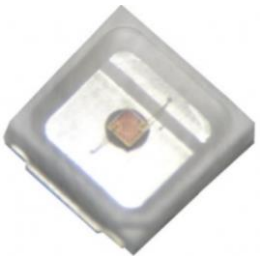
QUELIGHTING

Sustainable Lighting Solution



QLSP04RH

(Color 3030 LEDs)

Product Outline:

This is the high efficiency LED with reflector type. EMC 3030 Single color is a surface-mount LED which with heat sink to enhance operating performance. With special binning technology, these LEDs are ideal for architecture lighting and special lighting needs.

Features:

- Red color
- High brightness output @ 150mA,
- High driving current to 200mA.
- Package Dimension = 3.2mmX3.0mmX0.6mm
- RoHS compliant
- Custom Bin available upon special request

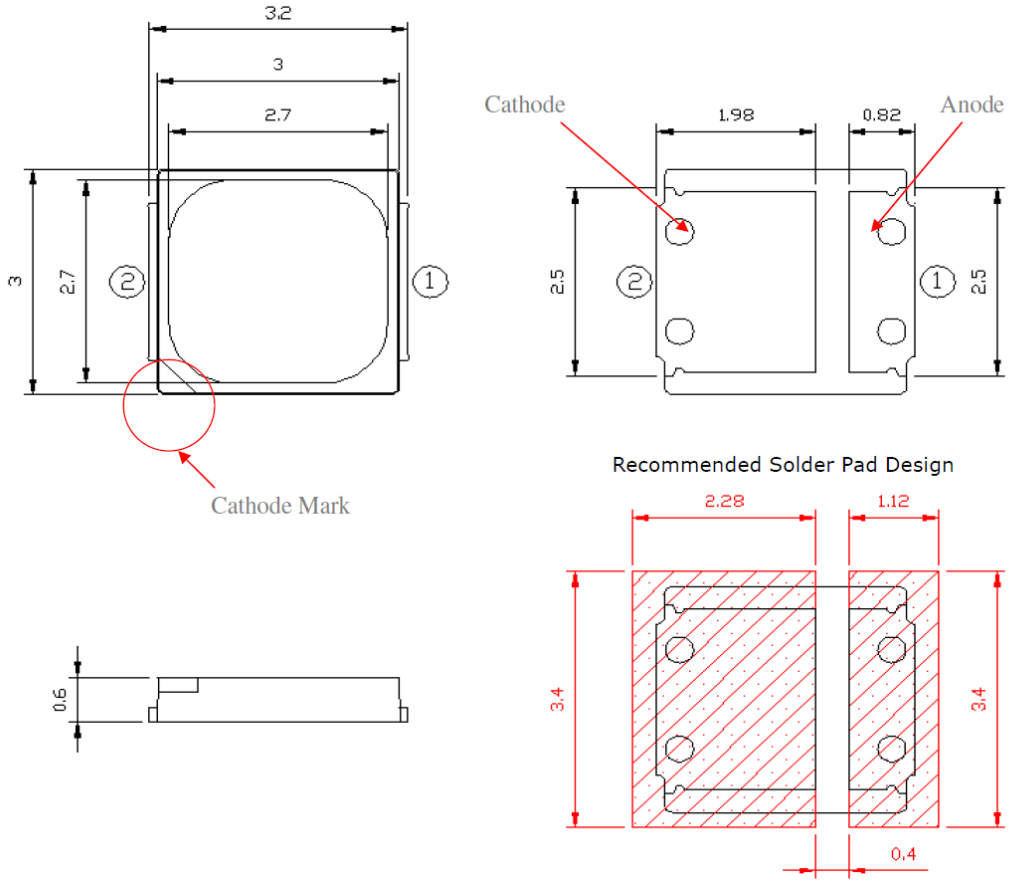
Application:

- Warning lamp
- Decoration lamp
- Architecture Lighting
- Garden Lighting
- Horticulture Lighting

Compliance and Certification:

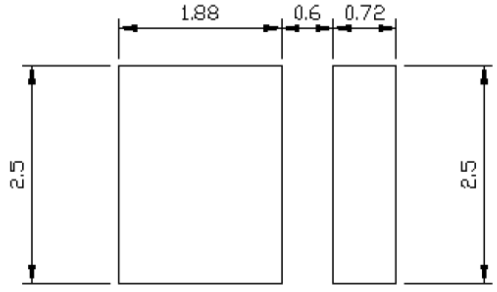
Mechanical Property:

(Dimension)



* All dimensions are in millimeters,
* Tolerances are ± 0.10mm.

Recommended Solder footprint:



* All dimensions are in millimeters.
* The LEDs is designed to be reflow soldered on to a PCB. IF dip soldered that QL cannot guarantee its reliability.
* Reflow soldering must not be performed more than twice.

Characteristics

■ Absolute Maximum Ratings

(Ta=25℃)

Parameter	Symbol	Rating	Unit
DC Forward Current	If	200	mA
Leakage Current	Ir	1.0	μA
Power Dissipation	Pd	0.6	W
Pulse Forward Current	Ifp	240	mA
LED Junction Temperature	TJ	125	℃
Storage Temperature	Tstg	-40 ~ 100	℃
Operation Temperature	Topr	-40 ~ 85	℃
Soldering Temperature	Tsol	260 < 10 sec	℃
ESD Sensitivity(HBM)		8	KV
Thermal Resistance	Rth	10	℃W

(1) Proper current rating must be observed to maintain junction temperature below maximum at all time
(2) IFP Condition: Duty 1/10, Pulse within 10msec

■ Electrical / Optical Characteristic

(Ta=25 oC)

Product	Color	I_F(mA)	V_F(V)		Wavelength	Brightness (lm/mW)	
			Typ.	max	nm	min	typ.
QLSP04RH	Red	150	2.2	2.6	615~630	18 lm	23 lm

■ Groups

Dominant Wavelength

Wd (nm) @ 150mA			
Color	**Code name**	**Min.**	**Max.**
Red	A7	615	620
	A8	620	625
	A9	625	630

Measurement tolerance is +/- 1nm

Forward Voltage (V_F) Bin:

VF Rank @ 150mA (Vf)			
Color	**Code name**	**Low**	**High**
Red	PQ	1.8	2.0
	RS	2.0	2.2
	TU	2.2	2.4

The forward voltage tolerance is ± 0.1V

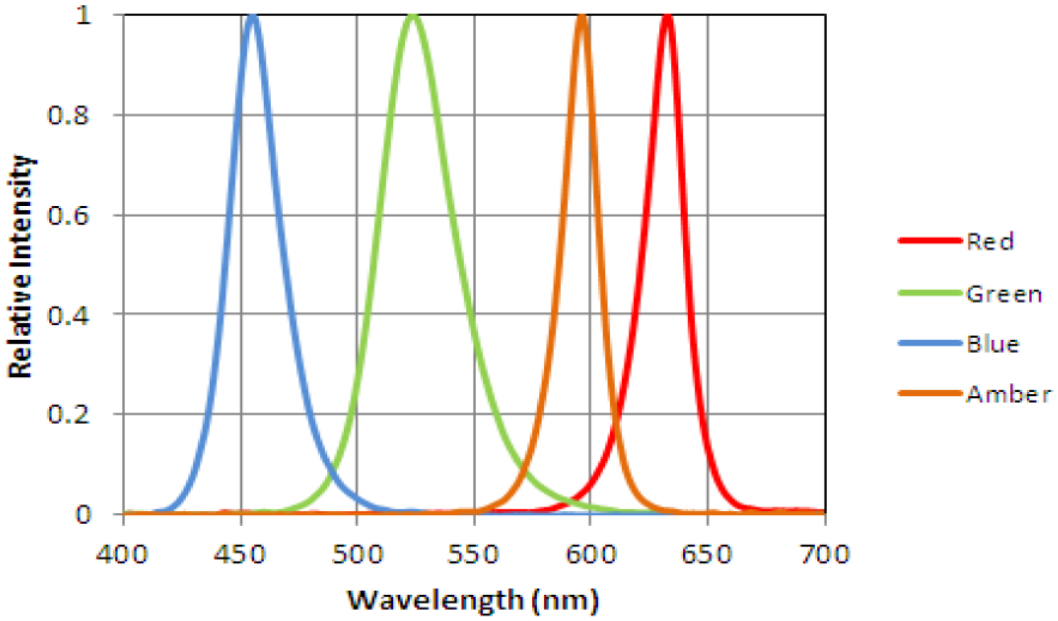
Luminous Flux Bin:

Rank @ 150mA (lm)			
Color	**Code name**	**Low**	**High**
Red	QIJ	18	22.5
	QKM	22.5	31.5

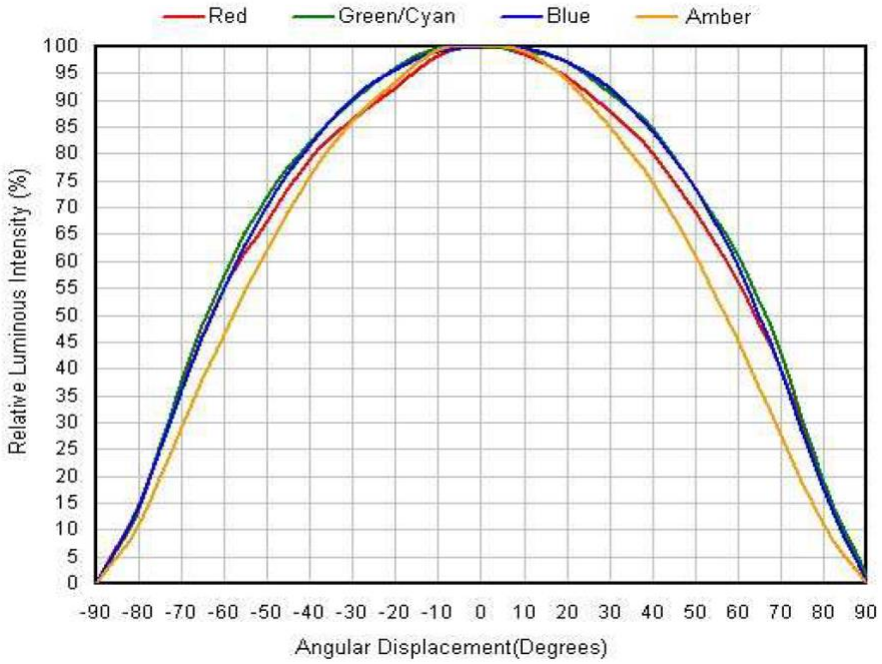
luminous flux tolerance is ± 7%

Characteristic Curves

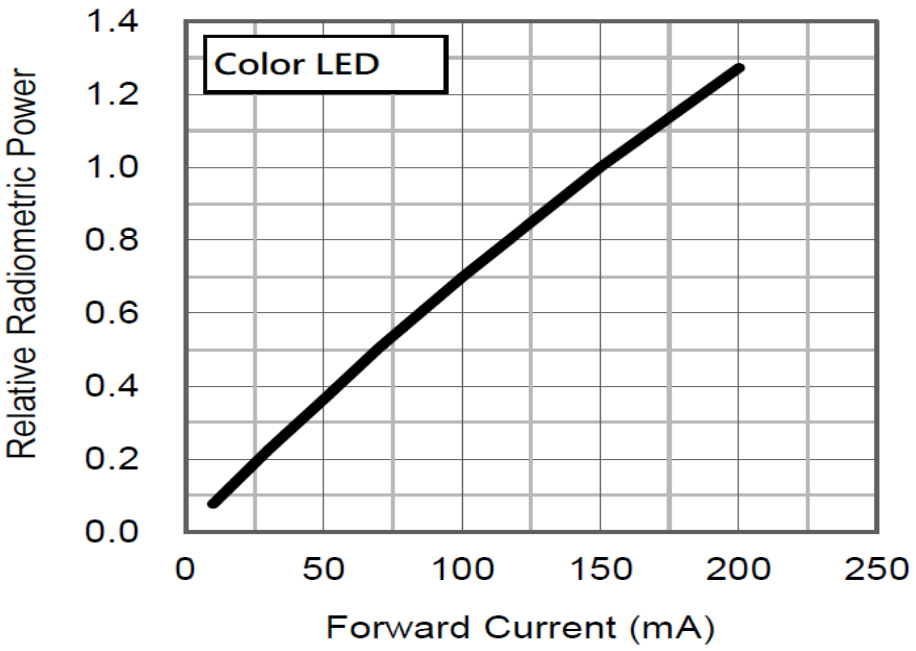
(1) Color Spectrum



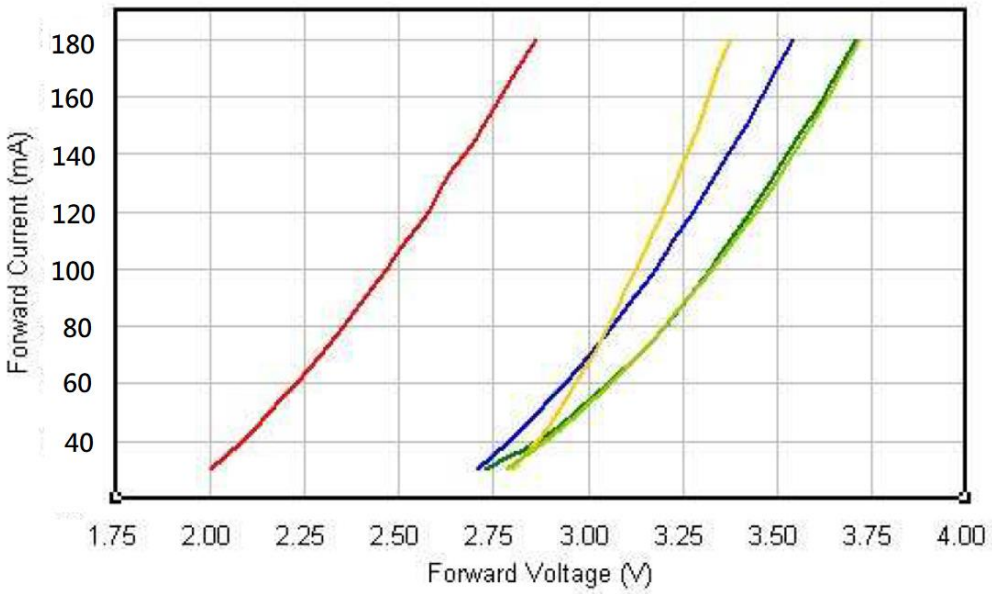
(2). Typical Representative Spatial Radiation Pattern



(3). Forward Current Characteristics



(4). Forward Current vs Forward Voltage



■ Reliability test:

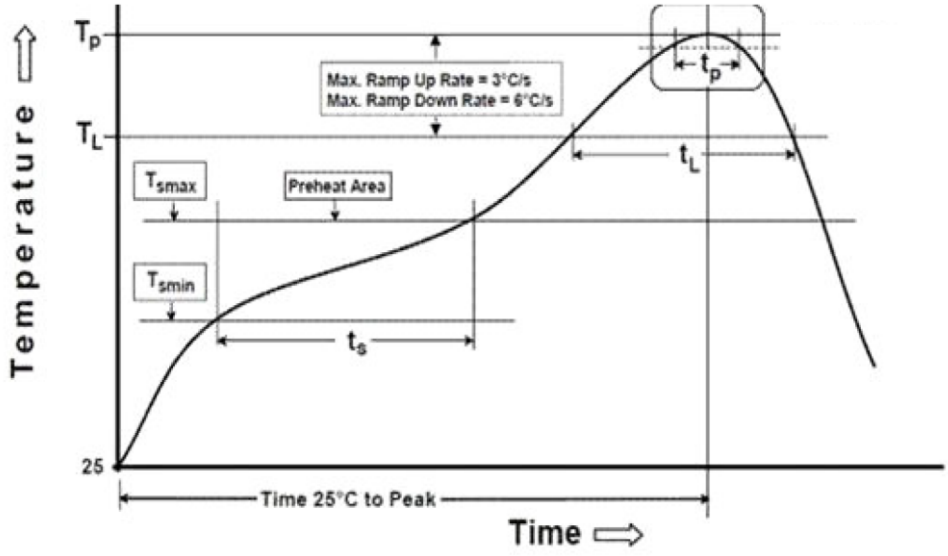
No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25℃ Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60℃	60℃ Operating	1000 Hrs	20 pcs
4	Steady State 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	150 mA	△Vf< 10%
Luminous Flux	Iv	150 mA	△Iv< 30%

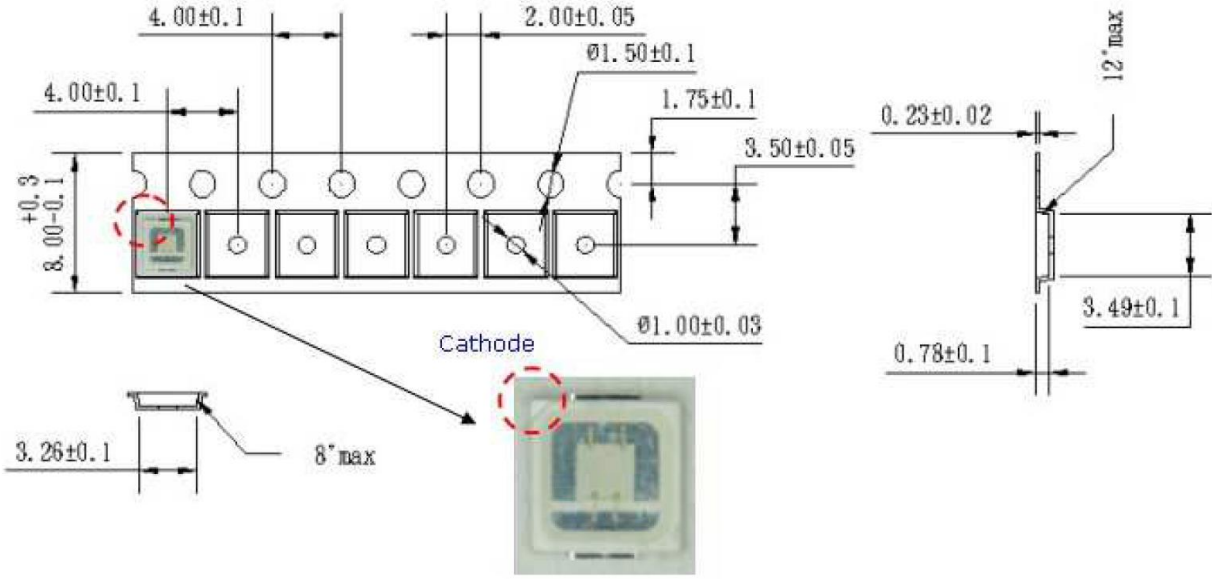
Solder Profile:

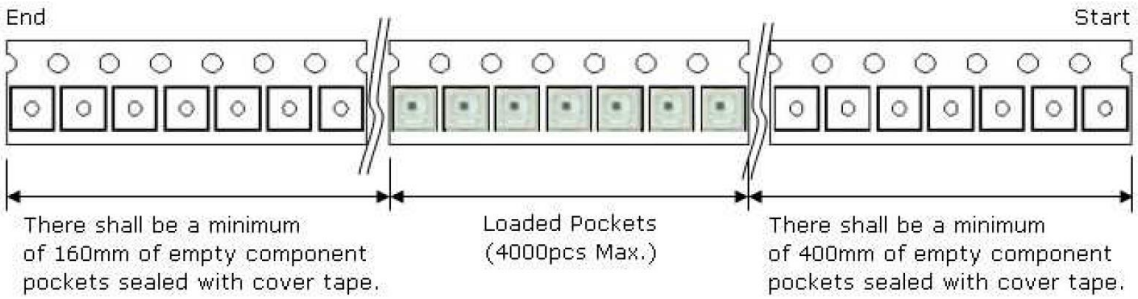
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



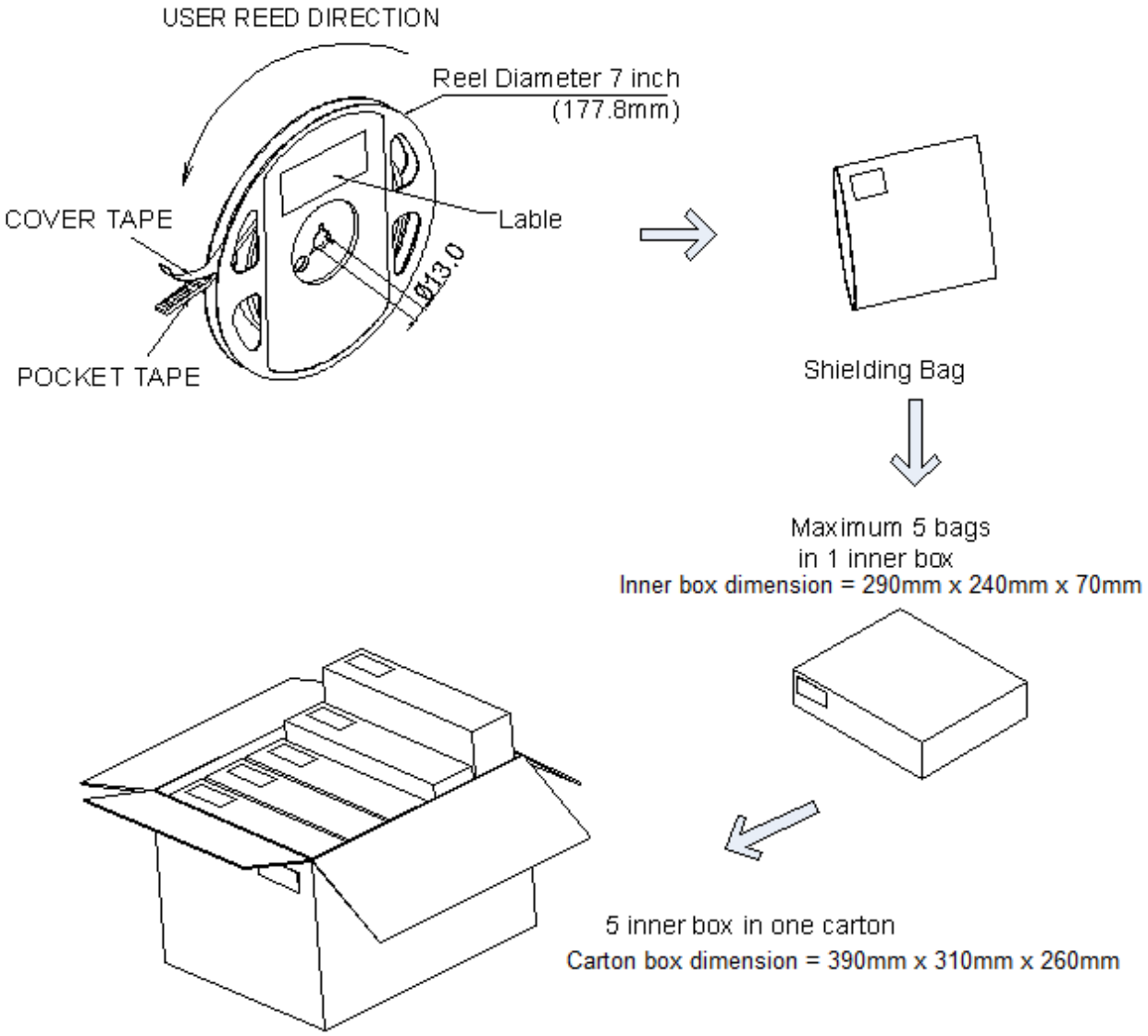
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100℃	150℃
Temperature Max(T_{smax})	150℃	200℃
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_P)	3℃/second max.	3℃/second max.
Liquidous Temperature(T_L)	183℃	217℃
Time(t_L) maintained 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:

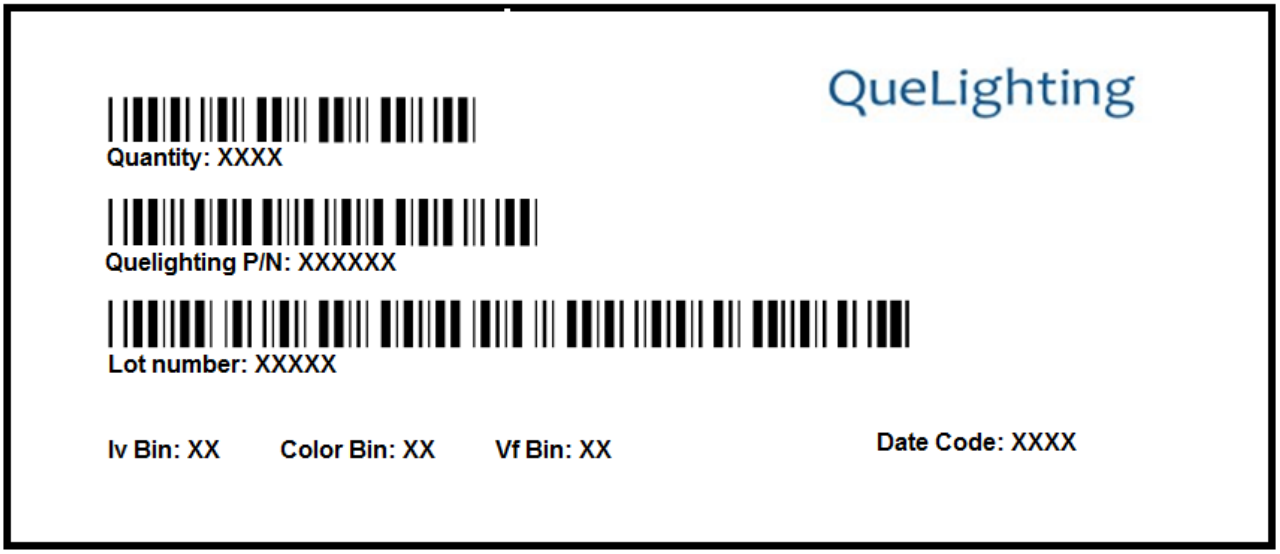




Unit : mm


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

Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP04RH		1000, 2000 pcs

Revision History:

Revision Date:	Changes:	Version #:
09-21-2020	Initial release	1.0