

**QLSP04BU**  
(High Power color 3030 LEDs)



## Product Outline:

This is the high power LED with reflector type. EMC 3030 Single color is a surface-mount LED which with heat sink to enhance operating performance. With special binning technology, these LEDs are ideal for architecture lighting and special lighting needs.

## Features:

- Blue Color
- High brightness output @ 350mA,
- High driving current to 1000mA
- Package Dimension = 3.2mmX3.0mmX0.6mm
- ESD protection up to 8KV
- RoHS compliant
- Custom Bin available upon special request

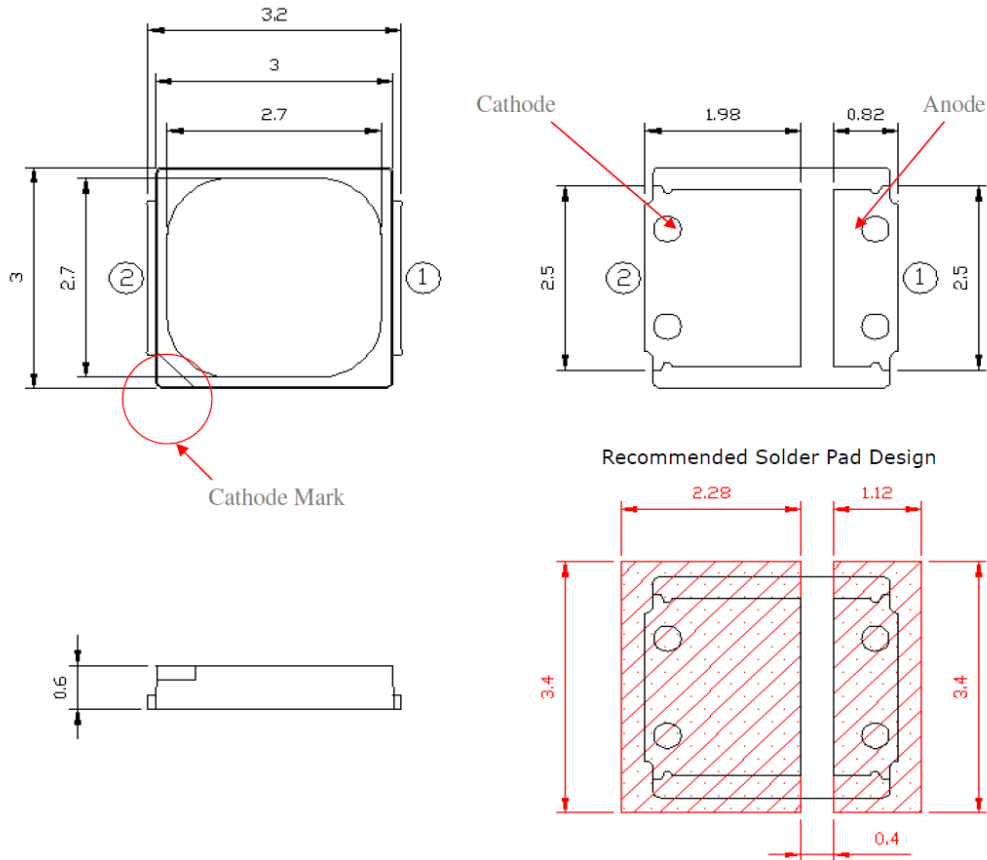
## Application:

- Warning lamp
- Decoration lamp
- Architecture Lighting
- Garden Lighting

## Compliance and Certification:

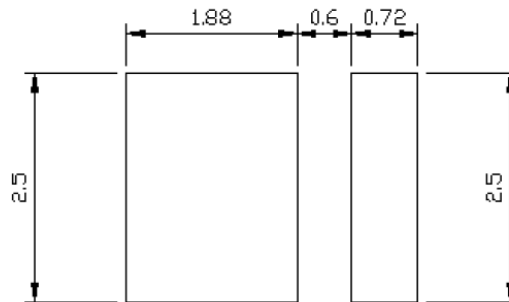


## Mechanical Property: (Dimension)



- \* All dimensions are in millimeters,
- \* Tolerances are  $\pm 0.10\text{mm}$ .

## Recommended Solder footprint:



- \* All dimensions are in millimeters.
- \* The LEDs is designed to be reflow soldered on to a PCB. IF dip soldered that QL cannot guarantee its reliability.
- \* Reflow soldering must not be performed more than twice.



# Characteristics

## ■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
DC Forward Current (Color for Royal Blue and Blue)	If	1000	mA
Leakage Current	Ir	1.0	μA
Power Dissipation	Pd	3.3	W
Pulse Forward Current	Ifp	1000	mA
LED Junction Temperature	TJ	125	°C
Storage Temperature	Tstg	-40 ~ 100	°C
Operation Temperature	Topr	-40 ~ 85	°C
Soldering Temperature	Tsol	260 < 10 sec	°C
ESD Sensitivity(HBM)		8	KV
Thermal Resistance	Rth	10	°CW

- (1) Proper current rating must be observed to maintain junction temperature below maximum at all time  
 (2) IFP Condition: Duty 1/10, Pulse within 10msec

## ■ Electrical / Optical Characteristic

(Ta=25 oC)

Product	Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		Wavelength nm	Luminous Flux(lm)/mW		Refer @ 700mA Typ.(lm)/mW
			Typ.	max		min	typ.	
QLSP04BU	Blue	350	3.2	3.5	465~480	26	33.6	56



## ■ Groups

### Dominant Wavelength

Wd (nm)			
Color	Code name	Min.	Max.
Blue	DD	465	470
	DE	470	475
	DF	475	480

Measurement tolerance is +/- 1nm

### Forward Voltage (V<sub>F</sub>) Bin:

VF Rank			
Color	Code name	Low	High
Blue	01	2.8	3.0
	23	3.0	3.2
	45	3.2	3.4
	67	3.4	3.6

The forward voltage tolerance is ± 0.1V

### Luminous Flux Bin:

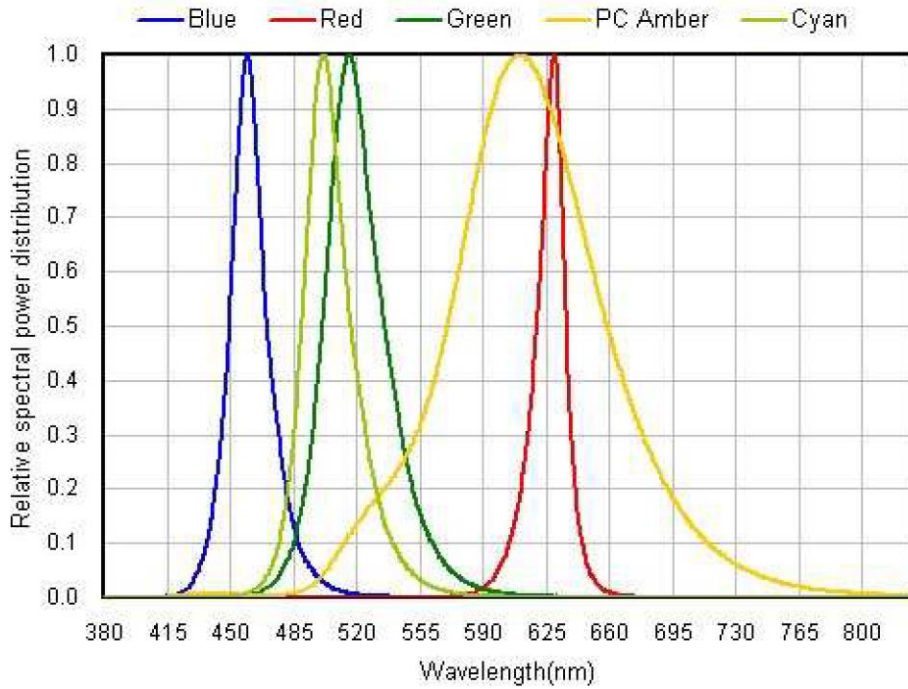
Rank @350mA (lm)			
Color	Code name	Low	High
Blue	QJ9	20	30
	QN9	30	40
	QP9	40	50

luminous flux tolerance is ± 7%

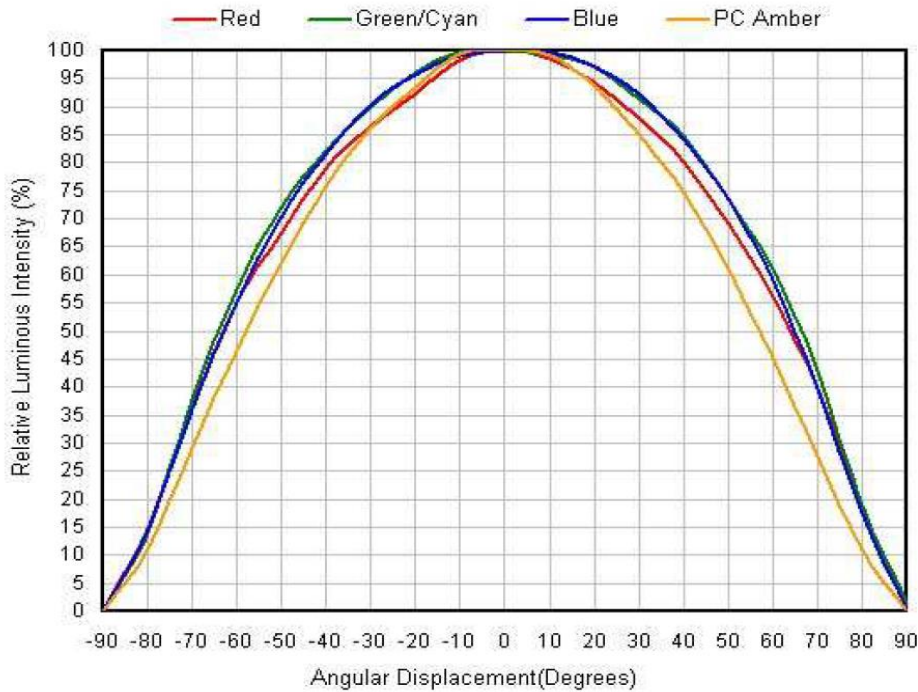


## Characteristic Curves

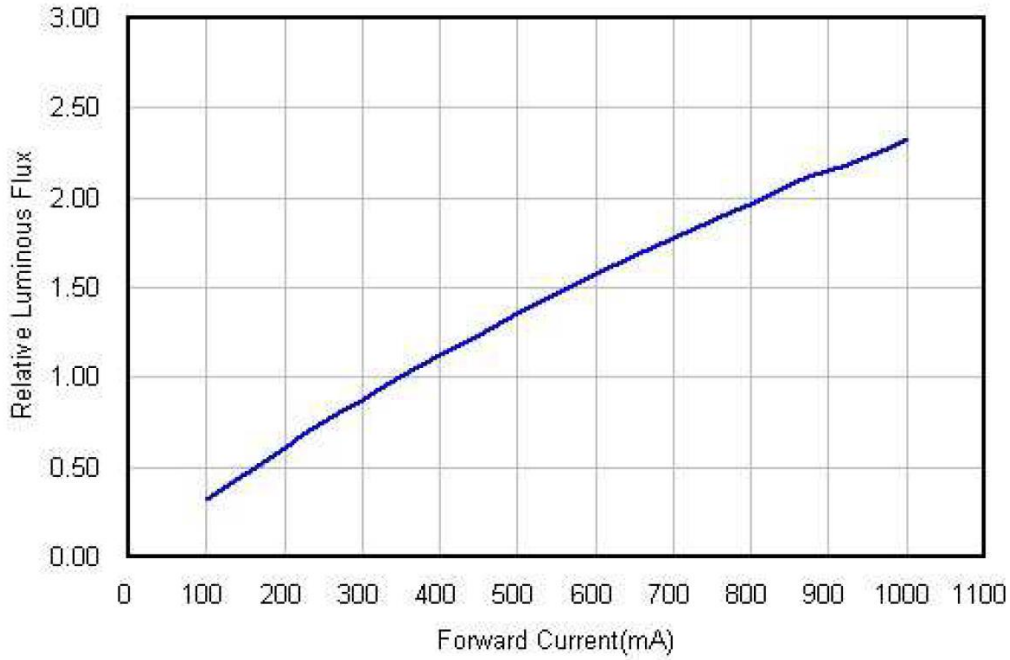
### (1) Color Spectrum



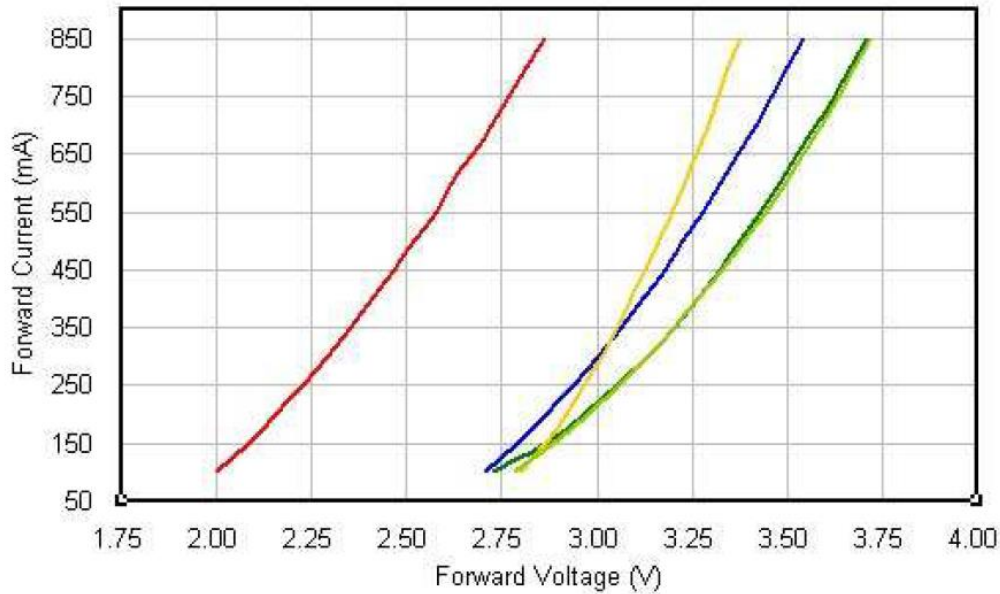
### (2). Typical Representative Spatial Radiation Pattern



### (3). Forward Current Characteristics



### (4). Forward Current vs Forward Voltage



■ **Reliability test:**

No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25°C Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40°C	-40°C Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60°C	60°C Operating	1000 Hrs	20 pcs
4	Steady State Operating Life of Low Temperature 85°C	85°C Operating	1000 Hrs	20 pcs
5	Low temperature storage -40°C	-40°C Storage	1000 Hrs	20 pcs
6	High temperature storage 100°C	100°C Storage	1000 Hrs	20 pcs
7	Steady State Operating Life of High Humidity Heat 60°C 90%	60°C/90% Operating	1000 Hrs	20 pcs
8	Steady State Pulse Operating Life Condition	25°C 10Hz duty=1/10 Operating	200 Cycle	20 pcs
9	Resistance to soldering heat on PCB (JEDEC MSL3)	pre-store@60°C, 60%RH for 52hrs Tslid max.=260 10sec	3 Times	20 pcs
10	Heat Cycle Test (JEDEC MRC)	25°C ~65°C ~-10°C, 90%RH, 24hr/1cycle	10 Cycle	20 pcs
11	Thermal shock	-40°C / 20minr~ 5minr~100°C /20min	300 Cycle	20 pcs

■ **Judgment Criteria:**

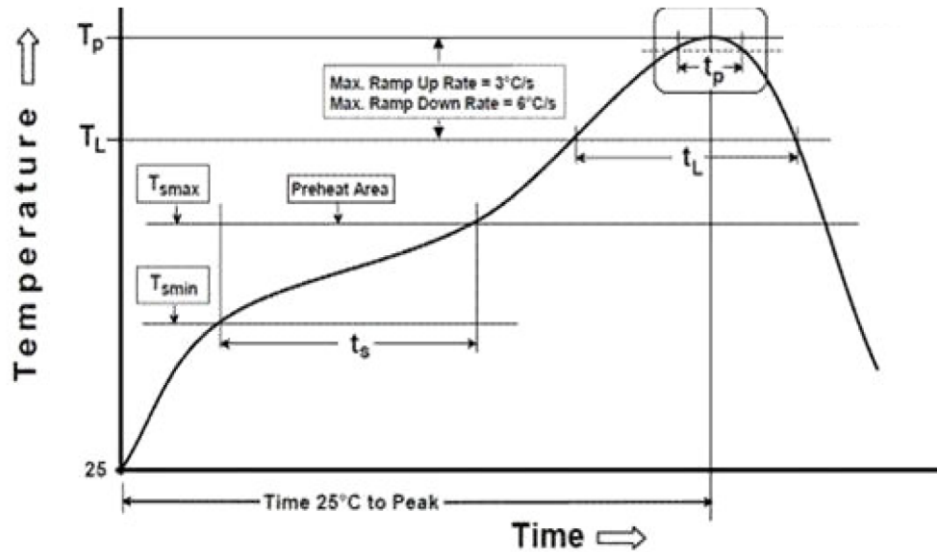
Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	350 mA	$\Delta Vf < 10\%$
Luminous Flux	Iv	350 mA	$\Delta Iv < 30\%$





## Solder Profile:

-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

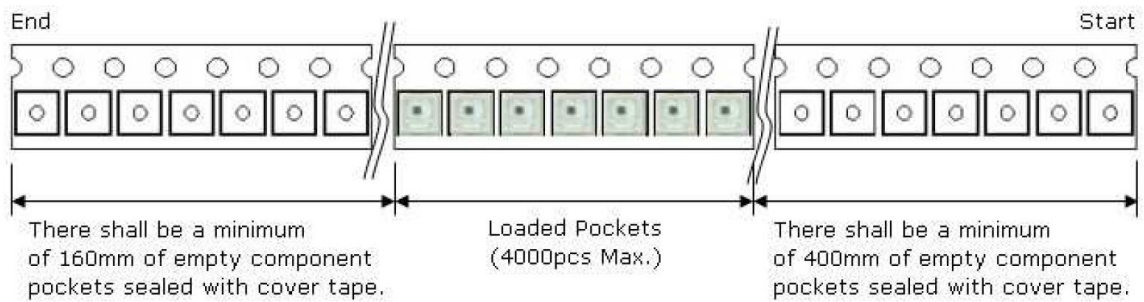
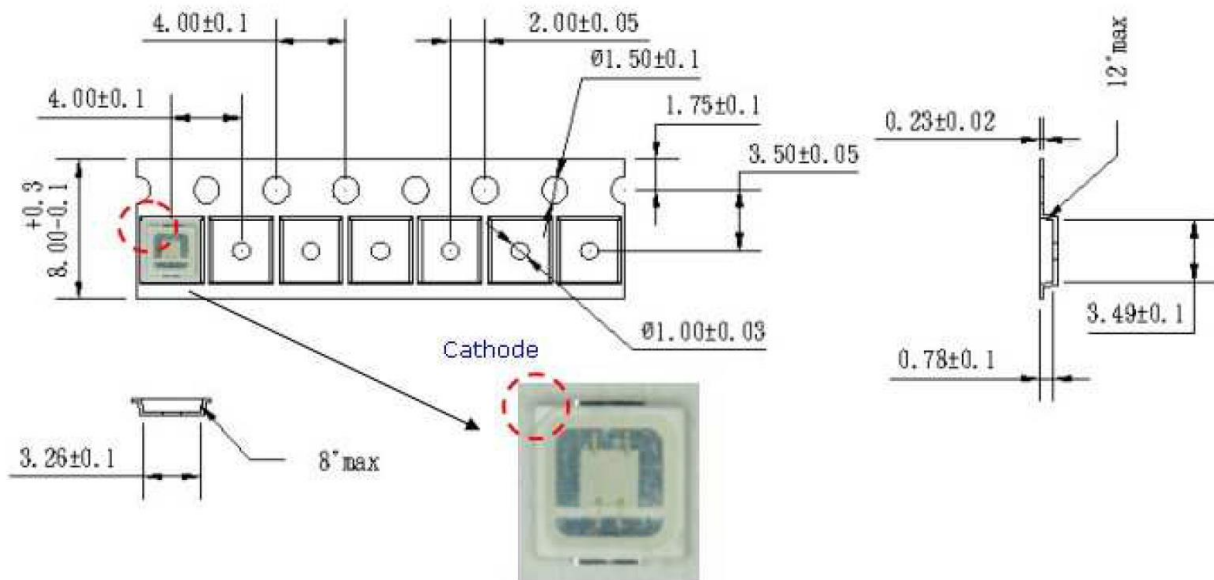


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min( $T_{smin}$ )	100°C	150°C
Temperature Max( $T_{smax}$ )	150°C	200°C
Time( $t_a$ ) from ( $T_{smin}$ to $T_{smax}$ )	60-120 seconds	60-120 seconds
Ramp-up rate( $T_L$ to $T_p$ )	3°C/second max.	3°C/second max.
Liquidous Temperature( $T_L$ )	183°C	217°C
Time( $t_L$ ) maintained above $T_L$	60-150 seconds	60-150 seconds
Peak package body temperature( $T_p$ )	235°C	260°C
Time within 5°C of Actual Peak temperature ( $t_p$ )	20seconds*	30 seconds*
Ramp-down rate( $T_p$ to $T_L$ )	6°C/second max.	6°C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

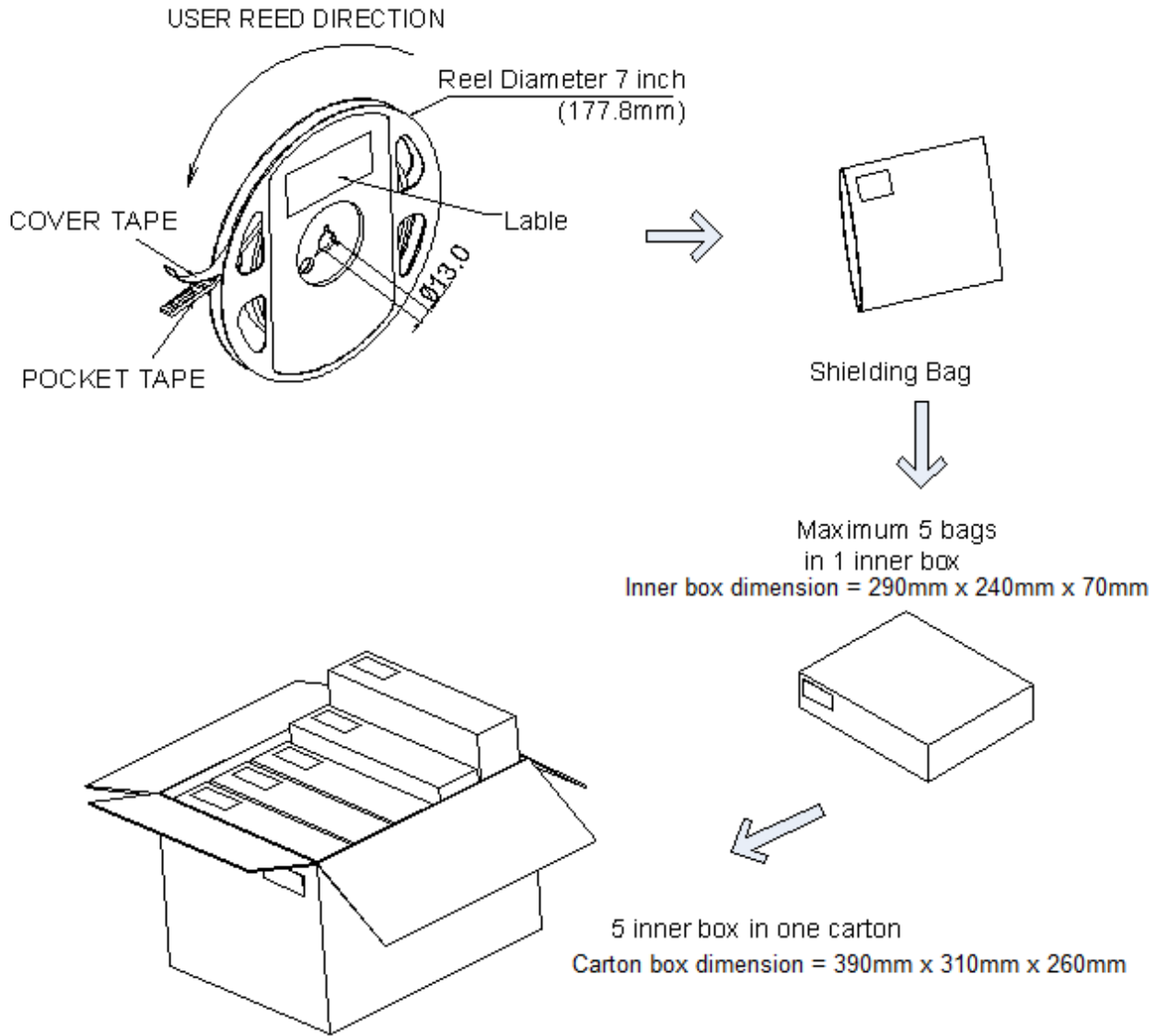


## Taping & Packing:

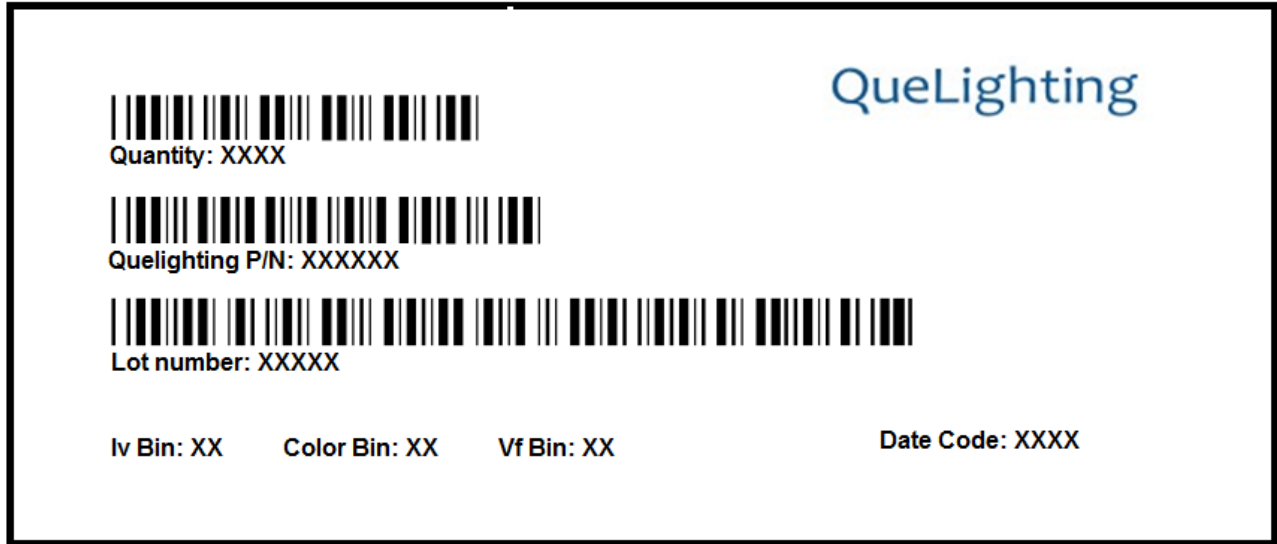


Unit : mm





## Labeling



## Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP04BU		10000,2000 pcs



## Revision History:

Revision Date:	Changes:	Version #:
03-30-2017	Initial release	1.0
08-01-2018	Add color on Royal Blue, Cyan Green, Deep Red, Cherry Red	1.1

