




## Terms and Conditions for Product Usage

**1.Technical Reference:** The information included in this document reflects representative usage scenarios and is intended for technical reference only.
**2.Specification Changes:** Part numbers, types, and specifications are subject to change or improvement without notice. Customers should verify the latest specifications with the current datasheet before starting mass production.
**3.Forward Bias:** LEDs must be operated with a forward bias. The driving circuit should be designed to ensure the LEDs are not subjected to reverse voltage when turned off. Continuous reverse voltage may cause metal migration and lead to device damage.
**4.Surface Appearance:** Surface appearance, including foreign particles or stains, is controlled within a 0.2 mm limit to meet quality standards.
**5.LED Storage Instructions:**
a. Store LEDs at or below 30℃ and 80% relative humidity (RH) before opening the package.
b. LEDs should be used within one year of purchase.
c. After opening the package, store LEDs at or below 30℃ and 60% RH.


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The products described in this document are intended for use in standard industrial and electronic equipment, including industrial control equipment, automation systems, communication equipment, office equipment and general electronic devices.

For applications requiring exceptionally high levels of reliability or safety, where product failure could directly result in personal injury, loss of life or significant property damage, including aerospace systems, transportation systems, traffic control equipment, medical life-support equipment and safety-critical devices,please contact a LuckyLight sales representative in advance for technical evaluation and written approval.

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## Revision History

| Revision | Date | Contents | Page |
|---|---|---|---|
| Rev. 1 | July 5, 2017 | Original Version | / |
| Rev. 2 | October 28, 2026 | Optimized the recommended soldering pattern and internal PCB layout and Dimensions | 2, 4 |
| | | 2 Small Boxes/Big Box | 8 |
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