QueLighting

QLSP07XXU-XX

(High Power 3535 LEDs)

Product Outline:

QLSP07XXU series are R/G/B LEDs 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 700mA/1000mA
- Package Dimension = 3.5mmX3.5mmX2.2mm
- Low thermal resistance : <6˚C/W
- ESD protection up to 8KV
- RoHS compliant
- Custom Bin available upon special request

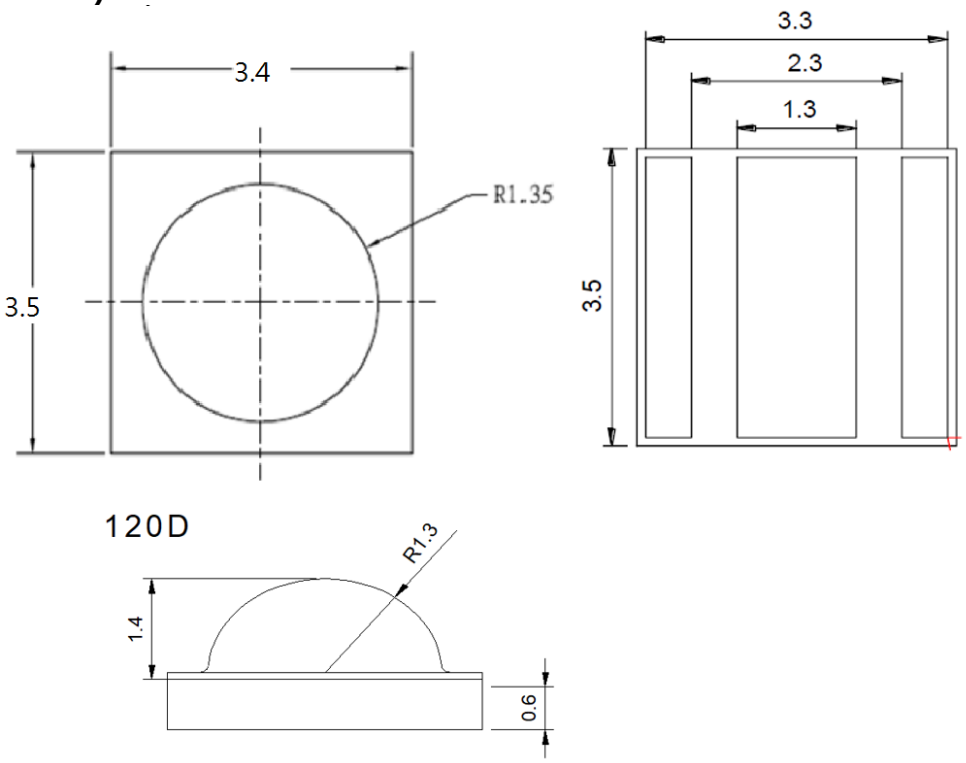
Application:

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

Compliance and Certification:

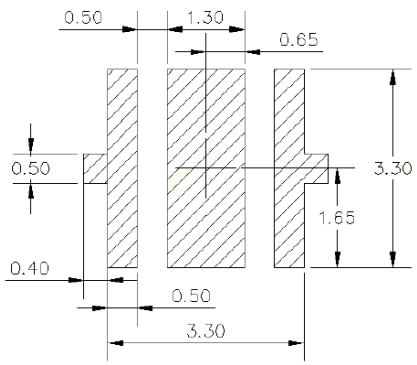
Mechanical Property:

(Dimension)



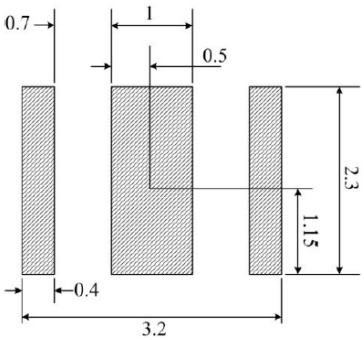
Recommended Solder footprint:

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)		Wavelength	Luminous Flux(lm)		Refer @ 700mA Typ.(lm)
			Typ.	max	nm	min	typ.	
QLSP07RBU	Royal Blue	350	3.2	3.5	450~460	15	25	45
QLSP07BU	Blue	350	3.2	3.5	460~475	30	40	71
QLSP07CGU	Cyan Green	350	3.2	3.5	495~515	70	80	132
QLSP07GU	Green	350	3.2	3.5	515~535	90	100	163
QLSP07AU	Ambwr	350	2.2	2.6	587~592	40	62	117
QLSP07RU	Red	350	2.2	2.6	615~630	60	70	119
QLSP07RU	Crimson	350	2.2	2.6	650~670	225mW	300mW	525mW
QLSP07CRU	Cherry Red	350	2.0	2.6	720~740	175mW	260mW	455mW

*Tolerance = +/- 10%

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)***
QLSP07RBU	4000	1000	1200	5	120	-40 – 85	-40 - 100	260	6
QLSP07BU	4000	1000	1200	5	120	-40 – 85	-40 - 100	260	6
QLSP07CGU	4000	1000	1200	5	120	-40 – 85	-40 - 100	260	6
QLSP07GU	4000	1000	1200	5	120	-40 – 85	-40 - 100	260	6
QLSP07AU	2000	700	1000	5	120	-40 – 85	-40 - 100	260	6
QLSP07RU	2000	700	1000	5	120	-40 – 85	-40 - 100	260	6
QLSP07CRU	2000	700	1000	5	120	-40 – 85	-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	DC	460	465
	DD	465	470
	DE	470	475
Cyan	DI5	495	505
	DK5	505	515
Green	DM	515	520
	DN	520	525
	DP	525	530
Amber	DS	585	590
	DT	590	595
Red	A7	615	620
	A8	620	625
	A9	625	630
Crimson	A145	650	660
	A165	660	670
Cherry Red	R730	720	740

Measurement tolerance is +/- 1nm

Forward Voltage (VF) Bin:

VF Rank (V)			
Color	**Code name**	**Low**	**High**
Royal Blue/ Blue/ Cyan/ Green	01	2.8	3.0
	23	3.0	3.2
	45	3.2	3.4
	67	3.4	3.6
Amber/ Red/ Crimson/	NO	1.6	1.8
	PQ	1.8	2.0
	RS	2.0	2.2

Cherry Red	TU	2.2	2.4
	VW	2.4	2.6

The forward voltage tolerance is ± 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
Cyan	QV9	80	90
	QW9	90	100
Green	QX9	100	110
	QY9	110	120
Amber	QR9	50	60
	QT9	60	70
	QU9	70	80
Red	QR9	50	60
	QT9	60	70
	QU9	70	80

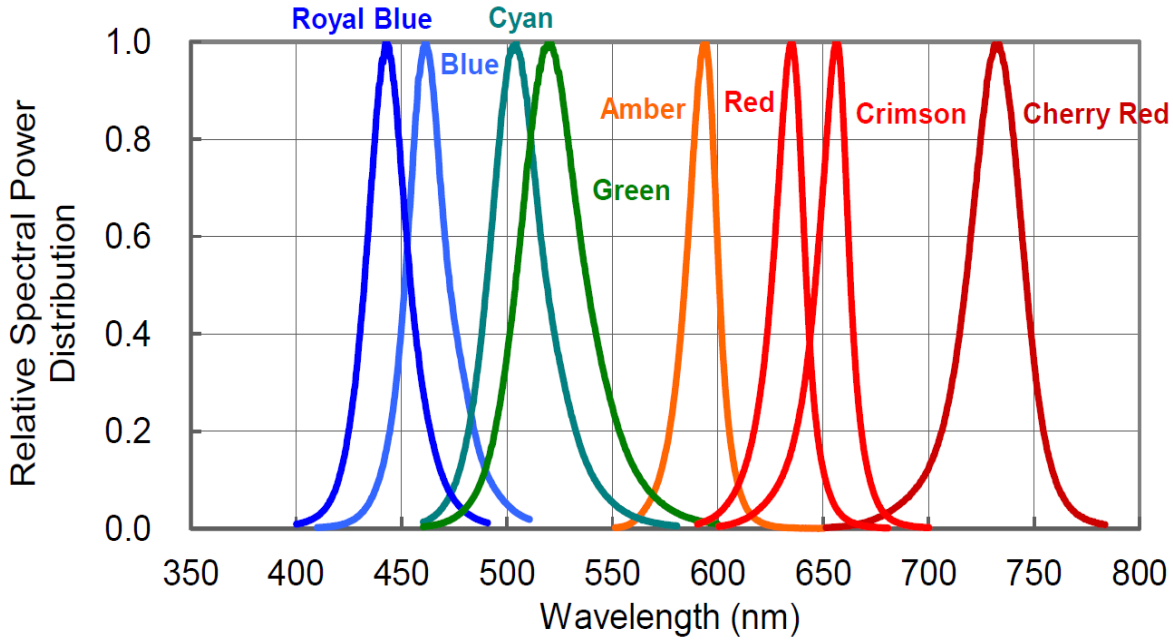
luminous flux tolerance is ± 7%

Radiometric Power Bin:

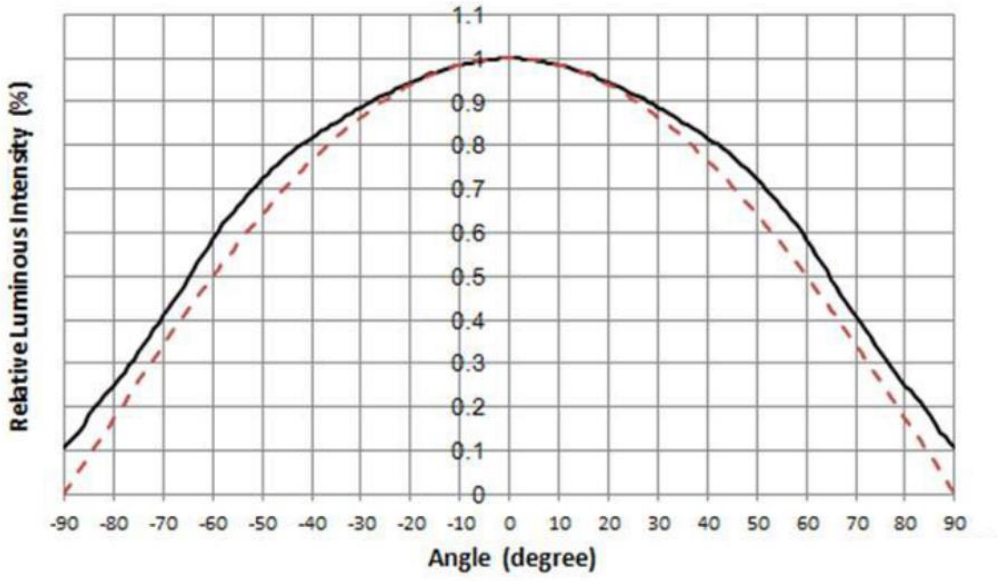
Rank @350mA (mW)			
Color	**Code name**	**Low**	**High**
Crimson	QE9	10	20
	QJ9	20	30
	QN9	30	40
Cherry Red	QN9	30	40
	QP9	40	50

Characteristic Curves

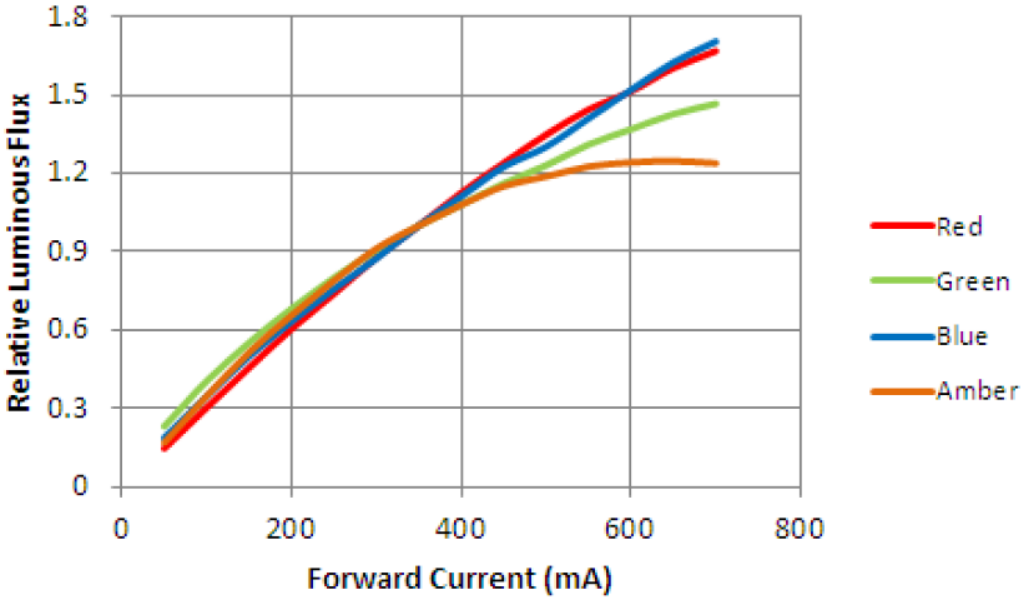
(1) Color Spectrum



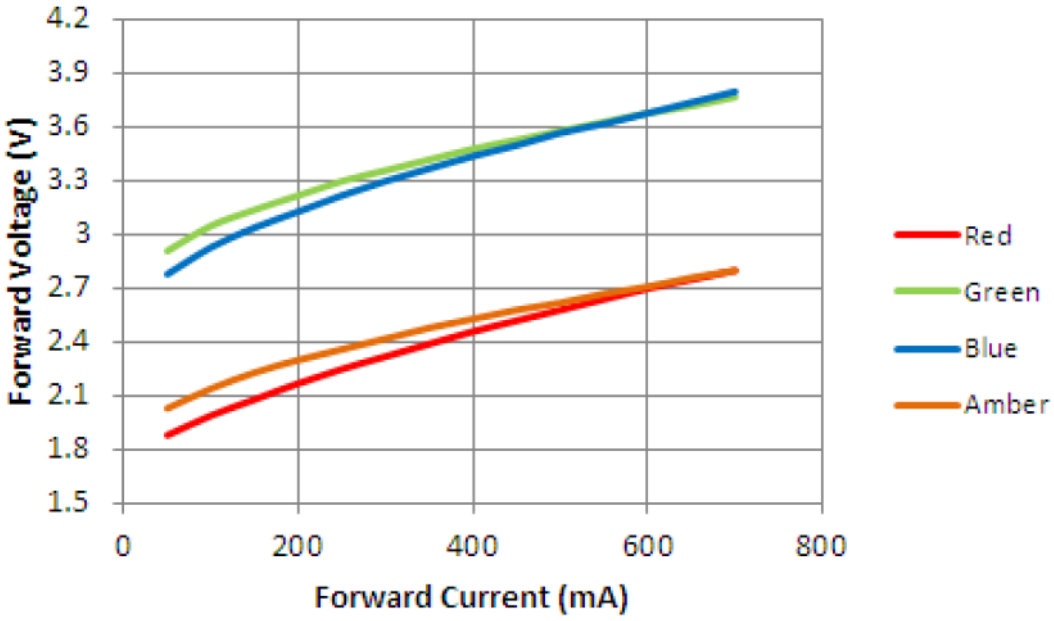
(2). Typical Representative Spatial Radiation Pattern



(3). Forward Current Characteristics



(4). Forward Current vs Forward Voltage



■ Reliability test:

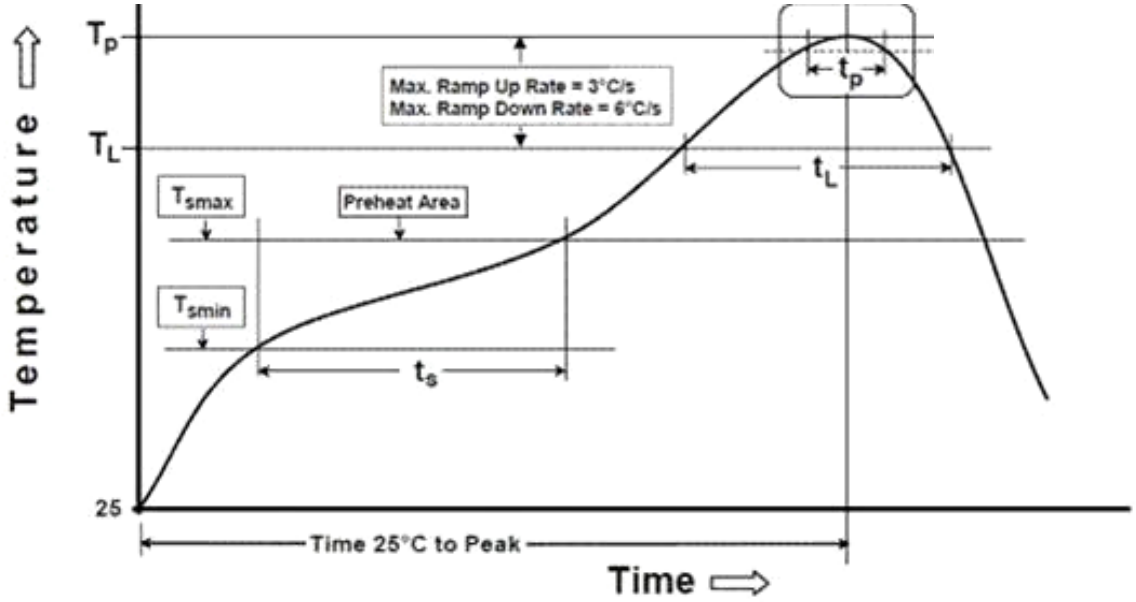
No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25℃ Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60℃	60℃ Operating	1000 Hrs	20 pcs
4	Steady State 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%

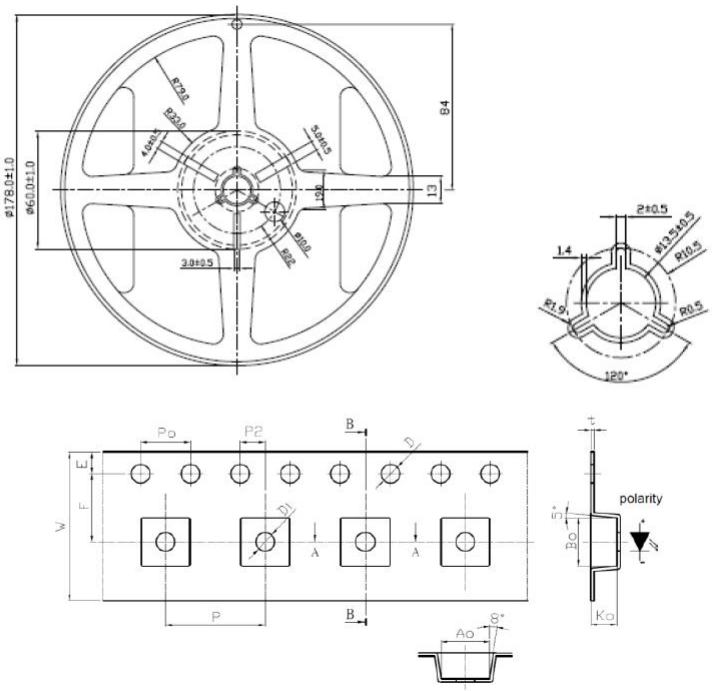
Solder Profile:

-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℃	260℃
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.		

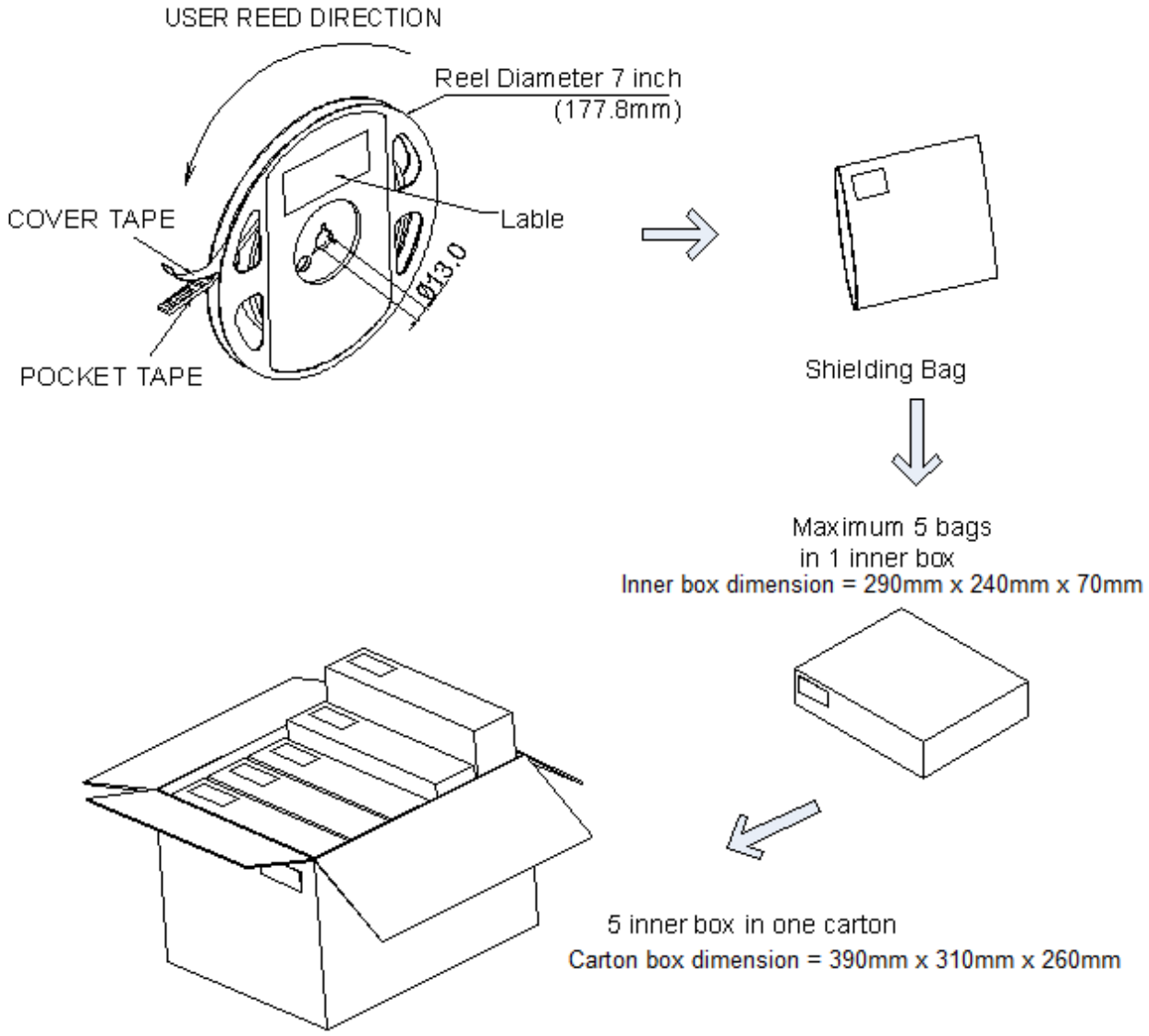
Taping & Packing:



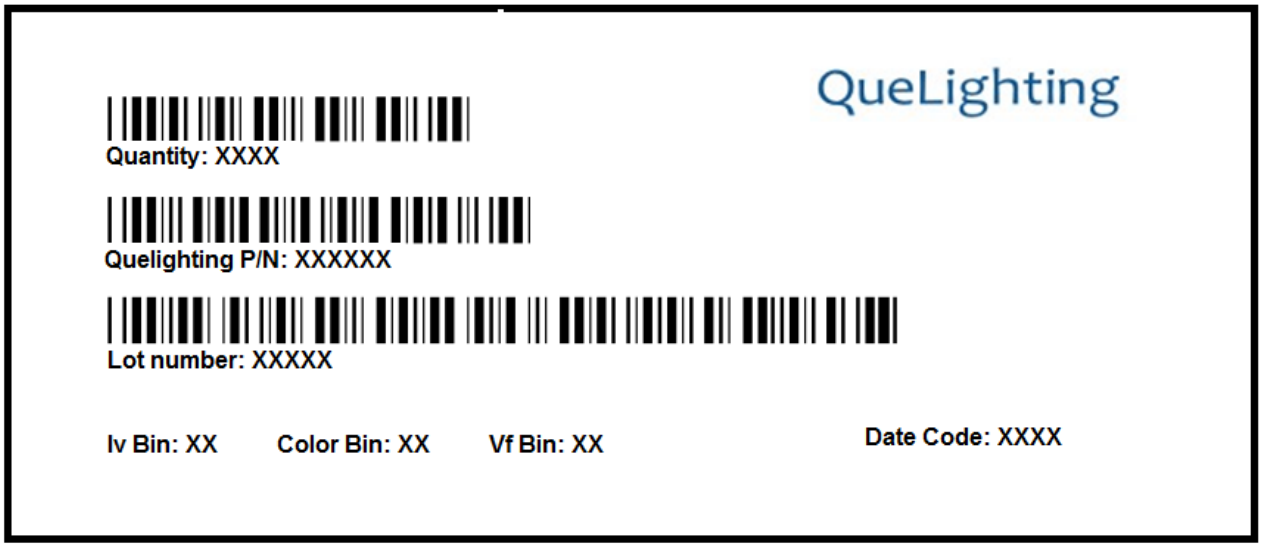
Notes: Dimensions are in millimeters.

Symbol	Dimension
W	12.00 +/- 0.10
P	8.00 +/- 0.10
E	1.75 +/- 0.10
F	5.50 +/- 0.05
P2	2.00 +/- 0.05
D	1.50+0.10 or 1.50-0.00
D1	1.50 +/- 0.10
Po	4.00 +/- 0.10
10Po	40.00 +/- 0.20
Ao	3.90 +/- 0.10
Bo	3.90 +/- 0.10
Ko	2.45 +/- 0.1
t	0.26 +/- 0.05

Unit : mm


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

Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP07XXU-XX		1000 pcs

Revision History:

Revision Date:	Changes:	Version #:
09-01-2017	Initial release	1.0
03-06-2019	Revise specification	1.1
08-07-2020	Update the specification	1.2