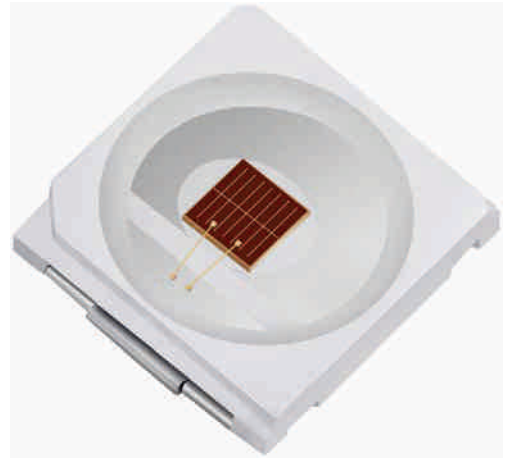


Middle Power LED  
3030

**301F** Series  
Deep Red

For Horticulture Lighting



#### Features & Benefits

- 1.0 W class middle power LED
- Mold resin for high reliability
- Standard form factor for design flexibility (3.0 × 3.0 mm)

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## 1. Characteristics

### a) Absolute Maximum Rating

Item	Symbol	Rating	Unit	Condition
Ambient / Operating Temperature	$T_a$	-40 ~ +105	°C	-
Storage Temperature	$T_{stg}$	-40 ~ +105	°C	-
LED Junction Temperature	$T_j$	125	°C	-
Forward Current	$I_F$	300	mA	-
Pulse Forward Current	$I_{FP}$	600	mA	Duty 1/10, pulse width 10ms
Assembly Process Temperature	-	260 <10	°C s	-
ESD (HBM)	-	2	kV	-

### b) Electro-optical Characteristics ( $I_F = 300 \text{ mA}$ , $T_s = 25^\circ\text{C}$ )

Item	Unit	Rank	Min.	Typ.	Max.
Forward Voltage ( $V_F$ )	V	V0	2.0	2.2	2.4
Peak wavelength ( $\lambda_p$ )	nm	DR0	655	-	665
Dominant wavelength ( $\lambda_D$ )	nm		-	640	-
Photosynthetic Photon Flux	$\mu\text{mol/s}$		-	1.37	-
Radiant Power	mW		-	245	-
Thermal Resistance (junction to solder point)	°C/W		-	33	-
Beam Angle	°		-	120	-

**Note:**

Ledstar maintains measurement tolerance of: Radiant Power =  $\pm 7\%$ , forward voltage =  $\pm 0.1 \text{ V}$ , Wavelength =  $\pm 2 \text{ nm}$

## 2. Product Code Information

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
L	D	R	-	3	0	3	0	T	T	A	R	6	6	0	-	V	0	D	R	0	P	0

Digit	PKG Information	Code	Specification
1 2 3	Ledstar Package Middle Power	LDR	
4 5 6 7	Package Model and Size	3030	3.0 x 3.0 x 0.65mm
8	Product Category	T	Top View
9	Bractek Type	T	PCT & Cu
10	Version	A	
11	Color	R	Red
12 13 14	Wavelength Typical (nm)	660	655~665
15 16	Forward Voltage (V)	V0	2.0~2.4 Bin Code: B0 2.0~2.2 B1 2.0~2.1 B2 2.1~2.2 C0 2.2~2.4 C1 2.2~2.3 C2 2.3~2.4
17 18 19	Peak Wavelength (nm)	DR0 DR2 DR3	DR2 DR3 655~660 660~665
20 21	Photosynthetic Photon Flux Efficiency (μmol/J)	P0 PB PC	PB PC 1.80~2.00 2.00~2.20

a) Voltage Bins ( $I_F = 300 \text{ mA}$ ,  $T_j = 25 \text{ °C}$ )

Product Code	Voltage Rank	Voltage Bin	Voltage Range (V)	
LDR-3030TTAR660-V0DR0P0	V0	B0	B1	2.0 ~ 2.1
		B2	2.1 ~ 2.2	
		C0	C1	2.2 ~ 2.3
		C2	2.3 ~ 2.4	

b) Wavelength Bins ( $I_F = 300 \text{ mA}$ ,  $T_j = 25 \text{ °C}$ )

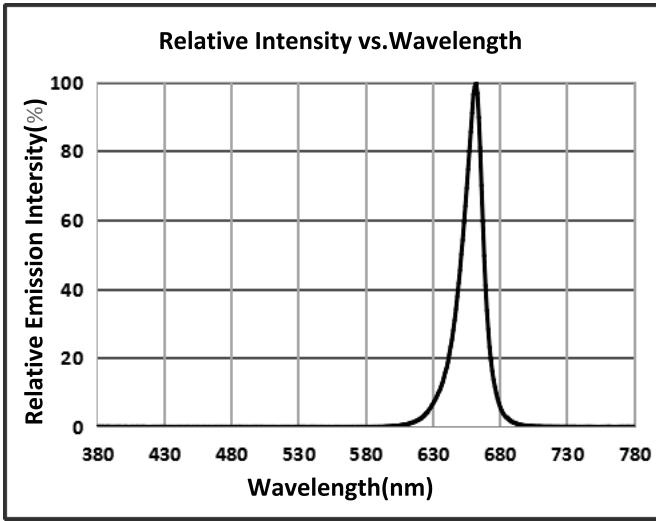
Product Code	Wavelength Rank	Wavelength Bin	Wavelength Range (nm)
LDR-3030TTAR660-V0DR0P0	DR0	DR2	655 ~ 660
		DR3	660 ~ 665

c) Photosynthetic Photon Flux Efficiency Bins ( $I_F = 300 \text{ mA}$ ,  $T_j = 25 \text{ °C}$ )

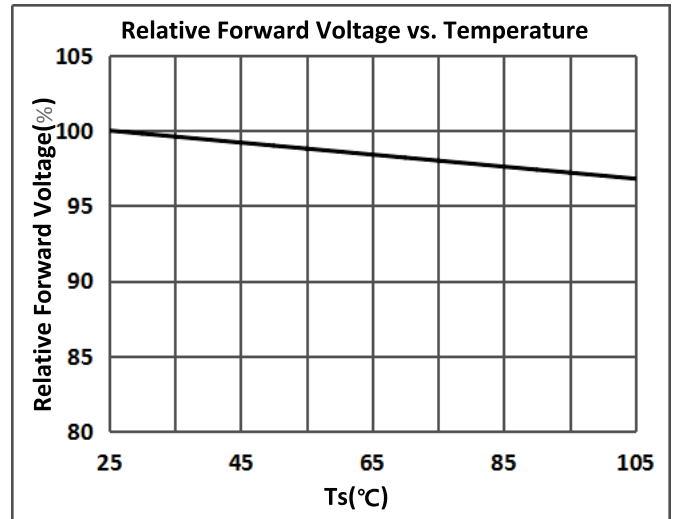
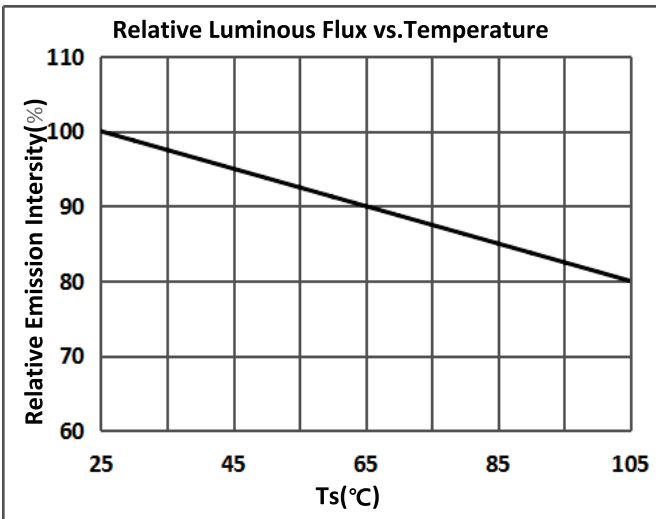
Product Code	PPERank	PPEBin	Radiant Power Range (mW)	PPERange ( $\mu\text{mol/J}$ )
LDR-3030TTAR660-V0DR0P0	P0	PB	220 ~ 270	1.8 ~ 2.0
		PC	220 ~ 270	2.0 ~ 2.2

3. Typical Characteristics Graphs

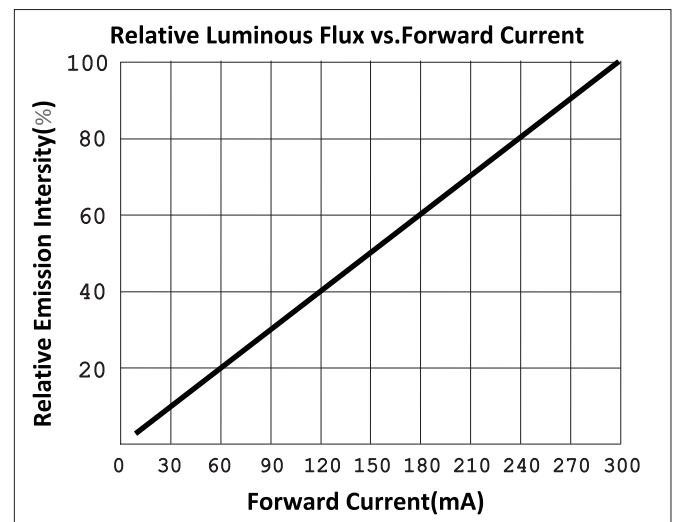
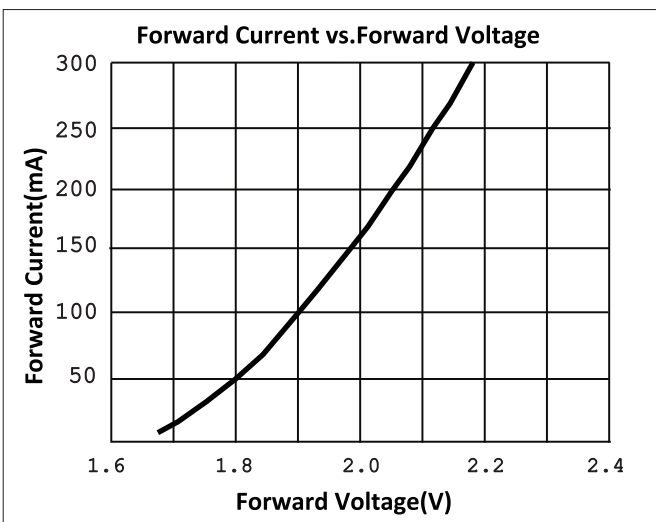
a) Spectrum Distribution ( $I_f = 300 \text{ mA}$ ,  $T_s = 25^\circ\text{C}$ )



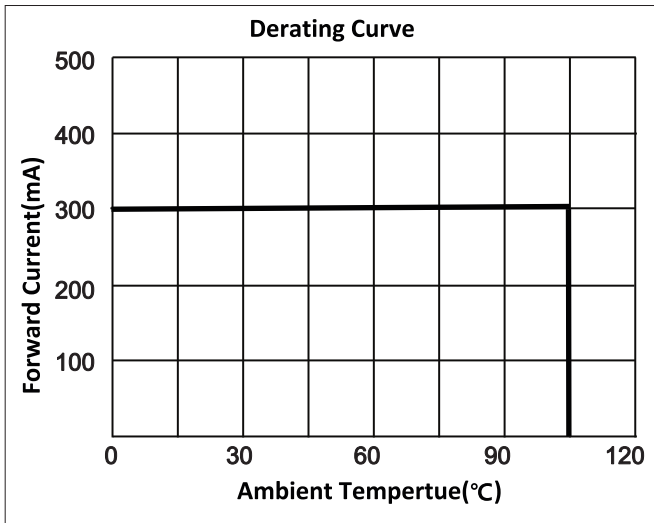
b) Temperature Characteristics ( $I_f = 300 \text{ mA}$ )



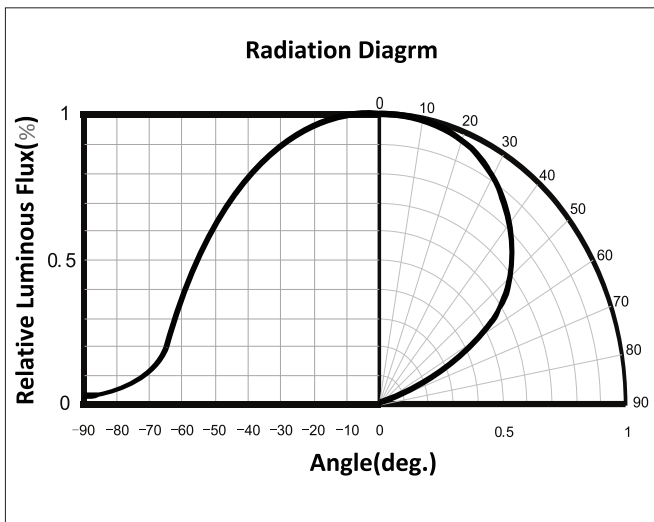
c) Forward Current Characteristics ( $T_s = 25^\circ\text{C}$ )



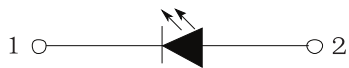
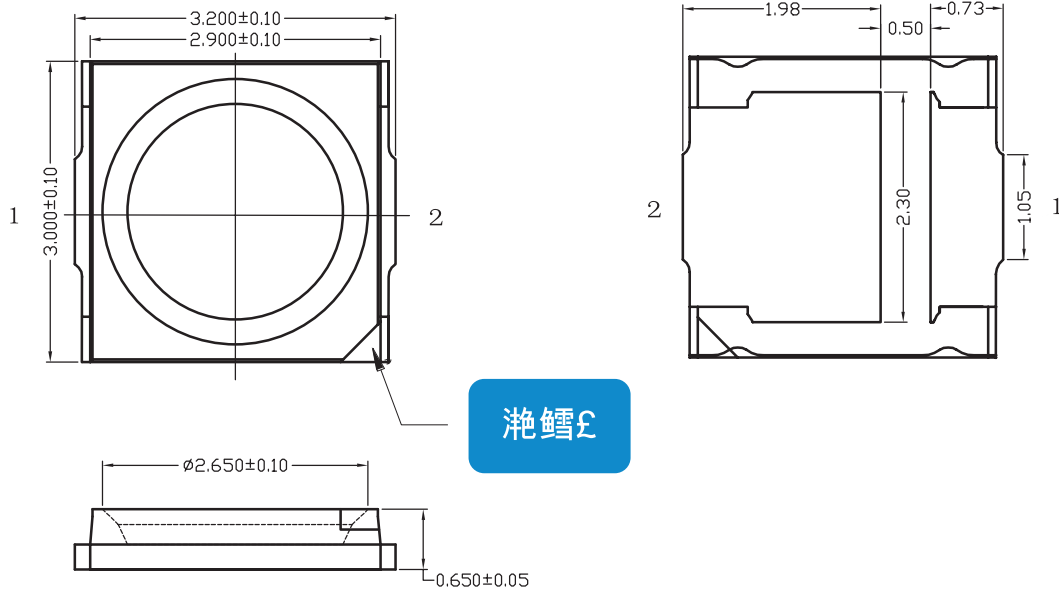
e) Derating Curve



f) Beam Angle Characteristics ( $T_s = 25^\circ\text{C}$ ,  $I_f = 300\text{ mA}$ )



#### 4. Outline Drawing & Dimension



Polarity

#### Notes:

$T_s$  point and measurement method:

- ① Measure one point at the cathode pad, if necessary remove PSR of PCB to reach  $T_s$  point.
- ② All pads must be soldered to the PCB to dissipate heat properly, otherwise the LED can be damaged.

#### Precautions:

- 1) Pressure on the LEDs will influence to the reliability of the LEDs. Precautions should be taken to avoid strong pressure on the LEDs. Do not put stress on the LEDs during heating.
- 2) Re-soldering should not be done after the LEDs have been soldered. If re-soldering is unavoidable, LED's characteristics should be carefully checked before and after such repair.
- 3) Do not stack assembled PCBs together. Since materials of LEDs is soft, abrasion between two PCB assembled with LED might cause catastrophic failure of the LEDs.



## 5. Reliability Test Items & Conditions

### a) Test Items

Test Item	Test Condition	Test Hour / Cycle	Sample No.
Room Temperature Life Test	25°C, DC 300 mA	1000 h	22
High Temperature Life Test	85°C, DC 300 mA	1000 h	22
High Temperature Humidity Life Test	85°C, 85 % RH, DC 300 mA	1000 h	22
Low Temperature Life Test	-40°C, DC 300 mA	1000 h	22
Powered Temperature Cycle Test	-40 °C ~ 85°C, each 10 min, On/Off 5min , Temp. Change Time 20min, DC 300 mA	100 cycles	22
Thermal Cycle	-40°C / 15 min ↔ 105°C / 15 min → Hot plate 180°C	100 cycles	100
High Temperature Storage	105°C	1000 h	22
Low Temperature Storage	-40°C	1000 h	22

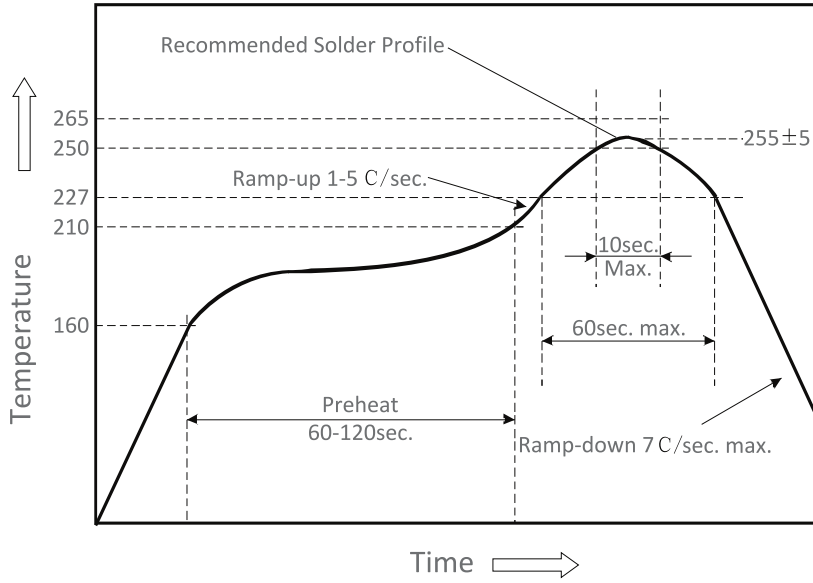
### b) Criteria for Judging the Damage

Item	Symbol	Test Condition (Ts = 25°C)	Limit	
			Min	Max
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 300 mA	Init. Value * 0.9	Init. Value * 1.1
Luminous Flux	Φ <sub>v</sub>	I <sub>F</sub> = 300 mA	Init. Value * 0.7	Init. Value * 1.1

## 6. Soldering Conditions

### a) Reflow Conditions (Pb free)

Reflow frequency: 2 times max.



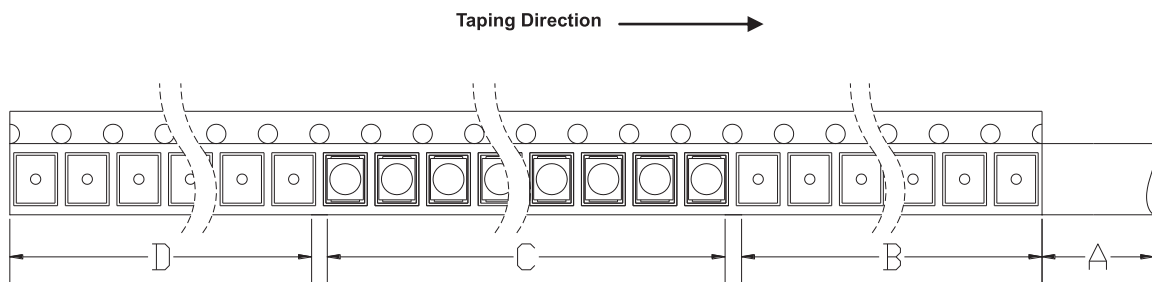
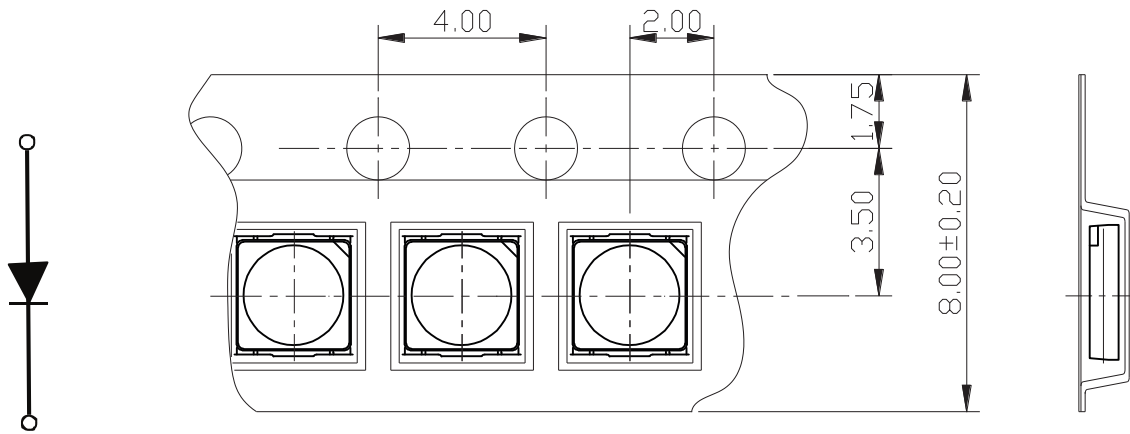
### b) Manual Soldering Conditions

Not more than 5 seconds @ max. 300°C, under soldering iron.

7. Tape & Reel

a) Taping Dimension

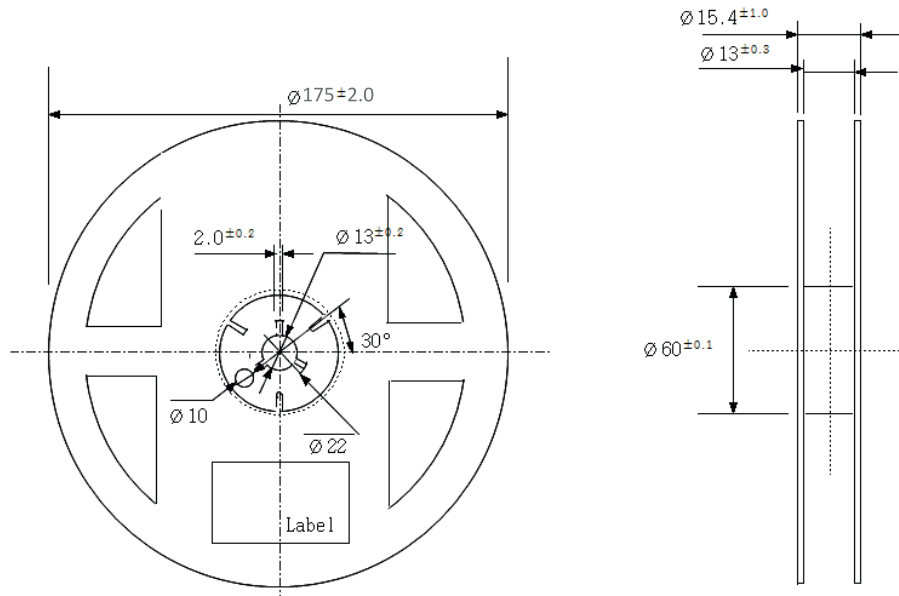
(unit: mm)



A: Top Cover Tape, 300mm; B: Leader, Empty, 200mm; C: 400 Lamps Loaded; D: Trailer, Empty, 200mm.

b) Reel Dimension

(unit: mm)



**Notes:**

- 1) Quantity: The quantity/reel is 4,000 pcs
- 2) Cumulative Tolerance: Cumulative tolerance / 10 pitches is  $\pm 0.2$  mm
- 3) Adhesion Strength of Cover Tape: Adhesion strength is 0.1-0.7 N when the cover tape is turned off from the carrier tape at  $10^\circ$  angle to the carrier tape
- 4) Packaging: P/N, Manufacturing data code no. and quantity are indicated on the aluminum packing bag

## 8. Label Structure

### a) Label Structure



Note: Denoted bin code and product code above is only an example (see description on page 5)

### b) Label Explanation

Part No.:Product Code

IF:Testing Current

VF:Forward Voltage Range

PPE:Photosynthesis Photons Flux Efficiency Range

WLD(WLP):Wavelength Range

Date:Packing Date

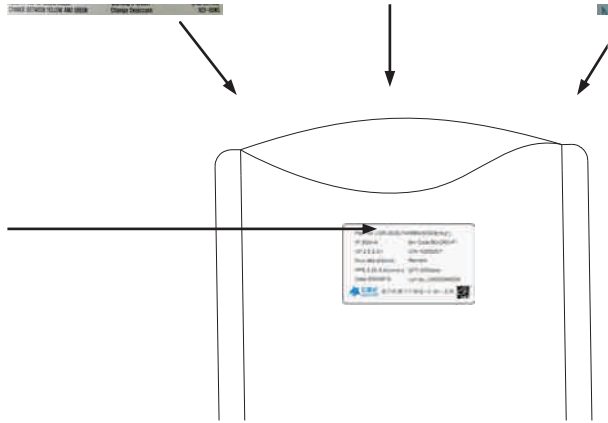
Bin Code:Rank

C/N:Internal Identification Code

Remark:Special Remark

QTY:Quantity

Lot No.:Production batch Number



**CAUTION**

THIS BAG CONTAINS  
MOISTURE AND ELECTROSTATIC  
SENSITIVE DEVICES



：5℃-30℃，最大相對濕度60%。  
進行紅外線回流、氣相回流、或類似的回流處理，必須在  
此工作。

條件，則元件必須保持。  
保藏：70℃±5℃，12小時。

condition:  
rye humidity 60% RH max.  
evelopes that will be applied to infrared reflow, vapor-phase reflow,  
cesses must be:  
4 hours.  
0% RH.  
fired mounting, if

ces must be baked under below conditions:



（射金耳期請參考標碼標子）

Univalent Total Floor Life Table

Maximum Percent Relative Humidity				
50%	60%	70%	80%	90%
∞	28	1	1	1
∞	∞	2	1	1
∞	∞	2	2	1

Seal to close any opening and then store in a dry place.

Standard reading is >60 % at 23 ± 5 °C.