

QLSP07ZCE
(3535 4W Flat White LED)



Product Outline:

QLSP07ZCE series is a High Power LED with high performance and light quality. it also provide high flux density of lighting source for 2nd lens design. The lighting application such as cation light, Fog light, working light, Head lamp, specific industrial and commercial lighting.

Features:

- High brightness output @ 1000mA,
- High Junction Temperature @ 150°C
- Ceramic substrate
- Plating material is gold for good sulfur resistance.
- Ra 70
- Package Dimension = 3.5mmX3.5mmX0.79mm
- Low thermal resistance : 4.5°C/W
- ESD protection up to 8KV
- RoHS compliant
- Custom Bin available upon special request

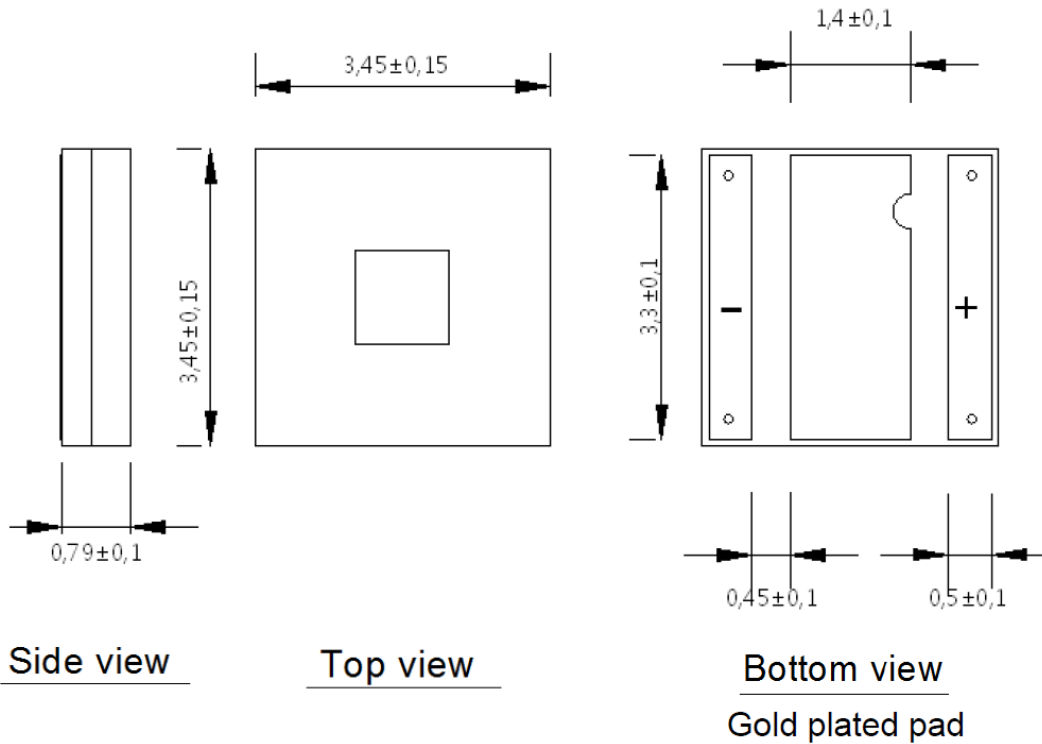
Application:

- Outdoor Lighting
- Working Light
- Daytime Running Light
- Fog light
- Head lamp

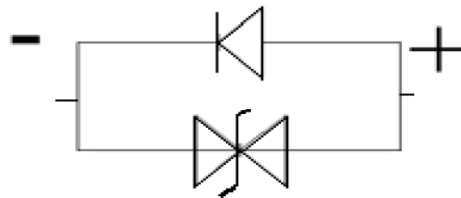
Compliance and Certification:



Mechanical Property: (Dimension)



Equivalent Circuit



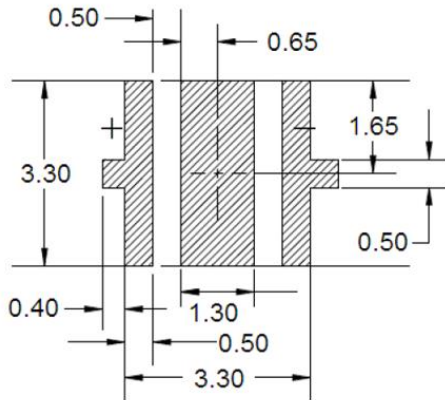
Notes:

1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.10 mm.
4. Please do not solder the emitter by manual hand soldering, otherwise it will damage the emitter.
5. **Please do not use a force of over 0.3kgf impact or pressure on the lens of the LED, otherwise it will cause a catastrophic failure.**



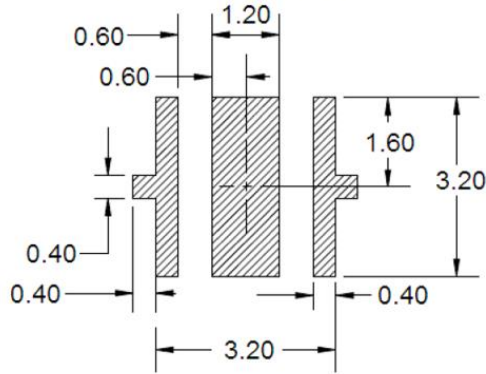
Recommended Solder footprint:

Recommended PCB solder pad:



RECOMMENDED PCB SOLDER PAD

Recommended stencil pattern:



RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)

Electrical / Optical Characteristic

(T=25 °C)

Product	Color	I _F (mA)	V _F (V)		CCT	Luminous Flux(lm)	
			Typ.	max	Typ	min	typ.
QLSP07ZCE	Cold White	1000	2.9	3.7	6000K	320	340

- (1) The Forward Voltage tolerance is $\pm 0.1V$
- (2) The luminous flux tolerance is $\pm 10\%$
- (3) Thermal resistance is calculated from junction to solder
- (4) Electric and optical data is tested at 50 ms pulse condition
- (5) The color coordinates measurement tolerance is ± 0.005

Absolute Maximum Rating

(T=25 °C)

Part #	P _d (mW)	I _F (mA)	I _{FP} (mA)*	V _R (V)	T _J (°C)	TOP (°C)	T _{ST} (°C)	T _{SOL} (°C)**	R _{th(J-S)} (C/W)***
QLSP07ZCE	4000	1200	2000	5	150	-40 - 125	-40 - 125	260	4.5

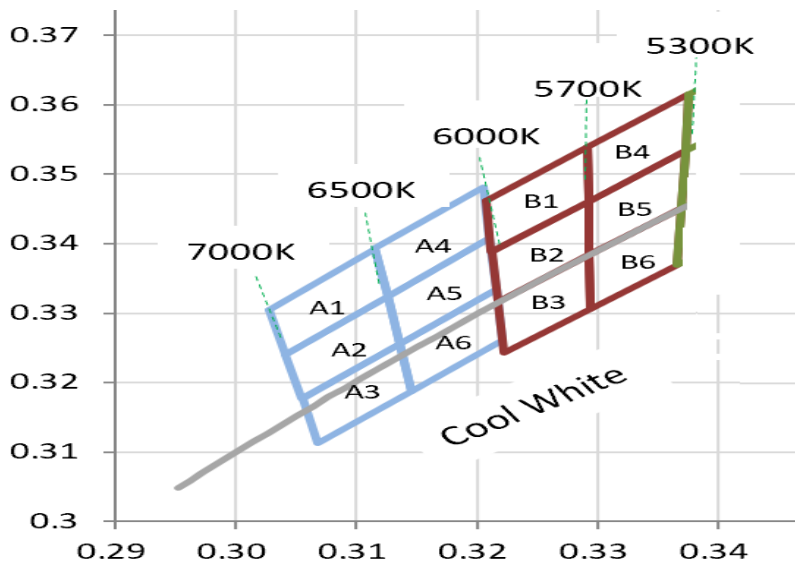
*Duty 1/10 @ 10Khz

** IR Reflow for no more than 10 sec @ 260 °C

*** Junction to substrate



White Binning



Forward Voltage (V_F) Bin:

VF Rank @ 1000mA (V)		
Code name	Low	High
02	2.8	3.1
14	3.1	3.4
47	3.4	3.7

The forward voltage tolerance is $\pm 0.1V$

Luminous Flux Bin:

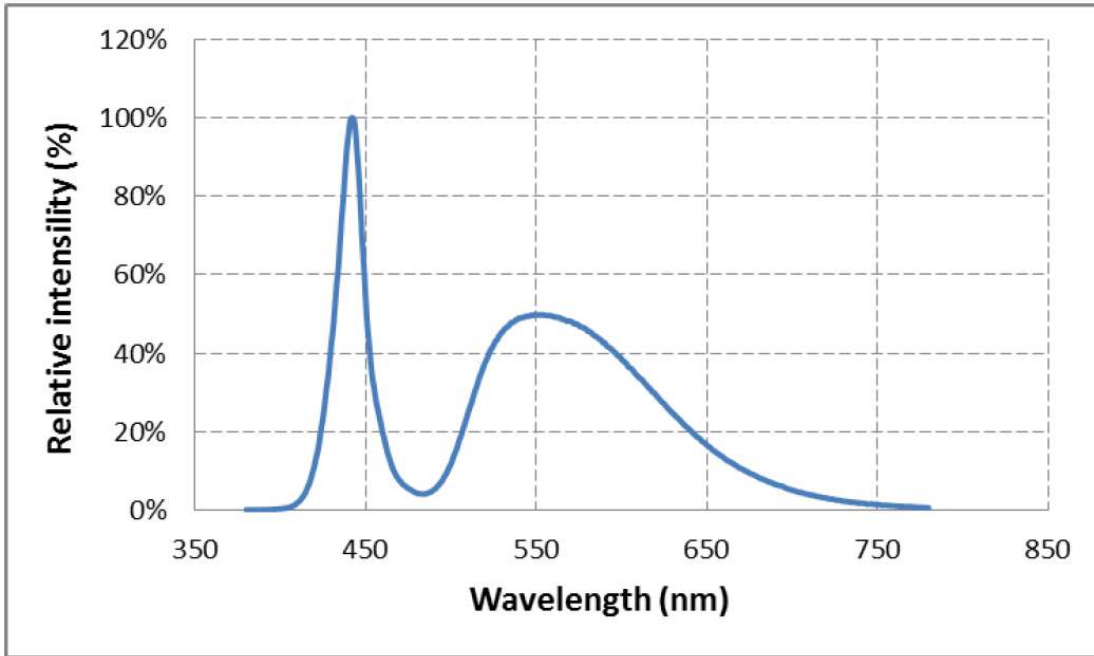
Rank @ 1000mA (lm)		
Code name	Low	High
U6	320	340
U7	340	360
U8	360	380

luminous flux tolerance is $\pm 10\%$

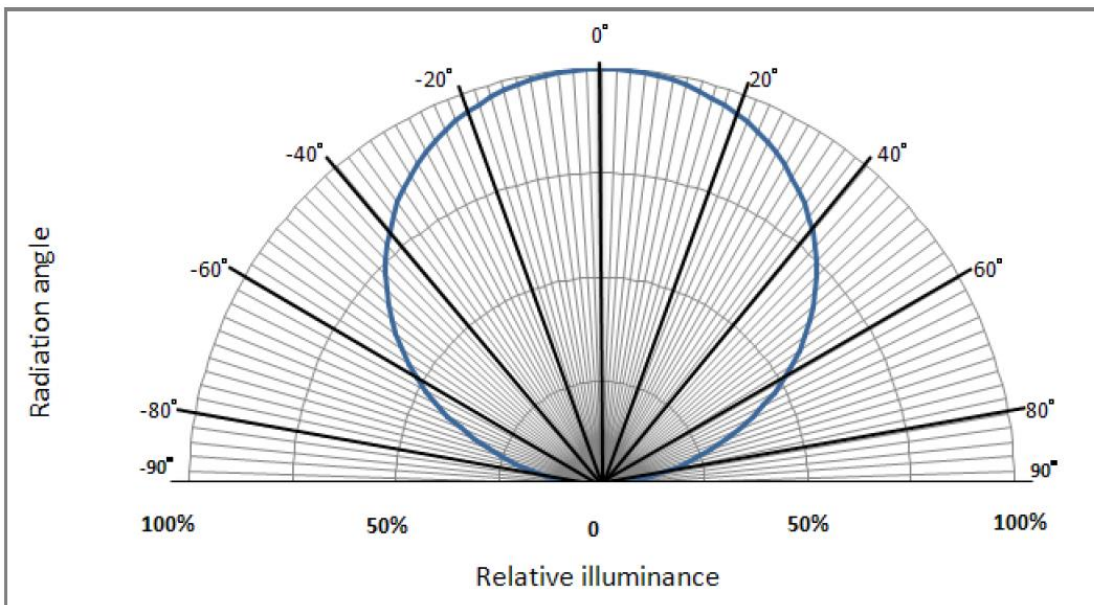


Characteristic Curves

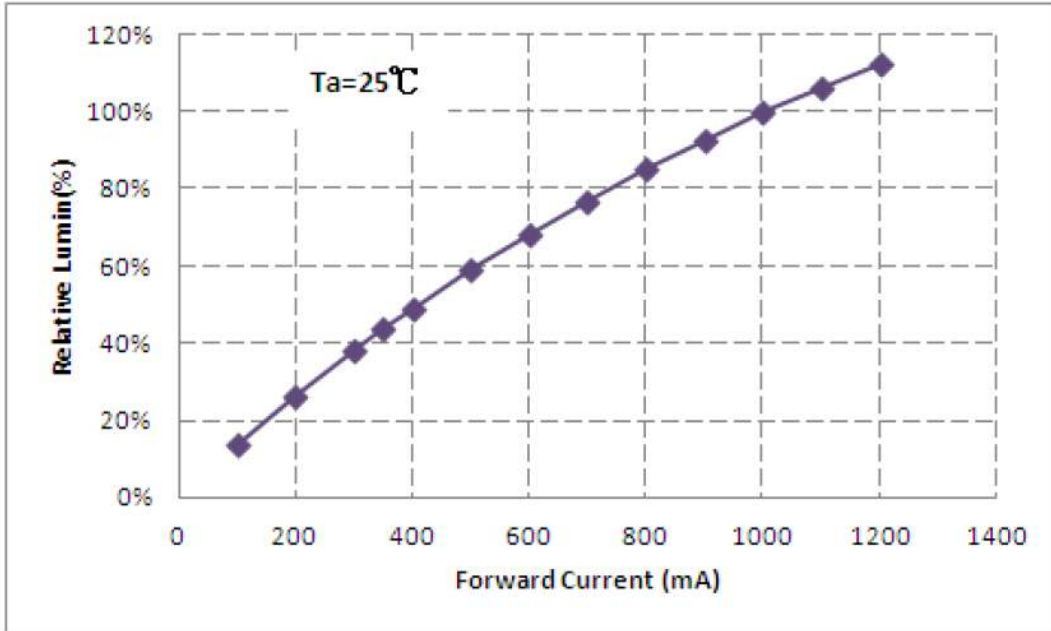
(1) Color Spectrum



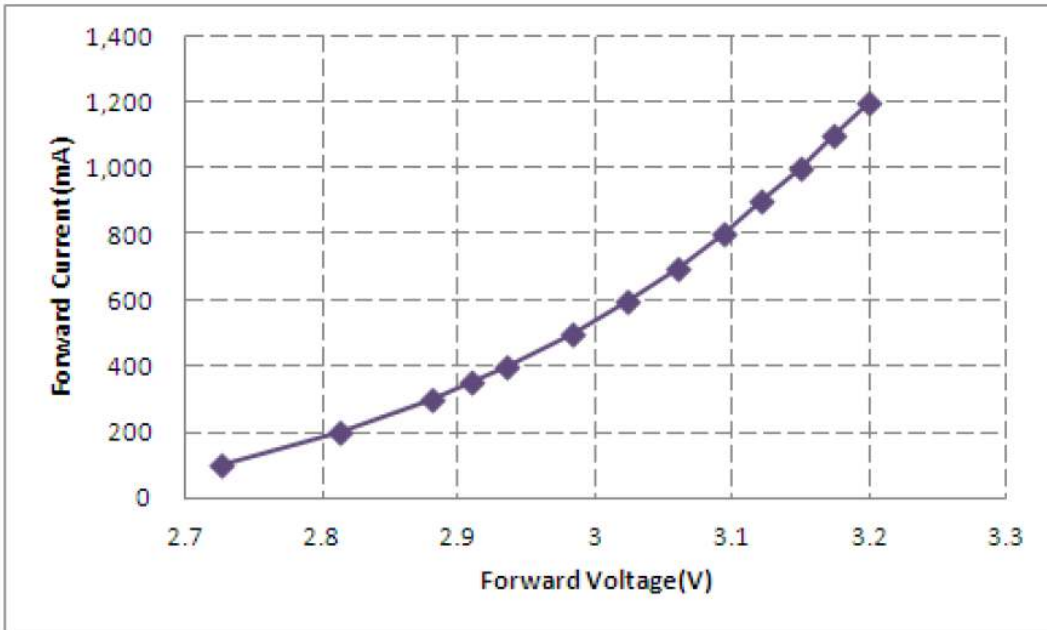
(2). Typical Representative Spatial Radiation Pattern



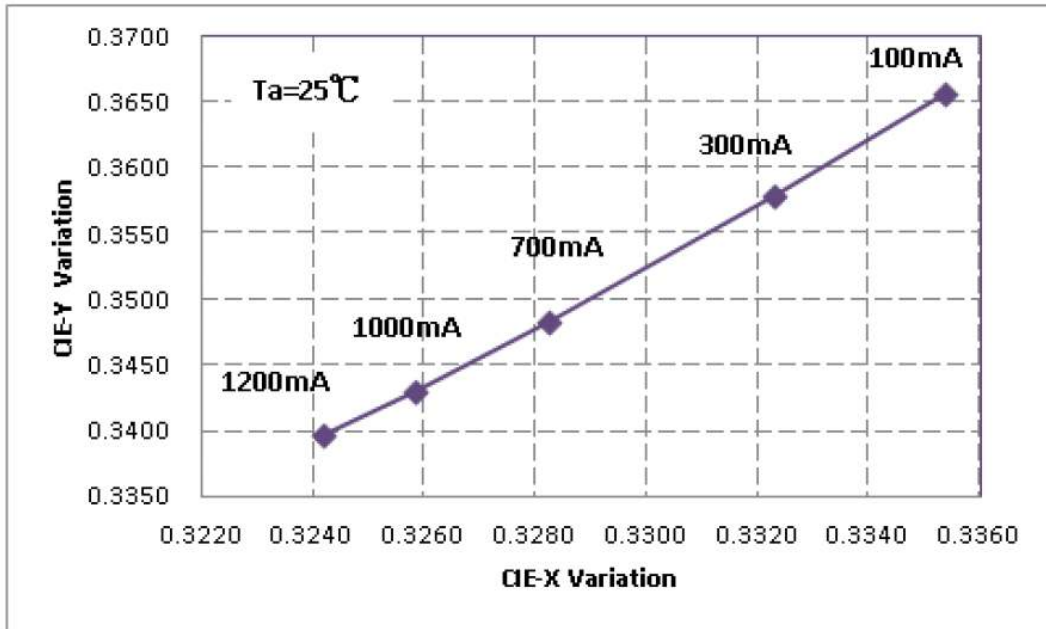
(3). Forward Current Characteristics



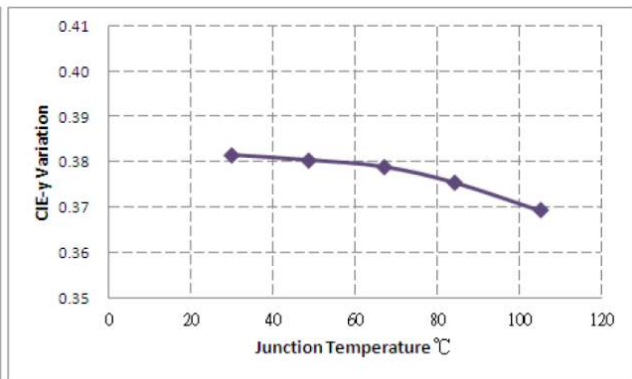
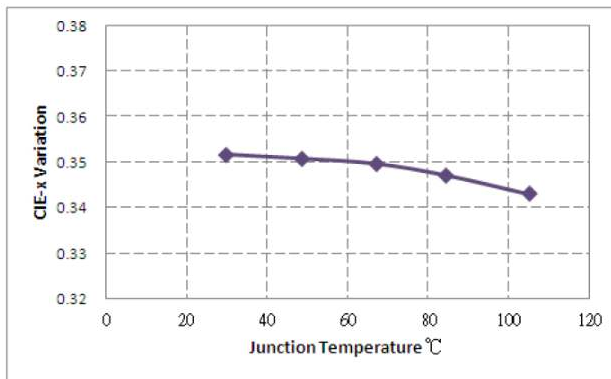
(4). Forward Current vs Forward Voltage



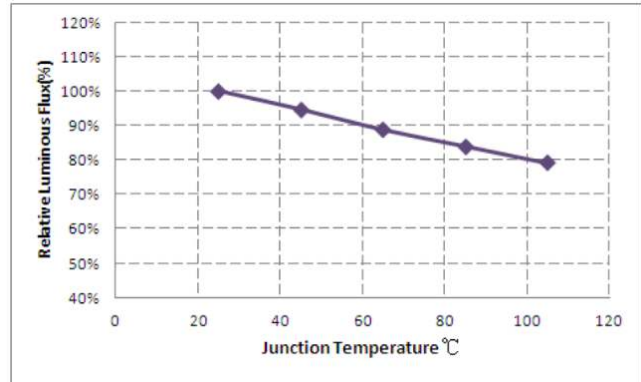
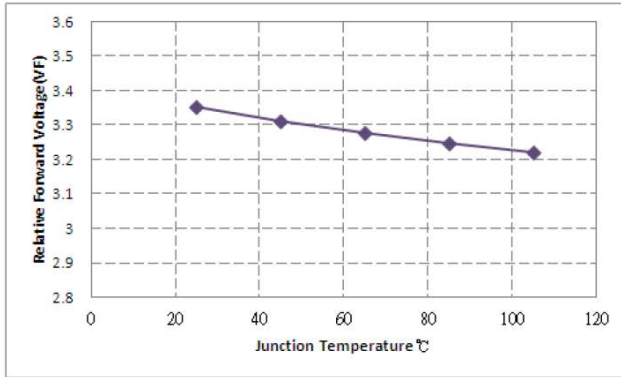
(5). Forward Current vs. Chromaticity Coordinate



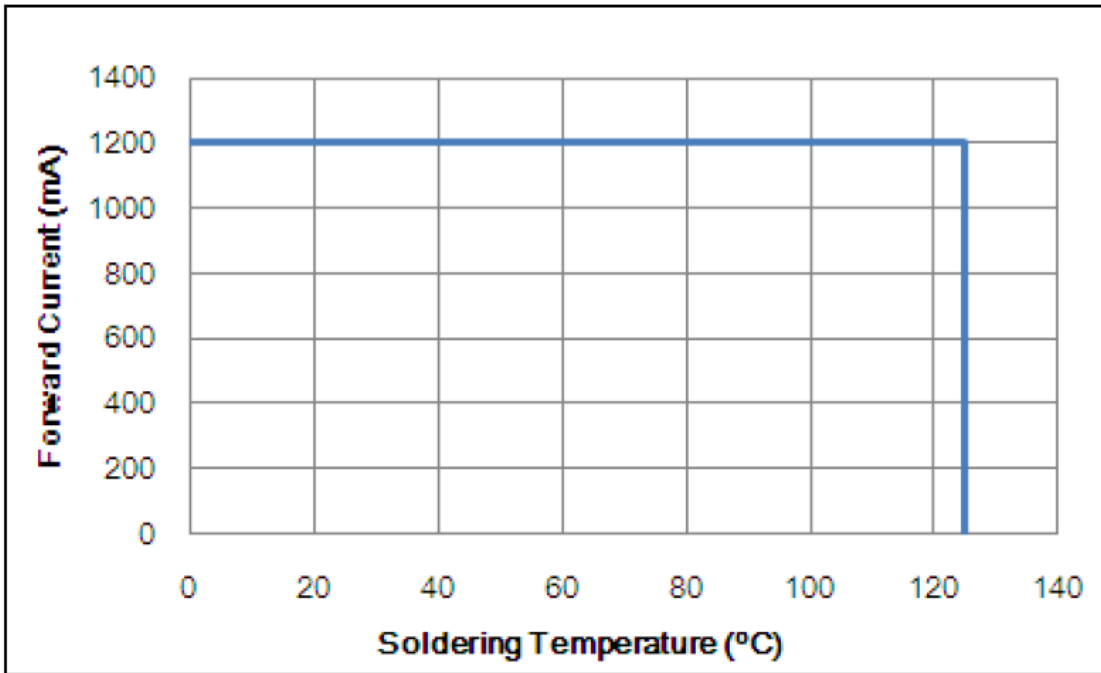
(6). Chromaticity Coordinate vs. Junction Temperature



(7). Relative Forward Voltage vs. Junction Temperature



(8). Forward Current Derating Curve



■ **Reliability test:**

No	Item	Condition	Standard of criterion	Result
1	Steady State Operating Life of Room Temperature	25°C Operating		Pass
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

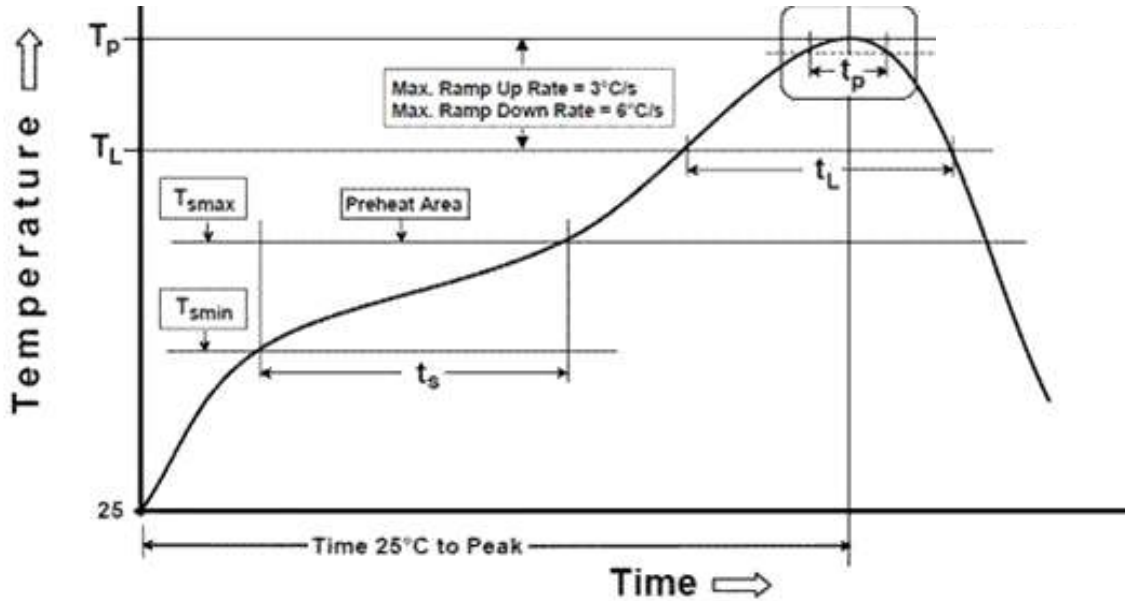
■ **Judgment Criteria:**

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	1000 mA	$\Delta Vf < 10\%$
Luminous Flux	Iv	1000 mA	$\Delta Iv < 20\%$



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.		



The selection of nozzle for SMT:

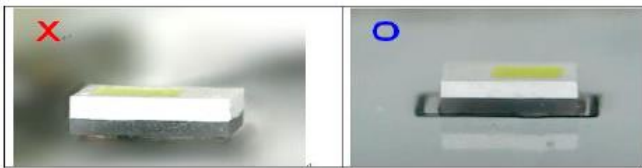
If the nozzle is not suitable for the sample, it drops easily, when it is picked up.

Recommended nozzle size is as the following list.

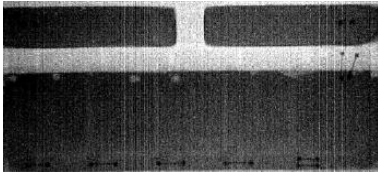
Precautions for SMT:

Undergoing the SMT, beware of the way of picking and pressing the sample, the appearance of sample is easily broken by the stress or the shear.

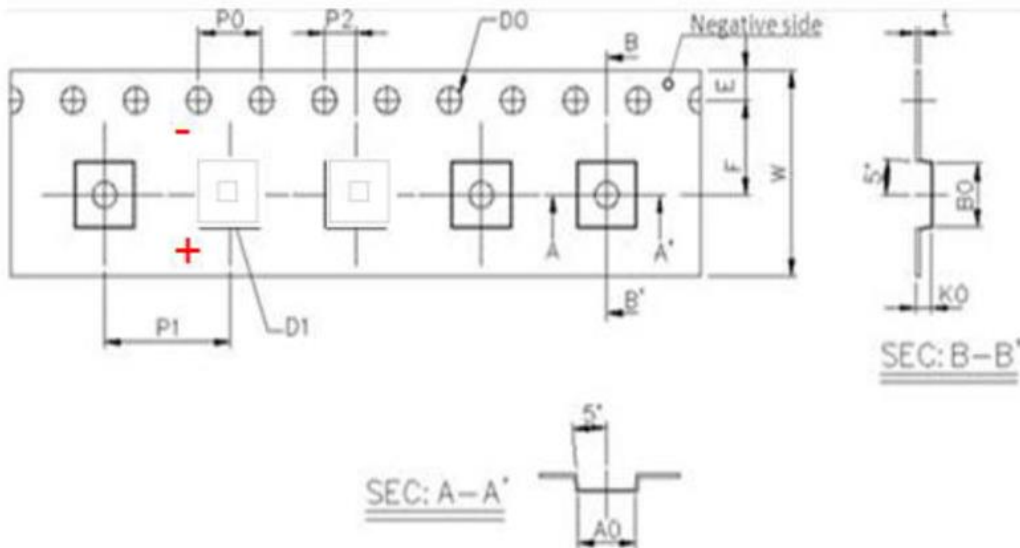
- After LEDs have been soldered, strongly recommend not to repair to keep the LEDs performance.
- Thicker solder will induce higher heat resistance. Thickness of solder is recommended to be thinner than 75um, at least 100um.



The void rate of the solder on heat transparent lower than 10% is recommended.



Taping & Packing:

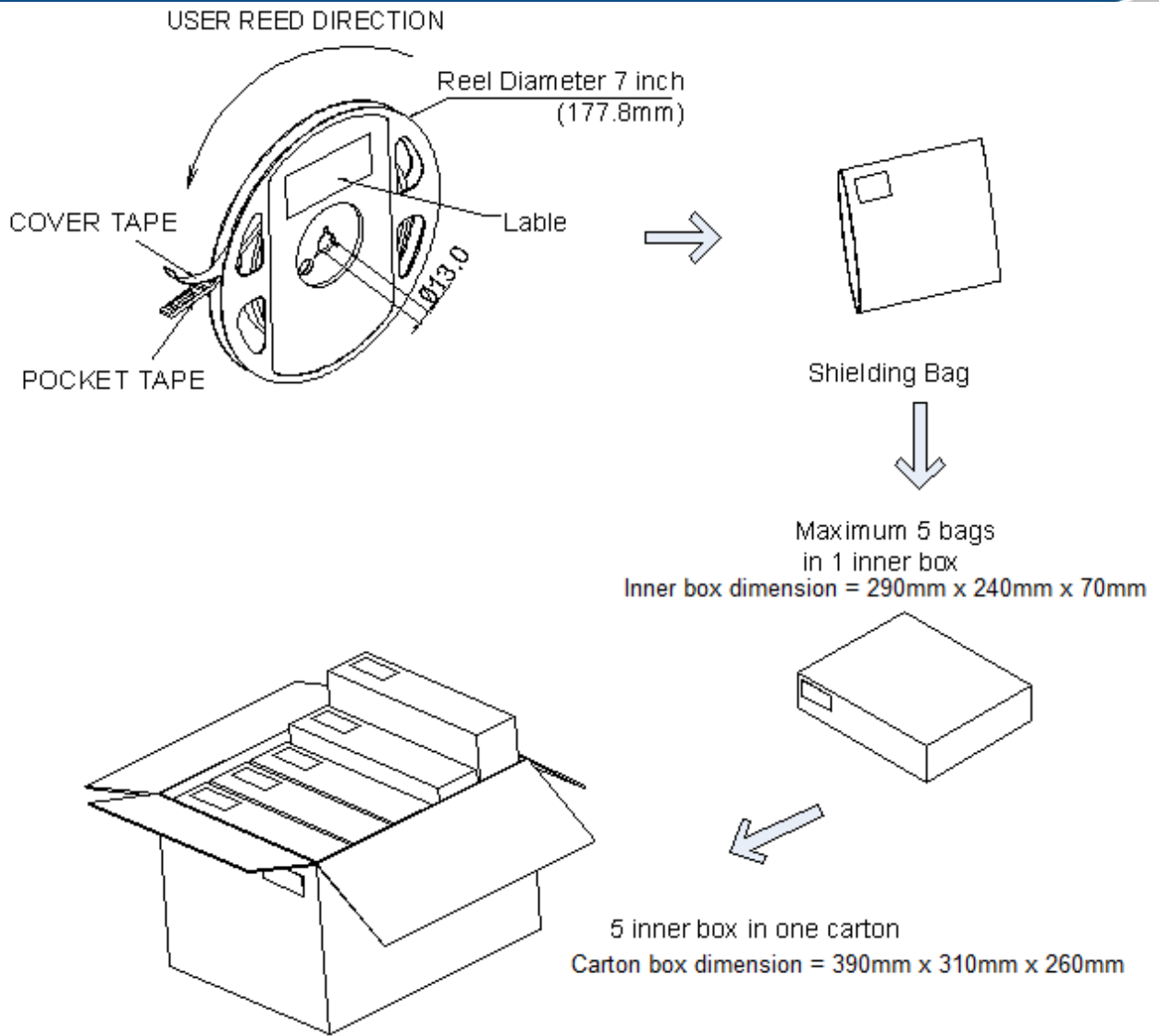


Item	Specification	Tol. (+/-)
W	12.00	± 0.20
E	1.75	± 0.10
F	5.50	± 0.05
D0	1.50	+0.10, -0
D1	1.00	± 0.10
P0	4.00	± 0.05
P1	8.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

t	0.25	± 0.05
A0	3.70	± 0.10
B0	3.70	± 0.10
K0	0.95	± 0.10

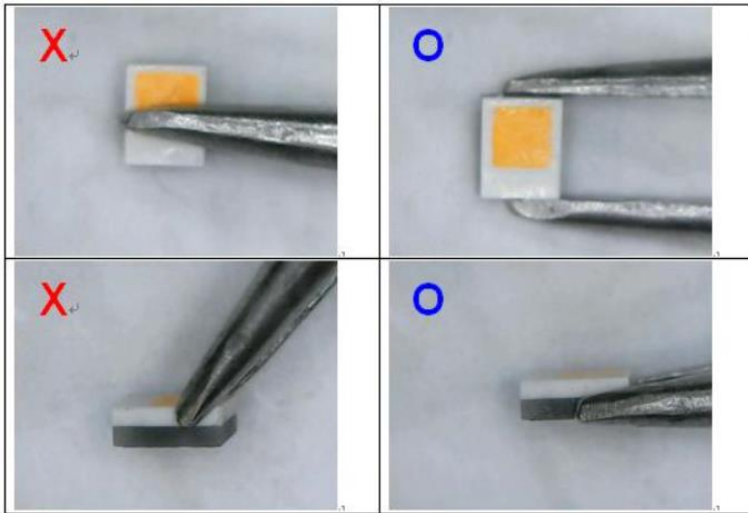
Unit : mm



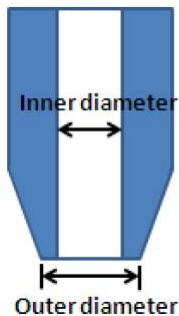


Handling of LEDs

1. Under SMT process, mechanical stress on the LED surface should be avoided.
2. In general, LEDs should be handled from the side of the substrate, since the surface will be scratched or the white reflector will be peeled off.



3. There are no restrictions on the form of the pick and place nozzle, except that mechanical stress on the surface of LED must be prevented. Lextar recommend that the material of nozzle is the rubber or the silicone, which the property is soft to prevent break the LED.



Nozzle Spec	
Outer diameter	Ψ 1.8 mm
Inner diameter	Ψ 1.4 mm
material	rubber or silicone

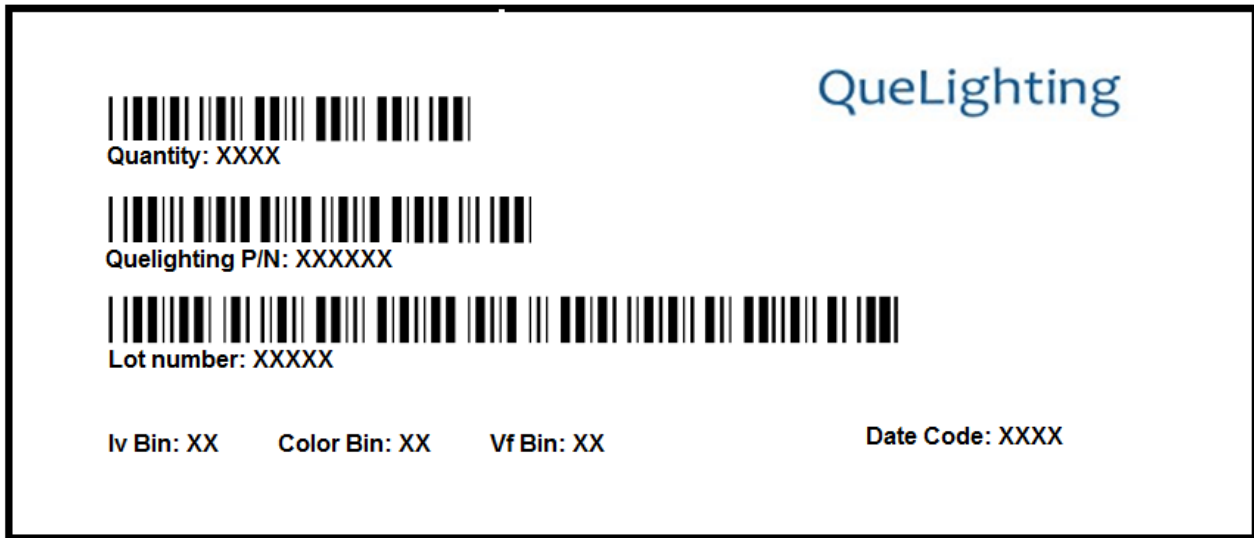
Soldering Notice and Conditions

Handling indications:

The sample cannot be picked up by touching the white PKG body. The sample must be picked up by gripping the side of the PKG substrate.



Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP07ZCE		1000 / 1500 / 2000pcs



Revision History:

Revision Date:	Changes:	Version #:
03-27-2021	Initial release	1.0

