DATASHEET

YUAN Series
ELYU03-5070J4J6294310-N0

Received
■ MASS PRODUCTION
□ PRELIMINARY
□ CUSTOMER DESIGN
DEVICE NO. : DHE-0001736
PAGE : 13

Revised record		
REV.	DESCRIPTION	RELEASE DATE
1	New create	2011.11.02
2	Change Typical illuminance Change Junction Temperature Change the map surface Change the Color Bin 5770	2012.03.22
3	Add Minimum package quantity	2012.09.14
4	Corrected the Luminous bin	2013.12.18
5	Change Product Labeling	2015.09.15

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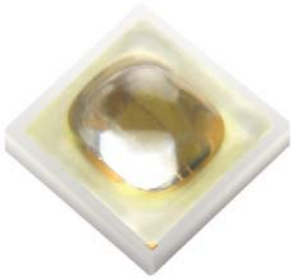


Features

- ●Feature of the device：small package with high efficiency
- ●Typical color temperature：6000 K
- ●Typical view angle：Horizontal 70°, Vertical 62°
- ●ESD protection up to 8KV
- ●Soldering methods：SMT
- ●Grouping parameter：total luminous flux, color coordinates
- ●Typical illuminance：220lx @ 1000 mA
- ●The product itself will remain within RoHS compliant version

Applications

- ●Mobile Phone Flash
- ●Decorative and Entertainment Lighting
- ●System appliances, measuring instruments Signal and Symbol Luminaries for orientation maker lights (e.g. steps, exit ways, etc.)

Device Selection Guide

Chip Materials	Emitted Color
InGaN	White

Absolute Maximum Ratings ($T_{solder\ pad}$=25℃)

Parameter	Symbol	Rating	Unit
DC Forward Current (mA)	I_F	200	mA
Peak Pulse Current (mA)	I_{Pulse}	1200	mA
ESD Resistance	V_B	8000	V
Reverse Voltage	V_R	[1]	V
Junction Temperature	T_J	125	℃
Operating Temperature	T_{Opr}	-40 ~ +85	℃
Storage Temperature	T_{Stg}	-40 ~ +110	℃
Power Dissipation (Pulse Mode)	P_d	5.2	W

Note:
1. The YUAN series LEDs are not designed for reverse bias used.
2. Avoid operating YUAN series LEDs at maximum operating temperature exceed 1 hour.
3. All specification are assured by reliability test for 1000hr, IV degradation less than 30%.
4. All reliability items are tested under good thermal management with 1.0x 1.0 cm^2 MCPCB.

JEDEC Moisture Sensitivity

Level	Floor Life		Soak Requirements Standard	
	Time (hours)	Conditions	Time (hours)	Conditions
2	1 year	≦30℃ / 60% RH	168 (+5/-0)	85℃ / 60% RH

Electro-Optical Characteristics ($T_{solder\ pad}$ =25ºC)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux(1)	Φv	160	200	----	lm	I_F=1000mA
Illuminance	----	----	220	----	lux	
Forward Voltage(2) (3)	V_F	2.95	----	4.35	V	
View Angle	$2\theta_{1/2}$	----	70 / 62 (H /V)	----	deg	
Correlated Color Temperature	CCT	5000	----	7000	K	

Note:
1. Luminous Flux, illuminance measurement tolerance：±10%
2. Forward voltage measurement tolerance：±0.1V
3. Electric and optical data is tested at 50 ms pulse condition.
4. Temperature of solder pad：25℃
5. Illuminance is measured at 1 meter.

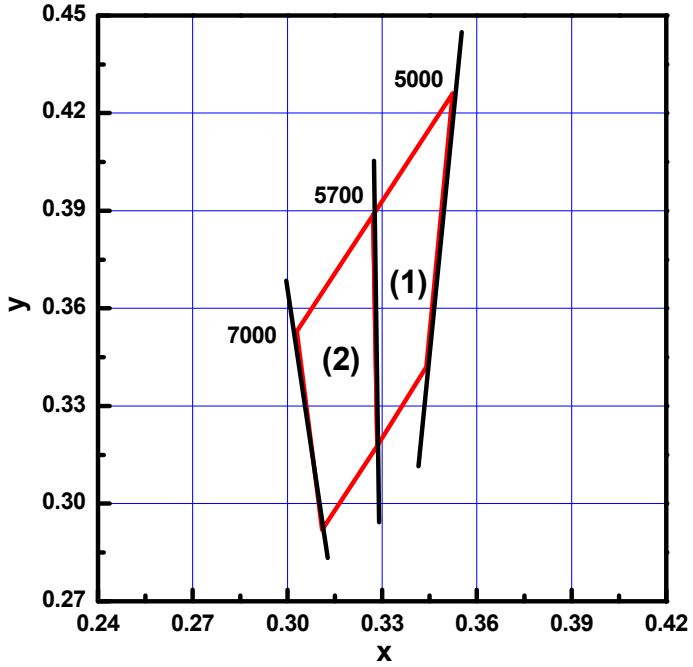
Bin Range of Forward Voltage Binning

Bin Code	Min.	Typ.	Max.	Unit	Condition
2932	2.95	----	3.25	V	I_F=1000mA
3235	3.25	----	3.55		
3538	3.55	----	3.85		
3841	3.85	----	4.15		
4143	4.15	----	4.35		

Bin Range of Luminous Intensity

Bin Code	Min.	Typ.	Max.	Unit	Condition
J4	160	----	180	lm	I_F=1000mA
J5	180	----	200		
J6	200	----	250		
J7	250	----	300		

White Bin Structure



Notes：
1.Color Bin (1) :5057K
2.Color Bin (2) :5770K

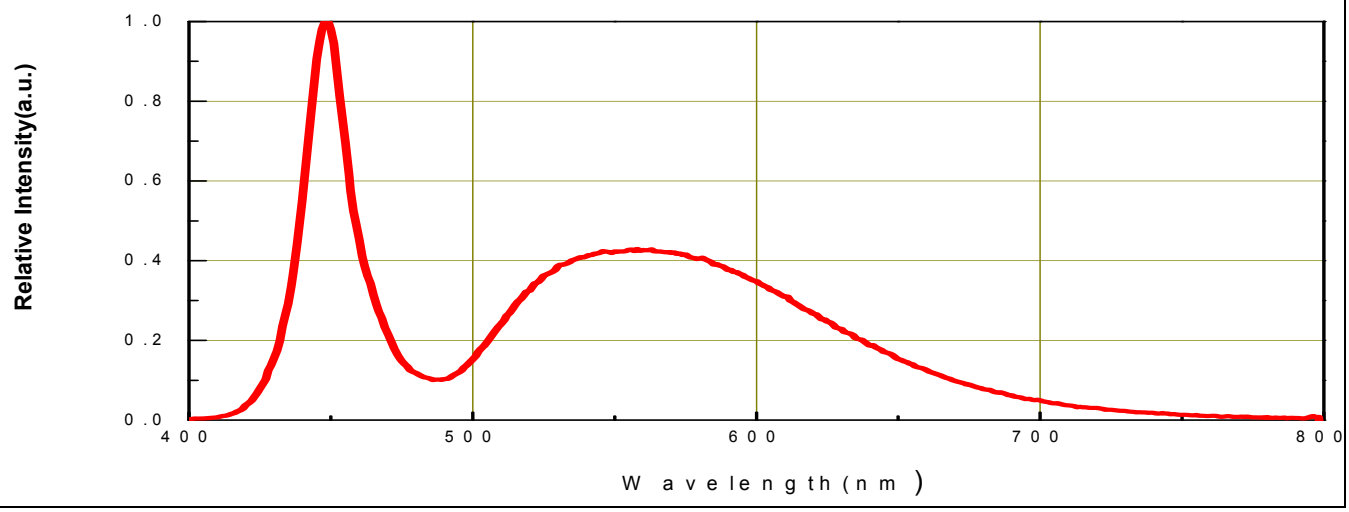
White Bin Coordinate

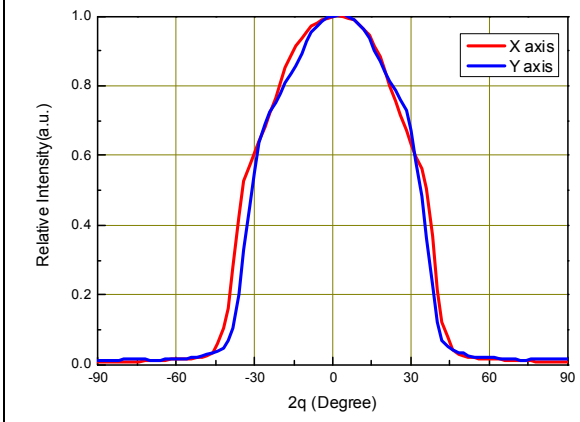
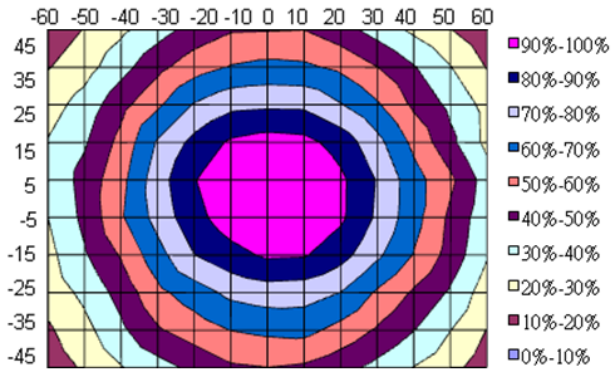
Bin	CIE-X	CIE-Y	CCT Reference Range
5057	0.3272	0.3888	5000K ~ 5700K
	0.3524	0.4261	
	0.3440	0.3420	
	0.3285	0.3178	
5770	0.3000	0.3486	5700K ~ 7000K
	0.3272	0.3888	
	0.3285	0.3178	
	0.3110	0.2920	

Note:
1. Color coordinates measurement allowance : ±0.01
2. Color bins are defined at I_F=1000mA and 50ms pulse operation condition.

Typical Electro-Optical Characteristics Curves

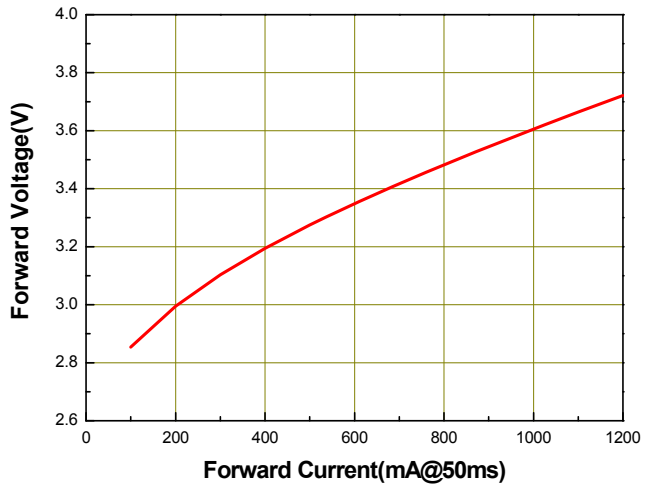
Relative Spectral Distribution, IF=1000mA@50ms, $T_{solder\ pad}$=25℃



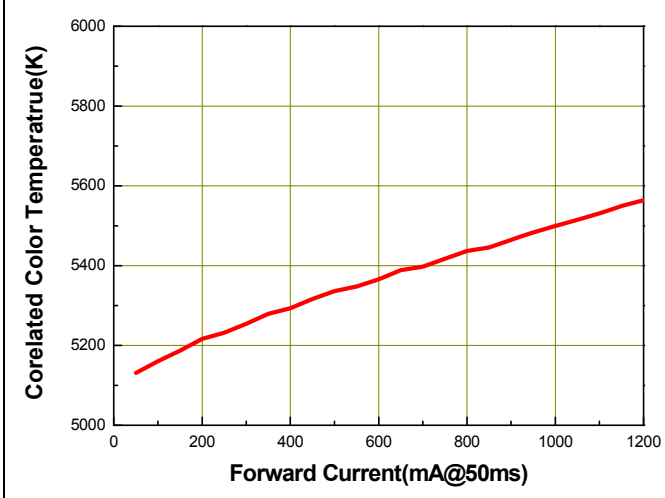
Typical Radiation Patterns	Illumination Pattern of Target area (1)
	
Degree	X Unit：cm

Note:
1. Distance = 1 meter (Illumination Pattern of Target area)
2. $2\theta_{1/2}$ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
3. View angle tolerance is ± 5° .

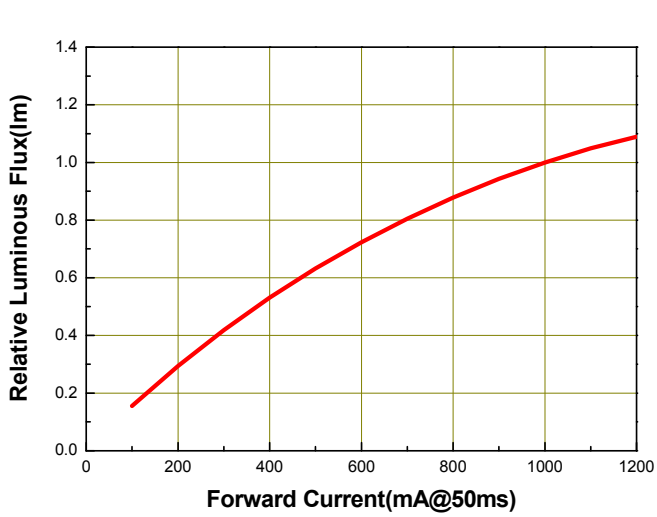
Forward Voltage vs Forward Current, $T_{solder\ pad}$ =25ºC



Correlated Color Temperature(CCT) vs. Forward Current

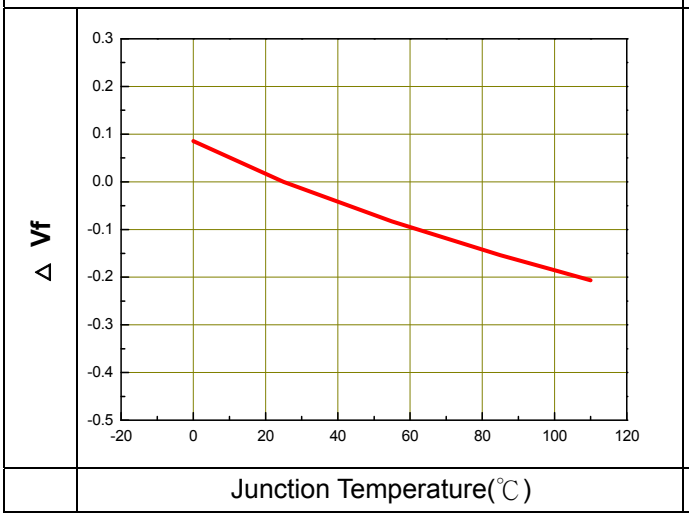


Luminous Flux vs Forward Current, $T_{solder\ pad}$ =25ºC

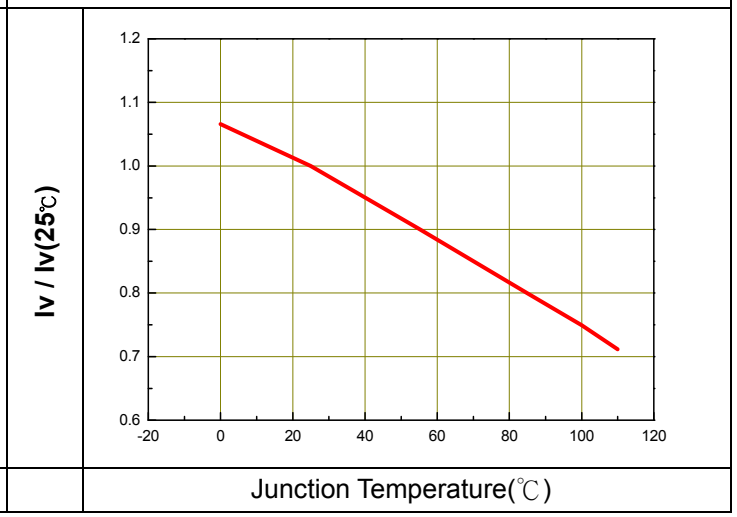


Note:
1. All correlation data is tested under superior thermal management with 1.0x 1.0 cm^2 MCPCB

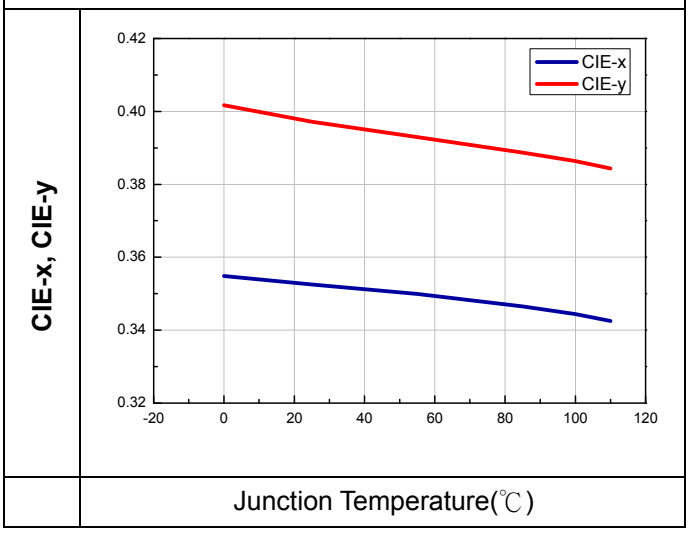
Relative Forward Voltage --- V_F - V_F (25℃)



Relative Luminous Flux --- Iv / Iv(25℃)



Farbortverschiebung Chromaticity Coordinate Shift



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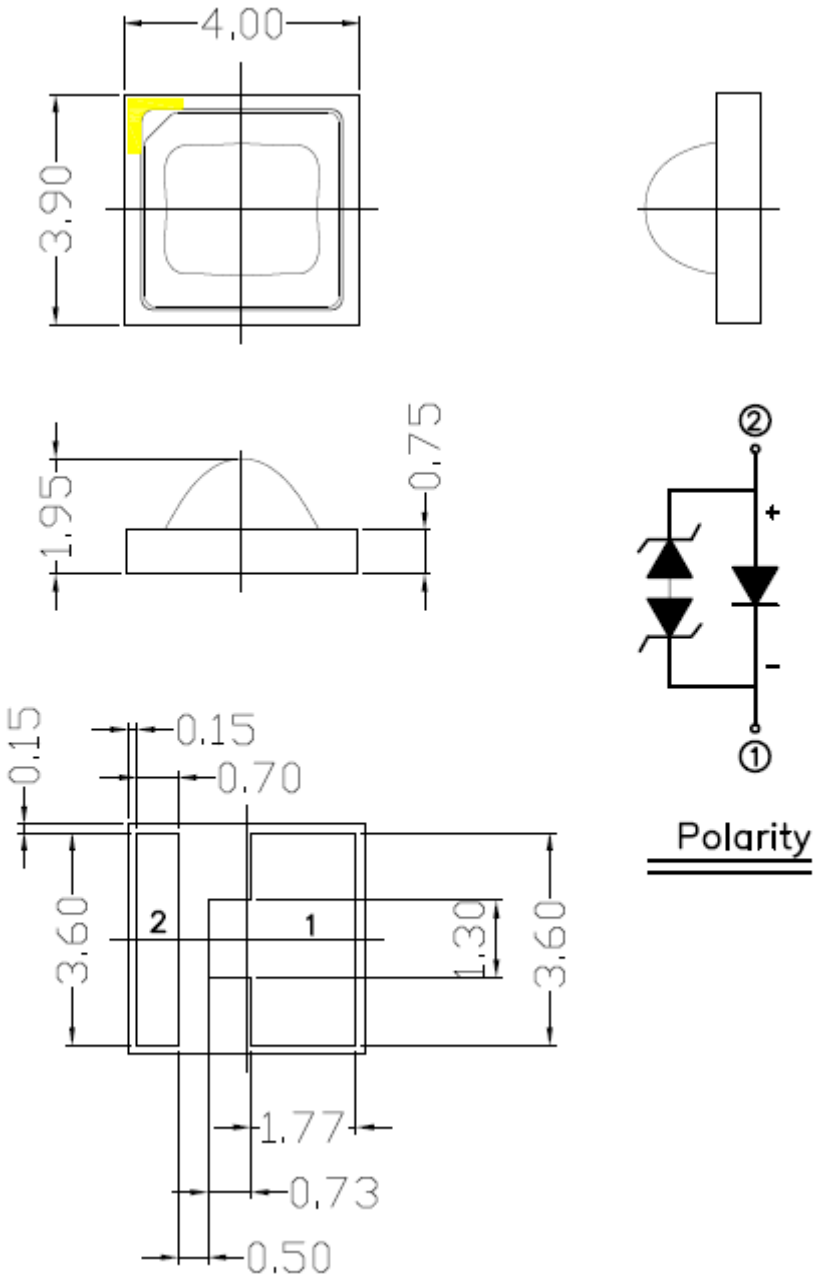
1. All correlation data is tested under superior thermal management with 1.0x 1.0 cm^2 MCPCB

Package Dimension



Note:
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.1mm.

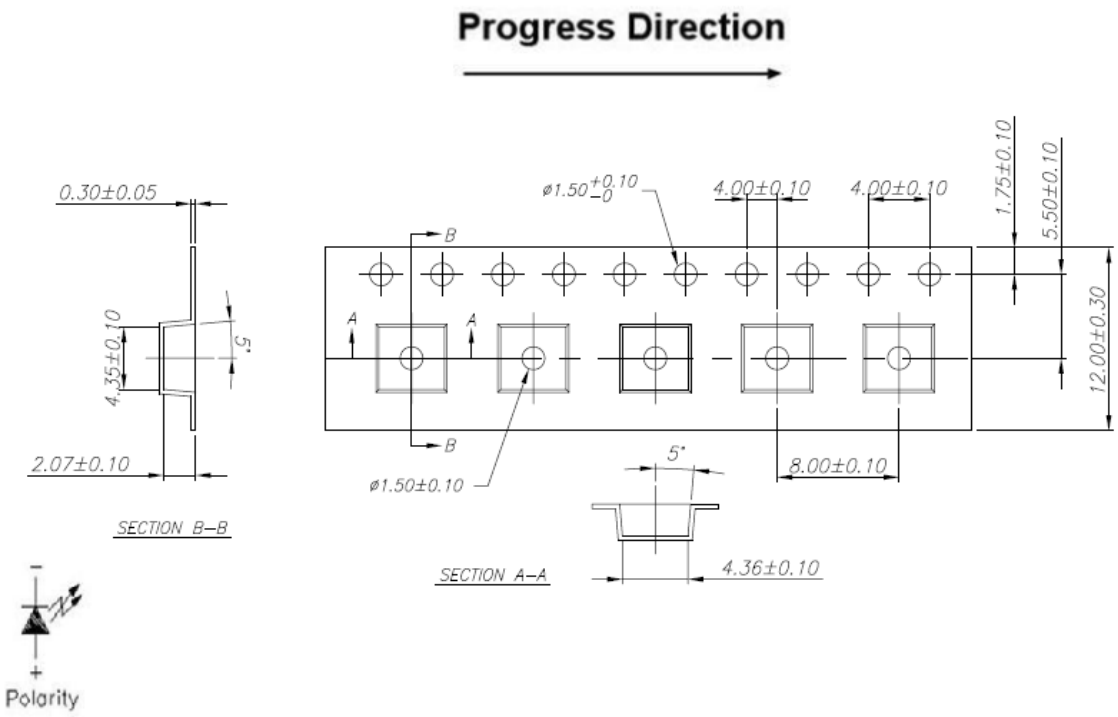
Moisture Resistant Packing Materials

Label Explanation

- CPN：Customer's Product Number
- P/N ：Everlight Product Number
- QTY：Packing Quantity
- CAT：Luminous Flux (Brightness) Bin
- HUE：Color Bin
- REF：Forward Voltage Bin
- L O T NO：Lot Number
- REFERENCE：reference
- MSL-X：MSL level

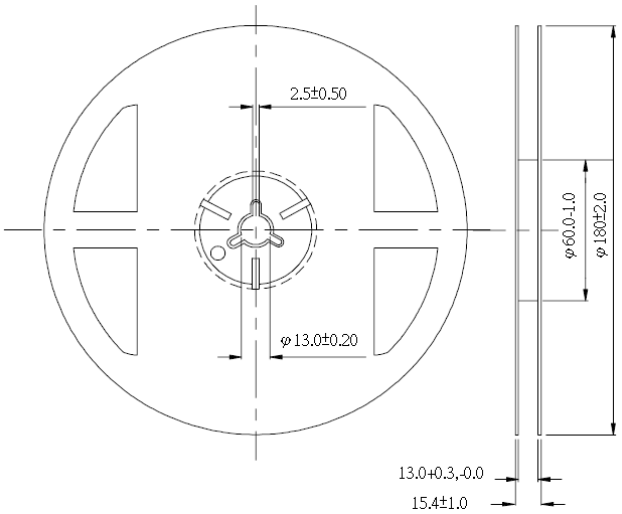
Carrier Tape Dimensions: Loaded Quantity 800 pcs Per Reel

(Minimum Package Quantity : 200 PCS)



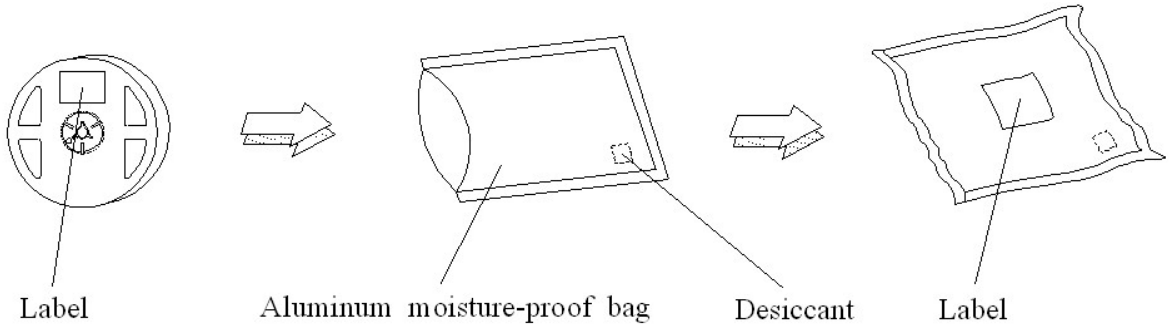
Note:
1.Dimensions are in millimeters.

Reel Dimensions



Note:
1. Dimensions are in millimeters.

Moisture Resistant Packing Process



Reflow Soldering Characteristics

Soldering and Handling

1. Over-current-proof

Though YUAN series has conducted ESD protection mechanism, customers must not use the device in reverse and should apply resistors for extra protection. Otherwise, slight voltage shift may cause enormous current shift and burn out failure would happen.

2. Storage

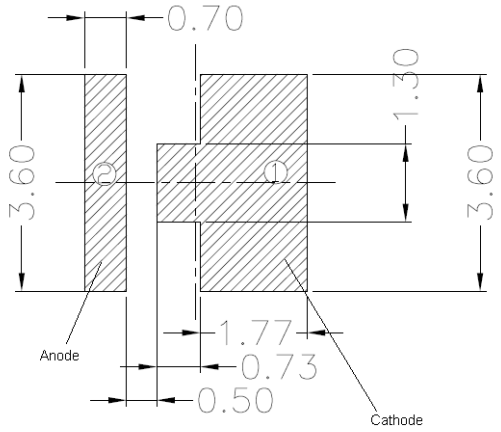
i. Do not open the moisture proof bag before the products are ready to use.
ii. Before opening the package, the LEDs should be stored at temperature less than 30°C and less and relative humidity less than 90%.
iii. After opening the package, the LEDs should be stored at temperature less than 30°C and relative humidity less than 85%.
iv. If the moisture absorbent material (silicone gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be implemented based on the following conditions: Pre-curing at 60±5°C for 24 hours.

3. Thermal Management

i. For maintaining the high flux output and achieving reliability, YUAN series LEDs should be mounted on a metal core printed circuit board (MCPCB), with proper thermal connection to dissipate approximately 1W to 5W of thermal energy under normal operation.
ii. Sufficient thermal management must be conducted, or the die junction temperature will be over the limit under large electronic driving and LEDs lifetime will decrease critically
iii. When operating , the solder pad temperature (or the board temperature nearby the LED) must be controlled under 70℃.

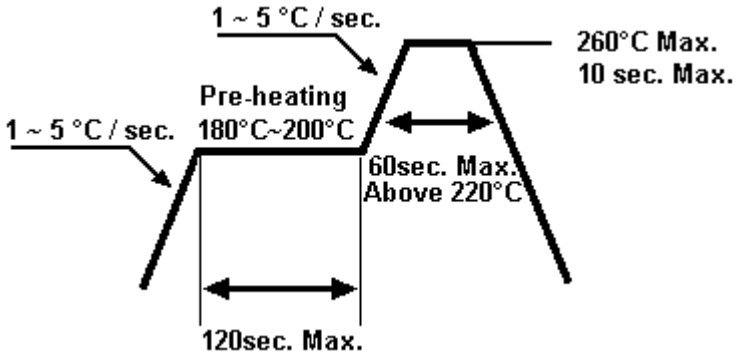
4. Soldering Condition

4.1 Soldering Pad



4.2 For Reflow Process

i. Lead reflow soldering temperature profile



ii. Reflow soldering should not be done more than two times.
iii. While soldering, do not put stress on the LEDs during heating.
iv. After soldering, do not warp the circuit board.