Spec. No.	PS-DE-S12050X-01
Rev.	

PRODUCT SPECIFICATION

Model No. : CSDE-S12050X-01

Description:		
Product Type	:	Touch SMD Display with Drive IC
Digit Height	:	8.0*8.0mm
Emitting Color	:	Pure Green; Yellow; Amber;Orange;Red;Deep Red
Feature	:	White Face With Touch PCB White Segment

CUSTOMER APPROVED SIGNATURES	APPROVED BY	CHECKED BY	PREPARED BY

OPTO PLUS TECHNOLOGIES CO.,LTD

Address:No.696,Yangming North Rd,

ShaoXing City,ZheJiang Province, P.R.China.

Tel :86-575-88623888

Fax:86-575-88623112

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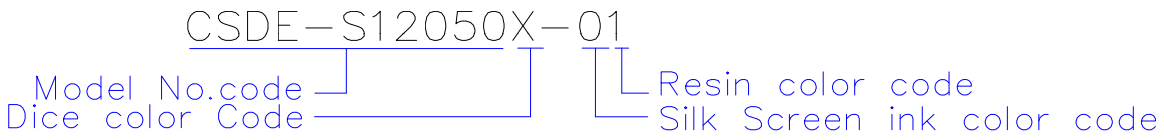
■ Features -

1. SMD type
2. Qualified according to JEDEC moisture sensitivity Level 2a
3. RoHS compliant.
4. Low power consumption.
5. Easy mounting on P.C. board

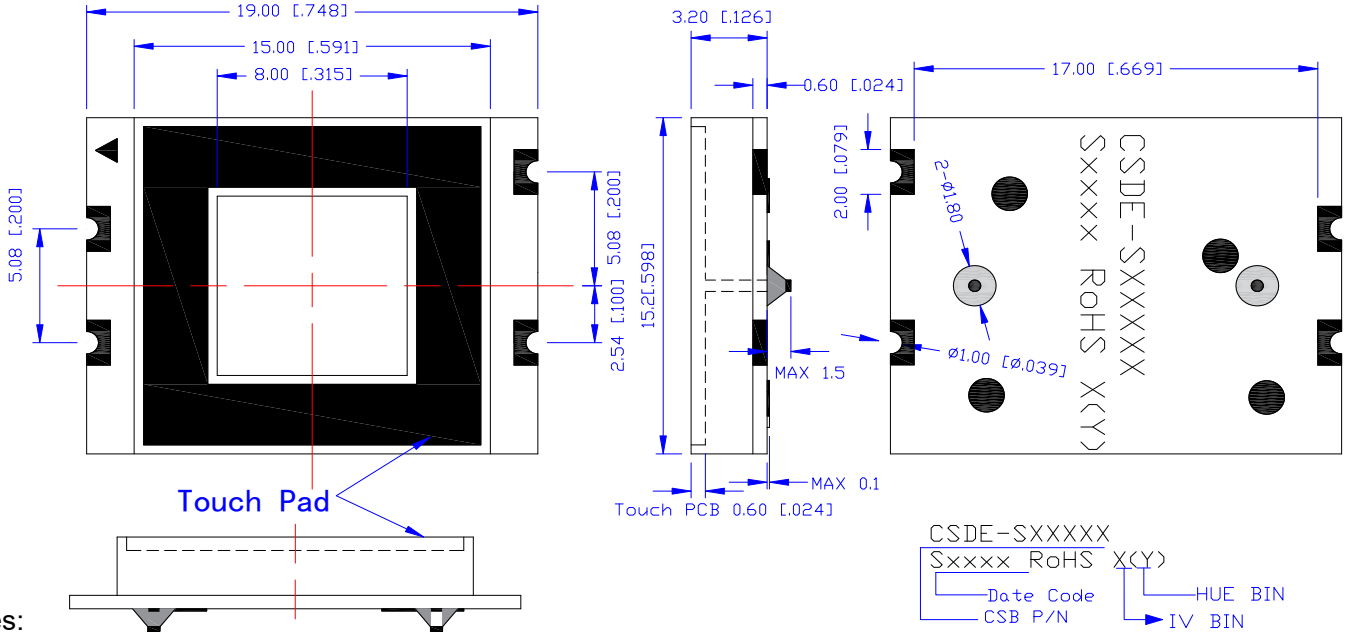
■ Device Selection Guide -

Model No.	Chip Material	Color		Description
		Emitter	Segment Resin	
CSDE-S120502	InGaN	Pure Green	White	/
CSDE-S12050T	AlGaInP	Yellow		
CSDE-S12050A		Amber		
CSDE-S12050V		Orange		
CSDE-S12050L		Red		
CSDE-S12050U		Deep Red		

■ LED Numeric/Alphanumeric Display



■ Mechanical Dimensions -



Notes:

1. Dimension in millimeter [inch], tolerance is ±0.25 [.010].unless otherwise noted
2. Bending≤Length*1%

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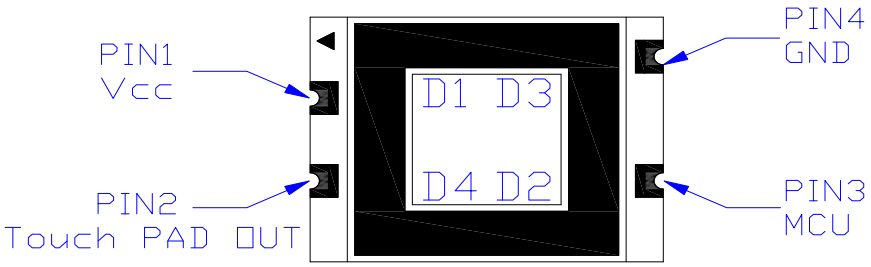
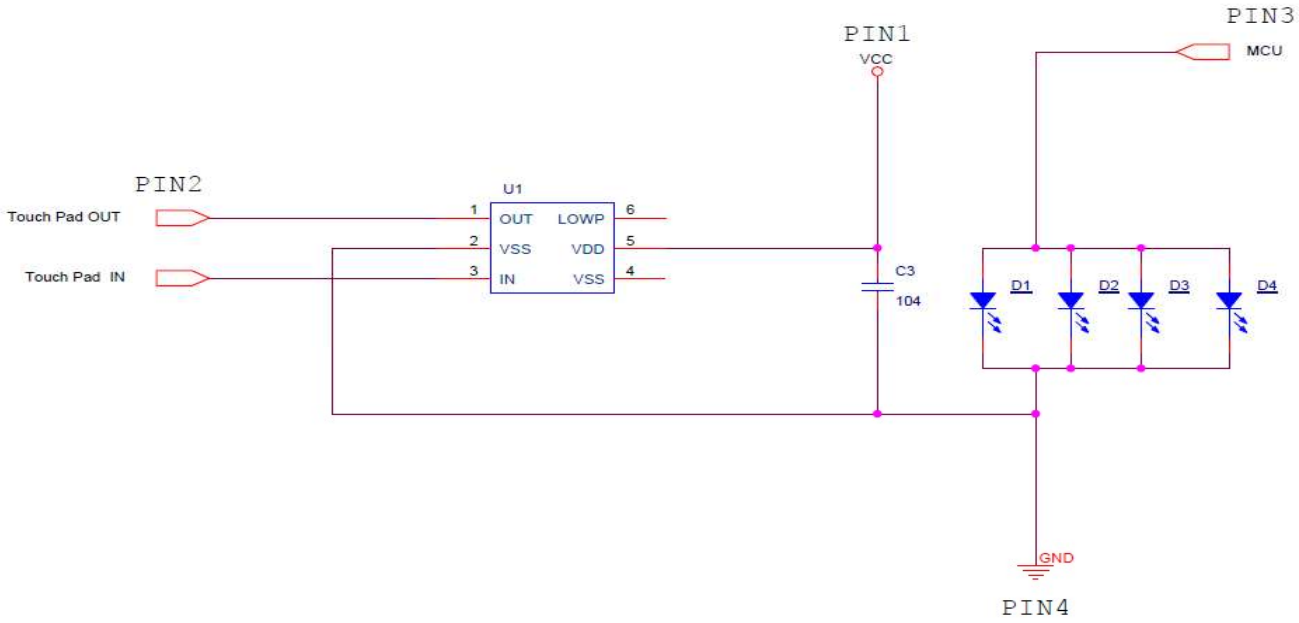
■ All Light On Segments Feature & Pad Position



■ Internal Circuit Diagrams -



■ Touch IC Electro-optical Characteristics -

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
V_{DD}	Supply Voltage	-	2.0	-	5.5	V
V_{IH}	High Level Input Voltage	@V_{DD}=5V	3.5	-	5	V
V_{IL}	Low Level Input Voltage	@V_{DD}=5V	0	-	1.5	V
I_{DD1}	Operating Current	@VDD=5V , no load	-	16	-	uA
		@VDD=3V , no load	-	3.5	-	
I_{DD2}	Operating Current (SLRT=V_{DD})	@VDD=5V , no load	-	10.5	-	uA
		@VDD=3V , no load	-	2.5	-	
I_{OL}	Low Level Output Current	@V_{DD}=3V , V_{OL}=1V	-	30	-	mA
I_{OH}	High Level Output Current	@V_{DD}=3V , V_{OH}=2V	-	80	-	mA

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■ **Absolute Maximum Rating -**

Parameter	Symbol	Rating		Unit
		2	M/T/A/V/L/U	
Power Dissipation Per Dice	P_d	114	70	mW
Continuous Forward Current Per Dice	I_f	30	25	mA
Peak Current Per Dice(duty cycle 1/10,1KHz)	I_{fp}	100	90	mA
Derating Liner from 25°C Per Dice	$\Delta I_f / \Delta T$	0.4	0.33	mA / °C
Reverse Voltage Per Dice	V_r	5	5	V
Electrostatic discharge(HBM)	ESD	1000	/	V
Operating Temp.	T_{opr}	-40 ~ +105		°C
Storage Temp.	T_{stg}	-40 ~ +105		°C
Hand Soldering Temp.	T_{sol}	350		°C

■ **Electro-optical Characteristics -**

Parameter	Symbol	Chip	Min.	Typ.	Max.	Unit	Condition
Forward Voltage Per Dice	V_f	2	-	3.2	3.8	V	I_f=20mA
		T/A/V/L/U	-	2	2.8		
Luminous Intensity Per Segment	I_v	2	-	600	-	mcd	I_f=20mA
		T	-	120	-		
		A	-	140	-		
		V	-	95	-		
		L	-	60	-		
		U	-	35	-		
Peak Emission Wavelength/Dominant Wavelength	$\lambda p/\lambda_d$	2	-	*/525	-	nm	I_f=20mA
		T	-	592/590	-		
		A	-	612/605	-		
		V	-	632/625	-		
		L	-	644/630	-		
		U	-	660/645	-		
Spectrum Radiation Bandwidth	$\Delta \lambda$	2	-	30	-	nm	I_f=20mA
		T/A/V/L/U	-	20	-		
Reverse Current	I_r	I_v	-	-	100	μA	V_r=5V
Luminous Intensity Matching Ratio	I_v-m	I_v	-	-	2:1	-	I_f=20mA

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■ Electrical / Optical Characteristics Curves -Per Dice

(Ta = 25°C Unless Otherwise Noted)

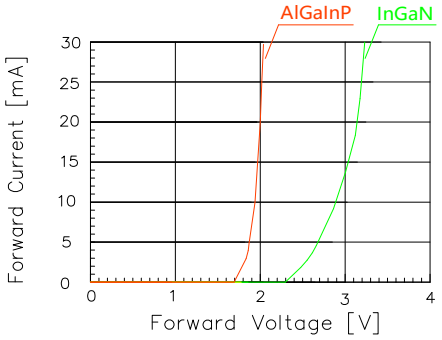

Fig 1. Forward Current vs. Forward Voltage

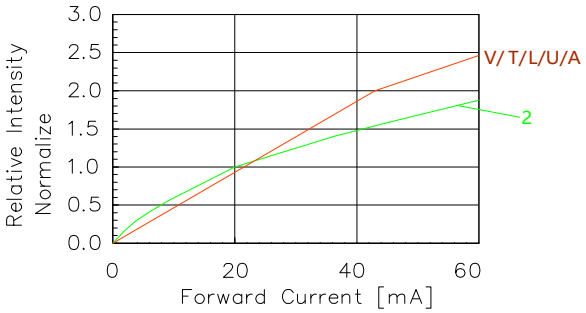

Fig 2. Relative Intensity vs. Forward Current

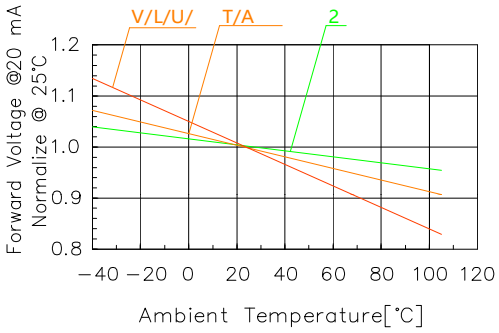

Fig 3. Forward Voltage vs. Temperature

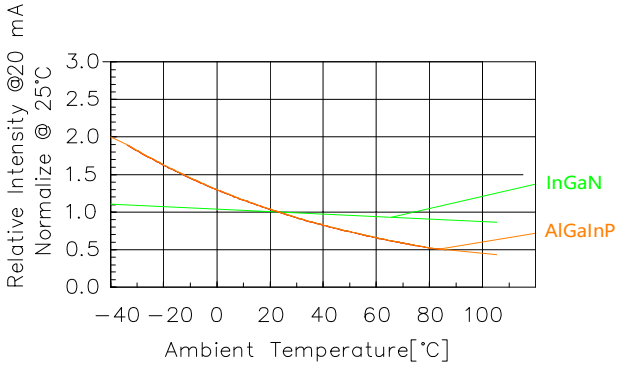

Fig 4. Relative Intensity vs. Temperature

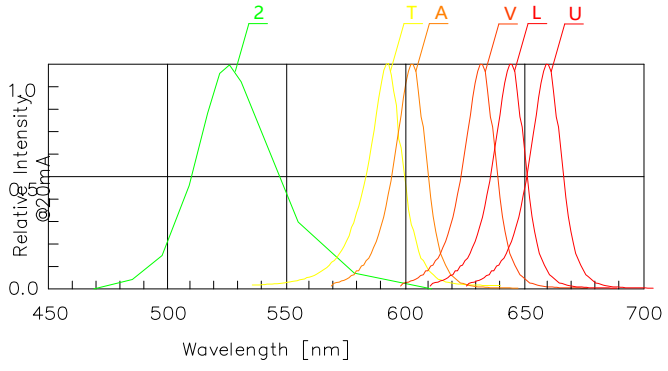

Fig 5. Relative Intensity vs. Wavelength

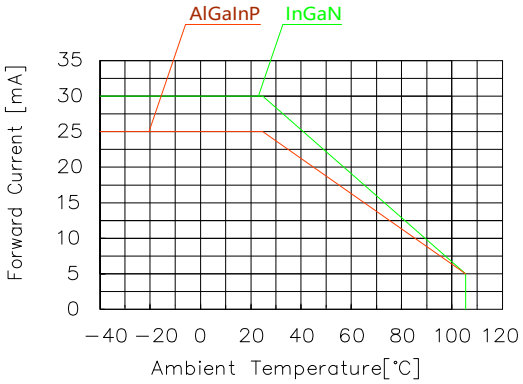

Fig 6. Forward current vs. Temperature

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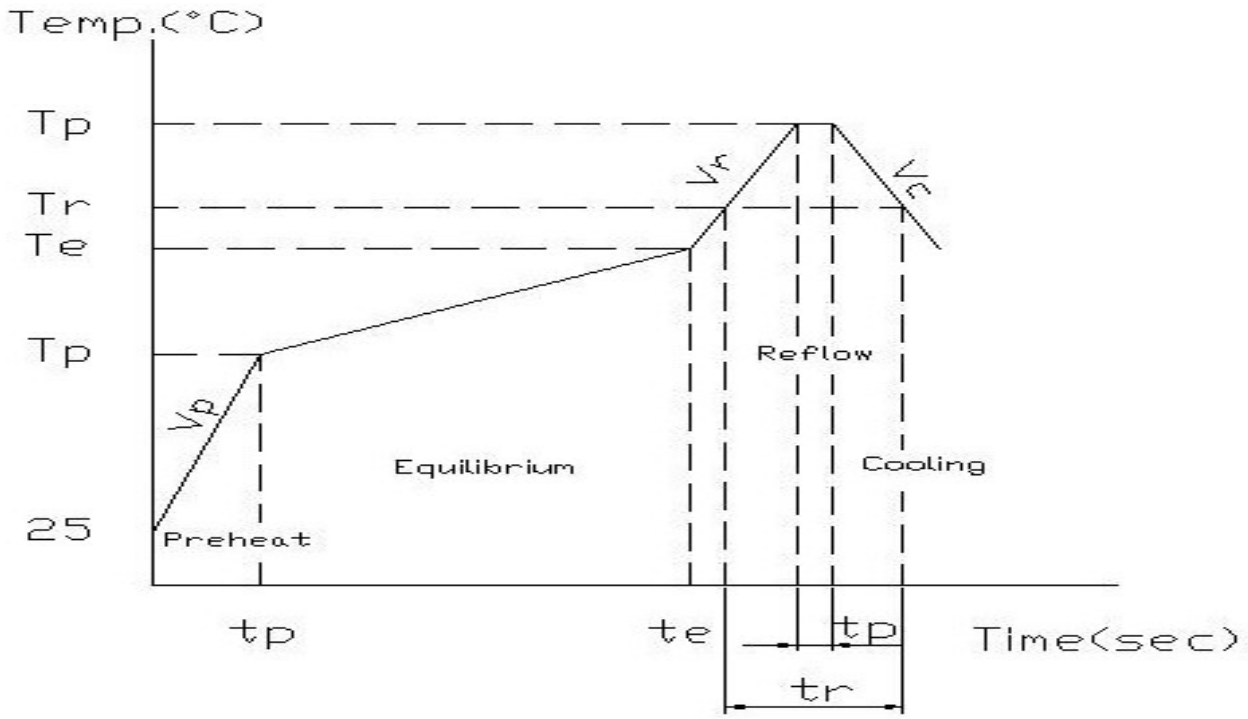
■ Soldering Characteristics

1. IR-Reflow Soldering Profile :

Area	Title	Symbol	Min	Max	Unit
(1)Preheat	Ramp-up rate	Vp	1	5	℃/sec
	temperature	Tp	150	—	℃
	time	tp	—	—	sec
(2)Equilibrium	Ramp-up rate	Ve	—	—	℃/sec
	temperature	Te	150	200	℃
	Time	te	60	120	sec
(3)Reflow	Ramp-up rate	Vr	1	5	℃/sec
	temperature	Tr	220	—	℃
	Time	tr	—	60	sec
	Peak temperature	Trp	—	260	℃
	Peak time	trp	—	10	sec
(4)Cooling	Ramp-down rate	Vc	3	6	℃/sec



2.Hand Soldering (Iron Condition)

Soldering Iron:30W Max

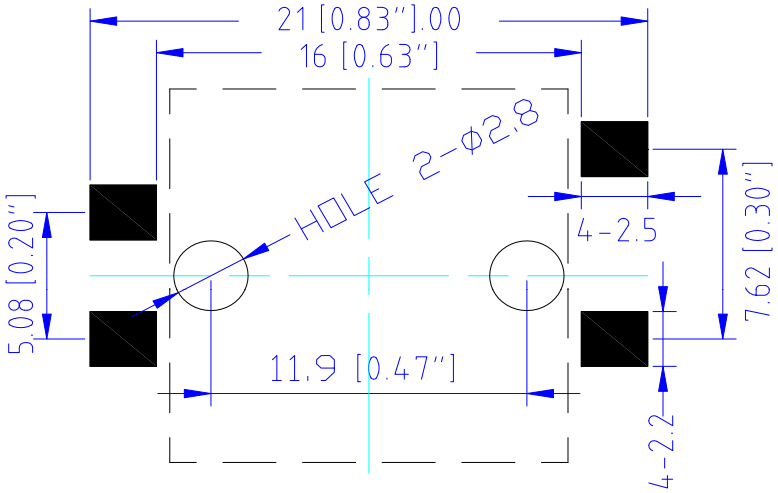
Temperature 350°C Max

Soldering Time:3 Seconds Max(One Time)

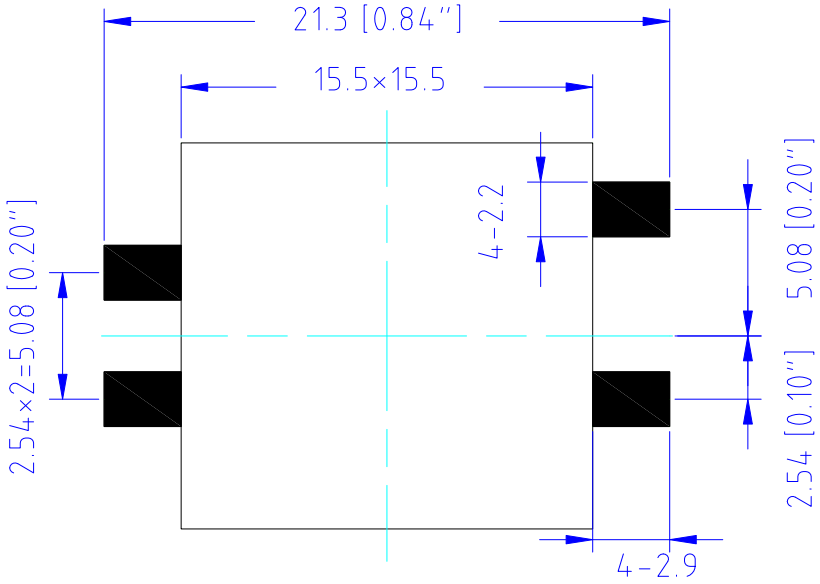
Distance:1.6mm min(From seating plane)

■ Soldering Pad Size

Top Mount



Reverse Mount



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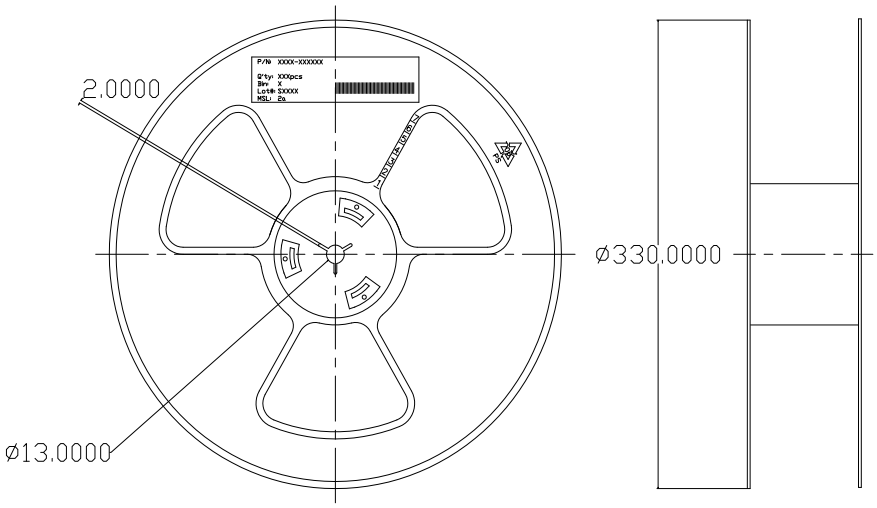
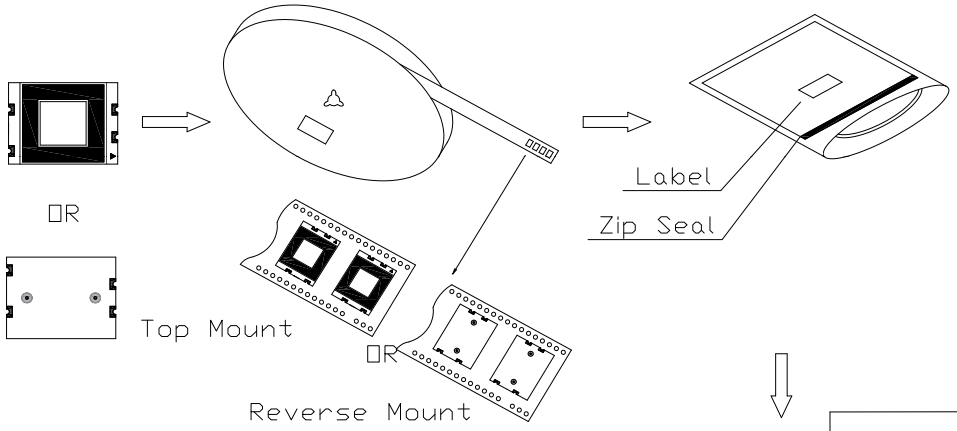
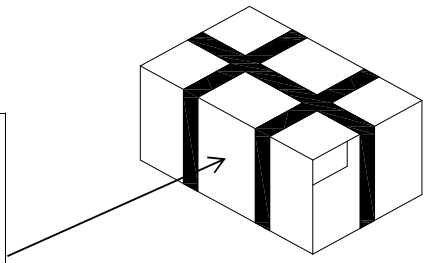
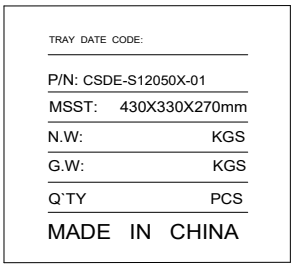
■ Reel Dimensions



■ Packing & Label Specifications







Package Name	Size	Unit	Amount	Unit	Amount	Unit	Note
Reel	Φ330	mm	1	Reel	750	Pcs	/
Bag	L450*W430	mm	1	Reel	750	Pcs	/
Outer Box	L430*W330*H270	mm	5	Bag	3750	Pcs	/

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■ Storage Method

- Storage Conditions

Before opening the package:

The LEDs should be kept at 30°C or less and 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

After opening the package:

The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7days) after opening the package. If unused LEDs remain,they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.

- If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment: more than 24 hours at 65 ± 5°C