



QLSP18XXAU-310
(High Power 1616 LED)



Product Outline:

QLSP18XXAU series are high power LEDs that bring high performance and quality of light to wide range of lighting application. The lighting application such as cation light, decoration light, signal, specific industrial and commercial lighting.

Features:

- High brightness output @ 350mA,
- High driving current to 1000mA
- Package Dimension = 1.6mmX1.6mmX1.5mm
- Low thermal resistance : <6°C/W
- ESD protection up to 4KV
- RoHS compliant
- Custom Bin available upon special request

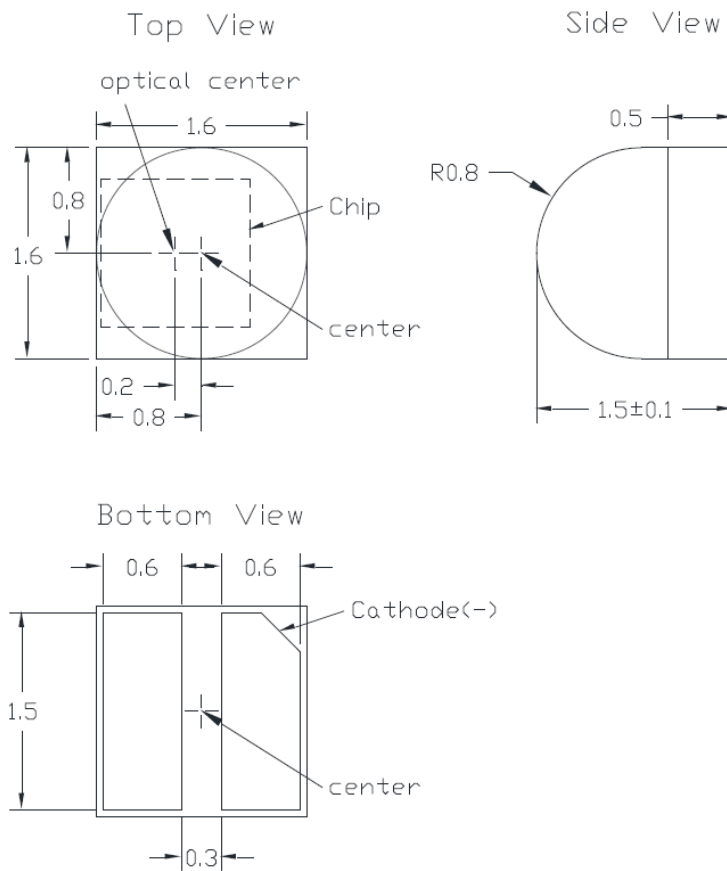
Application:

- Architecture Lighting
- Garden Lighting
- Exterior Automotive Lighting
- Warming lamp
- Indoor Lighting
- Outdoor Lighting

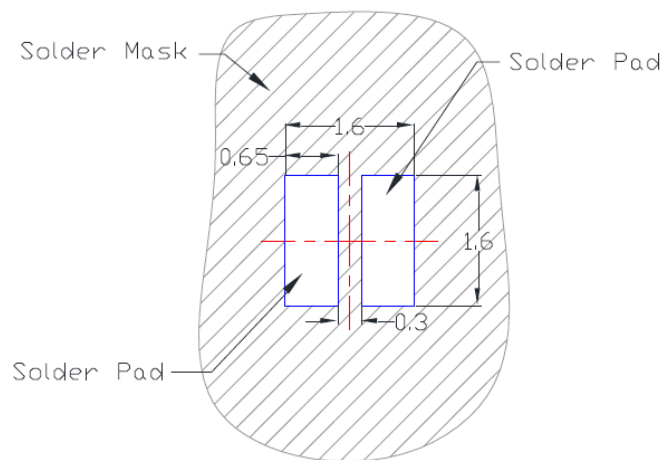
Compliance and Certification:



Mechanical Property: (Dimension)



Recommended Solder footprint:



Electrical / Optical Characteristic

(T=25 °C)

Product	Color	I _F (mA)	V _F (V)		Wavelength nm (CCT)	Luminous Flux(lm)		Refer @ 700mA Typ.(lm)
			Typ.	max		min	typ.	
QLSP18RBAU	Royal Blue	350	3.0	3.4	450~460	9	17	30
QLSP18BAU	Blue	350	3.0	3.4	465~485	31	40	71
QLSP18GAU	Green	350	3.0	3.4	515~535	100	120	210
QLSP18PCAAU	PC Amber	350	3.0	3.4	NA	90	100	180
QLSP18RAU	Red	350	2.2	2.6	615~630	50	70	125
QLSP18CWAU	Cold White	350	3.0	3.4	5000K~6000K	130	150	268

*Tolerance = +/- 7%

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)***
QLSP18RBAU	4000	1000	1300	5	125	-40~90	-40~100	260	6
QLSP18BAU	4000	1000	1300	5	125	-40~90	-40~100	260	6
QLSP18GAU	4000	1000	1300	5	125	-40~90	-40~100	260	6
QLSP18PCAAU	4000	1000	1300	5	125	-40~90	-40~100	260	6
QLSP18RAU	4000	1000	1300	5	125	-40~90	-40~100	260	6
QLSP18CWAU	4000	1000	1300	5	125	-40~90	-40~100	260	6

*Duty 1/10 @ 10Khz

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

*** Junction to substrate

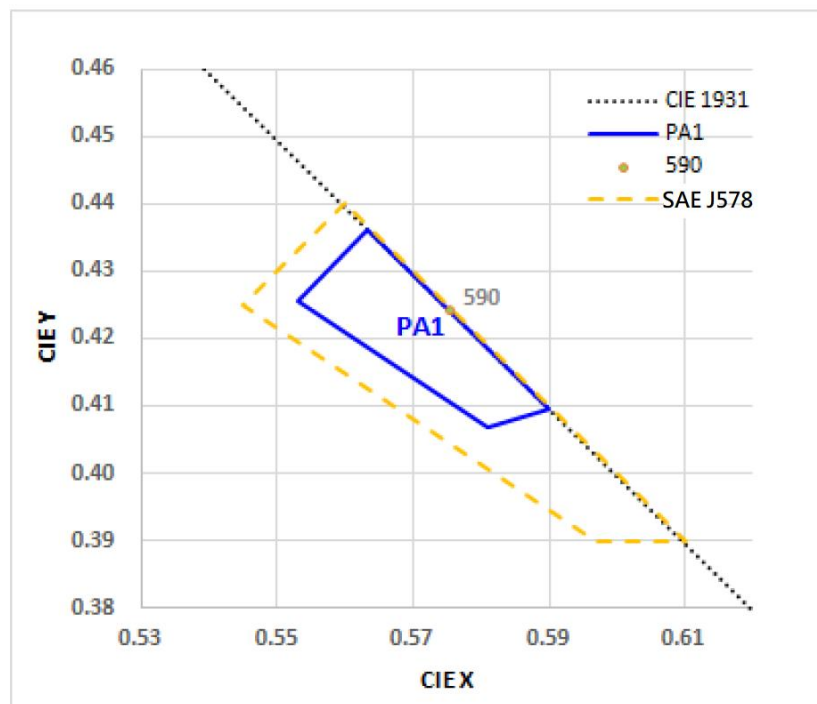


Dominate Wavelength (nm) Bin:

Wd (nm)			
Color	Code name	Min.	Max.
Royal Blue	DA	450	455
	DB	455	460
Blue	DD	465	470
	DE	470	475
	DF	475	480
	DG	480	485
Green	DM	515	520
	DN	520	525
	DP	525	530
Red	A79	610	620
	A89	620	630

Measurement tolerance is +/- 1nm

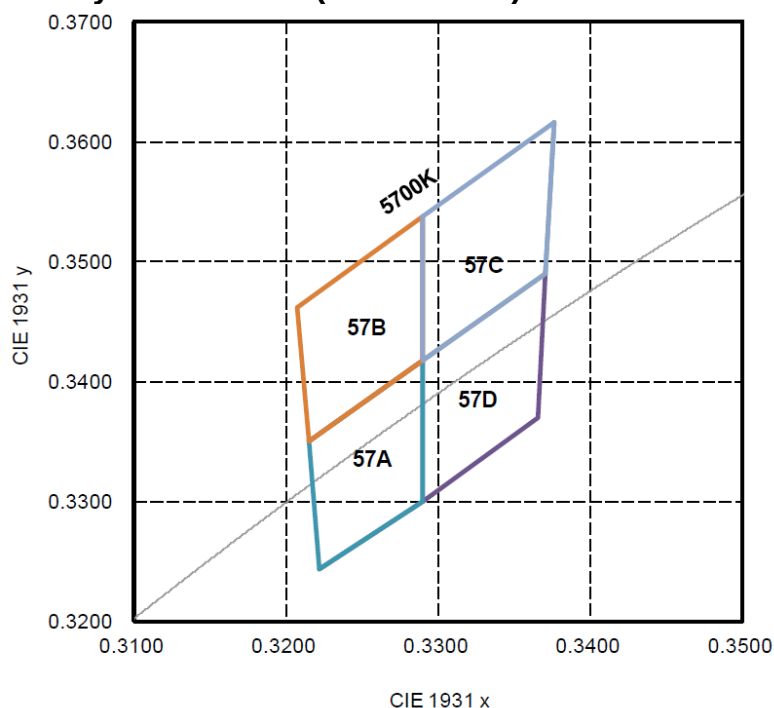
Chromaticity Coordinates (PC Amber)



PC Amber	CIE-X	CIE-Y
PA1	0.5529	0.4257
	0.5811	0.4068
	0.5901	0.4094
	0.5633	0.4362

Note : 1. Correlated color temperature is derived from the CIE 1931chromaticity diagram
2. CIE measurement tolerance is ± 0.007

Chromaticity Coordinates (Cold White)



Rank	CIE-X	CIE-Y	Rank	CIE-X	CIE-Y
57A	0.3215	0.3350	57C	0.3290	0.3538
	0.3290	0.3417		0.3376	0.3616
	0.3290	0.3300		0.3371	0.3490
	0.3222	0.3243		0.3290	0.3417
57B	0.3207	0.3462	57D	0.3290	0.3417
	0.3290	0.3538		0.3371	0.3490
	0.3290	0.3417		0.3366	0.3369
	0.3215	0.3350		0.3290	0.3300

Note : 1. Correlated color temperature is derived from the CIE 1931chromaticity diagram
2. CIE measurement tolerance is ± 0.007



Forward Voltage (VF) Bin:

VF Rank (V)			
Color	Code name	Low	High
Royal Blue/ Blue/ Green/ PC Amber/ Cold White	01	2.8	3.0
	23	3.0	3.2
	45	3.2	3.4
	67	3.4	3.6
Red/	NO	1.6	1.8
	PQ	1.8	2.0
	RS	2.0	2.2
	TU	2.2	2.4
	VW	2.4	2.6

The forward voltage tolerance is $\pm 0.1V$

Luminous Flux Bin:

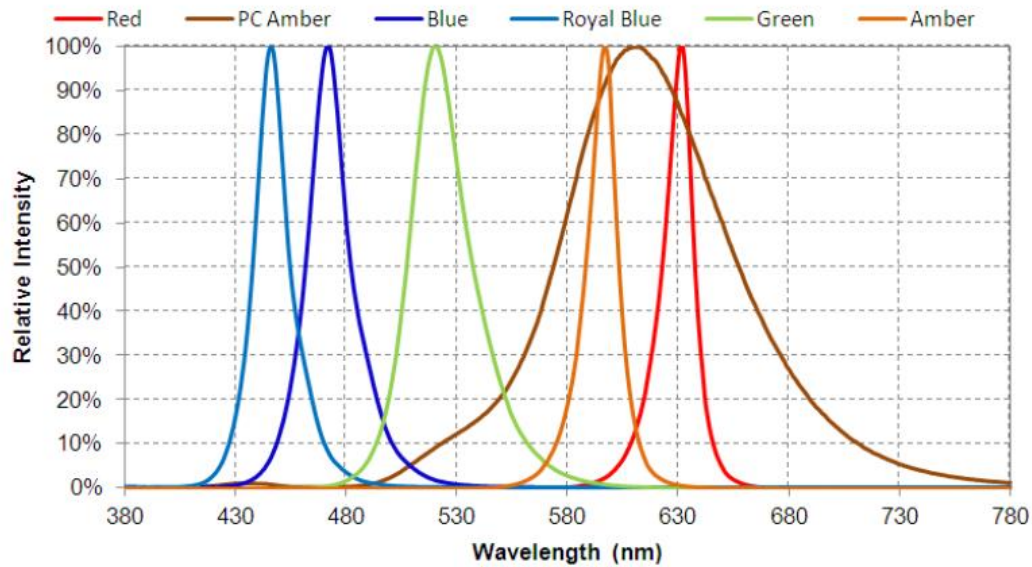
Rank @350mA (lm)			
Color	Code name	Low	High
Royal Blue	QE9	10	20
	QJ9	20	30
	QN9	30	40
Blue	QN9	30	40
	QP9	40	50
Green	QX9	100	110
	QY9	110	120
	QZ9	120	130
PC Amber	QW9	90	100
	QX9	100	110
Red	QS9	50	60
	QT9	60	70
	QU9	70	80
Cold White	Q19	140	150
	Q29	150	160
	Q39	160	170

luminous flux tolerance is $\pm 7\%$

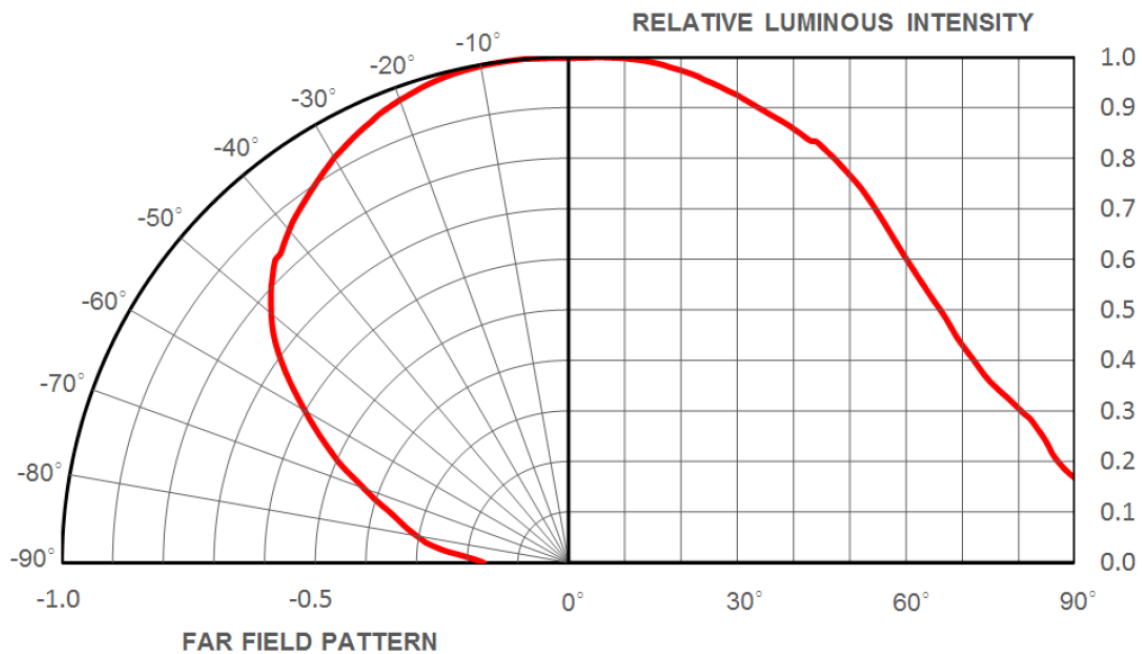


Characteristic Curves

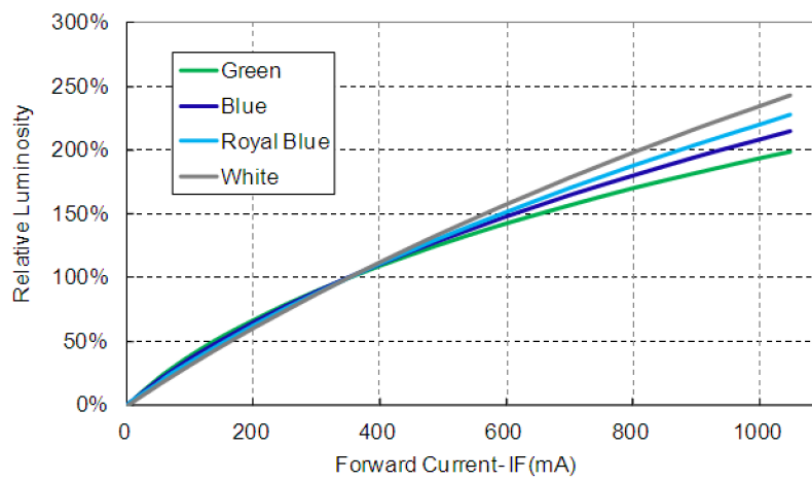
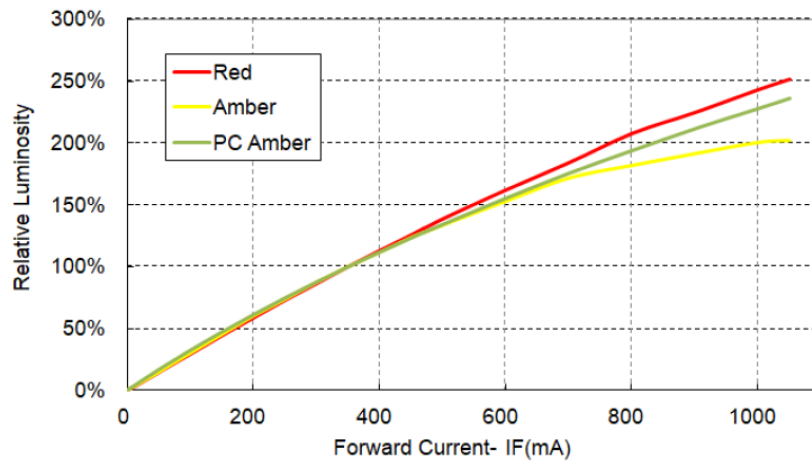
(1) Color Spectrum



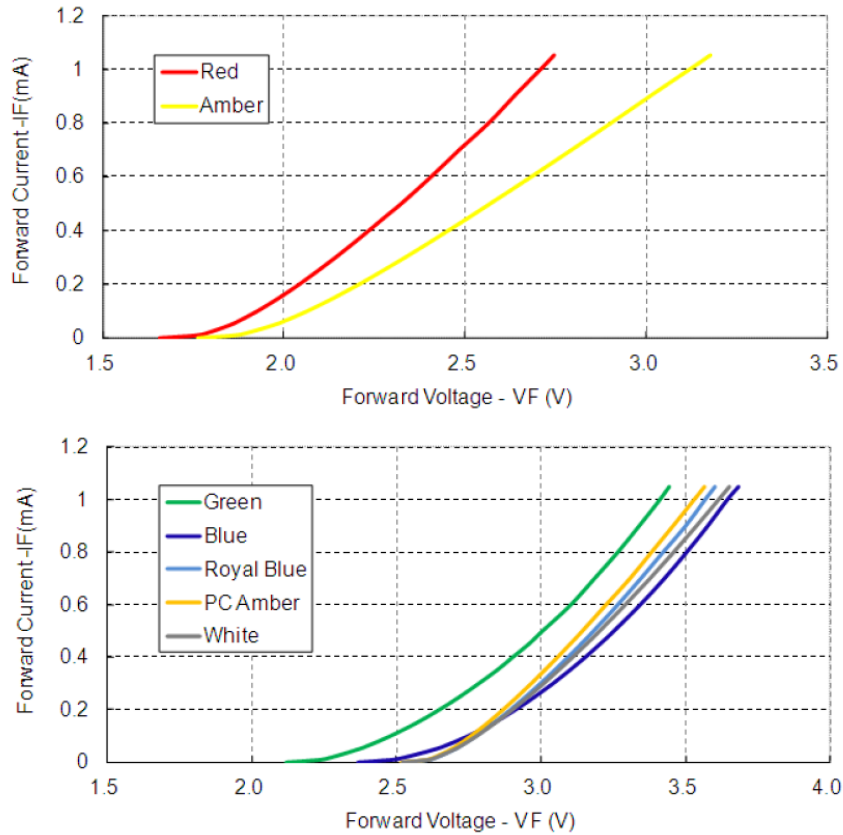
(2). Typical Representative Spatial Radiation Pattern



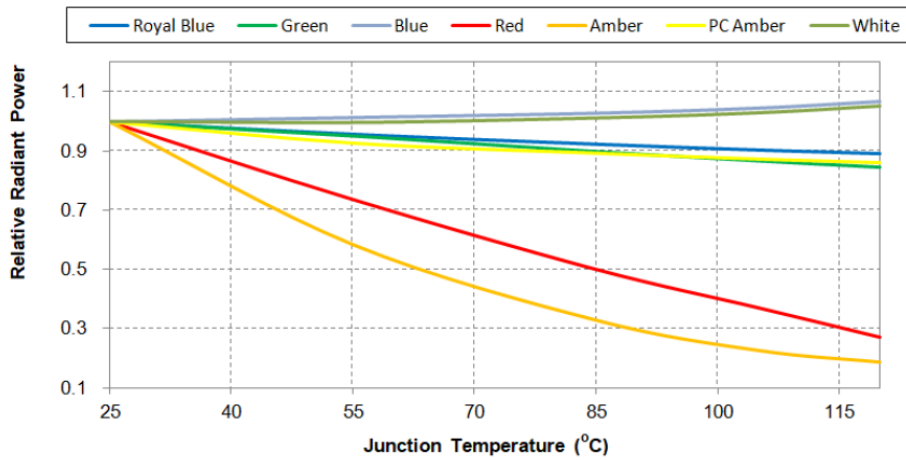
(3). Forward Current Characteristics



(4). Forward Current vs Forward Voltage



(5). Relative light output VS. T_j ($I_F = 350\text{mA}$)



■ 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 Tsltd 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 / 20min~ 5min~100°C /20min	300 Cycle	20 pcs

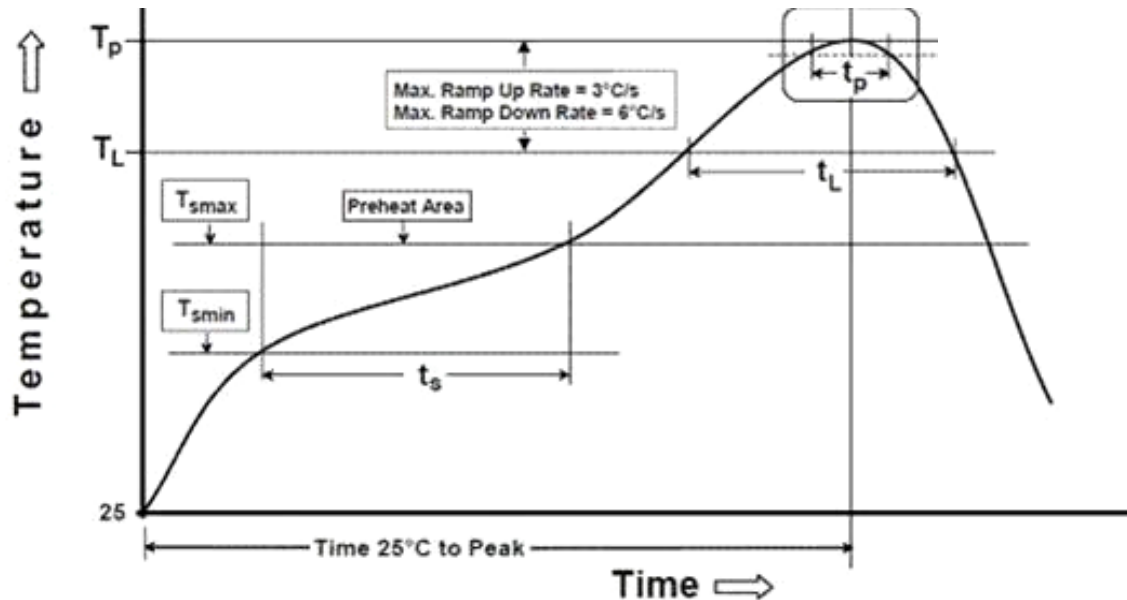
■ Judgment Criteria:

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



Solder Profile:

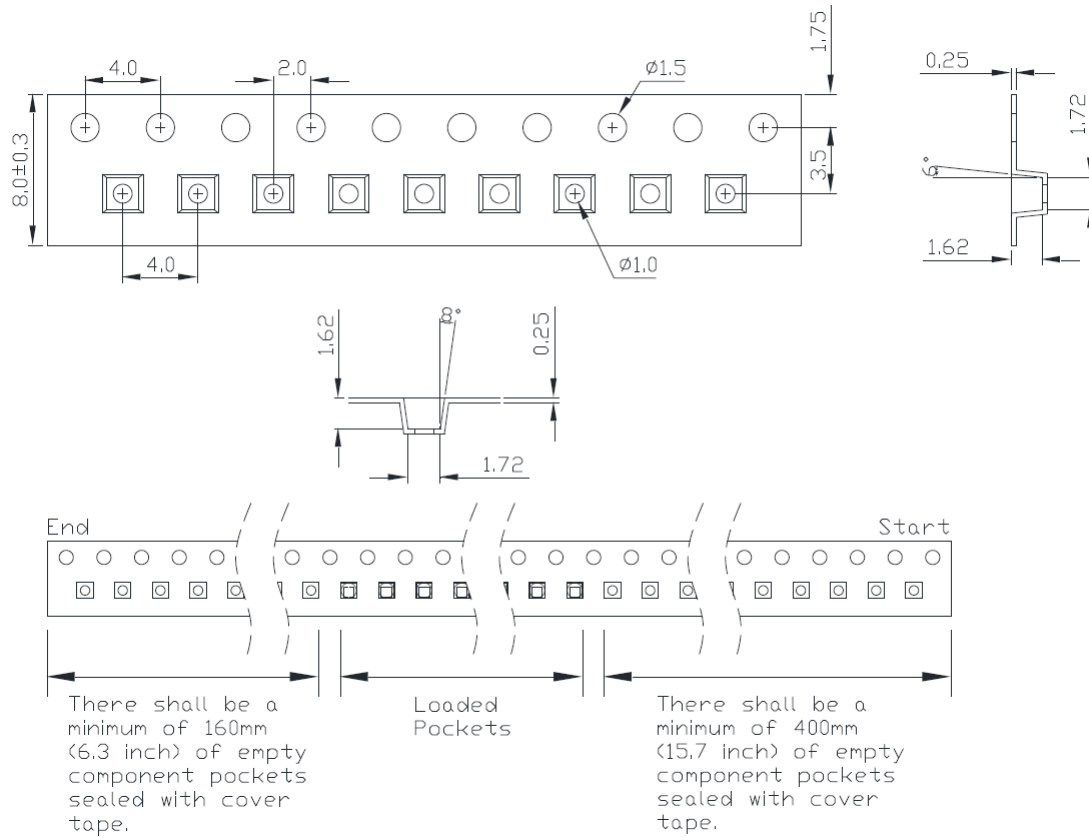
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



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.		



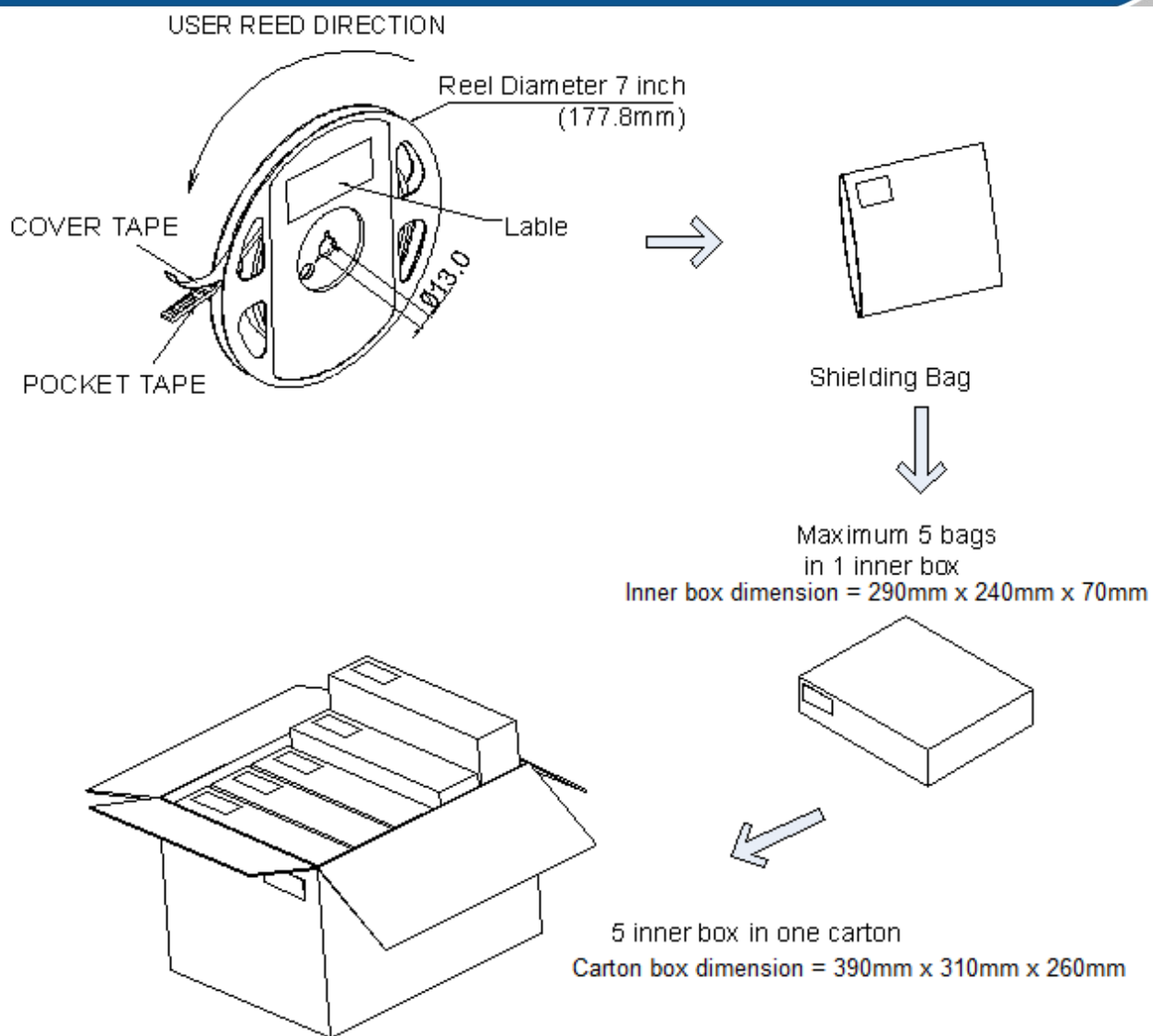
Taping & Packing:



Notes:

1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.10 mm.





Labeling


Quantity: XXXX




Quelighting P/N: XXXXXX


Lot number: XXXXXX

Iv Bin: XX Color Bin: XX Vf Bin: XX

Date Code: XXXX

Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP18XXAU-310		1000/2000 pcs



Revision History:

Revision Date:	Changes:	Version #:
06-16-2021	Initial release	1.0

