

# **SURFACE MOUNT CHIP LED LAMPS**

## **DATA SHEET**

**MODEL NO: GT3528-4W14BXX**

REV. : 2.0

DATE : 01-Apr.-2009

## Features

- P-LCC-2 package.
- White package.
- Optical indicator.
- Colorless clear window.
- Pb-free.
- Wide viewing angle.
- Compatible with automatic placement equipment.
- Available on tape and reel (8mm Tape).
- Suitable for vapor-phase reflow, Infrared reflow and wave solder processes.
- The product itself will remain within RoHS compliant version



## Descriptions

The GT3528 series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

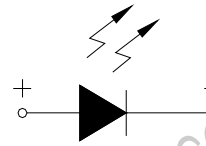
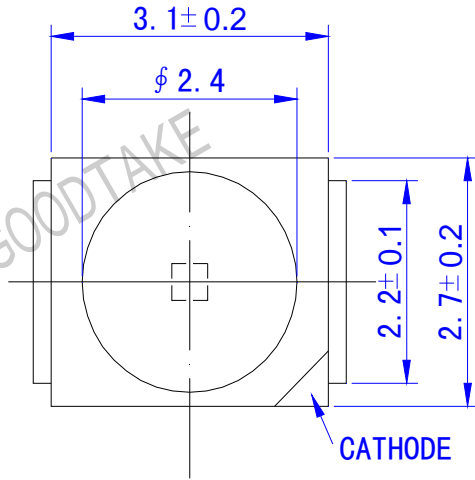
## Applications

- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- Light pipe application.
- General use.

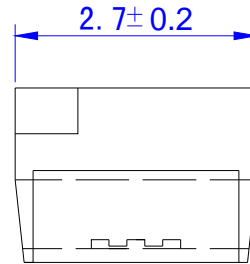
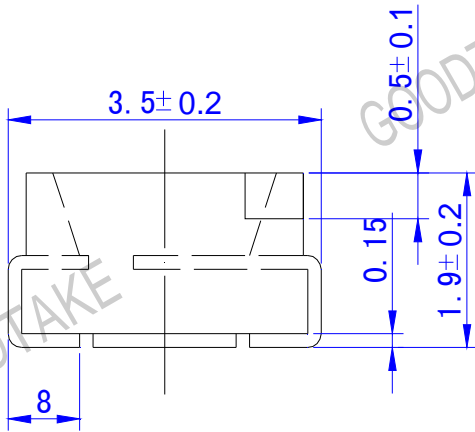
## Device Selection Guide

Material	Resin (mold)	Emitted Color
InGaN	Epoxy	White

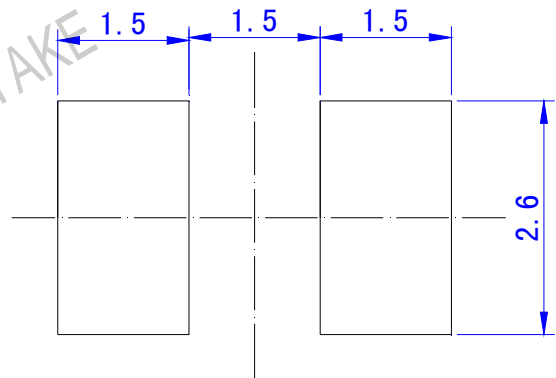
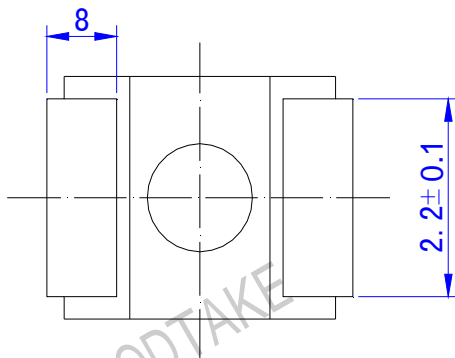
## Package Dimensions



Polarity



For reflow soldering (Proposal)



Note: The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm

## Absolute Maximum Rating (Ta=25°C)

Item	Symbol	Condition	Absolute Maximum Rating	Unit
Forward Current	I <sub>F</sub>		30	mA
Peak Forward Current	I <sub>FP</sub>	Duty1/10 @1Khz)	100	mA
Reverse Voltage	V <sub>R</sub>		5	V
Power Dissipation	P <sub>D</sub>		105	mW
Operating Temperature	T <sub>opr</sub>		-40~+85	°C
Storage Temperature	T <sub>stg</sub>		-55~+100	°C
Electrostatic Discharge	ESD		2000 (HBM)	V
Lead Soldering Temperature	T <sub>sol</sub>		260°C for 10 seconds	

## Electrical and Optical Characteristics at (Ta=25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	2.8	---	3.6	V
50%Power angle	2θ <sub>1/2</sub>		--	120	--	Deg
Luminous Intensity	I <sub>v</sub>		1200	----	2600	Mcd
Chromaticity Coordinates	CIE-X		0.3782	--	0.4946	--
	CIE-Y		0.3620	--	0.4551	--
Reverse Current	I <sub>R</sub>	V <sub>r</sub> =5V			10	μA

**Luminous Intensity Combination(mcd at 20mA)**

<b>Rank</b>	<b>Min (mcd)</b>	<b>Max (mcd)</b>
<b>H</b>	<b>1200</b>	<b>1400</b>
<b>I</b>	<b>1400</b>	<b>1600</b>
<b>J</b>	<b>1600</b>	<b>1800</b>
<b>K</b>	<b>1800</b>	<b>2000</b>
<b>L</b>	<b>2000</b>	<b>2200</b>
<b>M</b>	<b>2200</b>	<b>2400</b>
<b>N</b>	<b>2400</b>	<b>2600</b>

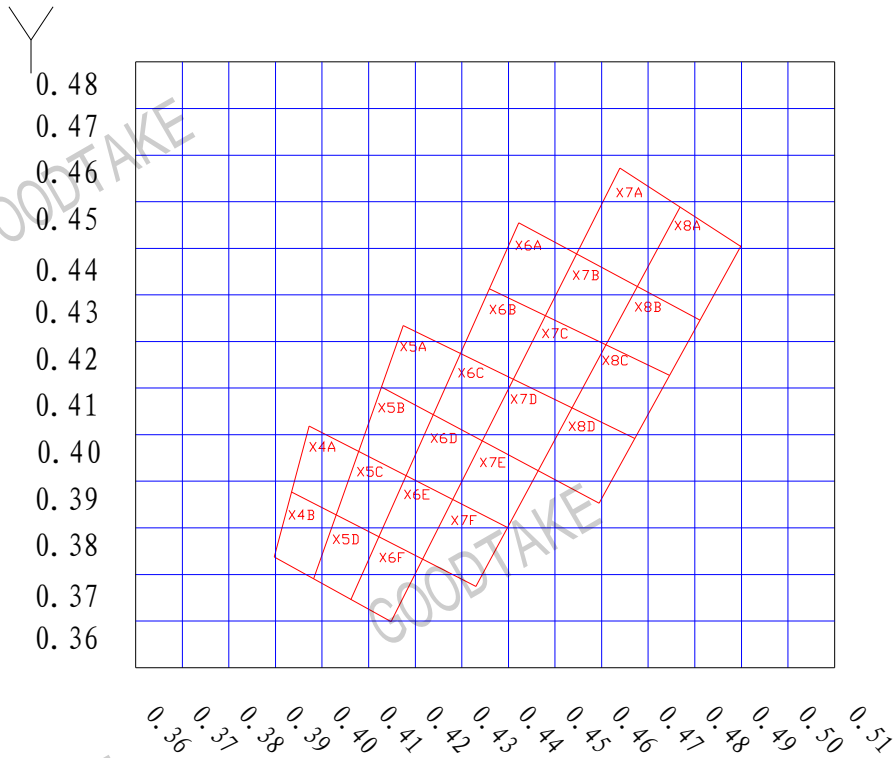
\*Measurement Uncertainty of Luminous Intensity:  $\pm 10\%$ .

**Forward Voltage Combination(V at 20mA)**

<b>Rank T</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Forward Voltage</b>	<b>2.8~2.9</b>	<b>2.9~3.0</b>	<b>3.0~3.1</b>	<b>3.1~3.2</b>
<b>Rank R</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Forward Voltage</b>	<b>3.2~3.3</b>	<b>3.3~3.4</b>	<b>3.4~3.5</b>	<b>3.5~3.6</b>

\*Measurement Uncertainty of Forward Voltage:  $\pm 0.1V$ .

## Color Combination( at 20mA)



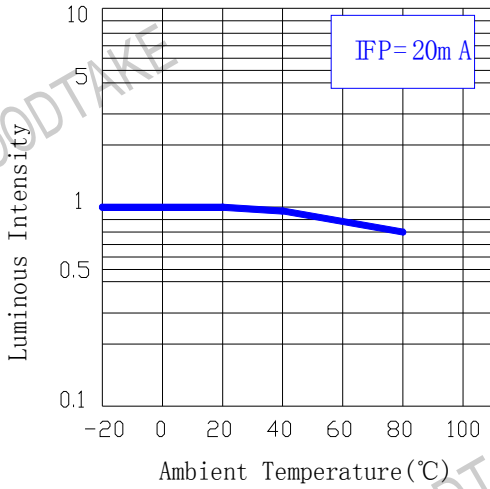
## Color Ranks(IF=20mA,Ta=25℃)

Color Ranks	CIE						色温段
	X8A	X8B	X8C	X8D			
X8	X8A	X8B	X8C	X8D			2500-2700K
X7	X7A	X7B	X7C	X7D	X7E	X7F	2700-3000K
X6	X6A	X6B	X6C	X6D	X6E	X6F	3000-3250K
X5	X5A	X5B	X5C	X5D			3250-3500K
X4	X4A		X4B				3500-3700K

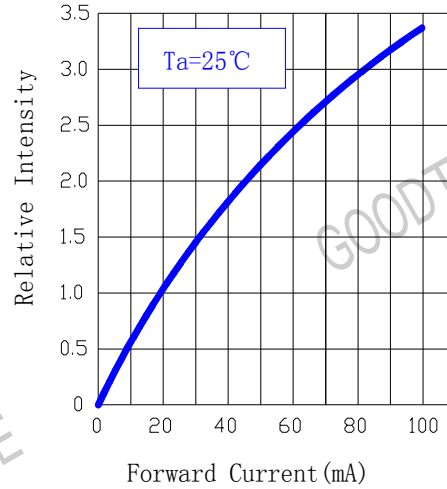
Measurement uncertainty of the color coordinates  $\pm 0.01$

## Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)

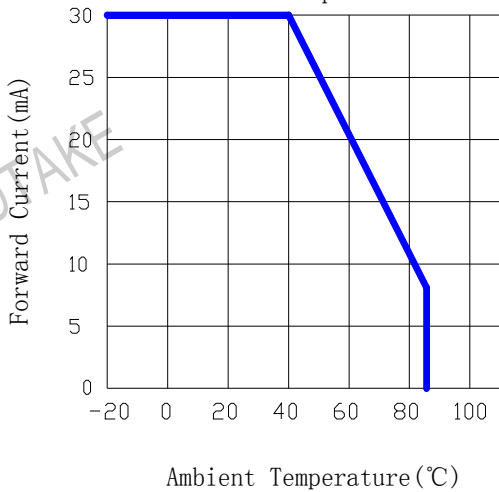
Luminous Intensity vs Ambient Temperature



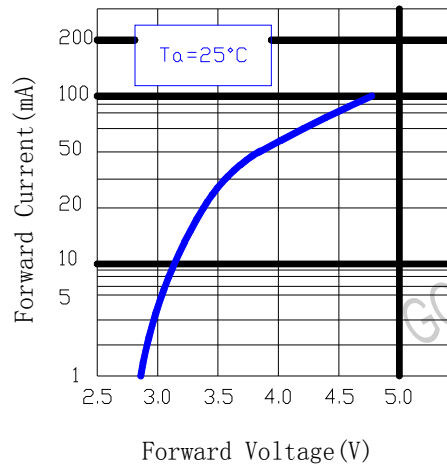
Relative Intensity vs Forward Current (mA)



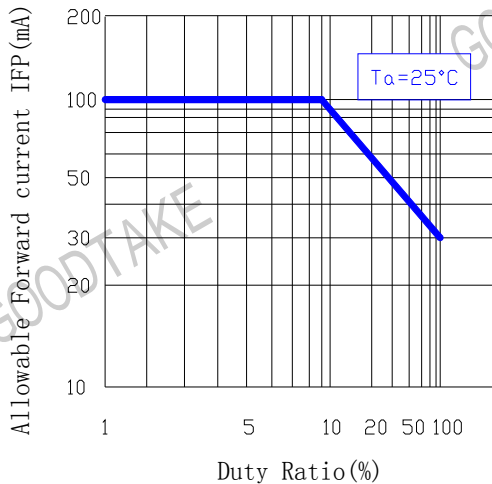
Forward Current vs Ambient Temperature



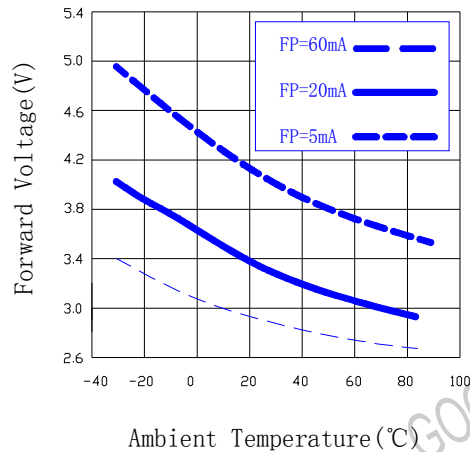
Forward Current vs Forward Voltage

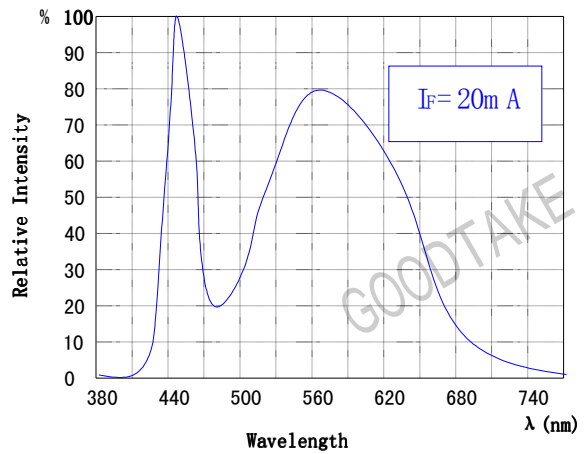
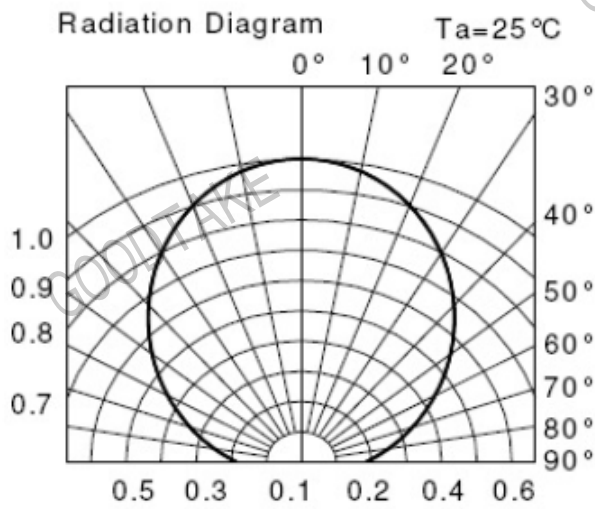


Duty Ratio vs. Allowable Forward current



Forward Voltage vs. Ambient Temperature





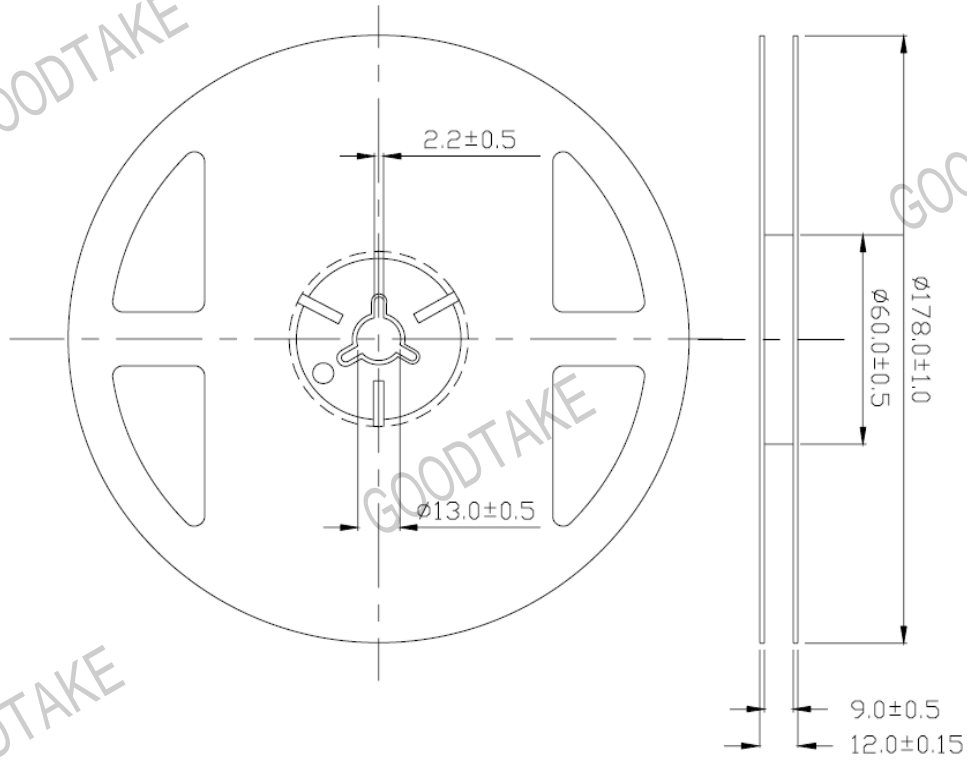
**Test items and results of reliability**

NO	Item	Test Conditions	Test Hours/Cycle	Sample Size	Ac/Re
1	Reflow	TEMP: 260±5°C Min. 5sec.	6 MIN.	22 PCS	0/1
2	Temperature Cycle	H: +100°C 15min ↓ 5 min L: -40°C 15min	300 CYCLES	22 PCS	0/1
3	Thermal Shock	H: +100°C 5min ↓ 10 sec L: -10°C 5min	300 CYCLES	22 PCS	0/1
4	High Temperature Storage	TEMP: 100°C	1000 HRS	22 PCS	0/1
5	Low Temperature Storage	TEMP: -55°C	1000 HRS	22 PCS	0/1
6	DC Operating Life	IF = 20 mA / 25°C	1000 HRS	22 PCS	0/1
7	High Temperature / High Humidity	85°C / 85%RH	1000 HRS	22 PCS	0/1

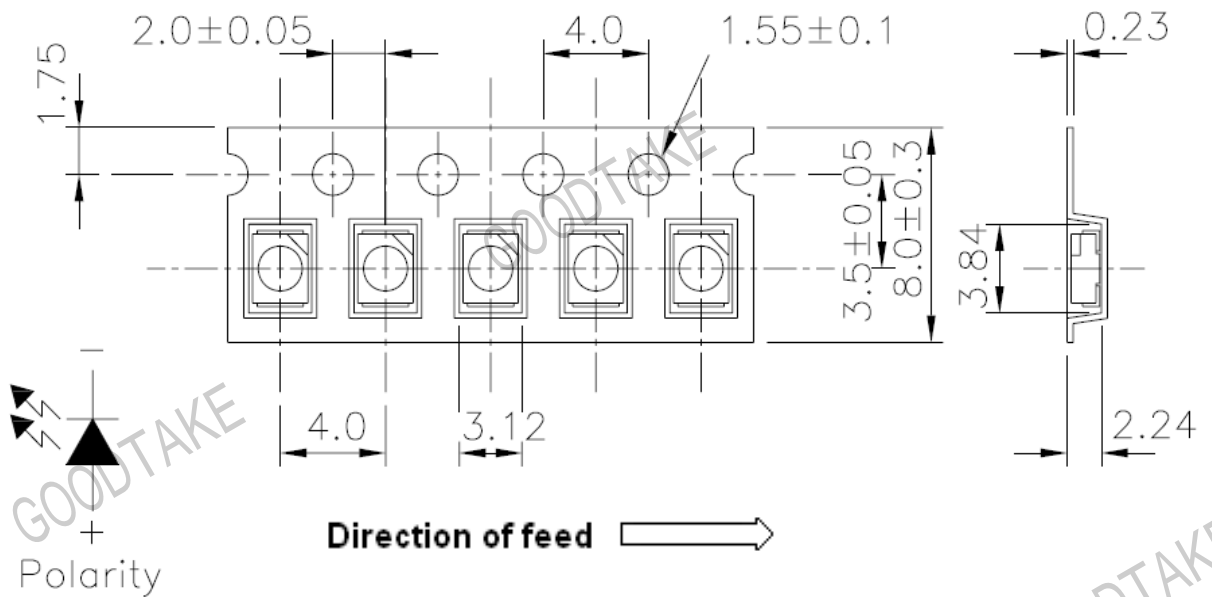


## Taping Specification

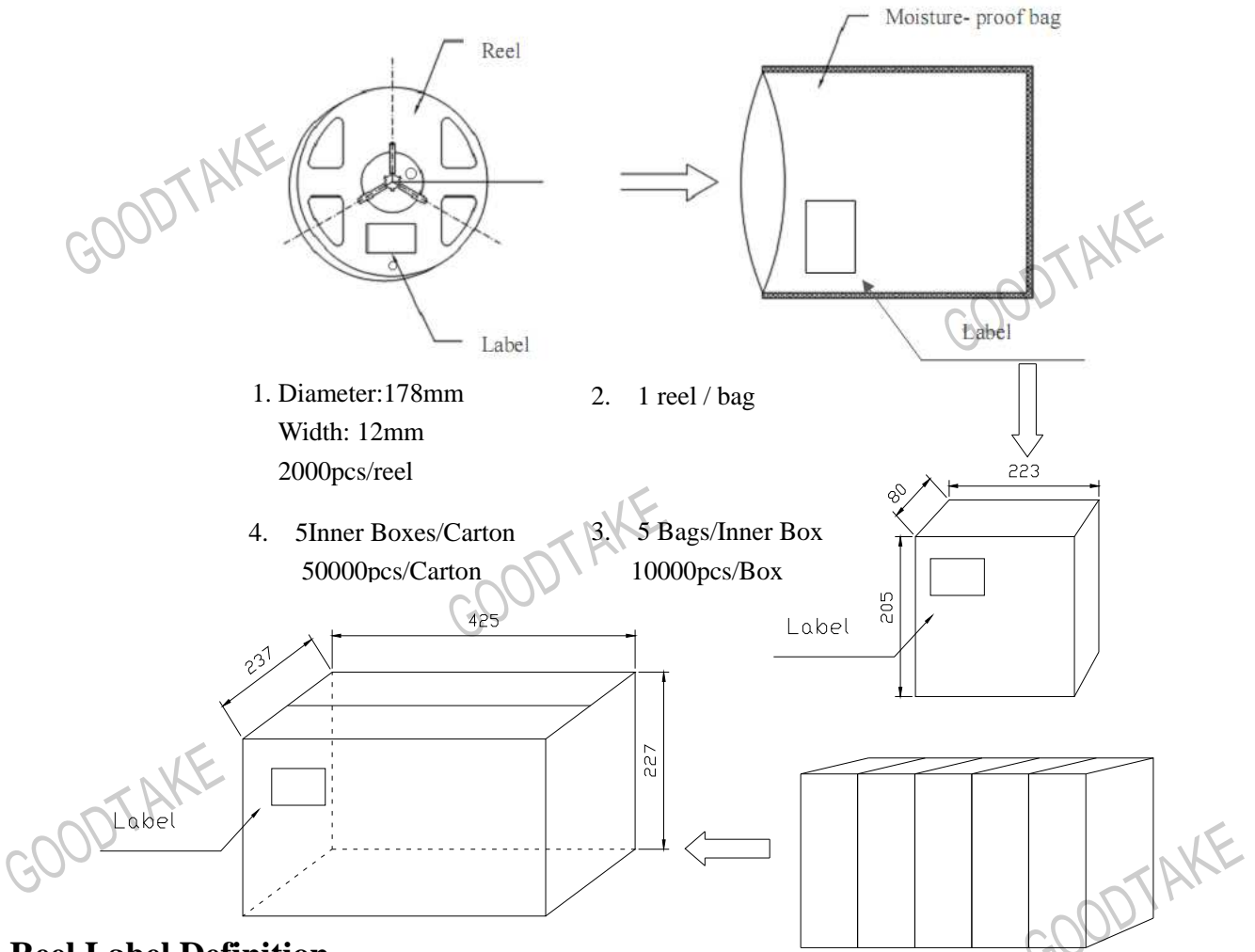
### (1) Shape and dimensions of reels: unit in mm



### (2) Dimensions of tape



## Packing Information



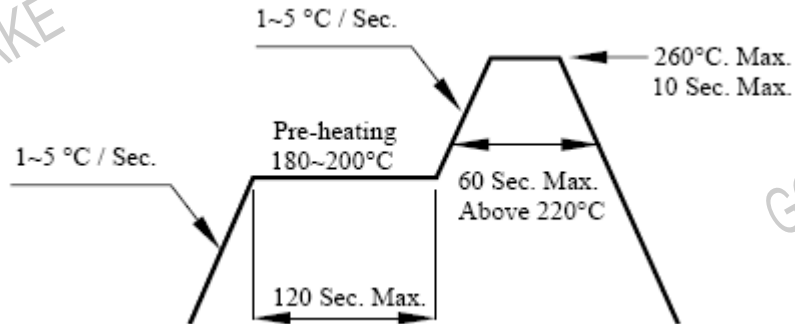
## Reel Label Definition

<b>GOODTAKE</b>	<b>RoHS</b>
PART NO. GT3528-4W14BXX	
IV: a-b	VF: c-d      CIE: e
BIN: f/g/e	QTY: h
DATE: 20xx-xx-xx	LOT NO. 10050901

- a-b: brightness range
- c-d: forward voltage range
- e-f: CIE range
- BIN: bright/voltage/CIE
- h : quantity of LED

## Soldering Condition

### 1. Pb-free solder temperature profile



2. Reflow soldering should not be done more than two times.
3. When soldering, do not put stress on the LEDs during heating.
4. After soldering, do not warp the circuit board.

## Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.