

SURFACE MOUNT CHIP LED LAMPS

DATA SHEET

MODEL NO: GT3528-4W14BY

REV. : 1.0

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.

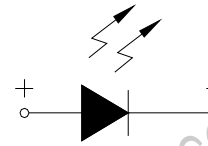
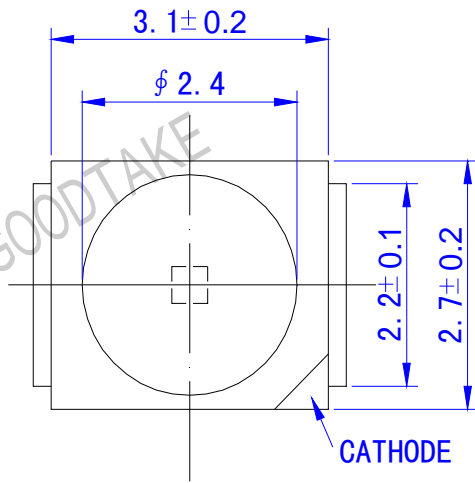
Applications

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

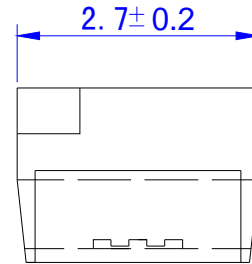
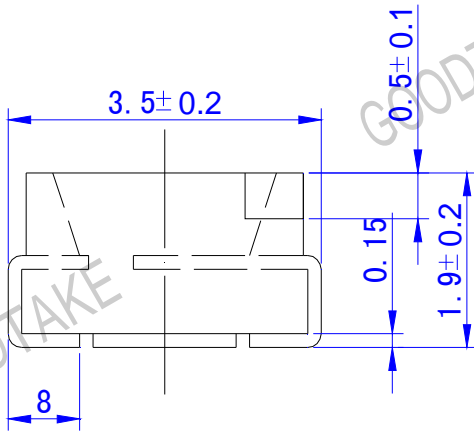
Device Selection Guide

Material	Resin (mold)	Emitted Color
InGaN	Epoxy	White

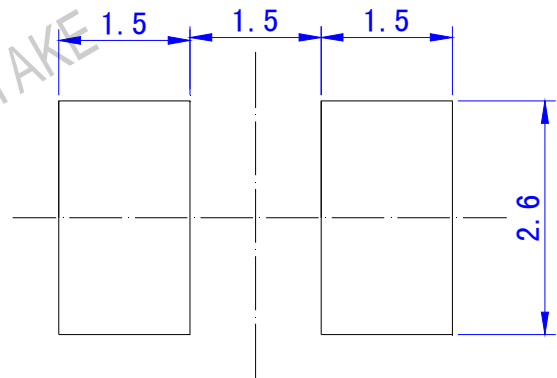
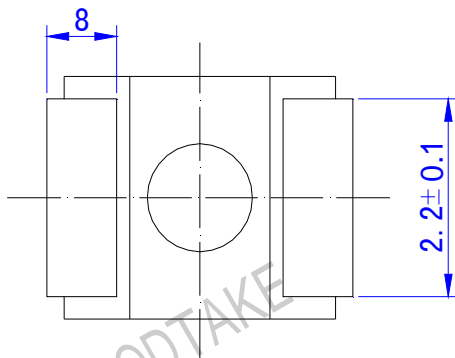
Package Dimensions



Polarity



For reflow soldering (Proposal)



Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

Absolute Maximum Rating (Ta=25°C)

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

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

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V _F	I _F =20mA	2.8	---	3.6	V
50%Power angle	2θ _{1/2}		--	120	--	Deg
Luminous Intensity	I _v		1200	----	2600	Mcd
Chromaticity Coordinates	CIE-X		0.3069	--	0.3584	--
	CIE-Y		0.3147	--	0.4120	--
Reverse Current	I _R	V _r =5V			10	μA

Luminous Intensity Combination(mcd at 20mA)

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

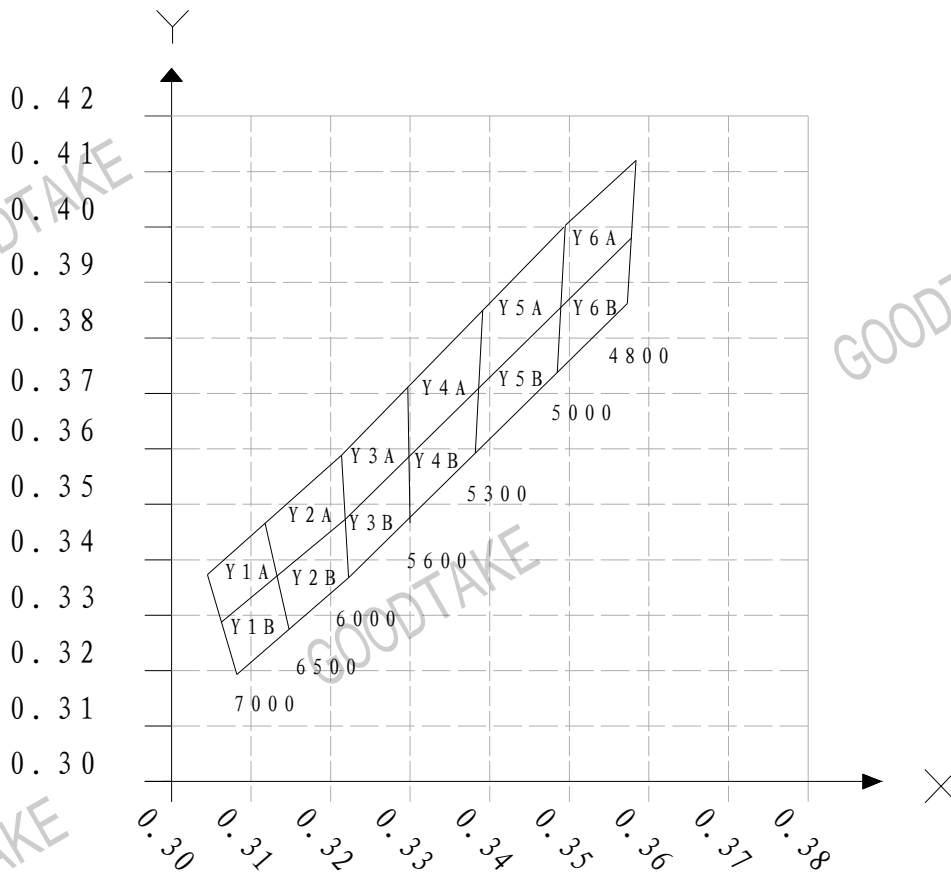
*Measurement Uncertainty of Luminous Intensity: $\pm 10\%$.

Forward Voltage Combination(V at 20mA)

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

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

Color Combination(at 20mA)



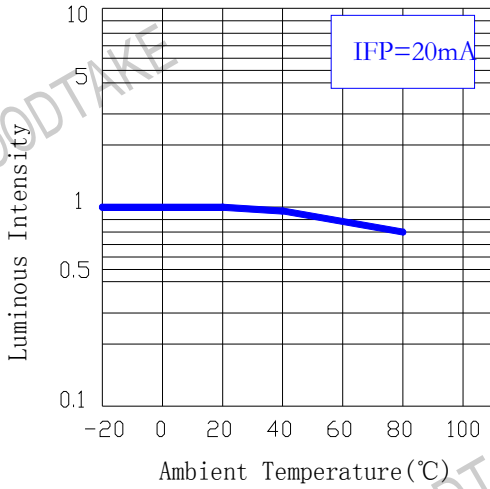
Color Ranks(IF=20mA,Ta=25°C)

Color Ranks		CIE				CCT
Y1	X	0.3069	0.3092	0.3152	0.3131	6500-7000K
	Y	0.3266	0.3147	0.3236	0.3372	
Y2	X	0.3152	0.3131	0.3224	0.3214	6000-6500K
	Y	0.3236	0.3372	0.3343	0.3518	
Y3	X	0.3224	0.3214	0.3300	0.3297	5600-6000K
	Y	0.3343	0.3518	0.3456	0.3661	
Y4	X	0.3300	0.3297	0.3381	0.3390	5300-5600K
	Y	0.3456	0.3661	0.3577	0.3821	
Y5	X	0.3381	0.3390	0.3485	0.3495	5000-5300K
	Y	0.3577	0.3821	0.3731	0.4003	
Y6	X	0.3485	0.3495	0.3573	0.3584	4800-5000K
	Y	0.3731	0.4003	0.3862	0.4120	

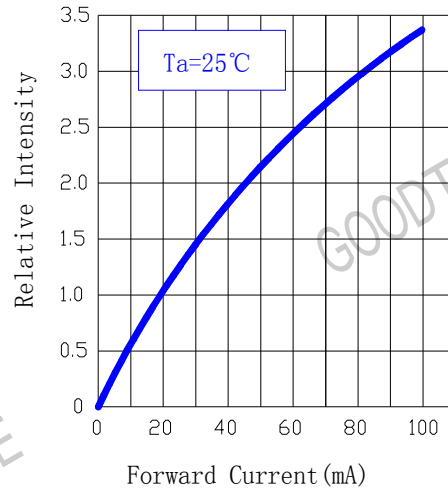
Measurement uncertainty of the color coordinates ± 0.01

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

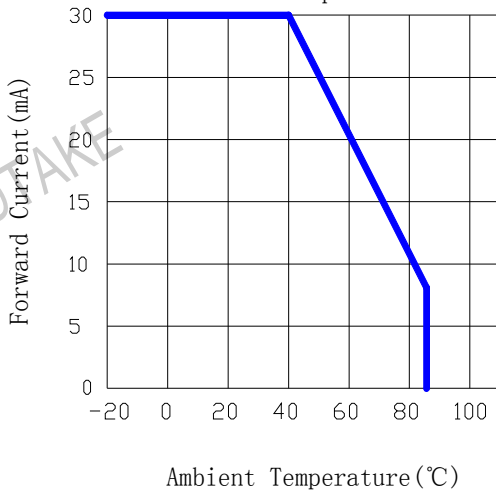
Luminous Intensity vs Ambient Temperature



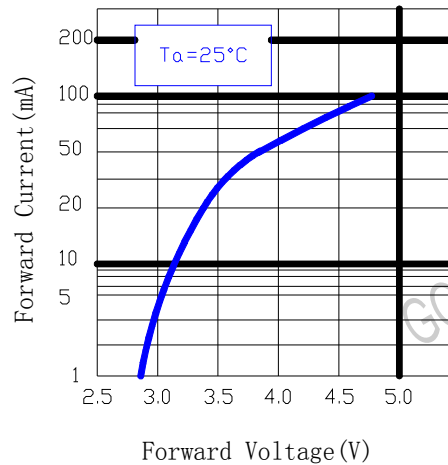
Relative Intensity vs Forward Current (mA)



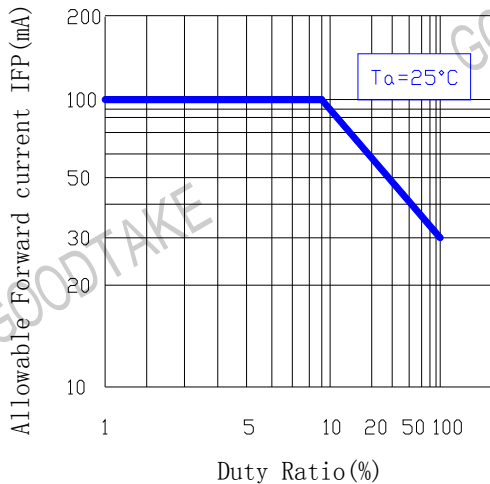
Forward Current vs Ambient Temperature



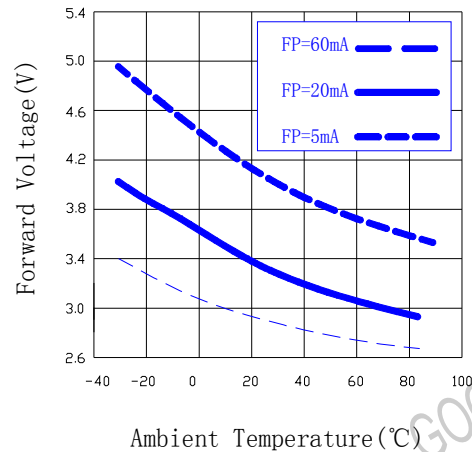
Forward Current vs Forward Voltage

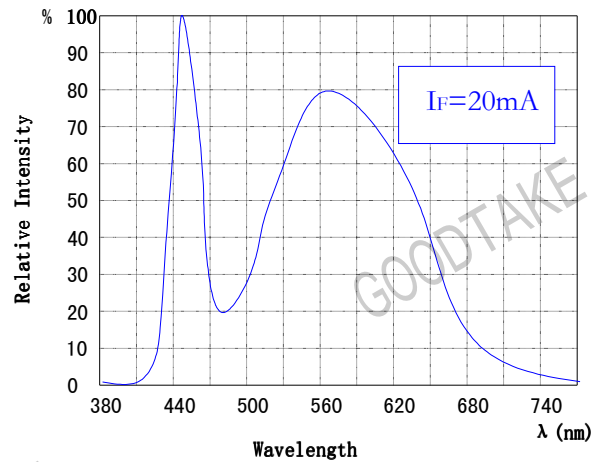
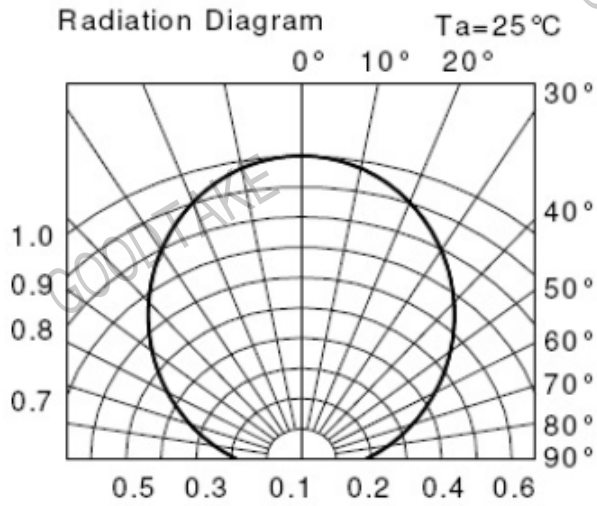


Duty Ratio vs. Allowable Forward current



Forward Voltage vs. Ambient Temperature



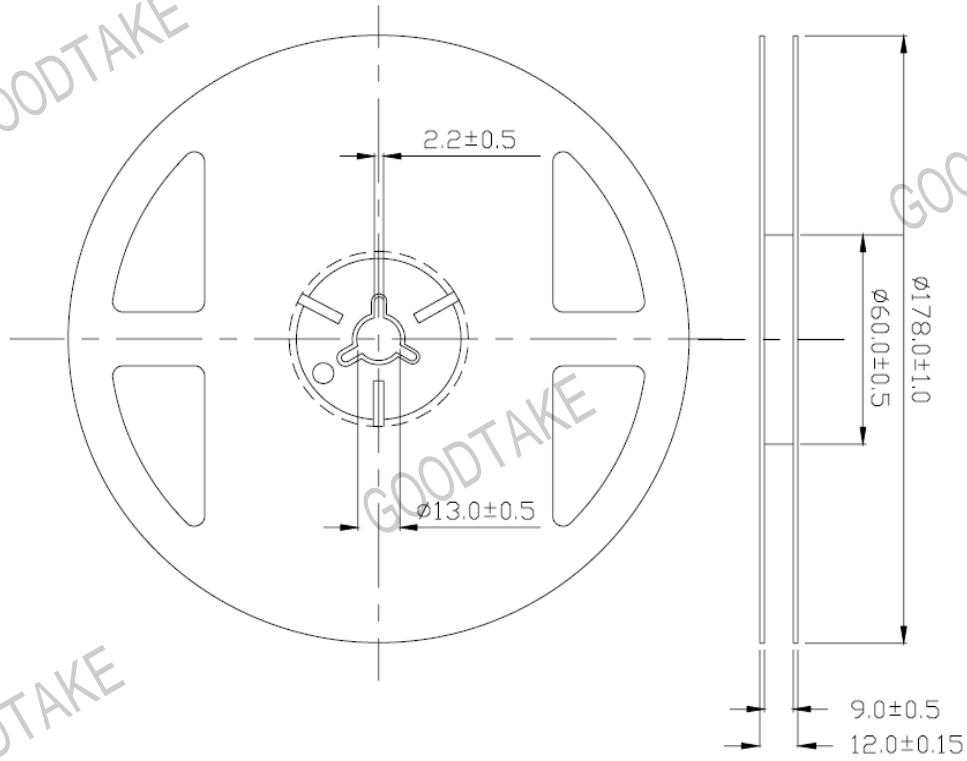


Test items and results of reliability

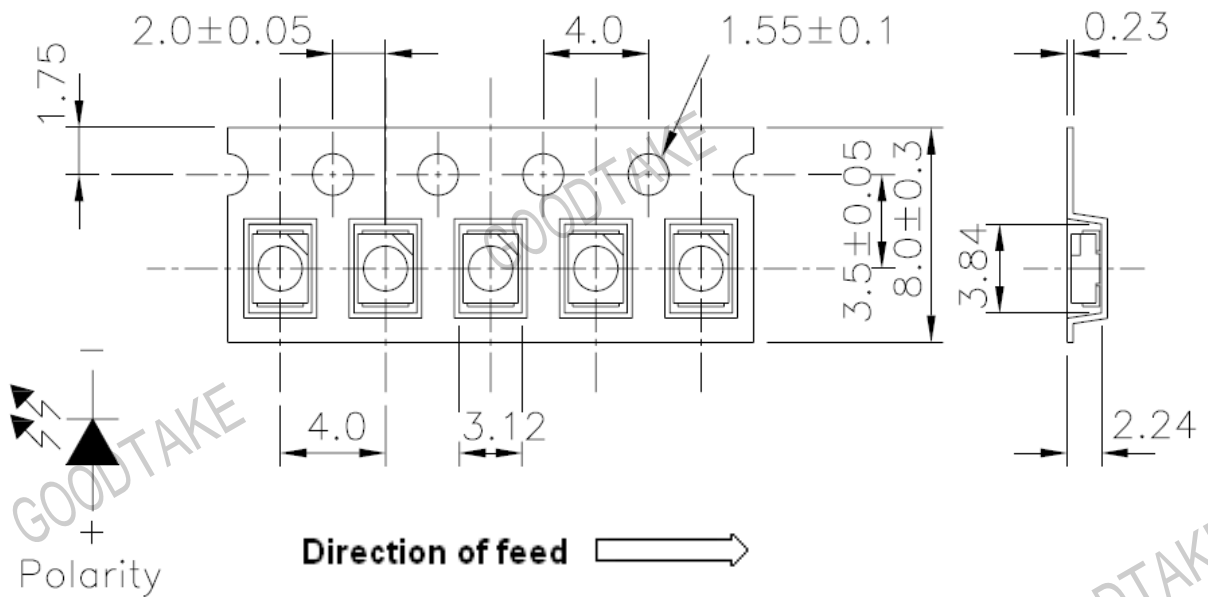
NO	Item	Test Conditions	Test Hours/Cycle	Sample Size	Ac/Re
1	Reflow	TEMP: $260\pm 5^\circ\text{C}$ Min. 5sec.	6 MIN.	22 PCS	0/1
2	Temperature Cycle	H: $+100^\circ\text{C}$ 15min ↓ 5 min L: -40°C 15min	300 CYCLES	22 PCS	0/1
3	Thermal Shock	H: $+100^\circ\text{C}$ 5min ↓ 10 sec L: -10°C 5min	300 CYCLES	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	$I_F = 20 \text{ mA} / 25^\circ\text{C}$	1000 HRS	22 PCS	0/1
7	High Temperature / High Humidity	$85^\circ\text{C} / 85\% \text{RH}$	1000 HRS	22 PCS	0/1

Taping Specification

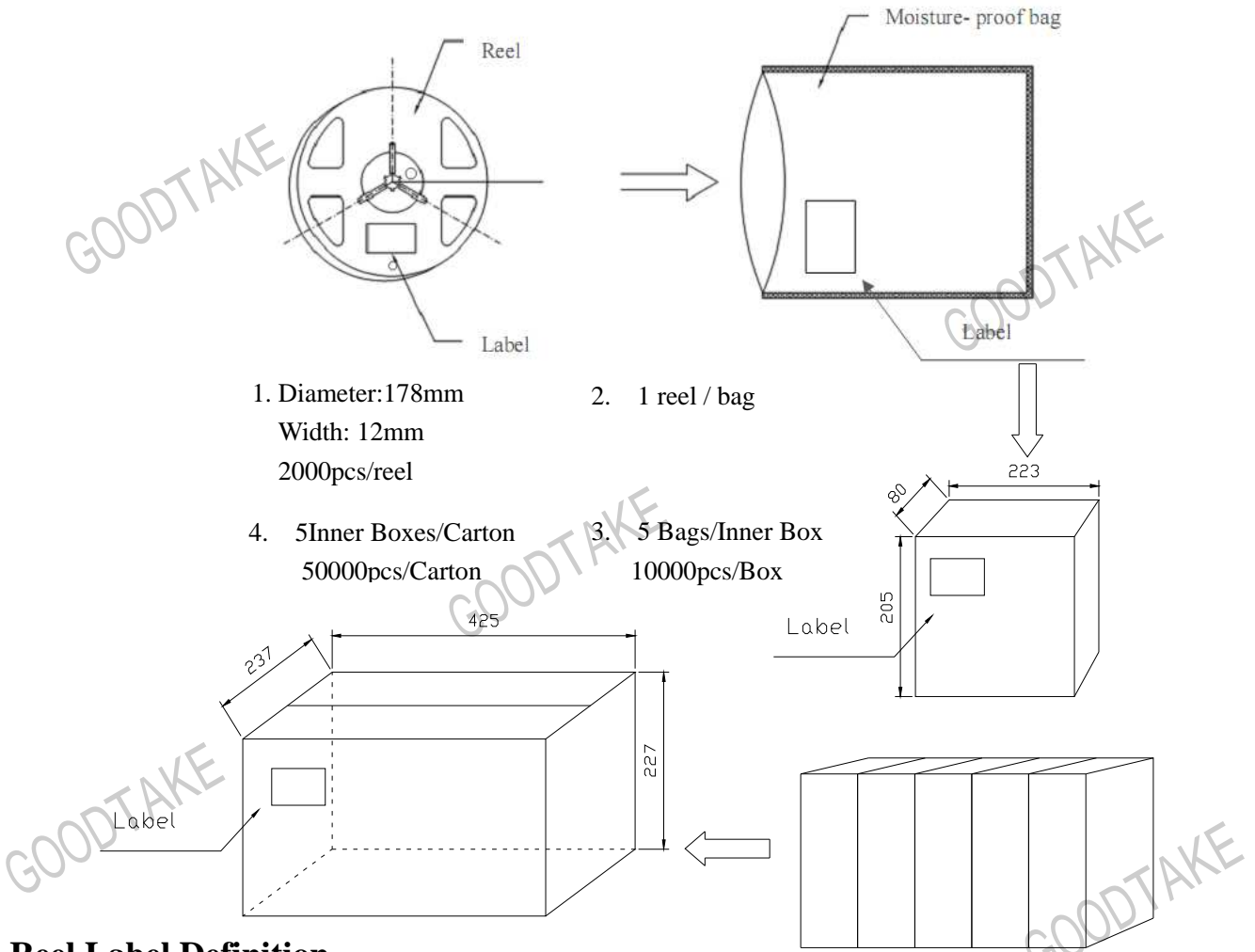
(1) Shape and dimensions of reels: unit in mm



(2) Dimensions of tape

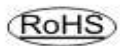


Packing Information



1. Diameter: 178mm
Width: 12mm
2000pcs/reel
2. 1 reel / bag
3. 5 Bags/Inner Box
10000pcs/Box
4. 5 Inner Boxes/Carton
50000pcs/Carton

Reel Label Definition

PART NO: GT3528-4W14BY

IV : a-b VF : c-d CIE : e

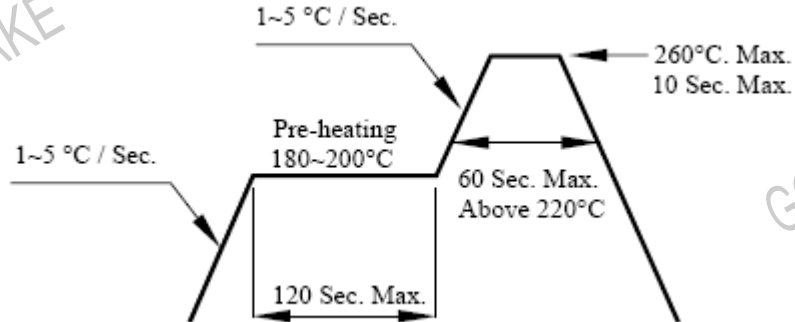
BIN : f/g/e QTY : h

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.