



QLSP04PCR
(3030 PC Red)



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:

- PC Red color
- High brightness output @ 350mA,
- High driving current to 500mA.
- Package Dimension = 3.2mmX3.0mmX0.6mm
- RoHS compliant
- Custom Bin available upon special request
- View angel >110°

Application:

- Warning lamp
- Horticulture
- Decoration lamp
- Architecture Lighting
- Garden Lighting
- Horticulture Light

Compliance and Certification:



Characteristics

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
DC Forward Current	If	500	mA
Leakage Current	Ir	1.0	μA
Power Dissipation	Pd	1.8	W
Pulse Forward Current	Ifp	700	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

- (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)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	Vf	350mA	3.0		3.5	V
View Angle	θ			120		deg
ESD Sensitivity(HBM)	KV			8.0		
Thermal Resistance	Rth			11.3		°C/W

- (1) Tolerance of measurement: VF=+/- 0.1V

■ Specification

Product	Color	Vf(V) IF=350mA	Dominant Wavelength(nm)	Luminous Flux IF=350mA	
				Min.	Typ.
QLSP04PCRU	PC Red	3.2	615~625	24.5	27.5

*Tolerance = +/- 10%



■ **Groups**

Forward Voltage (V_F) Bin:

VF Rank @ 350mA			
Code name	Min.	Max.	Units
2	3	3.1	V
3	3.1	3.2	
4	3.2	3.3	
5	3.3	3.4	
6	3.4	3.5	

The forward voltage tolerance is $\pm 0.1V$

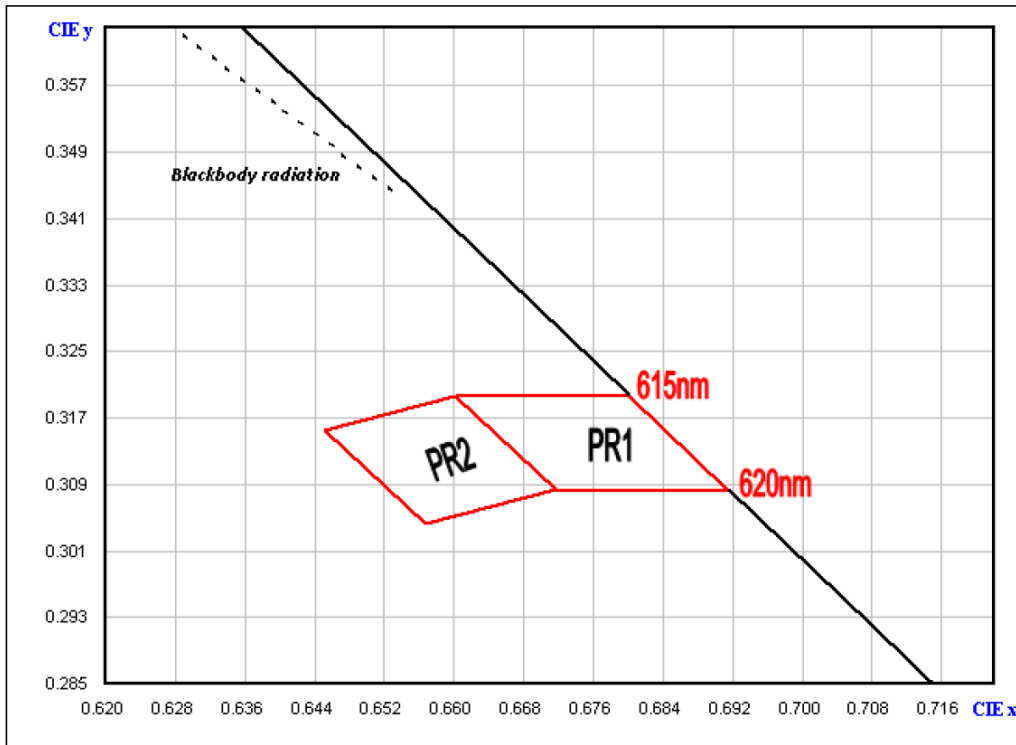
Luminous Flux Bin:

Im Rank (Im) @ 350mA			
Code name	Min.	Max.	Units
QL	25	28	lm
QM	28	31.5	

Luminous flux tolerance is $\pm 7\%$



CIE bin table

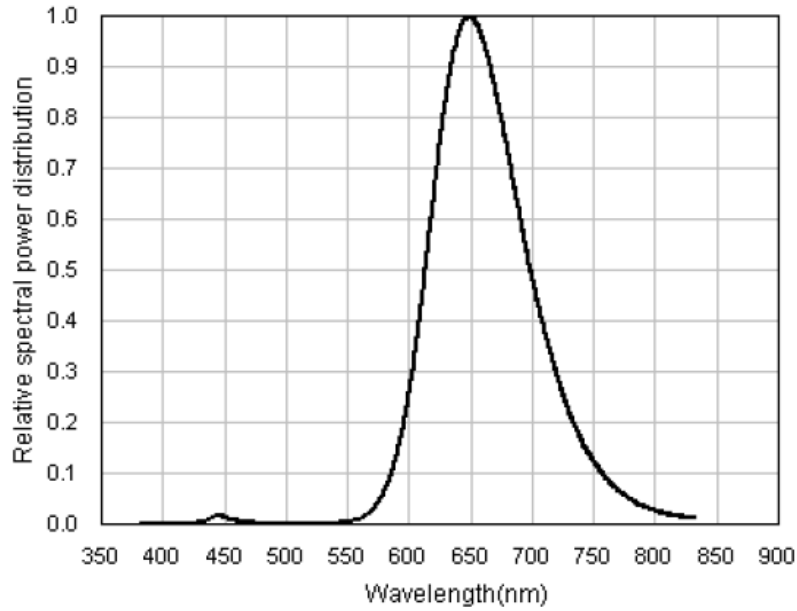


Color (CCT)	Bin Code	P1_x	P1_y	P2_x	P2_y	P3_x	P3_y	P4_x	P4_y
PC Red	PR1	0.6718	0.3084	0.6602	0.3197	0.6801	0.3197	0.6915	0.3083
	PR2	0.6718	0.3084	0.6568	0.3042	0.6452	0.3156	0.6602	0.3197

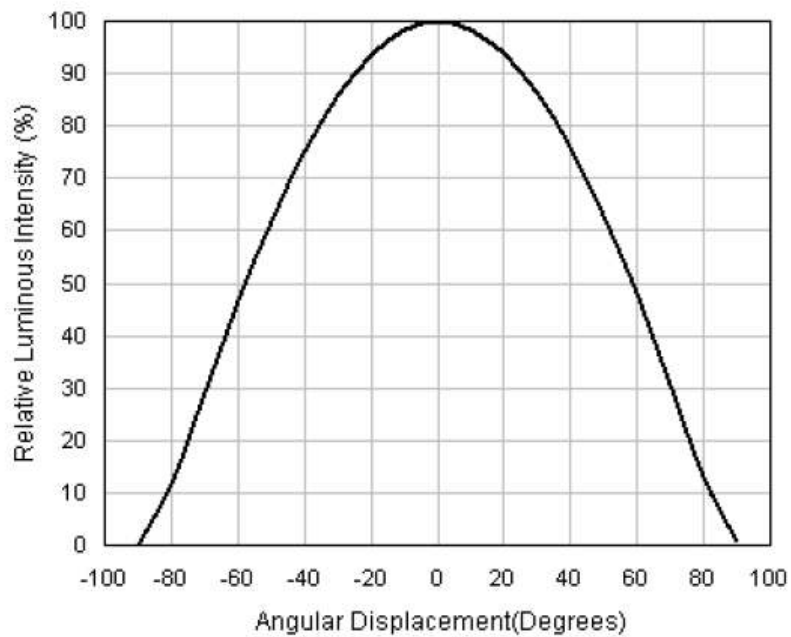


■ Characteristic Curves

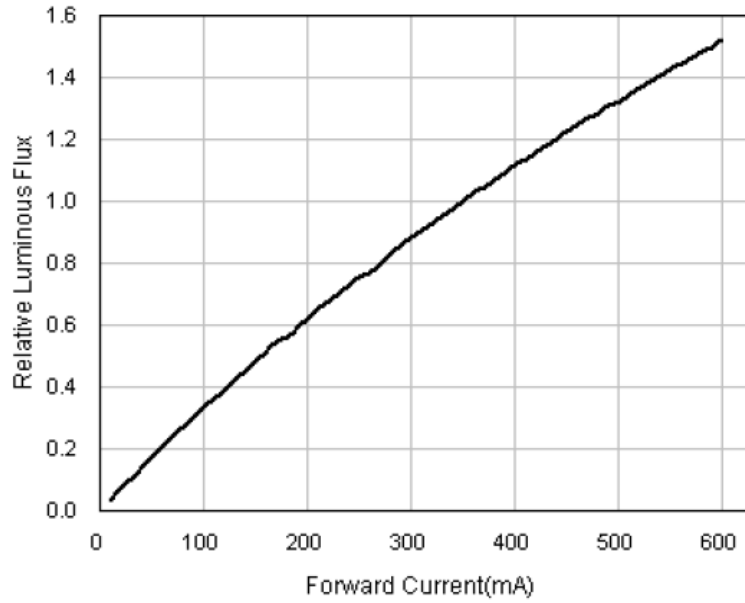
(1) Color Spectrum



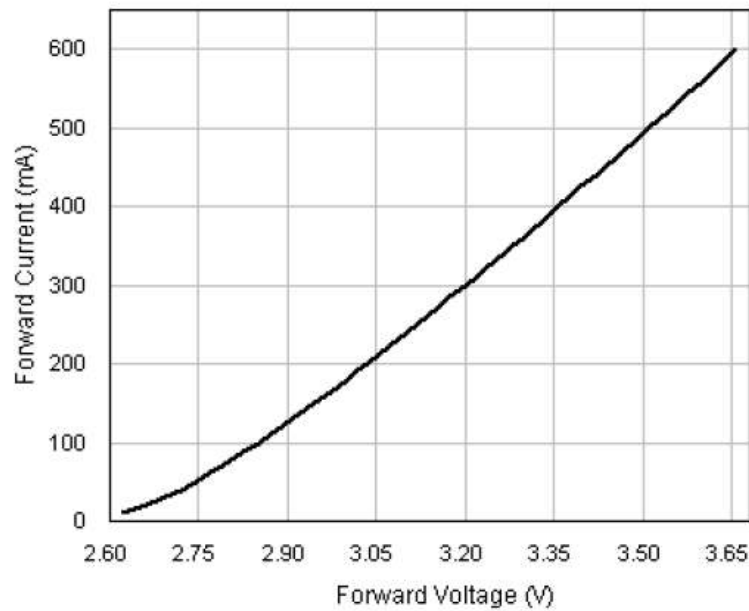
(2). Typical Representative Spatial Radiation Pattern



(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 T _{sld} 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

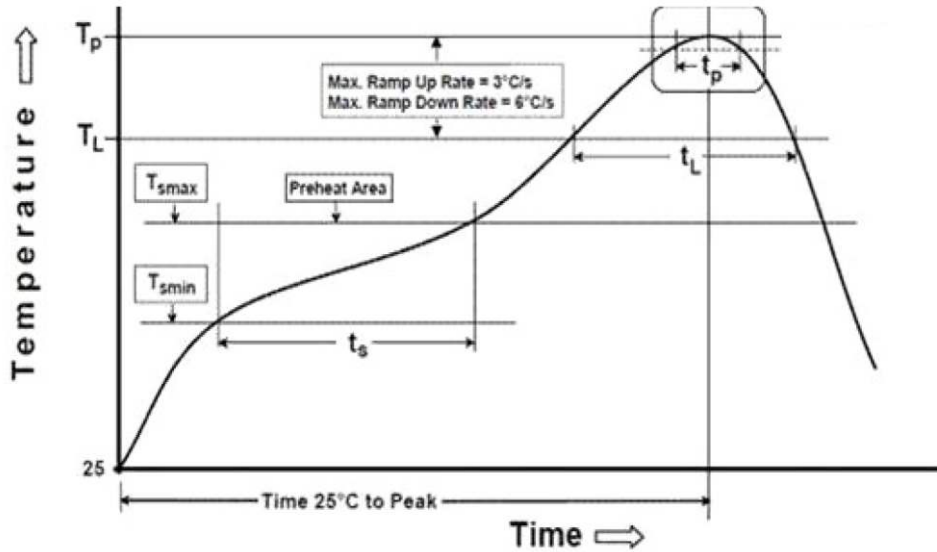
■ Judgment Criteria:

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	V _f	350 mA	ΔV _f < 10%
Luminous Flux	I _v	350 mA	ΔI _v < 30%



■ **Solder Profile:**

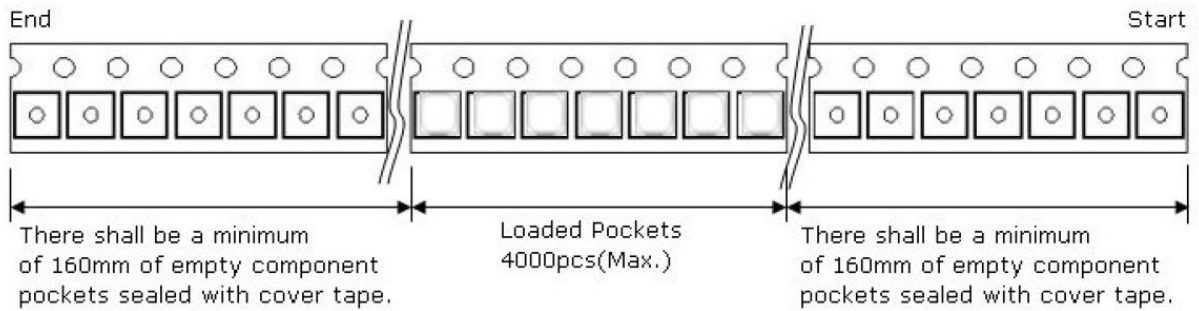
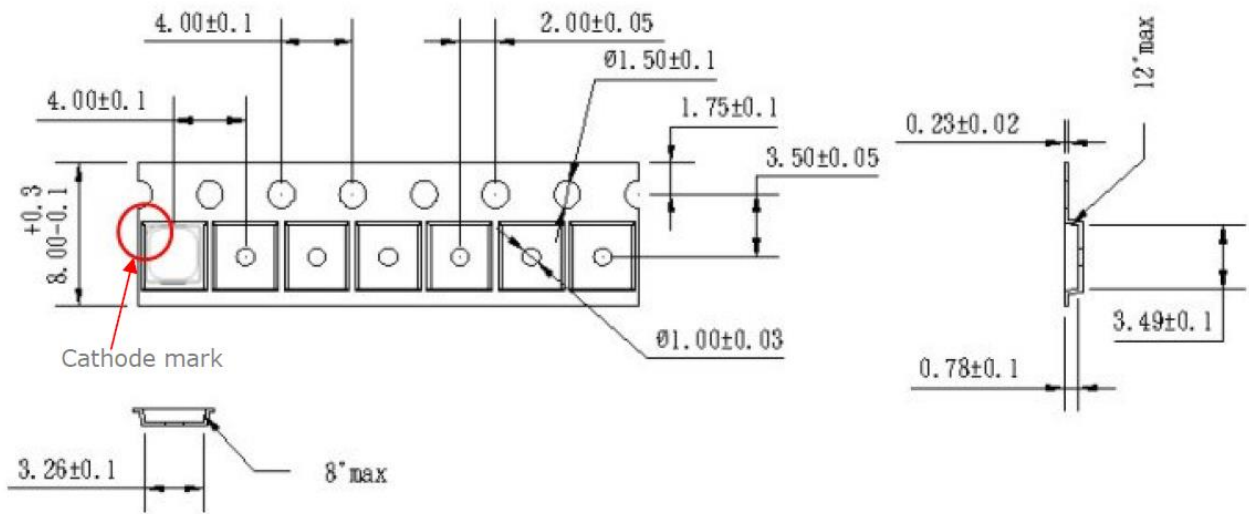
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



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.		

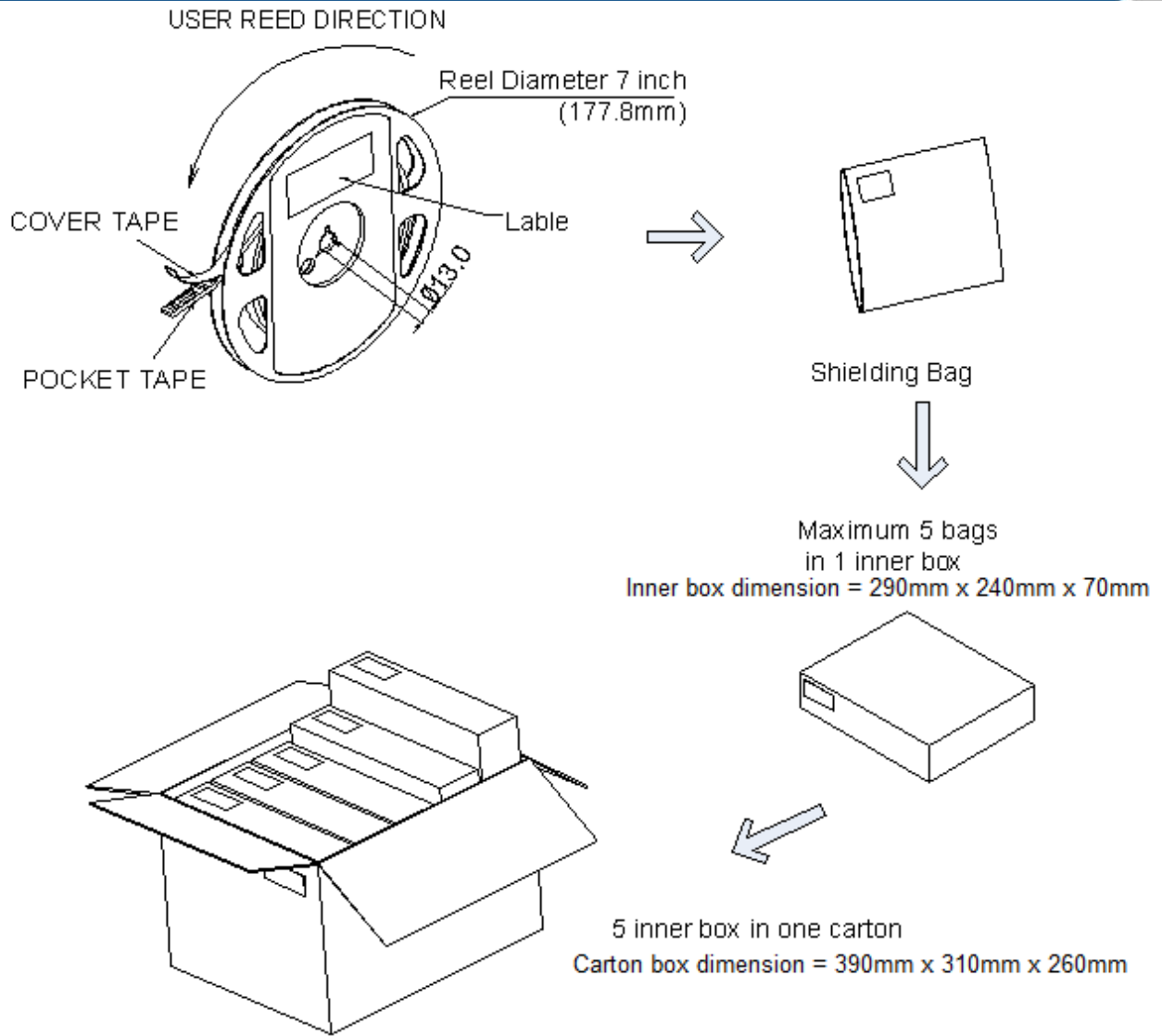


■ Taping & Packing:

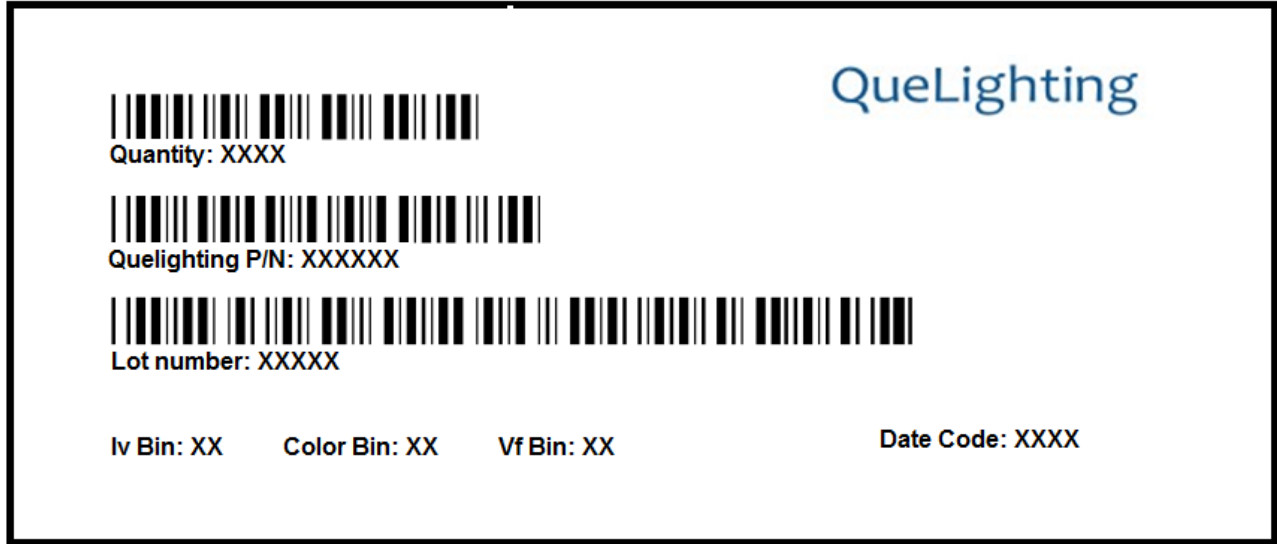


Unit : mm





■ Labeling



■ Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP04PCRU		1000pcs / 2000 pcs



■ Revision History:

Revision Date:	Changes:	Version #:
08-11-2016	Initial release	1.0
10-25-2021	Update performance	1.1

