



QLSP38PWF
(2214)



Product Outline:

These high output reflector type Tube LEDs are available in various colors to suit customer's application. This LEDs can be use as a top emitter for directional lighting needs. With special binning technology, these LEDs are ideal for architecture lighting and special lighting needs.

Features:

- High brightness output @ 30mA
- Package Dimension = 2,2mmX1.3mmX1.4mm
- CRI= 80min (for PW)
- With Zener diode
- RoHS compliant
- Custom Bin available upon special request

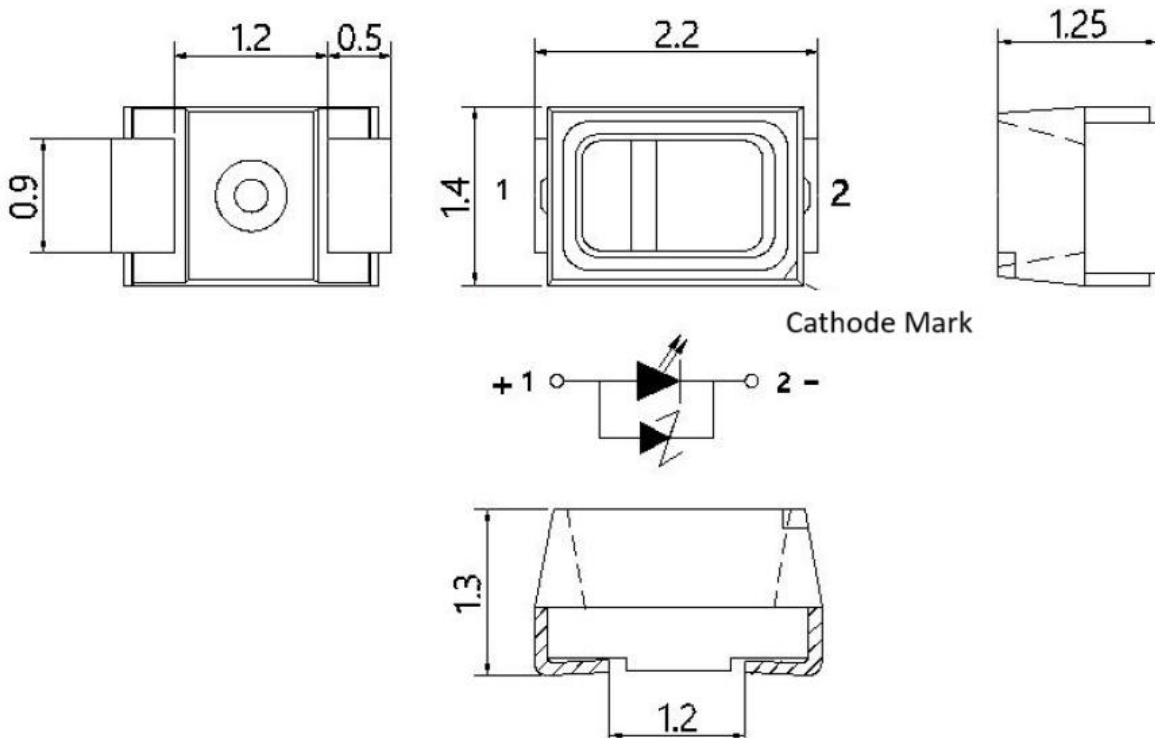
Application:

- Architecture Lighting
- Garden Lighting
- Interior Lighting
- Special application lighting

Compliance and Certification:

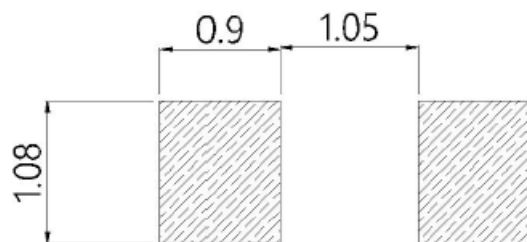


Mechanical Property: (Dimension)



* All dimensions are in millimeters, * Tolerances are $\pm 0.10\text{mm}$.

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°C)

Parameter	Symbol	Rating	Unit
DC Forward Current	If	30	mA
Power Dissipation	Pd	0.1	W
Pulse Forward Current	Ifp	90	mA
LED Junction Temperature	TJ	120	°C
Storage Temperature	Tstg	-40 ~ 80	°C
Operation Temperature	Topr	-40 ~ 85	°C
Soldering Temperature	Tsol	260 < 5 sec	°C
Electrostatic Discharge (HBM)	ESD	8000	V

- (1) Proper current rating must be observed to maintain junction temperature below maximum at all time
 (2) IFP Condition: t < 100 μs ; D = 0.001 ; Ta= 25 °C

■ Electrical / Optical Characteristic

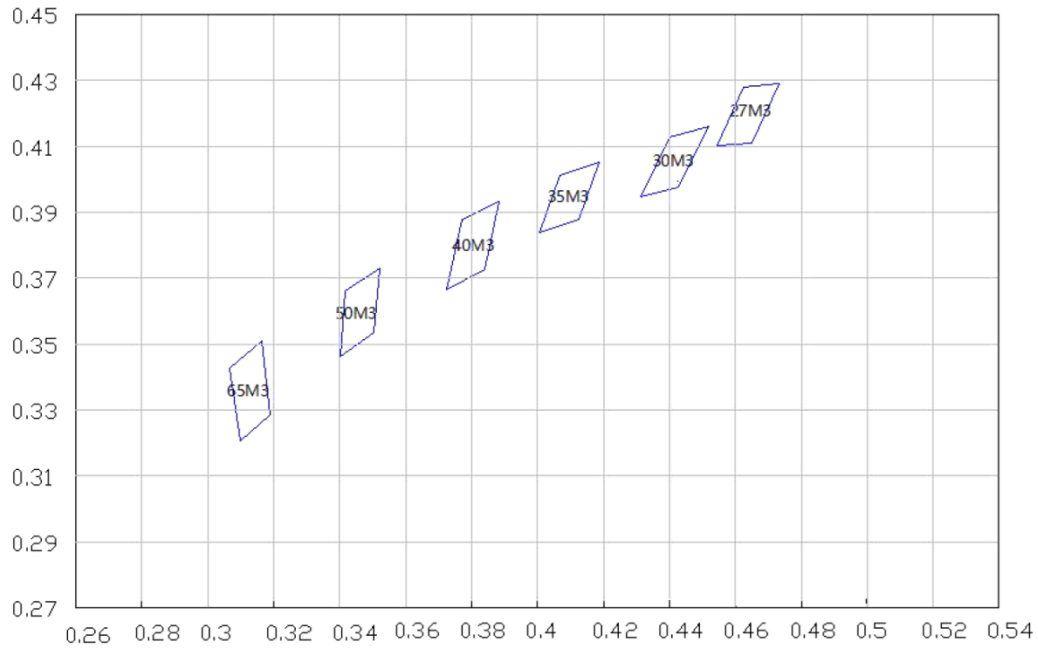
(Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	Vf	30mA	2.8		3.4	V
Brightness			6	10		lm
View Angle	θ			120		deg
Reverse current	Ir	Vr = 5V		10		uA
Color Temperature			4810		5160	CCT
Color Rendering Index	CRI		80			CRI

- (1) Tolerance of measurement: VF=+/- 0.1V
 (2) The CRI tolerance is ±2.
 (3) Thermal resistance is calculated from junction to solder



■ Specification



Color Bin:

4810-5160K	50M3	0. 3416	0. 3661
		0. 3520	0. 3731
		0. 3504	0. 3536
		0. 3402	0. 3463

Tolerance : +/- 5%



Forward Voltage (V_F) Bin:

VF Rank @ 30mA			
Code name	Min.	Max.	Units
Z1	2.8	3.0	V
23	3.0	3.2	
45	3.2	3.4	

The forward voltage tolerance is $\pm 0.1V$

Luminous Intensity Bin:

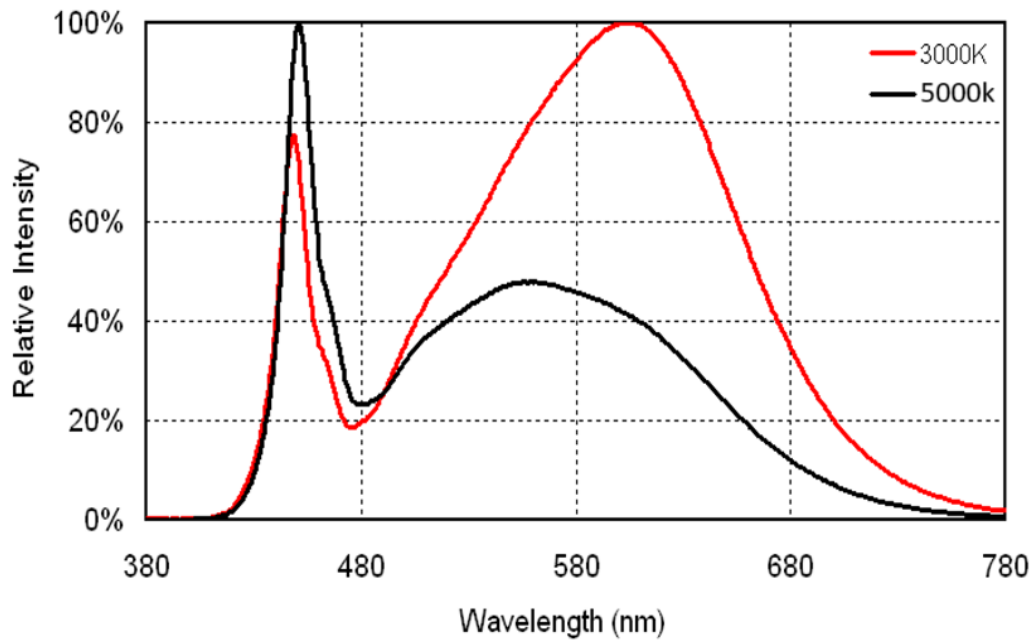
Intensity Rank (lm) @ 30mA			
Code name	Min.	Max.	Units
QAC	6	9	lm
QDF	9	12	
QGH	12	18	

Luminous intensity tolerance is $\pm 7\%$

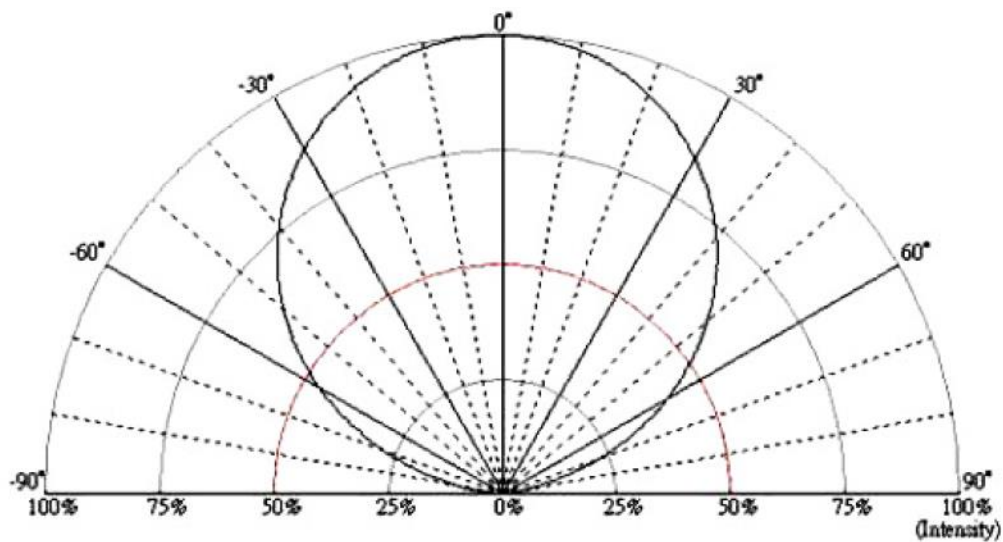


■ Characteristic Curves

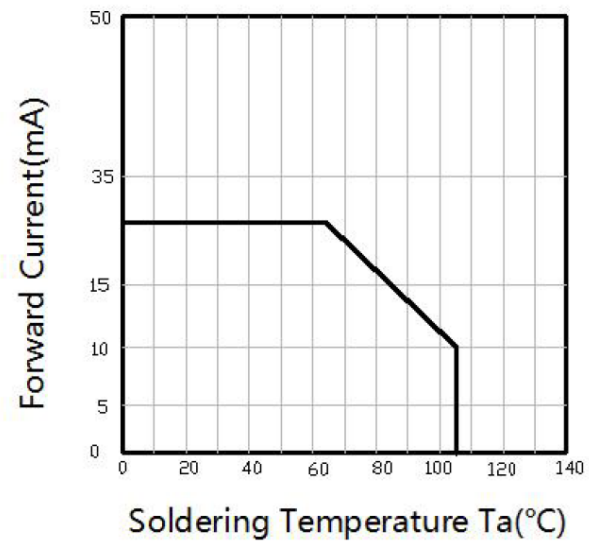
(1) Color Spectrum



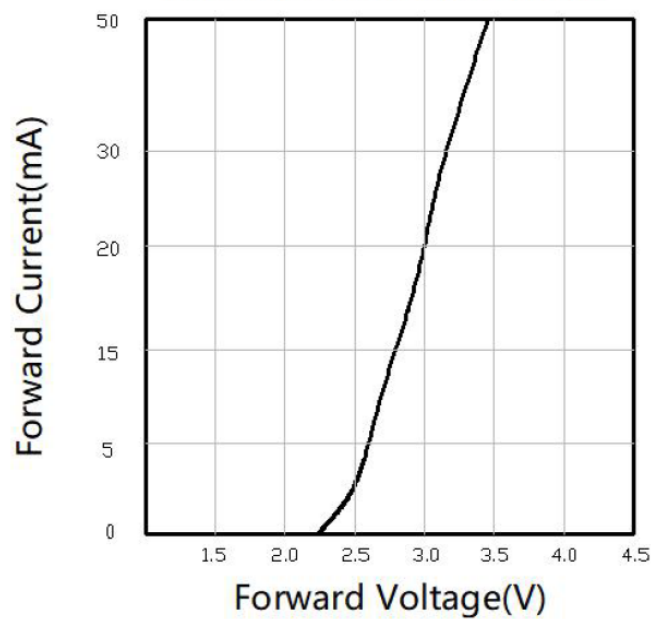
(2). Typical Representative Spatial Radiation Pattern



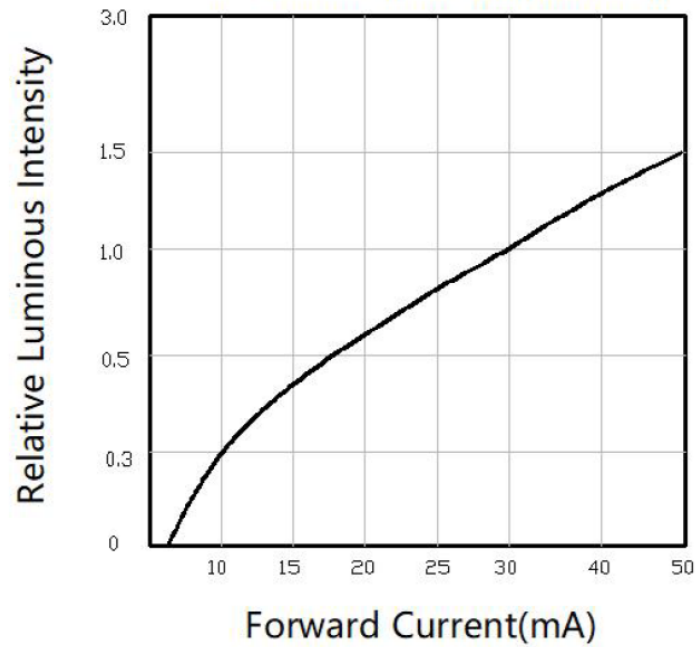
(3). Forward Current vs Solder temperature



(4). Forward Current vs Forward Voltage



(5). Ambient Temp vs Relative Intensity



■ 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 Tsld 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

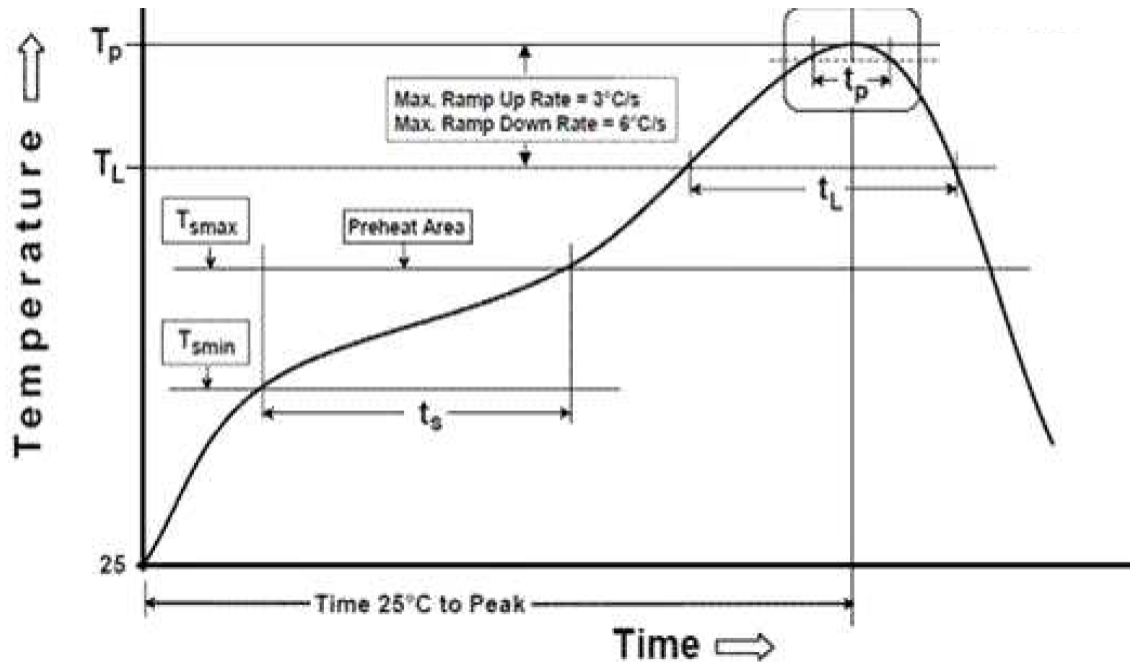
■ Judgment Criteria:

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	V _f	30 mA	$\Delta V_f < 10\%$
Luminous Flux	I _v	30 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):

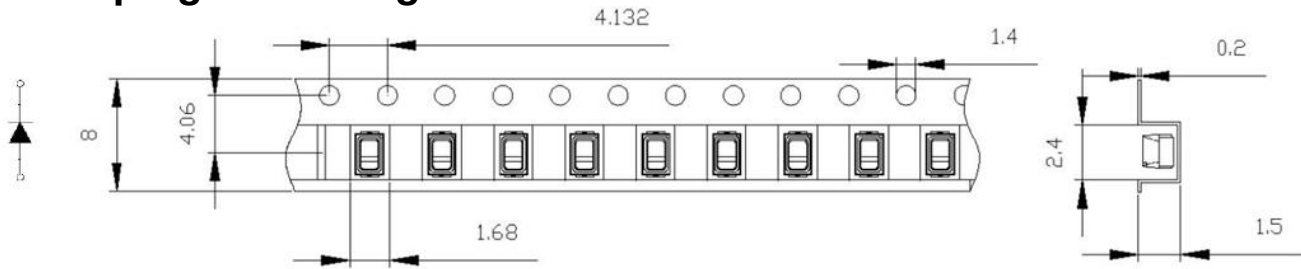


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T _{smin})	100°C	150°C
Temperature Max(T _{smax})	150°C	200°C
Time(t _a) from (T _{smin} to T _{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T _L to T _p)	3°C/second max.	3°C/second max.
Liquidous Temperature(T _L)	183°C	217°C
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.

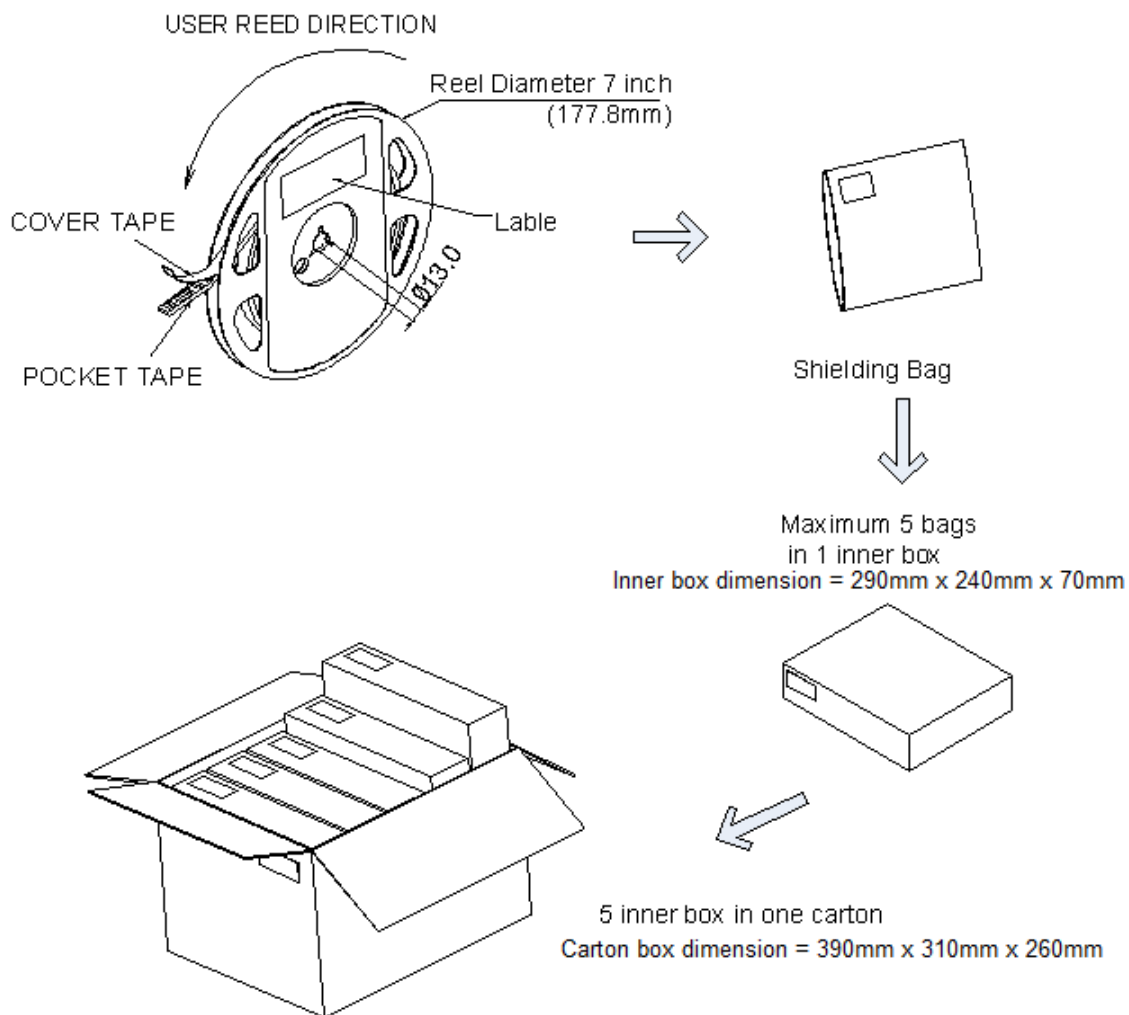
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.



■ Taping & Packing:



Unit : mm



■ Labeling


Quantity: XXXX




Quelighting P/N: XXXXXX


Lot number: XXXXX

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

Date Code: XXXX

■ Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP38YF		3000 pcs



■ Revision History:

Revision Date:	Changes:	Version #:
10-30-2024	Initial release	1.0

