QUELIGHTING

Sustainable Lighting Solution

QLSP35WXWU

(1919 CSP White LED)

Product Outline:

QLSP35WXWU series is a CSP High Power White LED with very low thermal resistance. It's can provide 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 @ 350mA,
- Ra 80
- Package Dimension = 1.86mm x 1.86mm x 0.32mm
- Low thermal resistance : 3.5˚C/W
- RoHS compliant
- Custom Bin available upon special request

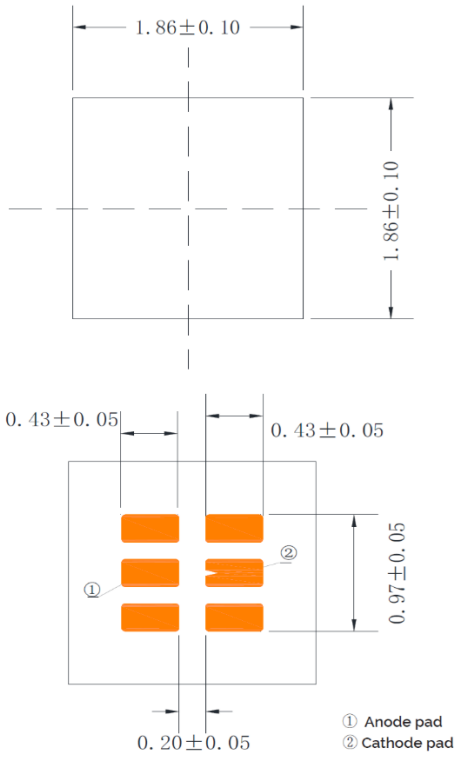
Application:

- Outdoor Lighting
- Working Light
- Fog light
- Head lamp
- Spot Light

Compliance and Certification:

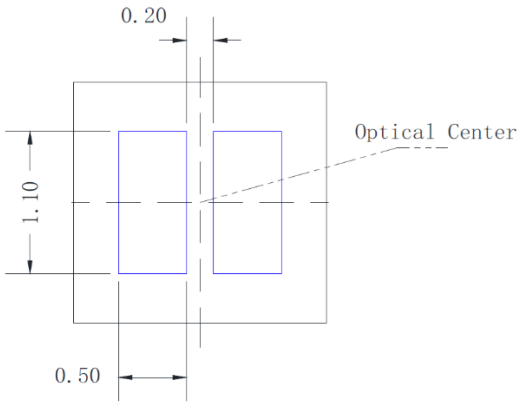
Mechanical Property:

(Dimension)



Notes:
1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.20mm.
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:



Electrical / Optical Characteristic

(T=25 °C)

Product	Color	I_F(mA)	V_F(V)		CCT	Luminous Flux(lm)		Efficacy (lm/W)
			Typ.	max	Typ	min	typ.	Typ.
QLSP35WW1WU	Warm White	500	3.0	3.2	2700K	180	204	136
QLSP35WW2WU	Warm White	500	3.0	3.2	3000K	190	215	143
QLSP35WNWU	Neutral White	500	3.0	3.2	4000K	210	234	156
QLSP35WPWU	Pure White	500	3.0	3.2	5000K	210	234	156
QLSP35WC1WU	Cold White	500	3.0	3.2	5700K	210	234	156
QLSP35WC2WU	Cold White	500	3.0	3.2	6500K	210	234	156

(1) The Forward Voltage tolerance is ±0.1V
(2) The luminous flux tolerance is ±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

(T=85 °C)

Product	Color	I_F(mA)	V_F(V)		CCT	Luminous Flux(lm)		Efficacy (lm/W)
			Typ.	max	Typ	min	typ.	Typ.
QLSP35WW1WU	Warm White	500	2.9	3.2	2700K	170	188	130
QLSP35WW2WU	Warm White	500	2.9	3.2	3000K	180	197	136
QLSP35WNWU	Neutral White	500	2.9	3.2	4000K	200	215	148
QLSP35WPWU	Pure White	500	2.9	3.2	5000K	200	215	148
QLSP35WC1WU	Cold White	500	2.9	3.2	5700K	200	215	148
QLSP35WC2WU	Cold White	500	2.9	3.2	6500K	200	215	148

(1) The Forward Voltage tolerance is ±0.1V
(2) The luminous flux tolerance is ±10%
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(4) Electric and optical data is tested at 50 ms pulse condition
(5) The color coordinates measurement tolerance is ±0.005

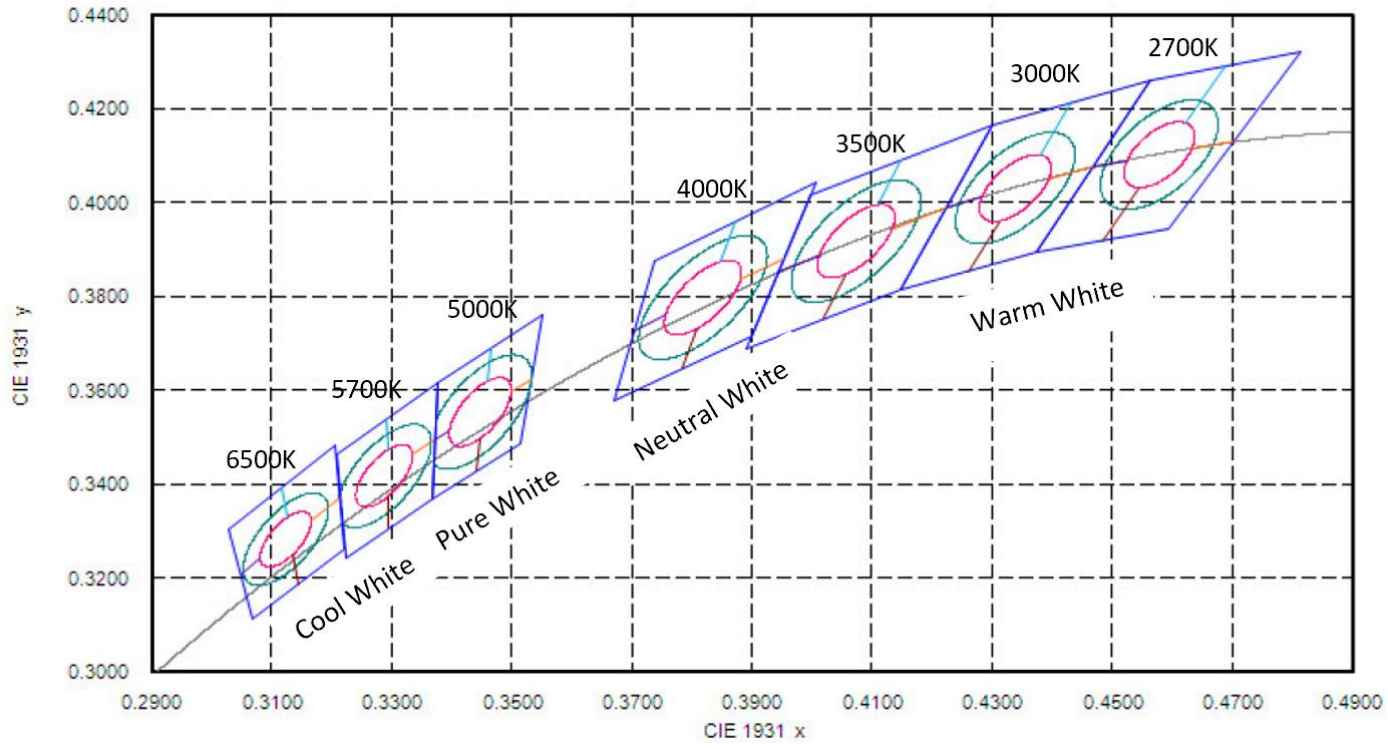
Absolute Maximum Rating

(T=25 °C)

Part #	P_d (mW)	I_F (mA)	I_{FP} (mA)*	V_R (V)	Tj(°C)	TOP (oC)	T_{ST} (°C)	T_{SOL} (°C)**	$R_{th(J-S)}$ (C/W)***
QLSP35WXWU	4200	1200	1500	5	130	-40 – 100	-40 - 100	260	3.5

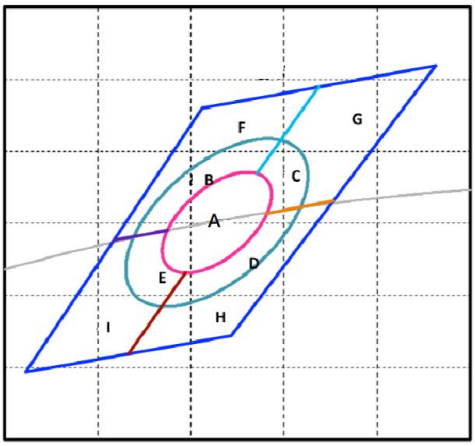
*Duty 1/10 @ 10Khz
** IR Reflow for no more than 10 sec @ 260 °C
*** Junction to substrate

White Binning



ANSI CCT	Color Space (MacAdam ellipse)	Target Center point (cx,cy)	Major Axis,a	Minor Axis,b	Ellipse Rotation Angle
2700K	3-step	(0.4578,0.4101)	0.0081	0.0042	53.70°
	5-step	(0.4578,0.4101)	0.0135	0.007	53.70°
3000K	3-step	(0.4338,0.403)	0.0083	0.00408	53.22°
	5-step	(0.4338, 0.403)	0.0139	0.0068	53.22°
4000K	3-step	(0.3818,0.3797)	0.0094	0.00402	53.72°
	5-step	(0.3818,0.3797)	0.0157	0.0067	53.72°
5000K	3-step	(0.3447,0.3553)	0.0082	0.00354	59.62°
	5-step	(0.3447,0.3553)	0.0137	0.0059	59.62°
5700K	3-step	(0.3287,0.3417)	0.0075	0.0032	59.09°
	5-step	(0.3287,0.3417)	0.0124	0.00533	59.09°
6500K	3-step	(0.3123,0.3282)	0.0067	0.00285	58.57°
	5-step	(0.3123,0.3282)	0.0112	0.00475	58.57°

CIE binning code:



Forward Voltage (V_F) Bin:

VF Rank @ 350mA (V)		
Code name	**Low**	**High**
89	2.6	2.8
01	2.8	3.0
23	3.0	3.2
45	3.2	3.4

The forward voltage tolerance is ± 0.1V

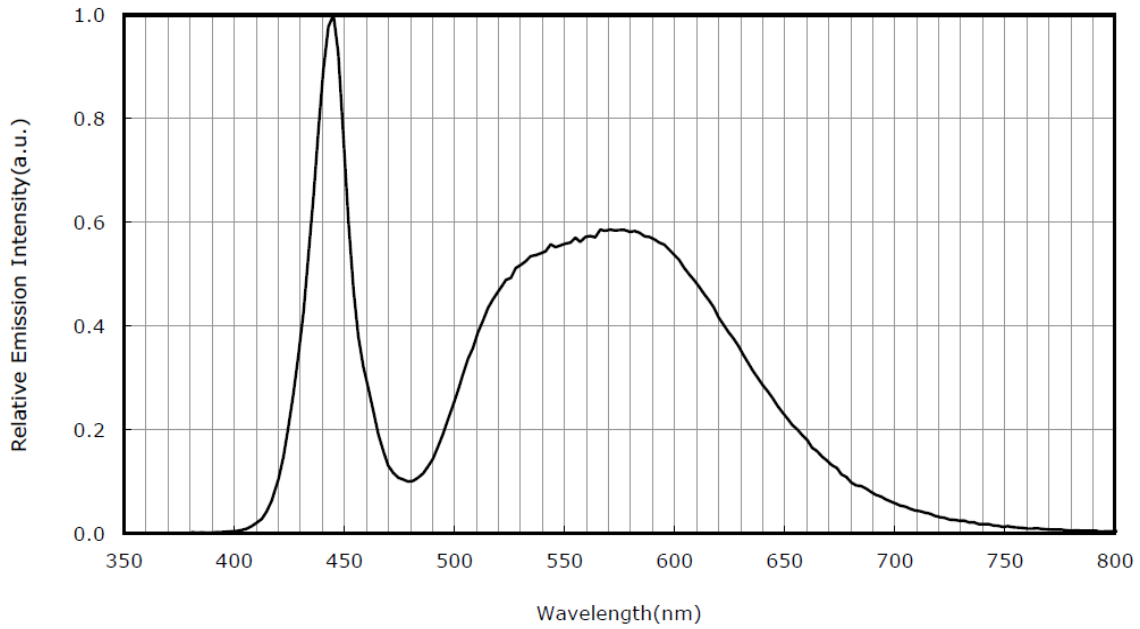
Luminous Flux Bin:

Rank @ 350mA (lm)		
Code name	**Low**	**High**
QY9	110	120
QZ9	120	130
Q09	130	140
Q19	140	150
Q29	150	160
Q39	160	170

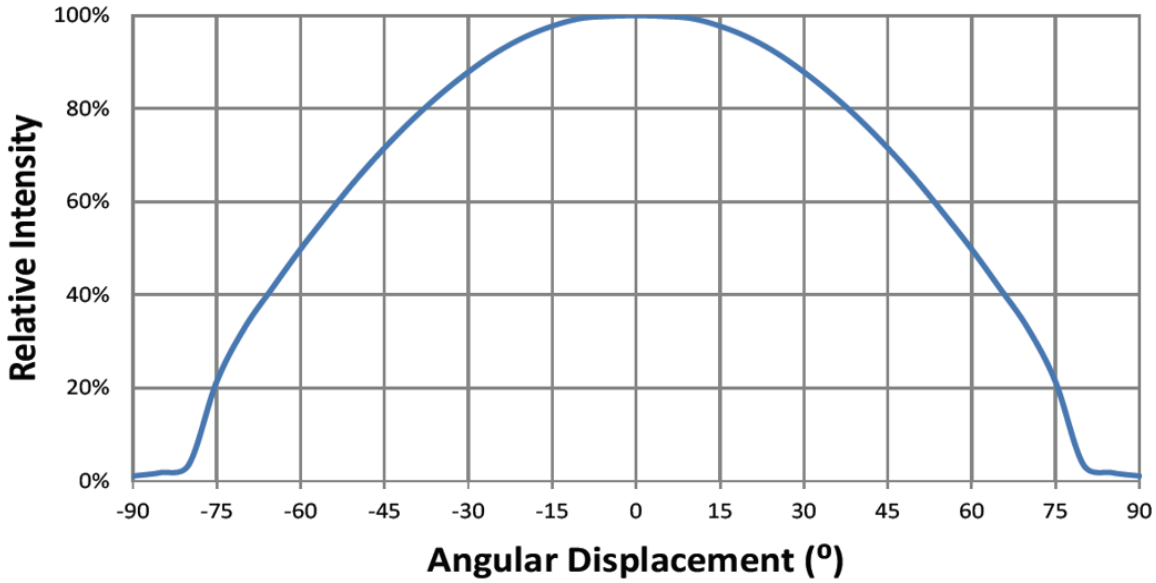
luminous flux tolerance is ± 10%

Characteristic Curves

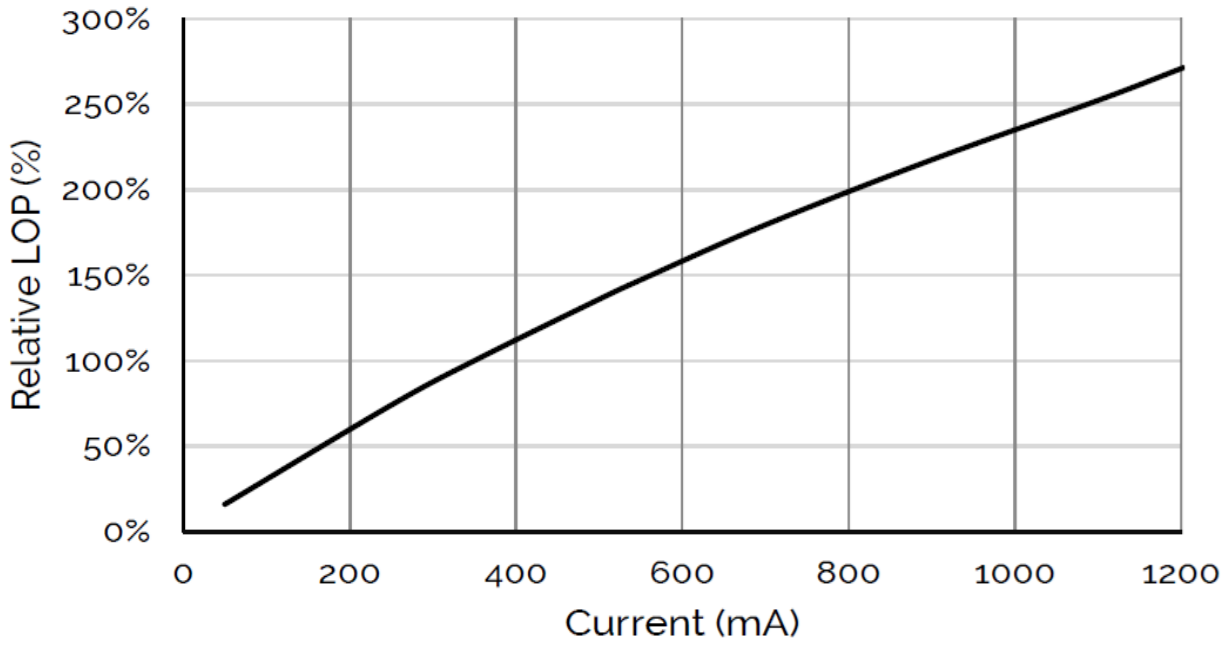
(1) Color Spectrum



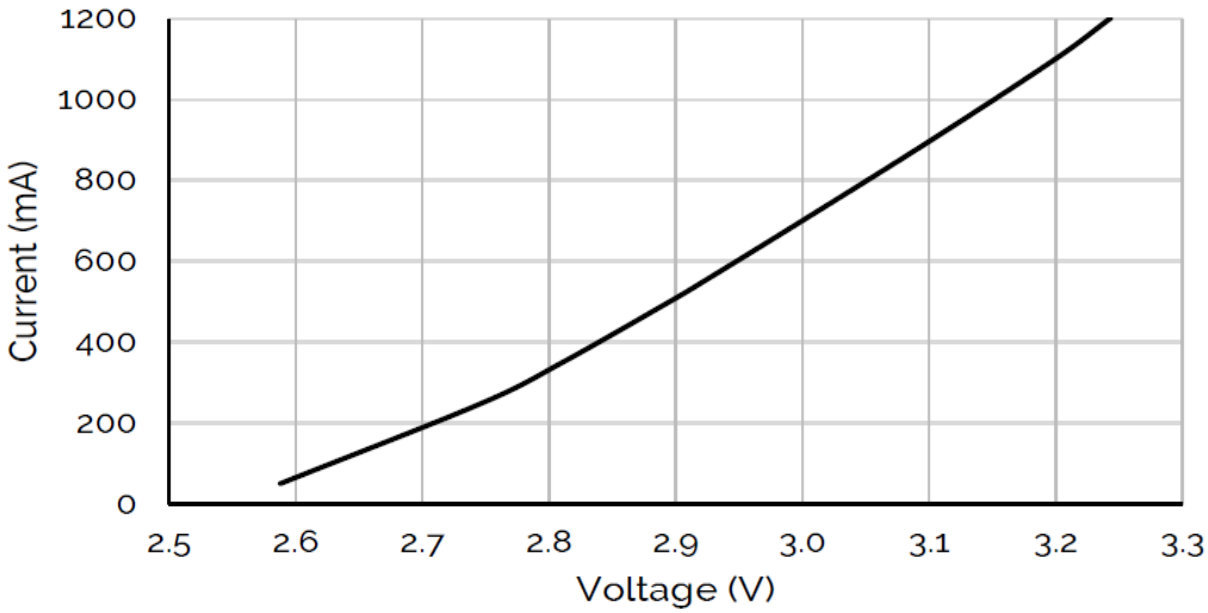
(2). Typical Representative Spatial Radiation Pattern



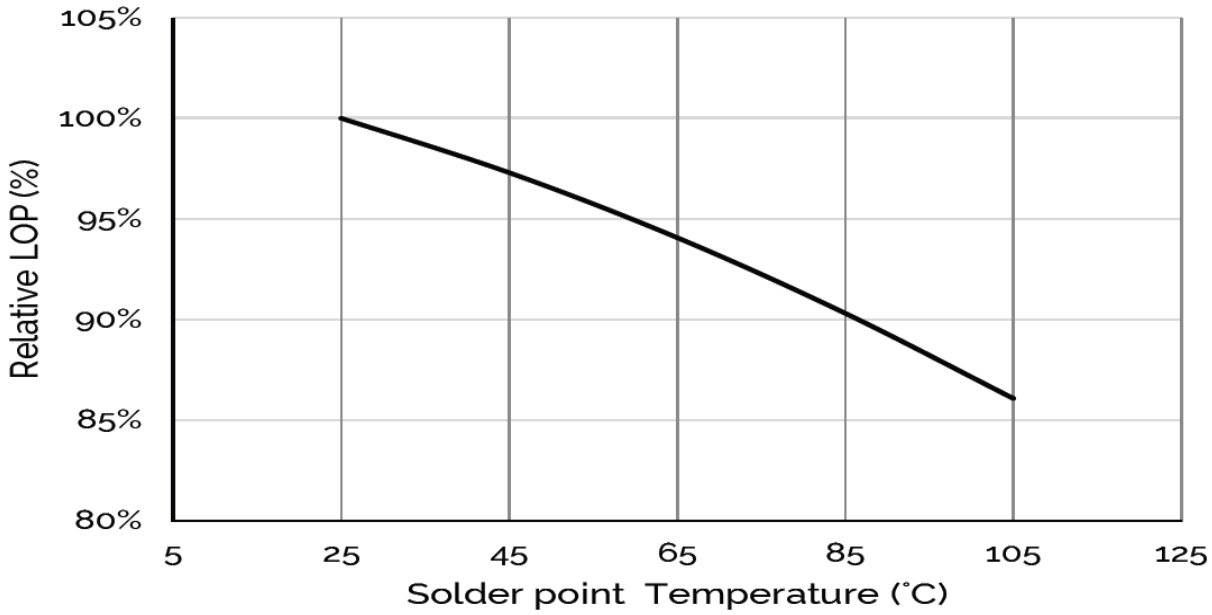
(3). Forward Current Characteristics



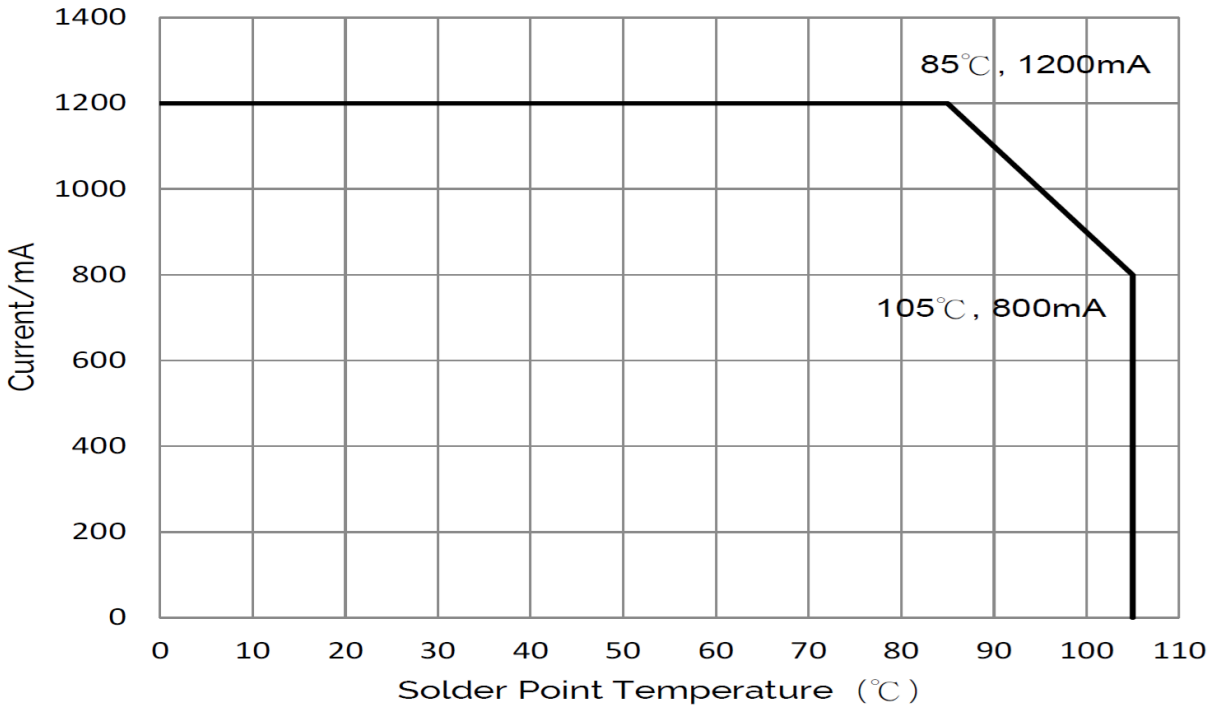
(4). Forward Current vs Forward Voltage



(5). Typical Relative Flux vs. Solder Point Temperature_350mA



(6). Drive Current vs Solder Point Temperature



■ Reliability test:

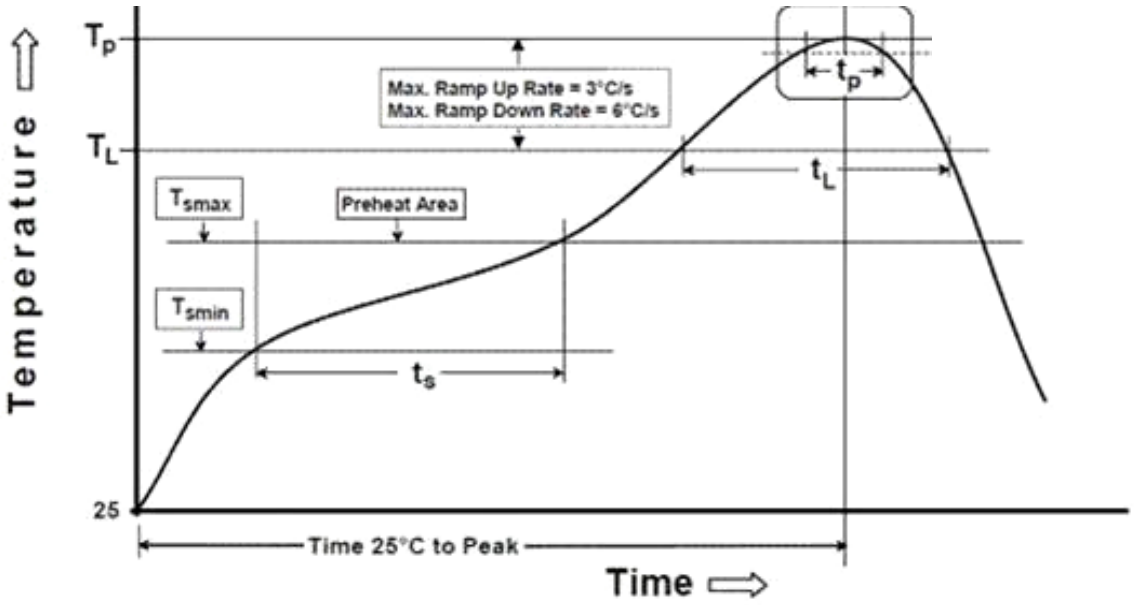
No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25℃ Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60℃	60℃ Operating	1000 Hrs	20 pcs
4	Steady State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

■ Judgment Criteria:

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

Solder Profile:

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

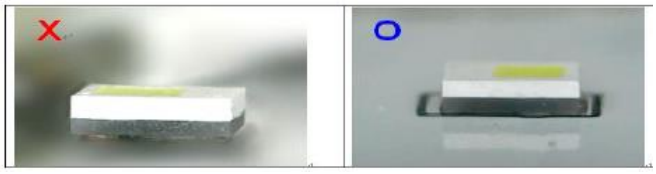


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100℃	150℃
Temperature Max(T_{smax})	150℃	200℃
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_P)	3℃/second max.	3℃/second max.
Liquidous Temperature(T_L)	183℃	217℃
Time(t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature(T_P)	235℃	250℃
Time within 5℃ of Actual Peak temperature (t_p)	20seconds*	30 seconds*
Ramp-down rate(T_P to T_L)	6℃/second max.	6℃/second max.
Time 25℃ 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.		

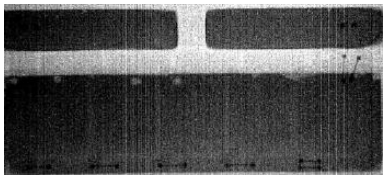
The selection of nozzle for SMT:
If the nozzle is not suitable for the sample, it drops easily, when it is picked up. Recommended nozzle size is as the following list.

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.

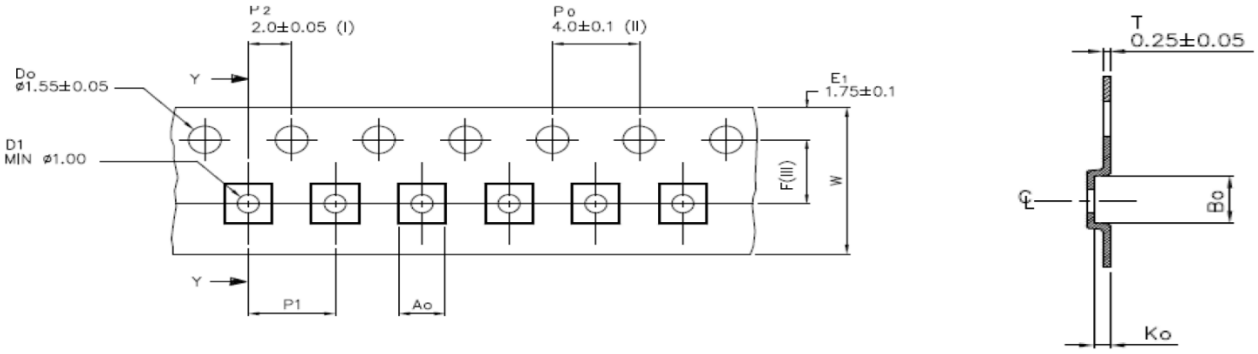
- After LEDs have been soldered, strongly recommend not to repair to keep the LEDs performance.
- Thicker solder will induce higher heat resistance. Thickness of solder is recommended to be thinner than 75um, at least 100um.



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

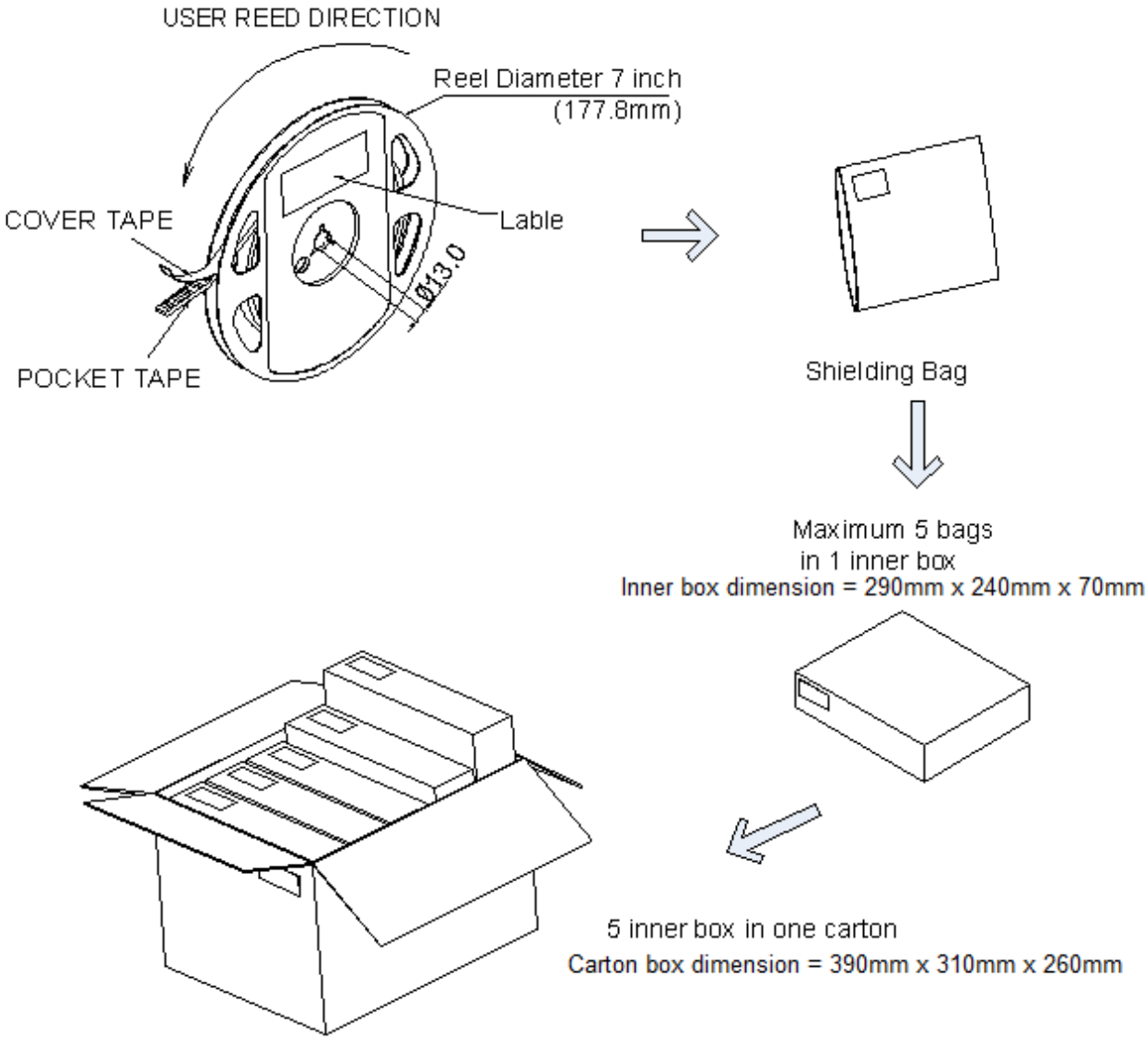


Taping & Packing:



Ao	Bo	Ko	F	P1	W
2.20±0.05	2.2±0.05	0.55±0.05	3.5±0.05	4.00±0.10	8.00 + 0.3 - 0.1

Unit : mm


USER REED DIRECTION
Reel Diameter 7 inch
(177.8mm)
COVER TAPE
Lable
Ø13.0
POCKET TAPE
Shielding Bag
Maximum 5 bags
in 1 inner box
Inner box dimension = 290mm x 240mm x 70mm
5 inner box in one carton
Carton box dimension = 390mm x 310mm x 260mm

■ Precautions

CAUTION: CHEMICAL EXPOSURE HAZARD
Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the CSP.

CAUTION: EYE SAFETY
Eye safety classification for the use of Bridgelux CSP is in accordance with IEC specification 62471: Photobiological Safety of Lamps and Lamp Systems. Most of Bridgelux CSPs are classified as Risk Group Exempt or Risk Group 1 in accordance with IEC specification 62471. However, the CSP LEDs will be classified as Risk Group 2 when operated at high power conditions with high ratio blue wavelength in the emission spectrum depending on characteristics. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely.

CAUTION: RISK OF BURN
Do not touch the CSP LES during operation. Allow the CSP to cool for a sufficient period of time before handling. The CSP may reach elevated temperatures such that could burn skin when touched.

Optical Source Models
Please contact your Bridgelux sales representative for assistance.

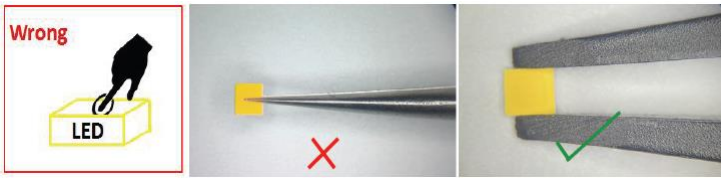
Disclaimers

MINOR PRODUCT CHANGE POLICY
The rigorous qualification testing on products offered by Bridgelux provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Bridgelux continues product optimization

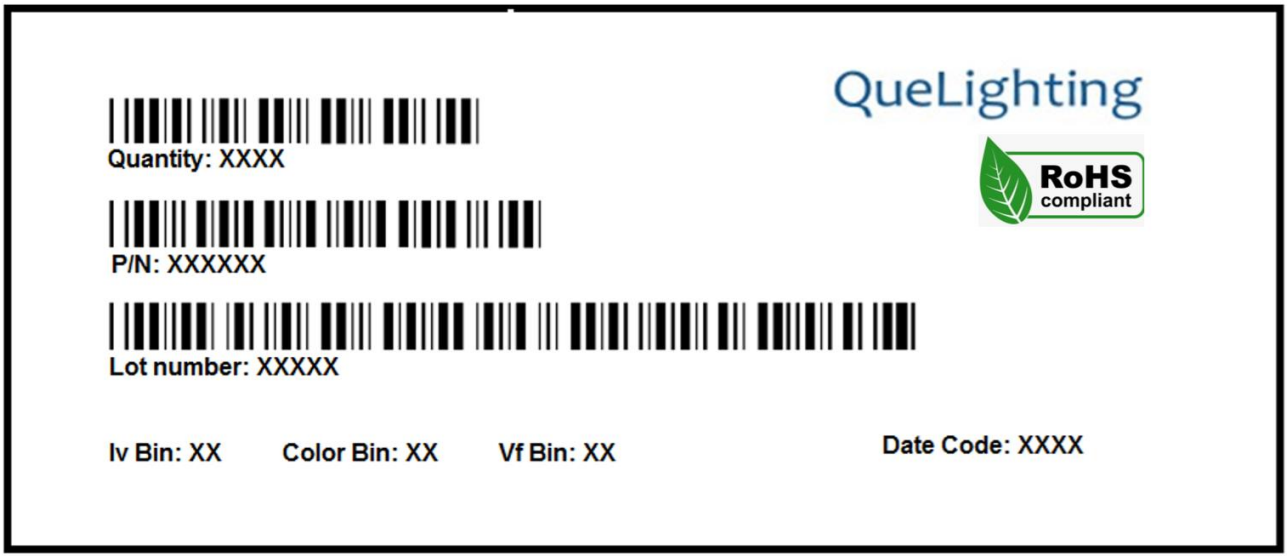
STANDARD TEST CONDITIONS
Unless otherwise stated, LED emitter testing is performed at the nominal drive current.

CAUTION: PICK AND PLACE
Recommend using Teflon material for nozzle. Sharp steel material must not be used as pick up tools.

CAUTION



Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP35WXWU		5000pcs

Revision History:

Revision Date:	Changes:	Version #:
02-10-2024	Initial release	1.0