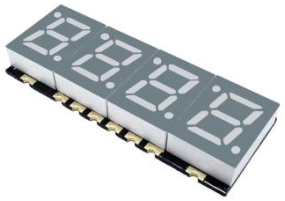
KD4-S281AVA / KD4-S281CVA

0.28-inch (7.00 mm) 4-Digit Seven-Segment Display
Orange-Red 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-S281AVA (Common Anode) and KD4-S281CVA (Common Cathode) are 0.28-inch (7.00 mm) character height surface-mount (SMD) orange-red 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-S281AVA	Orange-Red	Common Anode
KD4-S281CVA	Orange-Red	Common Cathode

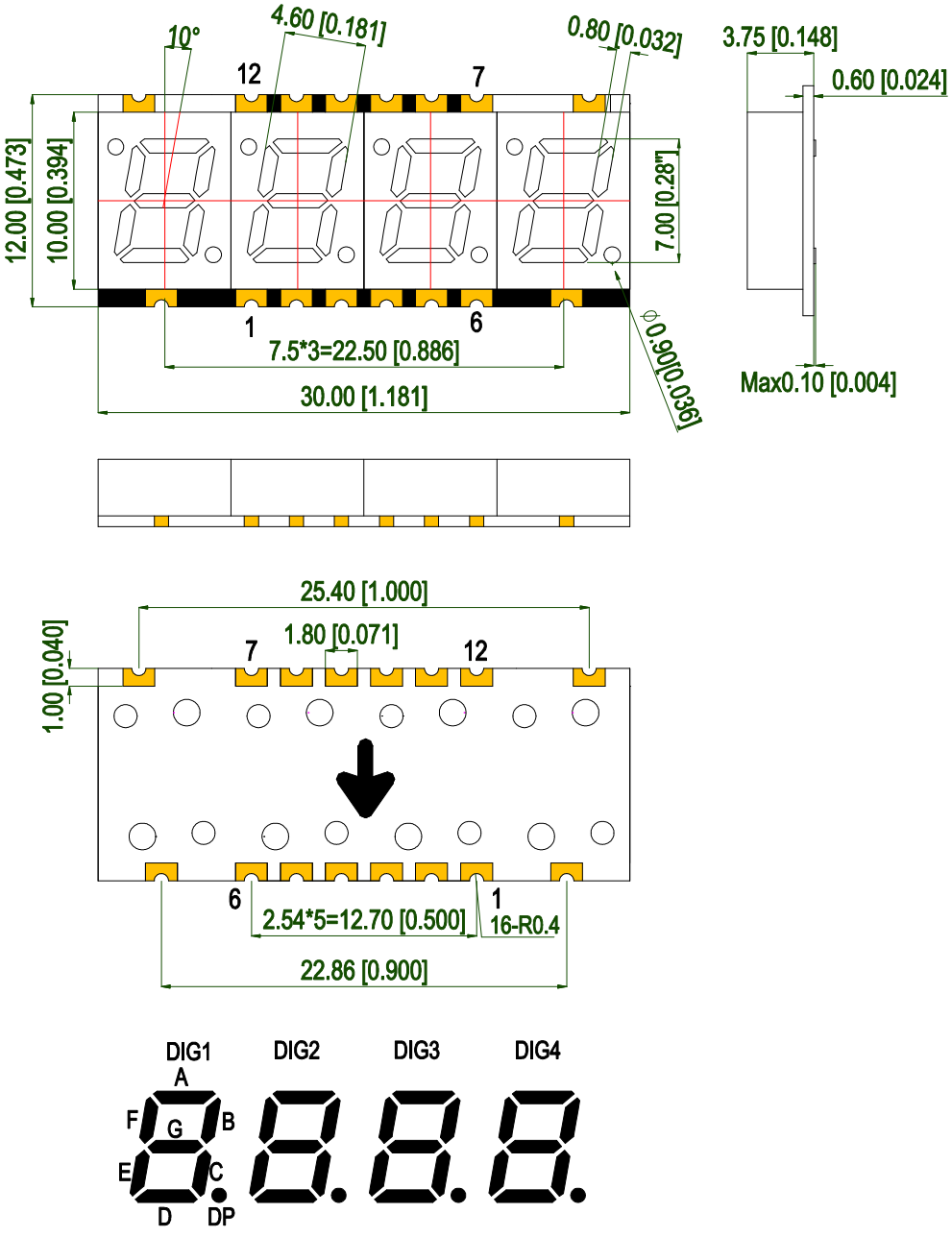
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0.28-inch (7.00 mm) 4-Digit Seven-Segment Display
Orange-Red Surface-Mount Four-Digit LED Numeric Display

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Technical Data Sheet

Package Dimension



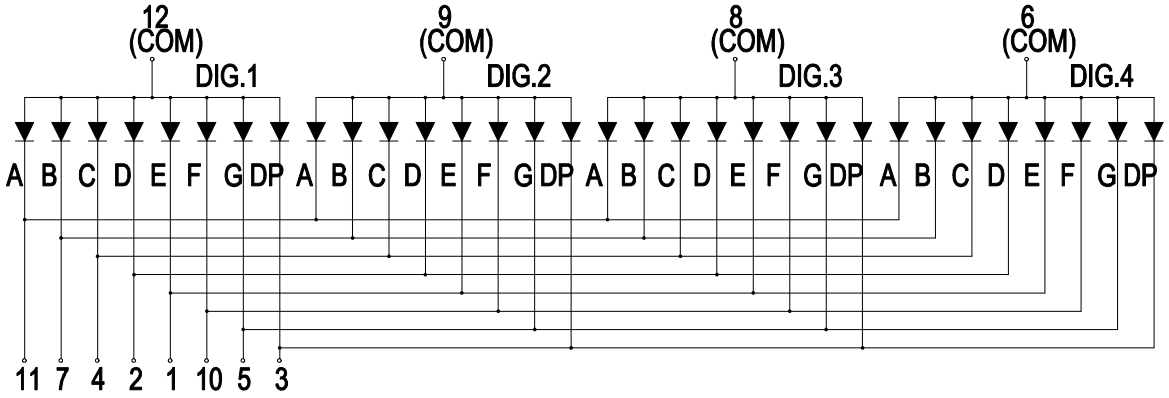
Notes:

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.*

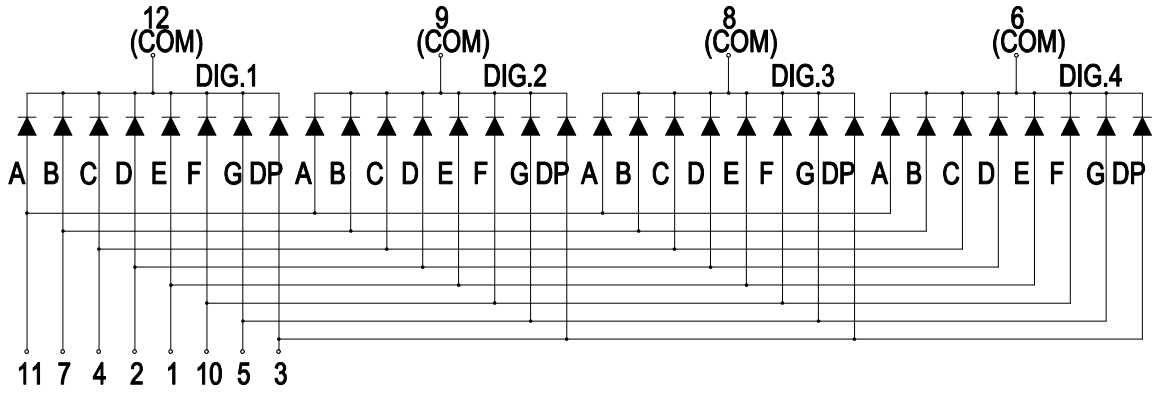
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Internal Circuit Diagram:

KD4-S281AVA (Common Anode)

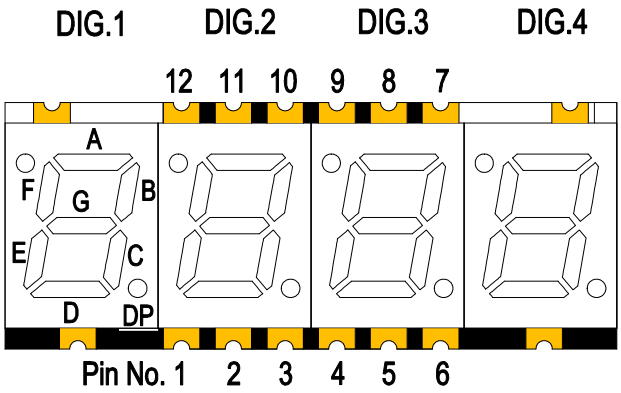


KD4-S281CVA (Common Cathode)



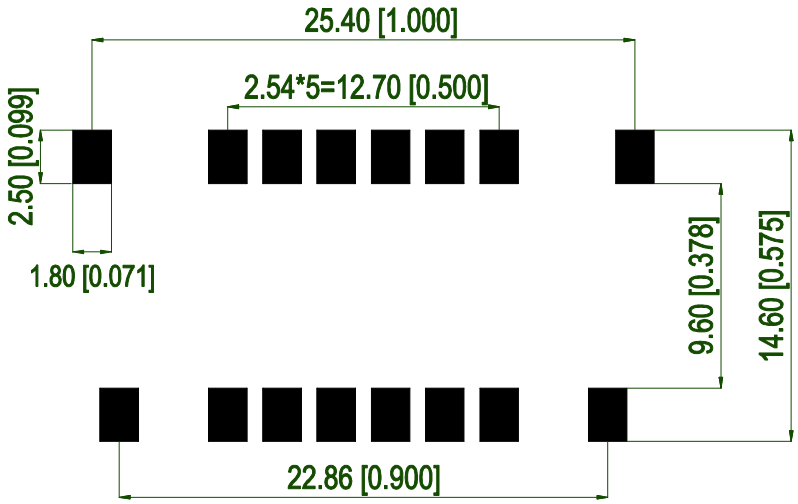
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Pin Connection



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) (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	4.0	8.0	---	mcd	I_F=5mA (Note a)
		8.0	16.0	---	mcd	I_F=10mA (Note a)
Luminous Intensity Matching Ratio	I_{v-m}	---	---	2:1		I_F=20mA
Peak Emission Wavelength	λ_p	---	632	---	nm	I_F=20mA
Dominant Wavelength	λ_d	---	624	---	nm	I_F=20mA (Note b)
Spectral Line Half-Width	$\triangle\lambda$	---	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:

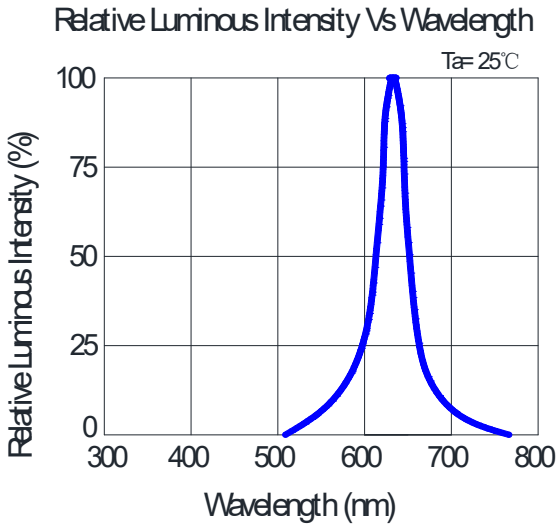
a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve. Tolerance of Luminous Intensity: ± 10 %

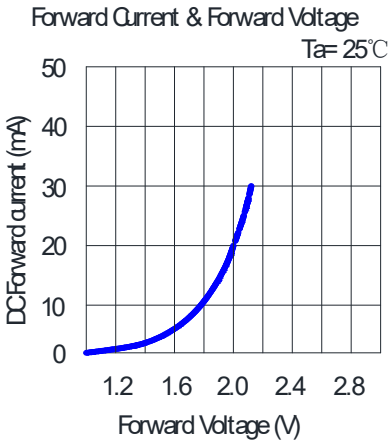
b. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

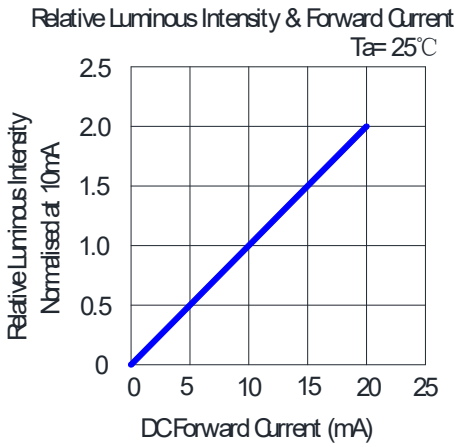
c. Tolerance of Forward Voltage: ± 0.1V

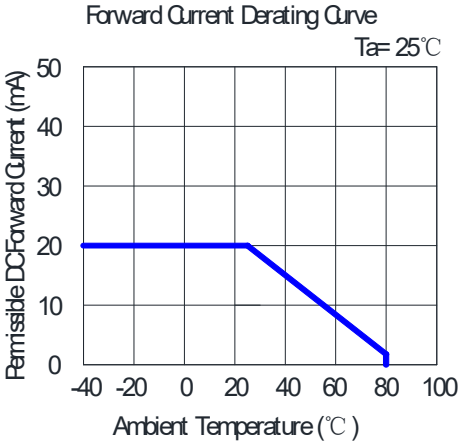
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Typical Electrical/Optical Characteristics Curves (T_a=25 ℃)



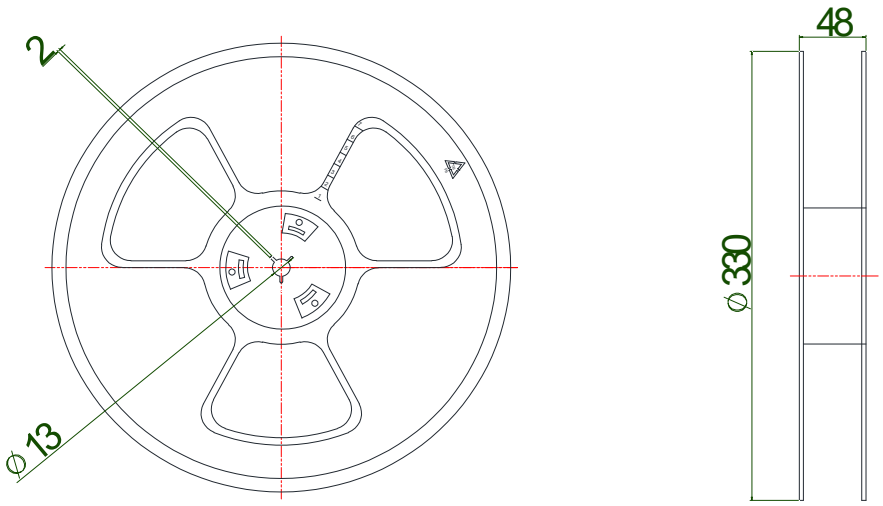




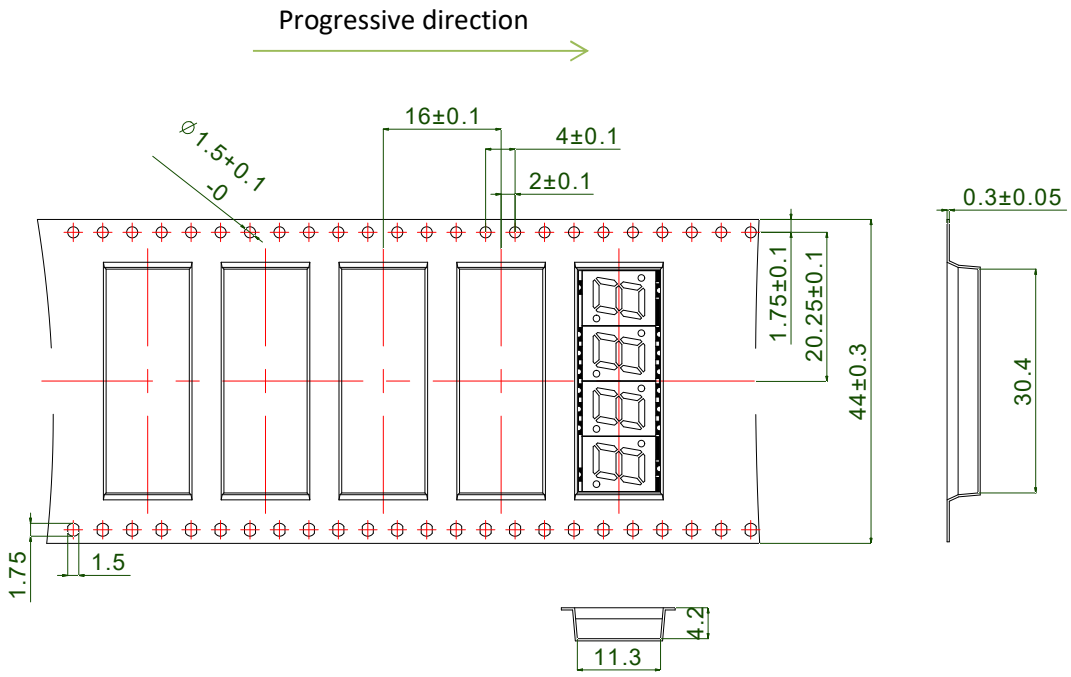


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Reel Dimensions *(units: mm)*



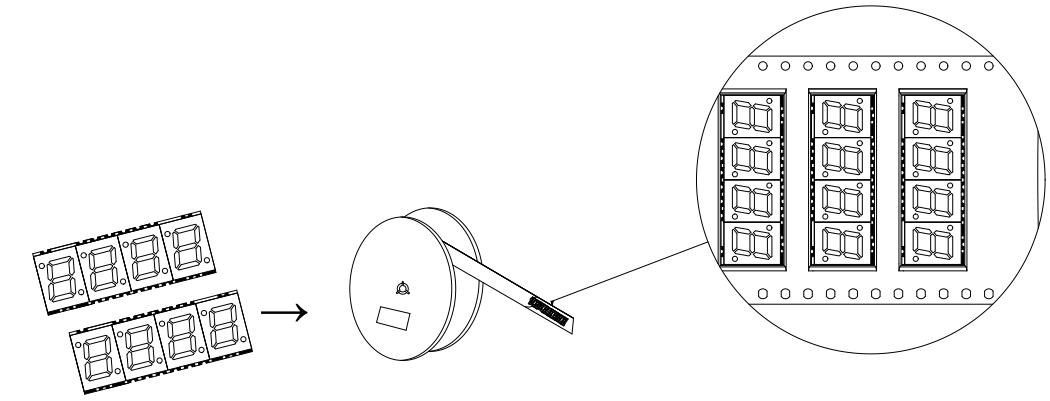
Tape Specifications *(units: mm):*



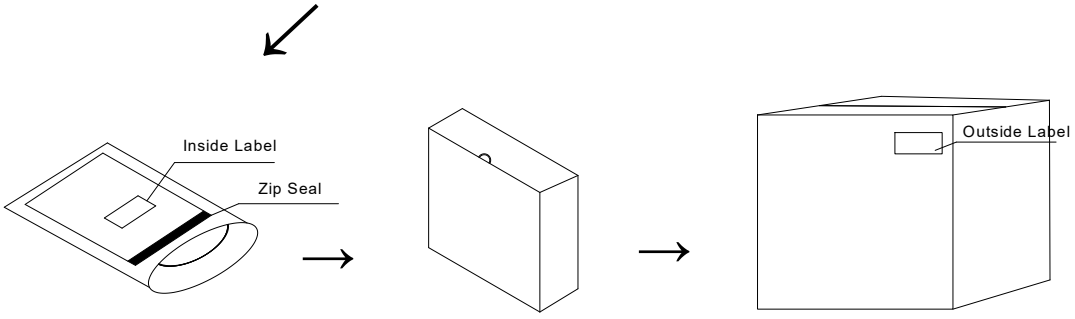
Note: Tolerances unless mentioned ±0.25mm.

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Packing & Label Specifications



1000 pcs/Reel

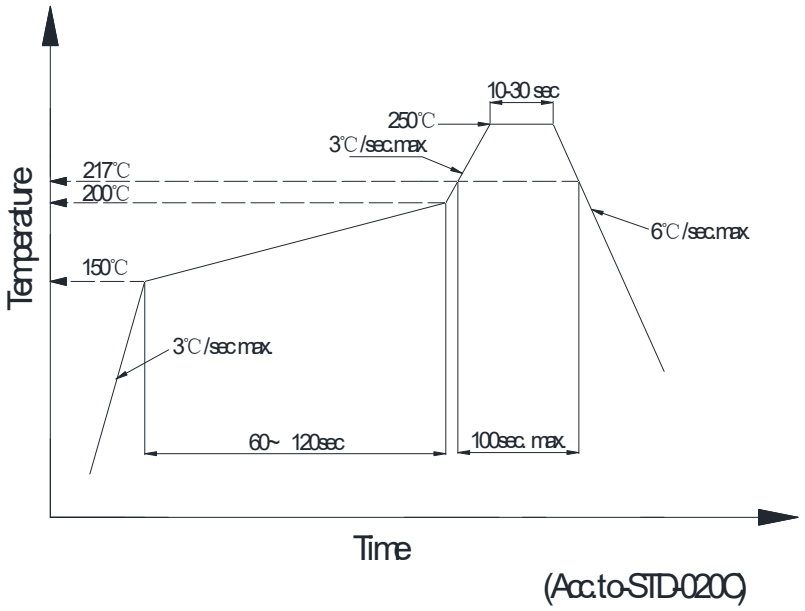


1 Reel/Bag 2 Bag/Small Box/2000 pcs 2 Small Boxes/Big Box/4000 pcs

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Precautions for Use

1. Pb-Free Reflow Soldering Profile.



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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