QUELIGHTING

Sustainable Lighting Solution

QLSP04WXL
High brightness

Product Outline:

This high output reflector type 3030 LEDs are available in warm /neutral / pure and cold white to suit customer's application. These 0.6W LEDs are equipped with heat sink to enhance operating performance. With special binning technology, these LEDs are ideal for architecture lighting and special lighting needs.

Features:

- High brightness output @ 65mA, max current is 200mA
- Package Dimension = 3.2mmX3.0mmX0.6mm
- CRI = 80 and above
- Available in warm/neutral/pure and cold white
- RoHS compliant
- Custom Bin available upon special request

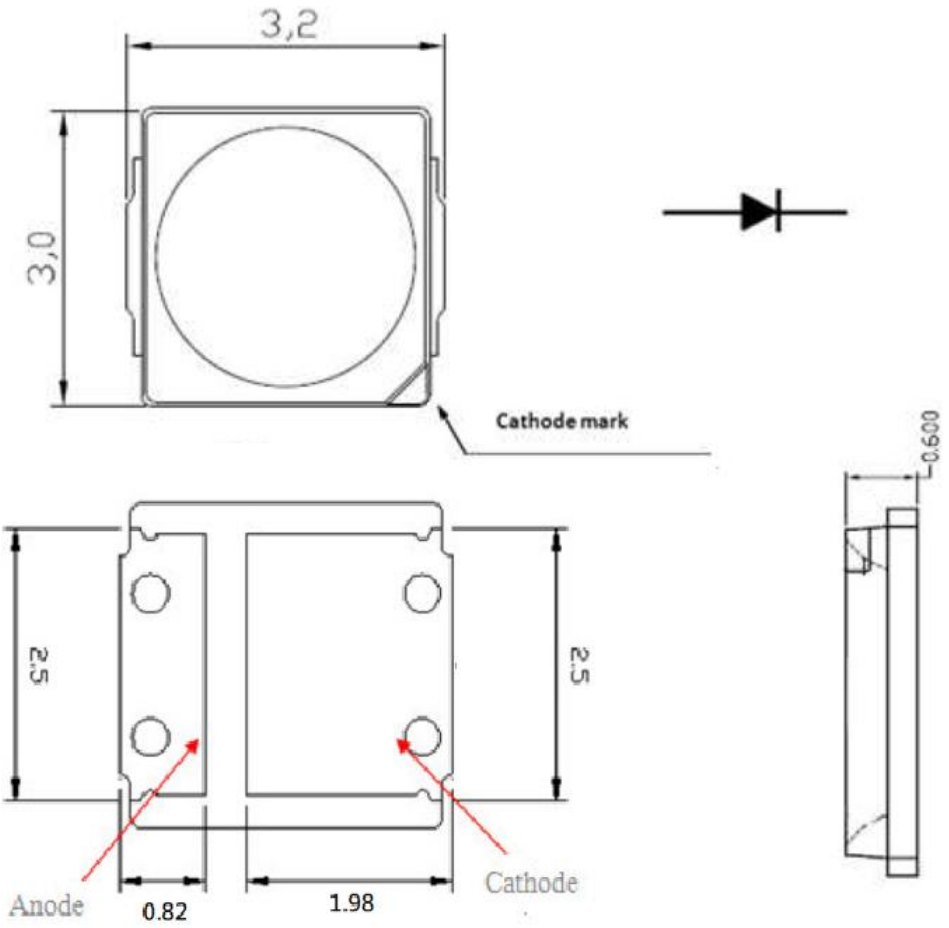
Application:

- Architecture Lighting
- Garden Lighting
- Interior Lighting

Compliance and Certification:

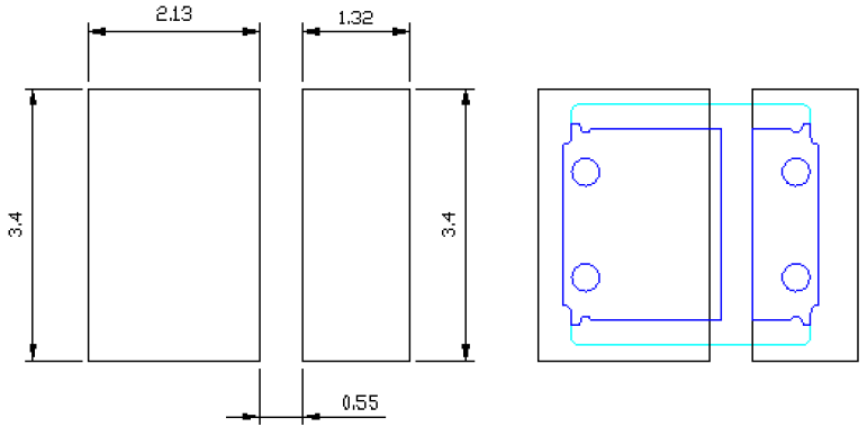
Mechanical Property:

(Dimension)

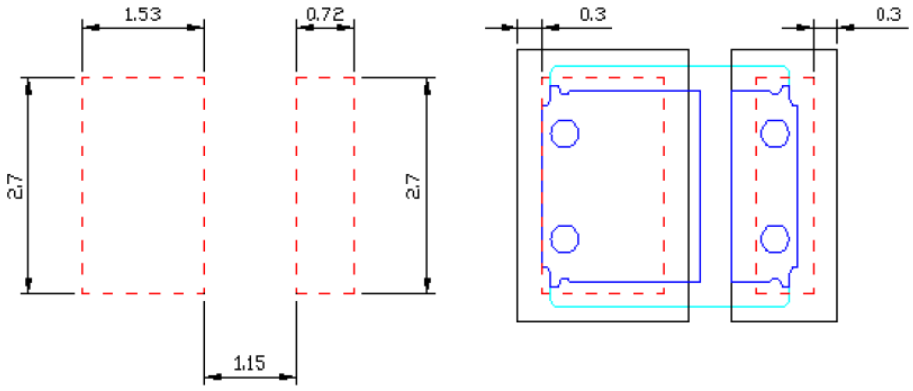


Unit:mm, tolerance:±0.1mm

Recommended Solder footprint:



Solder Pad Design



Stencil Pad Design

■ Electrical / Optical Characteristic

(T=25 °C)

Product	Color	I_F(mA)	V_F(V)		CCT	CRI	Efficiency (typ.)	Luminous Flux(lm)	
			Typ.	Max	Typ.(K)		Lm/W	min	typ.
QLSP04WW1L	Warm White	65	2.9	3.2	2700	80	**151**	25	29
QLSP04WW2L	Warm White	65	2.9	3.2	3000	80	**159**	25	29
QLSP04WNL	Netural White	65	2.9	3.2	4000	80	**164**	25	30
QLSP04WPL	Pure White	65	2.9	3.2	5000	80	**166**	28	31
QLSP04WC1L	Cold White	65	2.9	3.2	5700	80	**166**	28	31
QLSP04WC2L	Cold White	65	2.9	3.2	6500	80	**166**	28	31

(1) The Forward Voltage tolerance is ±0.1V
(2) The Color Rendering Index tolerance is ±2
(3) The luminous flux tolerance is ± 7%

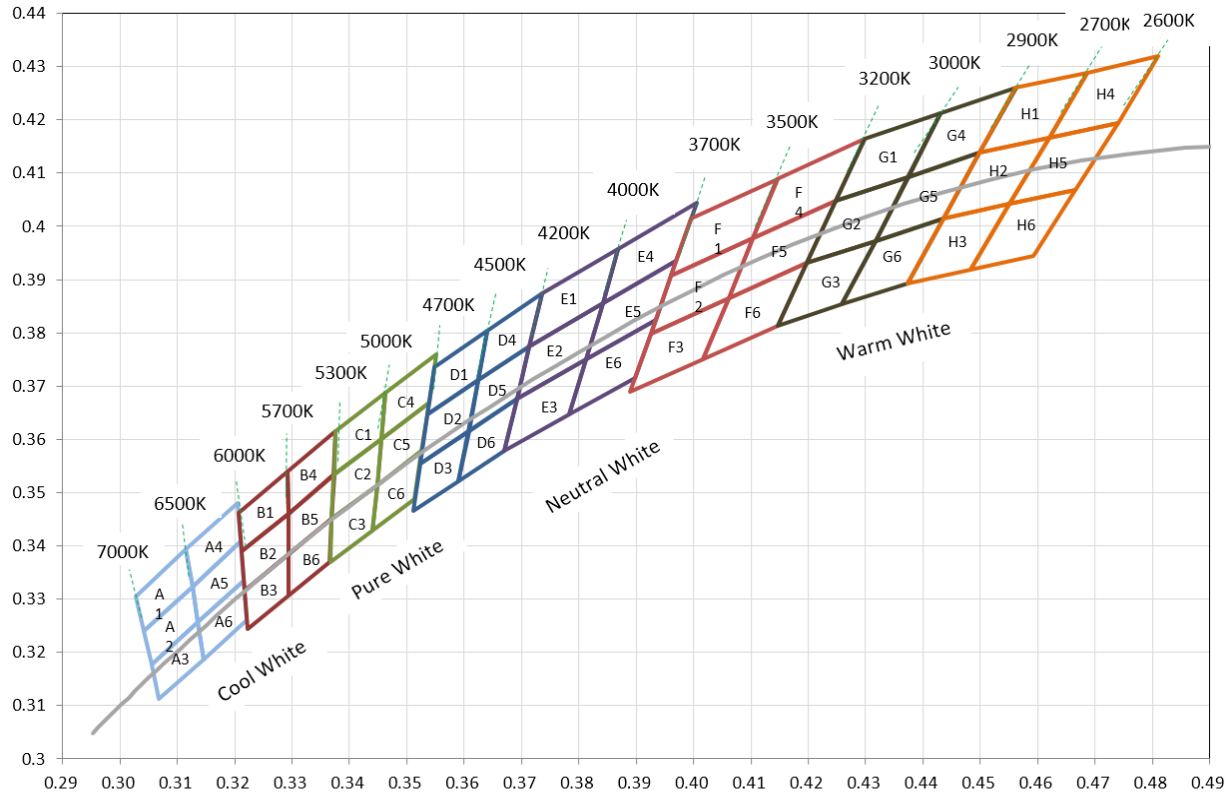
■ Absolute Maximum Rating

(T=25 °C)

Part #	P_d (mW)	I_F (mA)	I_{FP} (mA)*	V_R (V)	T_{OP} (°C)	T_{ST} (°C)	Tj (°C)**	T_{SOL} (°C)***	$R_{th(J-S)}$ (C/W)****
All White	660	200	300	5	-40 – 85	-40 - 100	120	260	16

*Duty 1/10 @ 10Khz
** Junction Temperature
*** IR Reflow for no more than 10 sec @ 260 °C
**** Thermal resistance is calculated from junction to solder

■ White Binning



Warm White

2700~2900K						2600~2700K					
H1		H2		H3		H4		H5		H6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4562	0.426	0.4499	0.4138	0.4436	0.4015	0.4687	0.4289	0.462	0.4166	0.4551	0.4042
0.4499	0.4138	0.4436	0.4015	0.4373	0.3893	0.462	0.4166	0.4551	0.4042	0.4483	0.3919
0.462	0.4166	0.4551	0.4042	0.4483	0.3919	0.474	0.4194	0.4666	0.4069	0.4593	0.3944
0.4687	0.4289	0.462	0.4166	0.4551	0.4042	0.481	0.4319	0.474	0.4194	0.4666	0.4069
0.4562	0.426	0.4499	0.4138	0.4436	0.4015	0.4687	0.4289	0.462	0.4166	0.4551	0.4042

3000~3200K						2900~3000K					
G1		G2		G3		G4		G5		G6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4299	0.4165	0.4248	0.4048	0.4198	0.3931	0.443	0.4212	0.4374	0.4093	0.4317	0.3973
0.4248	0.4048	0.4198	0.3931	0.4147	0.3814	0.4374	0.4093	0.4317	0.3973	0.4259	0.3853
0.4374	0.4093	0.4317	0.3973	0.4259	0.3853	0.4499	0.4138	0.4436	0.4015	0.4373	0.3893
0.443	0.4212	0.4374	0.4093	0.4317	0.3973	0.4562	0.426	0.4499	0.4138	0.4436	0.4015
0.4299	0.4165	0.4248	0.4048	0.4198	0.3931	0.443	0.4212	0.4374	0.4093	0.4317	0.3973

Neutral White

4000~4200K						3700~4000K					
E1		E2		E3		E4		E5		E6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3736	0.3874	0.3714	0.3775	0.3692	0.3677	0.3869	0.3958	0.3842	0.3855	0.3813	0.3751
0.3714	0.3775	0.3692	0.3677	0.367	0.3578	0.3842	0.3855	0.3813	0.3751	0.3783	0.3646
0.3842	0.3855	0.3813	0.3751	0.3783	0.3646	0.397	0.3935	0.3934	0.3825	0.3898	0.3716
0.3869	0.3958	0.3842	0.3855	0.3813	0.3751	0.4006	0.4044	0.397	0.3935	0.3934	0.3825
0.3736	0.3874	0.3714	0.3775	0.3692	0.3677	0.3869	0.3958	0.3842	0.3855	0.3813	0.3751

Pure White

5000~5300K						4700~5000K					
C1		C2		C3		C4		C5		C6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3376	0.3616	0.3373	0.3534	0.3369	0.3451	0.3463	0.3687	0.3456	0.3601	0.3448	0.3514
0.3373	0.3534	0.3369	0.3451	0.3366	0.3369	0.3456	0.3601	0.3448	0.3514	0.344	0.3428
0.3456	0.3601	0.3448	0.3514	0.344	0.3428	0.3539	0.3669	0.3526	0.3578	0.3514	0.3487
0.3463	0.3687	0.3456	0.3601	0.3448	0.3514	0.3552	0.376	0.3539	0.3669	0.3526	0.3578
0.3376	0.3616	0.3373	0.3534	0.3369	0.3451	0.3463	0.3687	0.3456	0.3601	0.3448	0.3514

Cold White

6500~7000K						6000~6500K					
A1		A2		A3		A4		A5		A6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3028	0.3304	0.3041	0.324	0.3055	0.3177	0.3115	0.3393	0.3126	0.3324	0.3136	0.3256
0.3041	0.324	0.3055	0.3177	0.3068	0.3113	0.3126	0.3324	0.3136	0.3256	0.3146	0.3187
0.3126	0.3324	0.3136	0.3256	0.3146	0.3187	0.321	0.3408	0.3216	0.3334	0.3221	0.3261
0.3115	0.3393	0.3126	0.3324	0.3136	0.3256	0.3205	0.3481	0.321	0.3408	0.3216	0.3334
0.3028	0.3304	0.3041	0.324	0.3055	0.3177	0.3115	0.3393	0.3126	0.3324	0.3136	0.3256

Note :

(1). Correlated color temperature is derived from the CIE 1931 Chromaticity diagram
(2). Correspond with ANSI color temperature binning
(3). Measurement tolerance is +/- 0.01

Forward Voltage (V_F) Bin:

VF rank			
Code name	**Condition**	**Low**	**High**
9	65mA	2.7	2.8
0	65mA	2.8	2.9
1	65mA	2.9	3
2	65mA	3	3.1
3	65mA	3.1	3.2

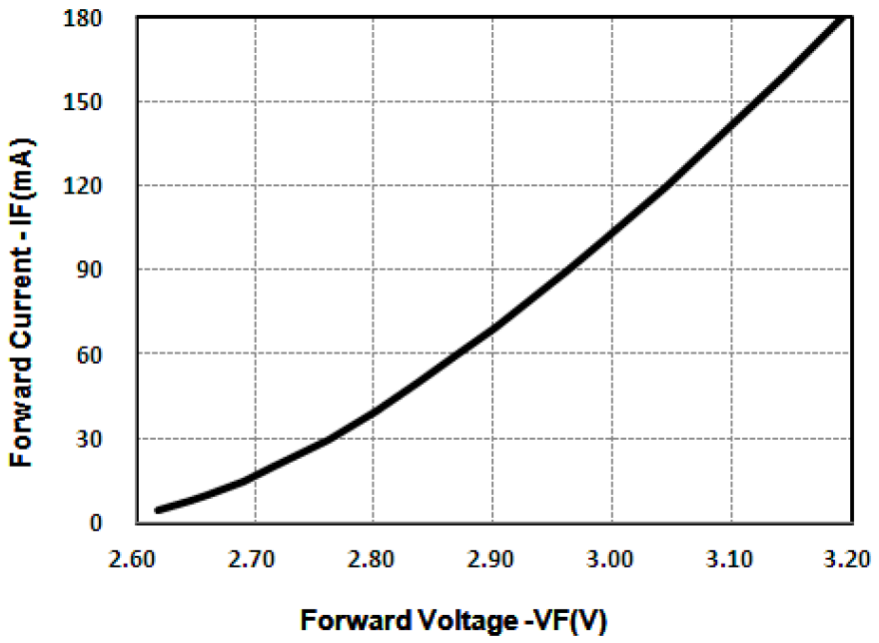
The forward voltage tolerance is ± 0.1V

Luminous Flux Bin:

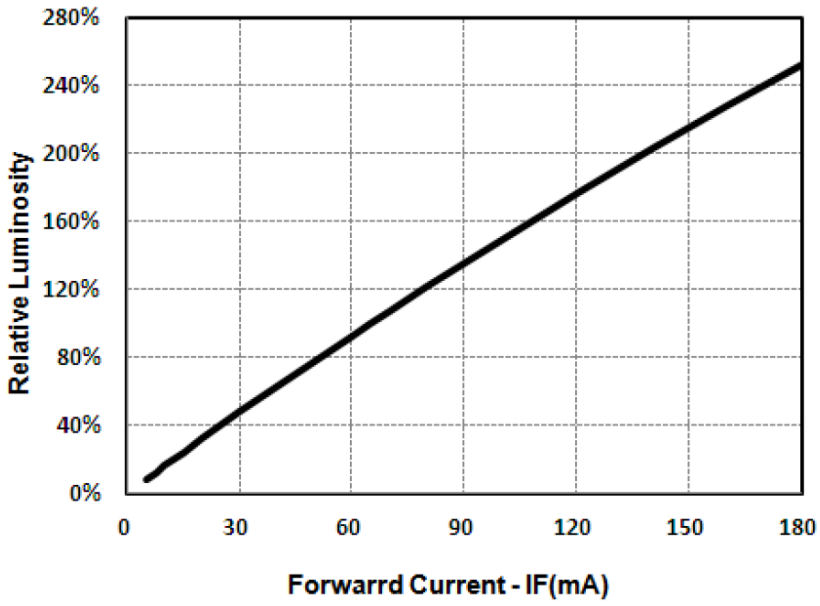
lm rank (lm)			
Code name	**Condition**	**Low**	**High**
QL	65mA	25	28
QM	65mA	28	31.5
QN	65mA	31.5	36

luminous flux tolerance is ± 7%

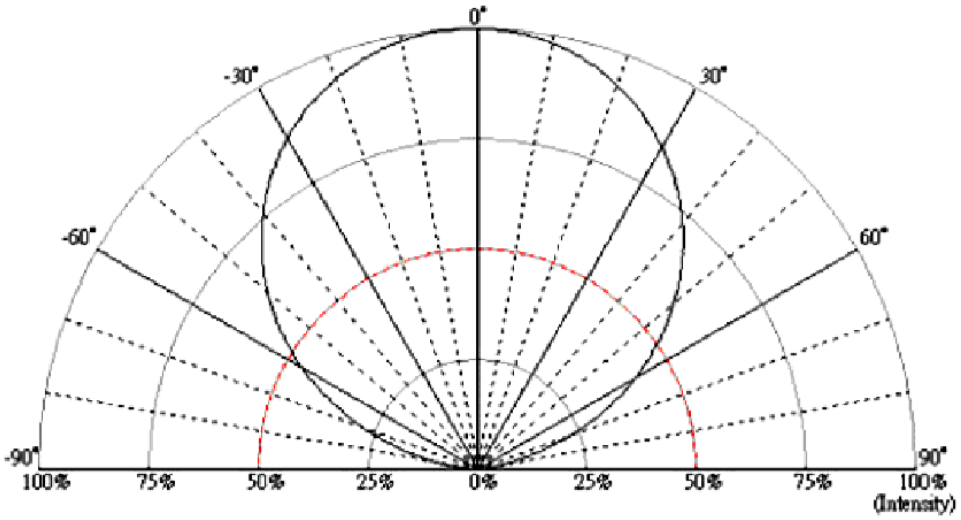
Characteristic Curves



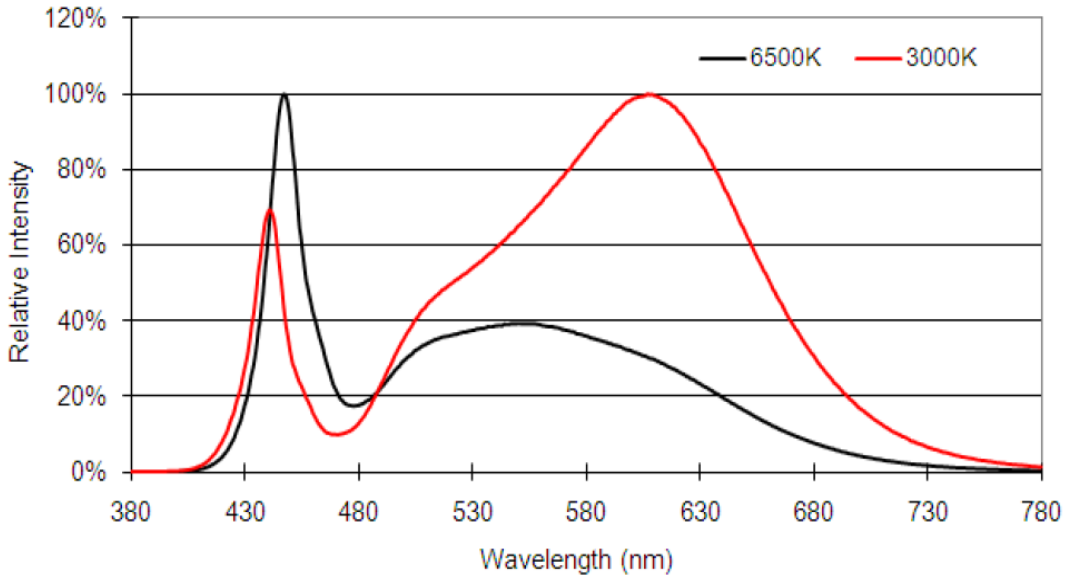
Forward Voltage vs. Forward Current



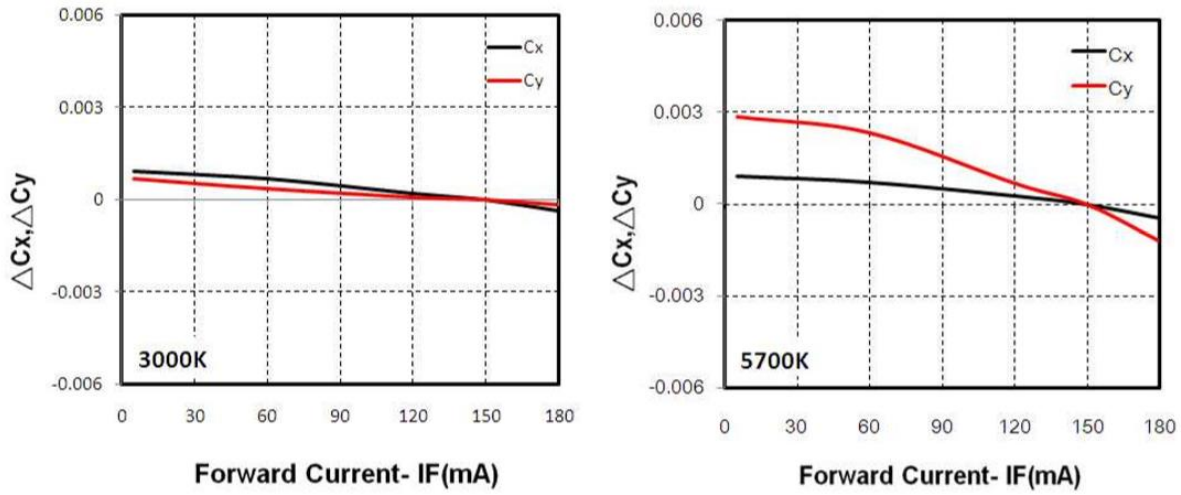
Forward current vs. Relative luminous intensity



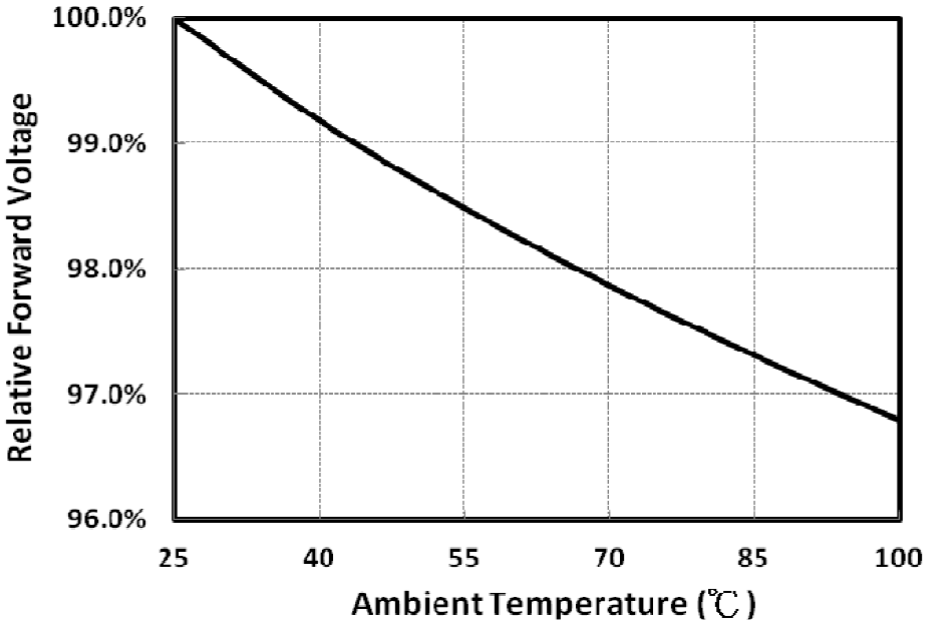
Radiation Pattern



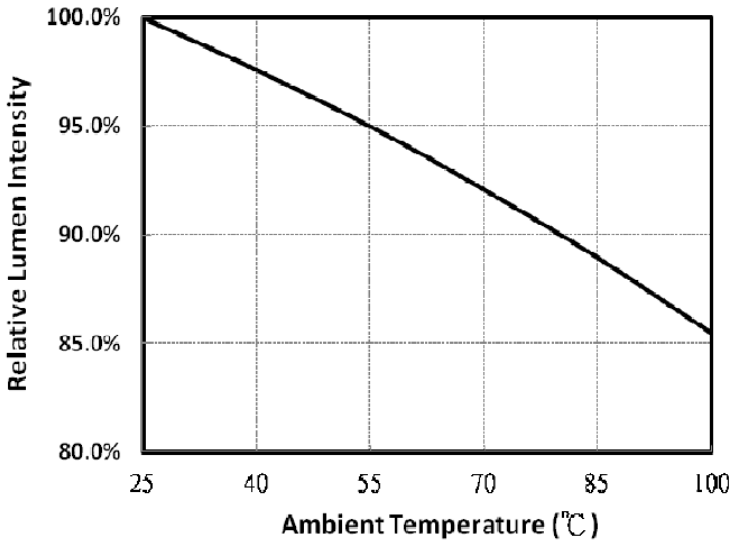
Spectrum Distribution



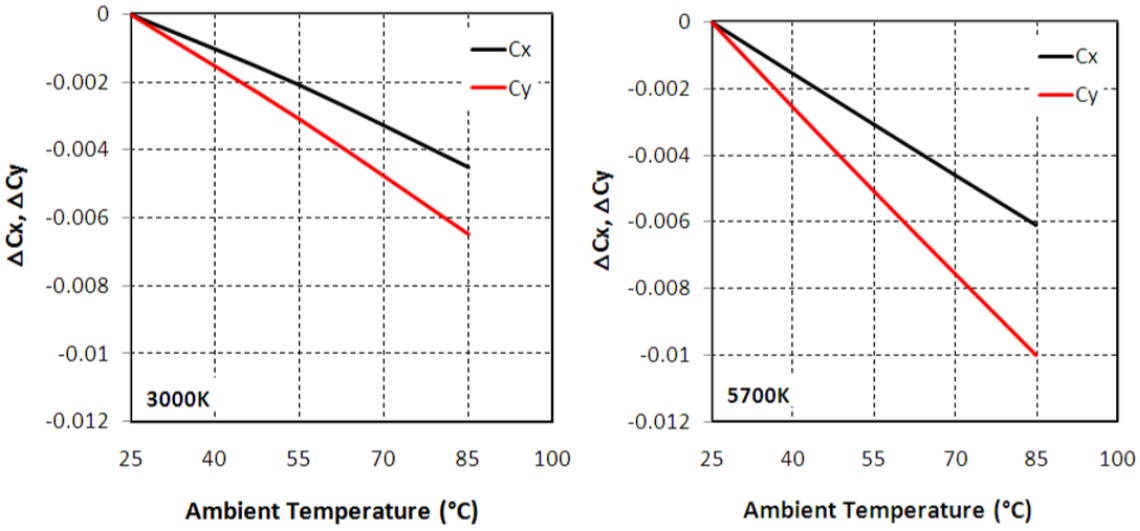
Forward Current vs. Chromaticity Coordinate



Relative Forward Voltage vs Ambient Temperature



Relative Luminous Intensity vs Ambient Temperature



Chromaticity vs. Ambient 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	200 mA	△Vf< 10%
Luminous Flux	Iv	200 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):

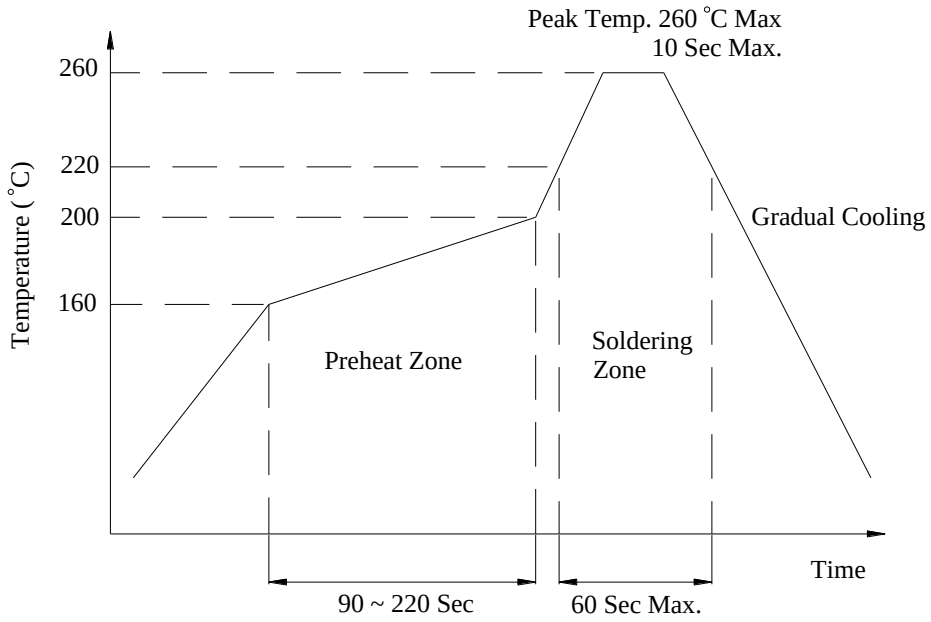
- When soldering LEDs,
- Do not solder/reflow the same LED over two times.
- Recommend soldering conditions:

  Hand soldering: 350 ℃ max , 3 sec. max.

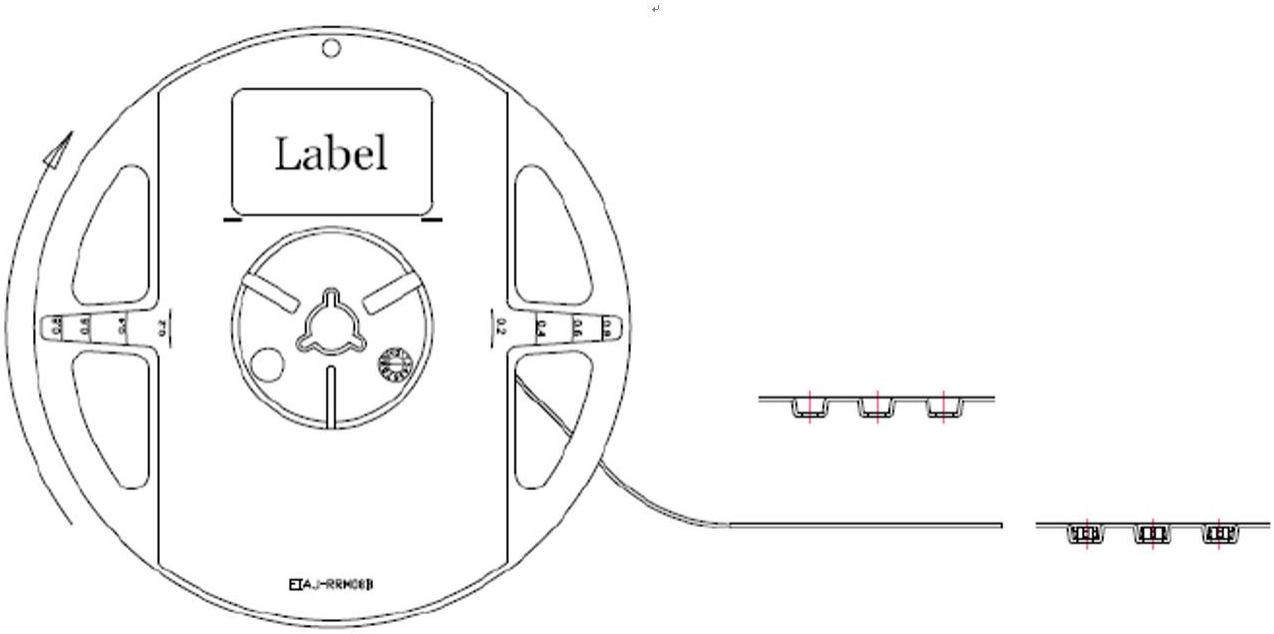
  Reflow soldering: Pre-heat 150 max , 180 sec. max. ℃

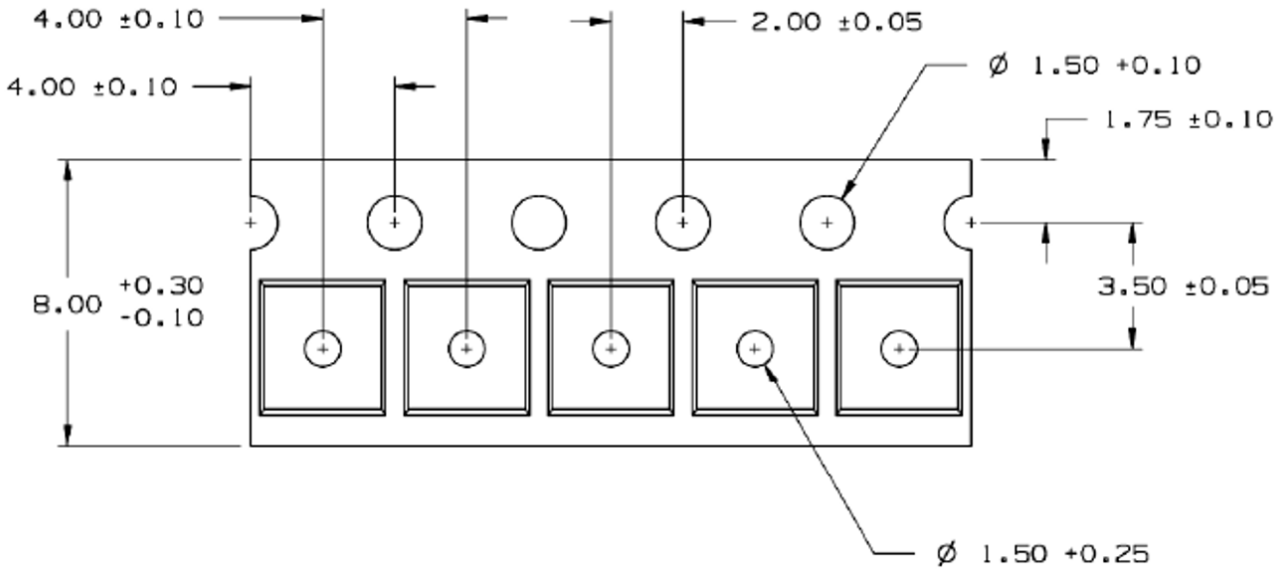
  Peak 260 ma ℃ x , 10 sec. max.

- Reflow temperature profile as below: (lead-free solder)
-

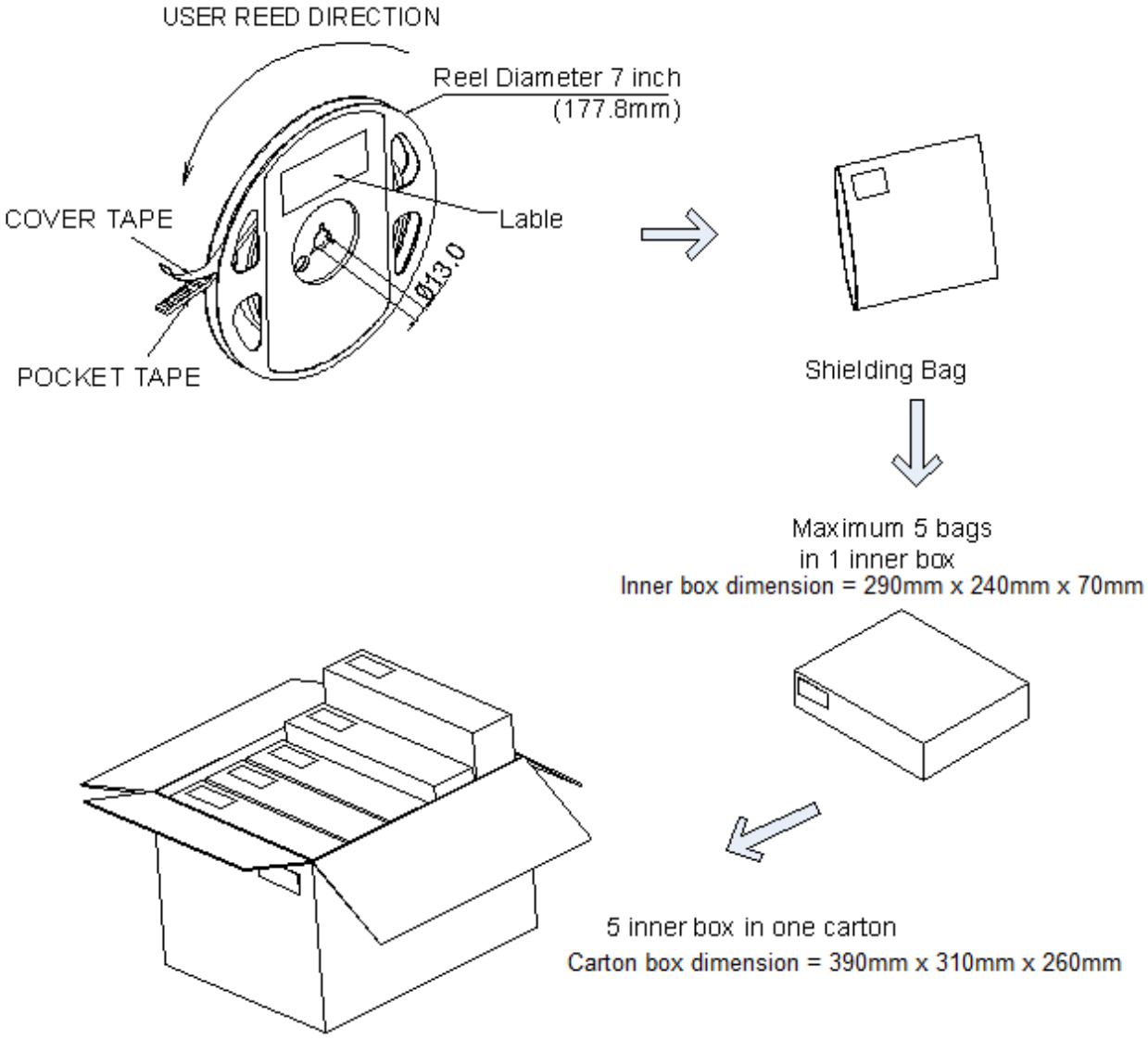


■ Taping & Packing:



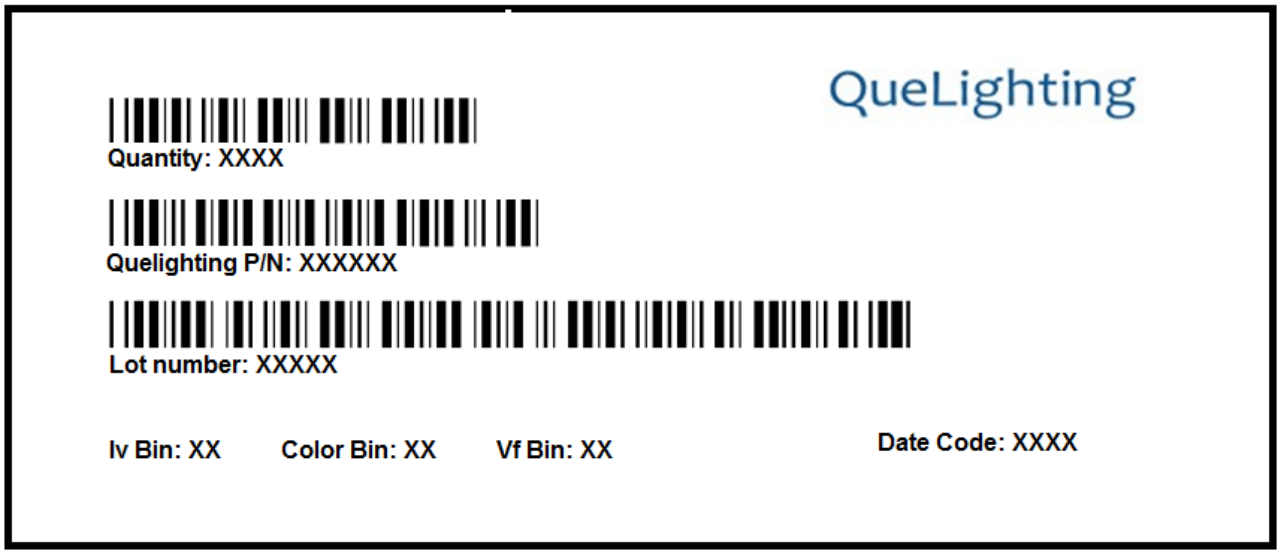


Unit : mm


USER REED DIRECTION
Reel Diameter 7 inch
(177.8mm)
COVER TAPE
Lable
ϕ13.0
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

Unit : mm

Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP04WXL		2000 pcs

Revision History:

Revision Date:	Changes:	Version #:
09-25-2020	Initial release	1.0