

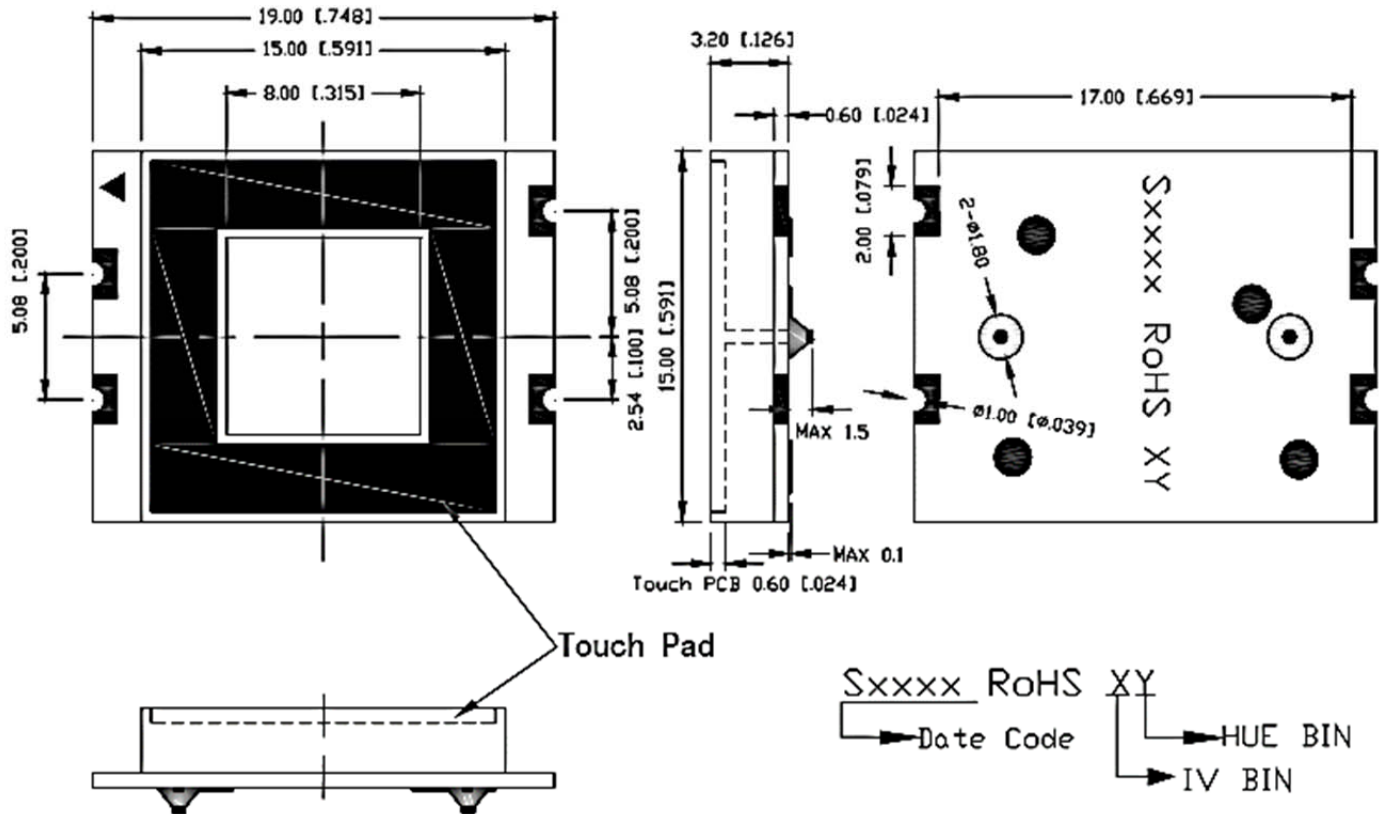


# American Opto Plus LED Corp. SMD-CT591PG-STI

19.0 x 15.0 x 3.2mm Pure Green Touch SMD Display w/Drive IC

- ◆ Radiation Size: 8.0 \* 8.0mm
- ◆ White Face with Touch PCB
- White Segment
- ◆ JEDEC Lvl 2a / RoHS Compliant

## MECHANICAL DIMENSIONS



### Notes:

1. Dimension in millimeter [inch], tolerance is  $\pm 0.25$  [0.010] unless otherwise noted.
2. Bending  $\leq$  Length \* 1.0%

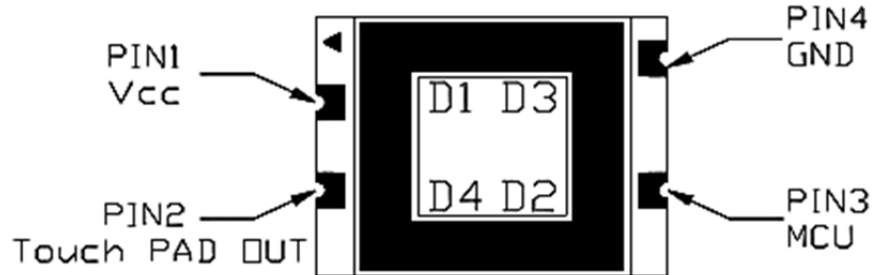


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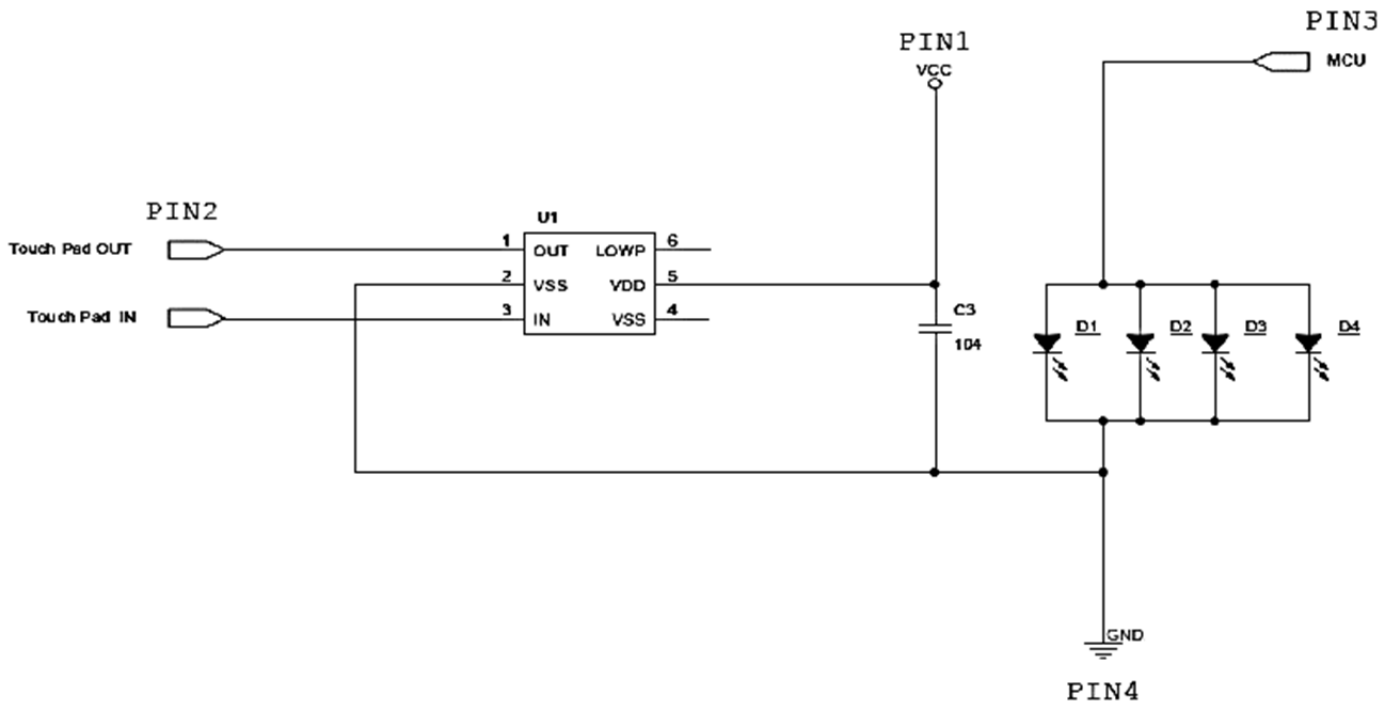
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## ALL LIGHT ON SEGMENTS FEATURE & PAD POSITION



Part Number	Color			
	Material	Emitted	Segment Resin	Description
SMD-CT591PG-STI	InGaN	Pure Green	White	Touch Display

## INTERNAL CIRCUIT DIAGRAMS





**American Opto Plus LED Corp.**  
**SMD-CT591PG-STI**

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**TOUCH IC ELECTRO-OPTICAL CHARACTERISTICS**

**(Ta=25°C)**

	Symbol	Min.	Typ.	Max.	Unit	Condition
Supply Voltage	V <sub>DD</sub>	2.0	--	5.5	V	--
High Level Input Voltage	V <sub>IH</sub>	3.5	--	5	V	V <sub>DD</sub> = 5V
Low Level Input Voltage	V <sub>IL</sub>	0	--	1.5	V	V <sub>DD</sub> = 5V
Operating Current	I <sub>DD1</sub>	--	16	--	μA	V <sub>DD</sub> = 5V No load
		--	3.5	--		V <sub>DD</sub> = 3V No load
Operating Current (SLRT = V <sub>DD</sub> )	I <sub>DD2</sub>	--	10.5	--	μA	V <sub>DD</sub> = 5V No load
		--	2.5	--		V <sub>DD</sub> = 3V No load
Low Level Output Current	I <sub>OL</sub>	--	30	--	mA	V <sub>DD</sub> = 3V V <sub>OL</sub> = 1V
High Level Output Current	I <sub>OH</sub>	--	8	--	mA	V <sub>DD</sub> = 3V V <sub>OH</sub> = 2V

**ABSOLUTE MAXIMUM RATING**

**(Ta=25°C)**

	Symbol	Rating	Unit
Power Dissipation (Per Dice)	P <sub>D</sub>	114	mW
Continuous Forward Current (Per Dice)	I <sub>F</sub>	30	mA
Peak Current (Per Dice, duty cycle 1/10,1KHz)	I <sub>FP</sub>	100	mA
Derating Liner from 25°C (Per Dice)	ΔI <sub>f</sub> / ΔT	0.4	mA / °C
Reverse Voltage (Per Dice)	V <sub>R</sub>	5	V
Operating Temp.	T <sub>OPR</sub>	-40 ~ +105	°C
Storage Temp.	T <sub>STG</sub>	-40 ~ +105	°C
Electrostatic Discharge (HBM)	ESD	1500	V
Hand Soldering Temperature	T <sub>SOL</sub>	350	°C



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## ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	288	600	--	mcd	I <sub>F</sub> = 20 mA
Forward Voltage	V <sub>F</sub>	--	3.2	3.8	V	I <sub>F</sub> = 20 mA
Dominant Wavelength	λ <sub>D</sub>	--	525	--	nm	I <sub>F</sub> = 20 mA
Spectrum Radiation Bandwidth	Δλ	--	30	--	nm	I <sub>F</sub> = 20 mA
Reverse Current	I <sub>R</sub>	-	-	100	μA	V <sub>R</sub> = 5V

## LUMINOUS GENERAL I<sub>v</sub> BIN GRADE

(I<sub>f</sub> = 20mA)

A	B	C	D	E	F	G	H	J	K	L	M
0.155	0.249	0.399	0.640	1.025	1.641	2.627	4.204	6.727	10.764	17.224	27.559
}		}		}		}		}		}	
0.248	0.398	0.639	1.024	1.640	2.626	4.203	6.726	10.763	17.223	27.558	44.095
N	P	Q	R	S	T	U	V	W	X	Y	1
44.096	70.555	112.889	180.622	288.997	462.397	739.836	1183.738	1893.982	3030.372	4848.597	7757.756
}		}		}		}		}		}	
70.554	112.888	180.622	288.996	462.396	739.835	1183.737	1893.981	3030.371	4848.596	7757.755	12412.409
}		}		}		}		}		}	
2	3	4	5	6	7	8	9				
4034.034	19859.858	31775.773	50841.238	81345.982	130153.573	208245.718	333193.149				
}		}		}		}					
19859.857	31775.772	50841.237	81345.981	130153.572	208245.717	333193.148	533109.039				

1. Unit = mcd
2. Tolerance: ±20%

## COLOR RANK LIMITS

(I<sub>f</sub> = 20mA)

0	1	2	3	4
522.0	524.0	526.0	528.0	530.0
}		}		}
523.9	525.9	527.9	529.9	532.0

1. Unit = nm
2. Tolerance: ±1



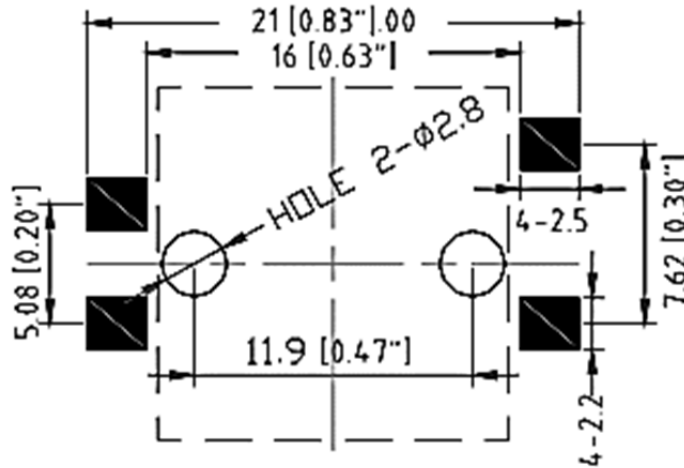
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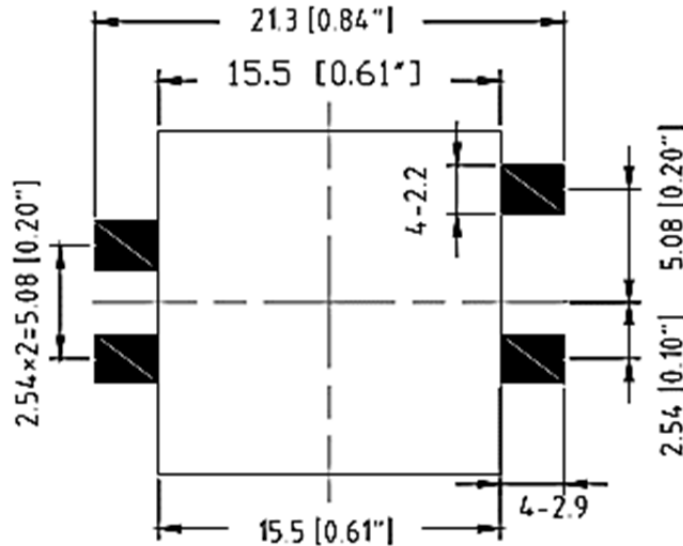
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## SOLDERING PAD SIZE

- Top Mount



- Reverse Mount





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## ELECTRICAL/OPTICAL CHARACTERISTICS CURVES - PER DICE (Ta=25°C)

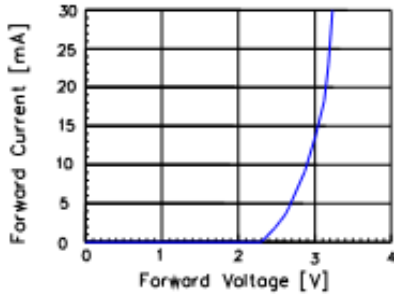


Fig 1. Forward Current vs. Forward Voltage

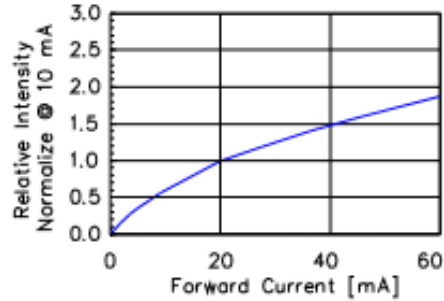


Fig 2. Relative Intensity vs. Forward Current

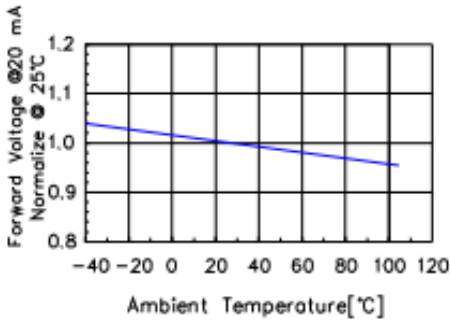


Fig 3. Forward Voltage vs. Temperature

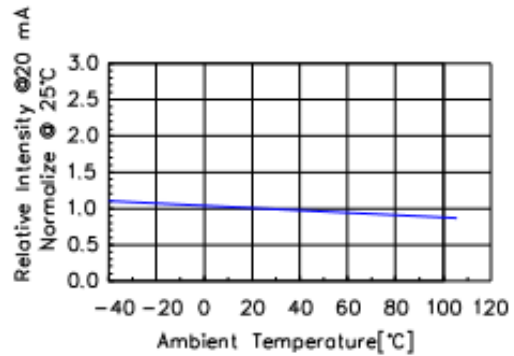


Fig 4. Relative Intensity vs. Temperature

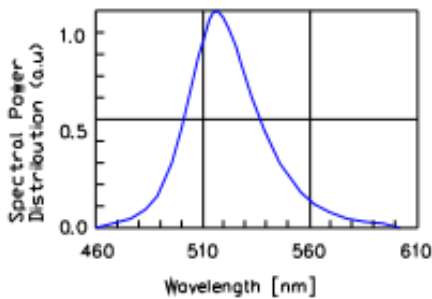


Fig 5. Spectral Power Distribution vs. Wavelength

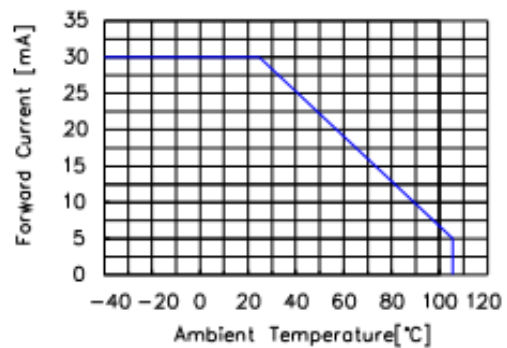


Fig 6. Forward current vs. Temperature



**American Opto Plus LED Corp.**  
**SMD-CT591PG-STI**

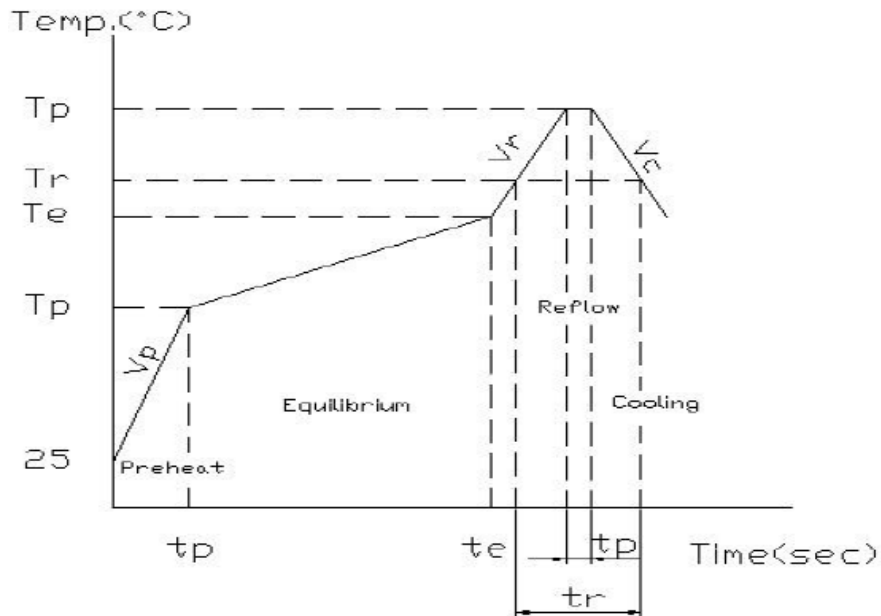
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**SOLDERING CHARACTERISTICS**

**1. IR-reflow Condition (Pb free)**

Area	Title	Symbol	Min	Max	Unit
(1)Preheat	Ramp-up Rate	$V_P$	1	5	°C/sec
	Temperature	$T_P$	150	--	°C
	Time	$t_p$	--	--	sec
(2)Equilibrium	Ramp-up Rate	$V_E$	--	--	°C/sec
	Temperature	$T_E$	150	200	°C
	Time	$t_e$	60	120	sec
(3)Reflow	Ramp-up Rate	$V_R$	1	5	°C/sec
	Temperature	$T_R$	220	--	°C
	Time	$t_r$	--	60	sec
	Peak Temperature	$T_{RP}$	--	260	°C
	Peak Time	$t_{rp}$	--	10	sec
(4)Cooling	Ramp-down Rate	$V_c$	3	6	°C/sec





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**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)



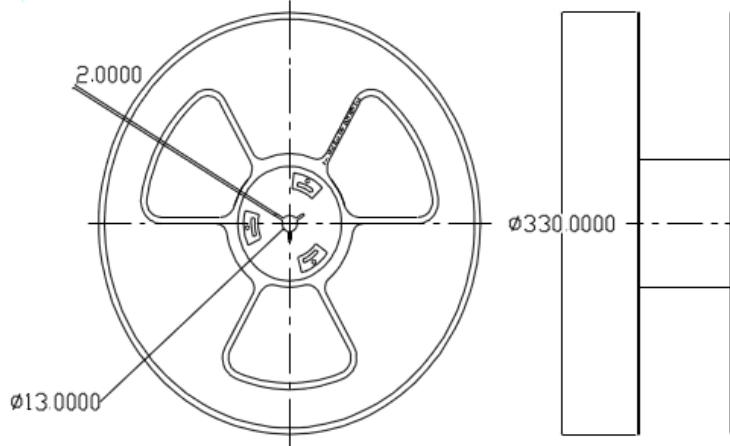


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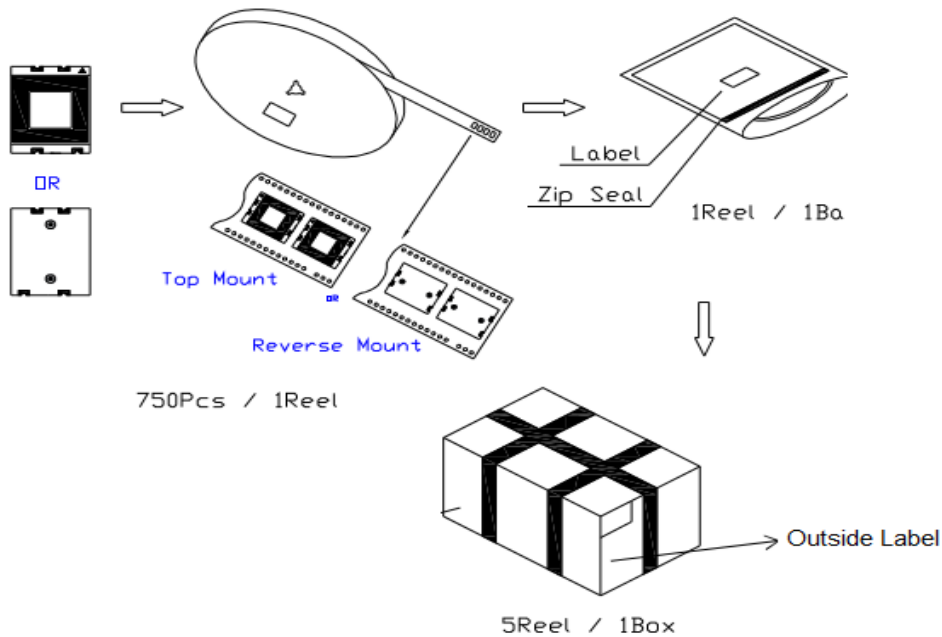
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## REEL DIMENSION



1. 750pcs per reel.

## PACKING AND LABEL SPECIFICATION



Package Name	Size	Unit	Amount	Unit	Amount	Unit	Note
Reel	ø 330*L35	mm	1	Reel	750	Pcs	/
Bag	L450*W430	mm	1	Reel	750	Pcs	/
Outer Box	L440*W340*H280	mm	5	Bag	3750	Pcs	/



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## STORAGE METHOD

### ● Storage Conditions

#### A. Before opening the package:

The LEDs should be kept at  $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$  and RH: 45% ~ 105%. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

#### B. After opening the package:

The LEDs should be kept at  $\leq 30^{\circ}\text{C}$  and  $\leq 70\% \text{RH}$ . The LEDs should be soldered within 168 hours (7) 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  $65 \pm 5^{\circ}\text{C}$