



QLSP19XH
(Color 2835 LEDs)



Product Outline:

This high output reflector type 2835S LEDs with 120 degree view angle are available in Red color to suit customer's application. These 0.5W and 1W 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 @ 150mA,
- High driving current to 300mA.
- Package Dimension = 2.8mmX3.5mmX0.68mm
- RoHS compliant
- Custom Bin available upon special request

Application:

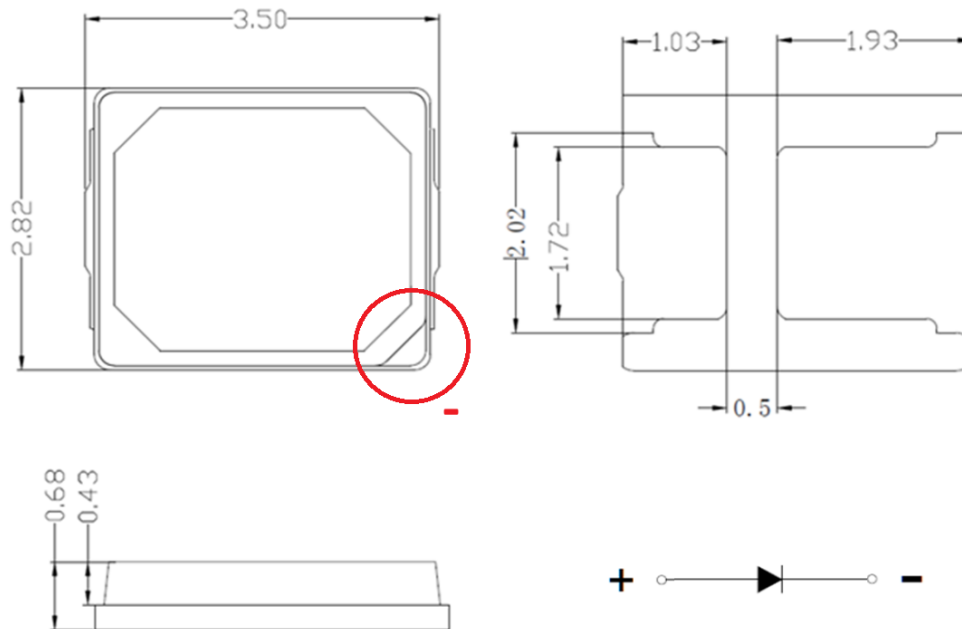
- Warning lamp
- Decoration lamp
- Architecture Lighting
- Garden Lighting
- Horticulture Lighting

Compliance and Certification:

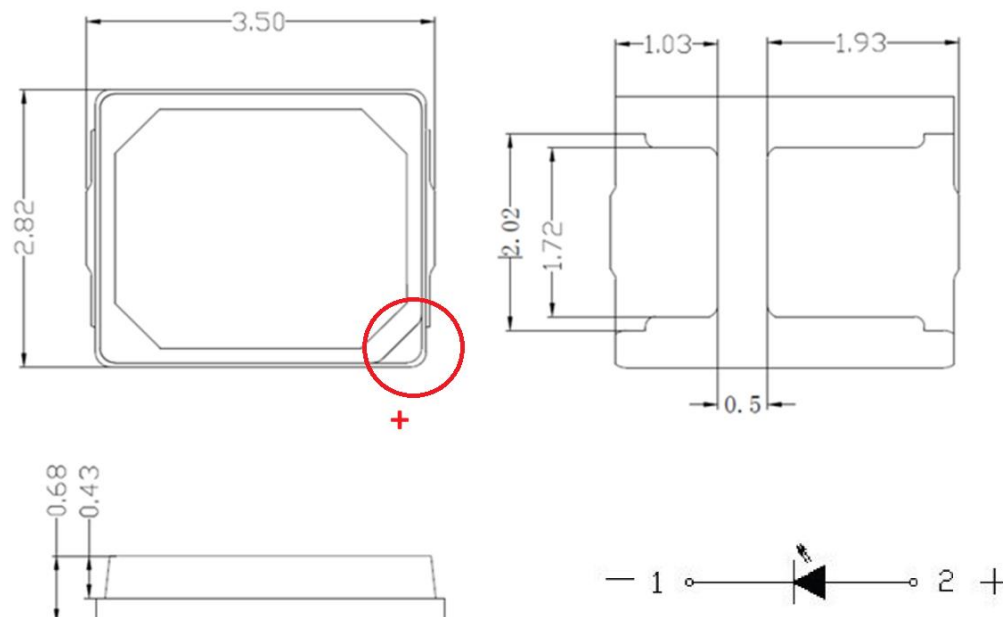


Mechanical Property:

- Color : Royal Blue, Blue, Green, PC Amber



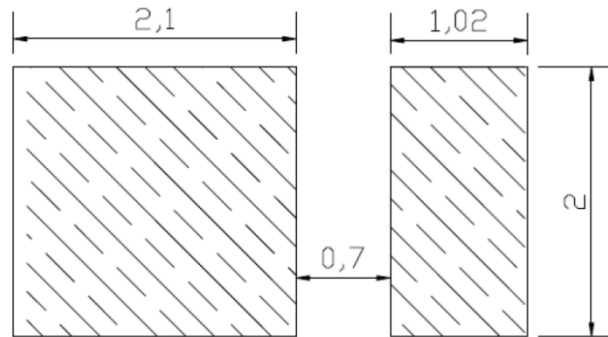
- Color : Red, Deep Red and Far Red



* 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- (Royal Blue, Blue, Green, PC Amber, Red)	If	300	mA
DC Forward Current- (Deep Red and Far Red)	If	150	mA
Leakage Current	Ir	1.0	μA
Power Dissipation (Royal Blue, Blue, Green, PC Amber, Red)	Pd	1	W
Power Dissipation (Deep Red and Far Red)	Pd	0.4	W
Pulse Forward Current	Ifp	350/200	mA
LED Junction Temperature	TJ	125	°C
Storage Temperature	Tstg	-40 ~ 100	°C
Operation Temperature	Topr	-40 ~ 85	°C
Soldering Temperature	Tsol	260 < 10 sec	°C
ESD Sensitivity(HBM)		4	KV
Thermal Resistance	Rth	10	°CW

(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 nm	Brightness (lm/mcd)	
			Typ.	max		min	typ.
QLSP19RBH	Royal Blue	150	3.0	3.4	447.5~460	8 lm	10 lm
QLSP19BH	Blue	150	3.0	3.4	465~480	18 lm	20 lm
QLSP19GH	Green	150	3.0	3.4	515~530	30 lm	40 lm
QLSP19CAH	PC Amber	150	3.0	3.4	588-595	60 lm	70 lm
QLSP19RH	Red	150	2.2	2.6	615~630	26 lm	28 lm
QLSP19DRH	Deep Red	150	2.0	2.6	650~670	8 lm	10 lm
QLSP19FRH	Far Red	150	2.0	2.6	720~740	300 mcd	400 mcd



■ Groups

Dominant Wavelength

Wd (nm) @ 150mA			
Color	Code name	Min.	Max.
Royal Blue	DA	450	455
	DB	455	460
Blue	DD	465	470
	DE	470	475
	DF	475	480
Cyan Green	DI	495	500
	DJ	500	505
	DK	505	510
	DL	510	515
Green	DM	515	520
	DN	520	525
	DP	525	530
PC Amber	PA1	588	594
Red	A7	615	620
	A8	620	625
	A9	625	630
Deep Red	A145	650	660
	A165	660	670
Far Red	R720	720	730
	R730	730	740

Measurement tolerance is +/- 1nm



Forward Voltage (V_F) Bin:

VF Rank @ 150mA (Vf)			
Color	Code name	Low	High
Royal Blue /Blue/Green/ PC Amber	XY	2.6	2.8
	Z1	2.8	3.0
	23	3.0	3.2
	45	3.2	3.4
Red/Deep Red/Far Red	PQ	1.8	2.0
	RS	2.0	2.2
	TU	2.2	2.4

The forward voltage tolerance is $\pm 0.1V$

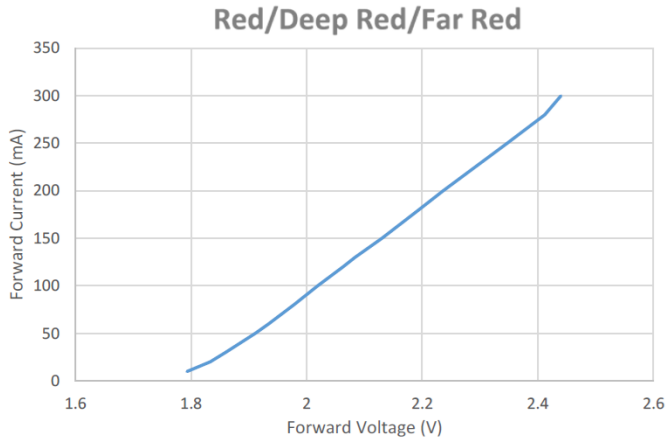
Luminous Flux Bin:

Rank @ 150mA (lm)			
Color	Code name	Low	High
Royal Blue	QCD	8	10
	QEF	10	12
	QG1	12	14
Blue	QIK	18	24
Green	QS	60	65
	QT	65	70
	QU	70	75
Red	QL	26	30
	QM	30	34
Deep Red	QCF	8	12
Far Red	M5	200 mcd	500 mcd

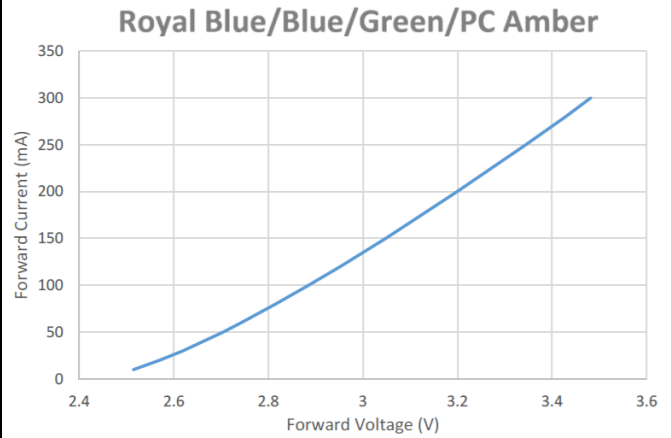
luminous flux tolerance is $\pm 7\%$



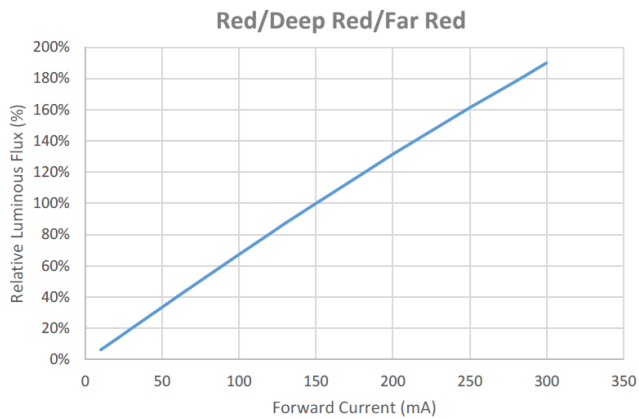
Characteristic Curves



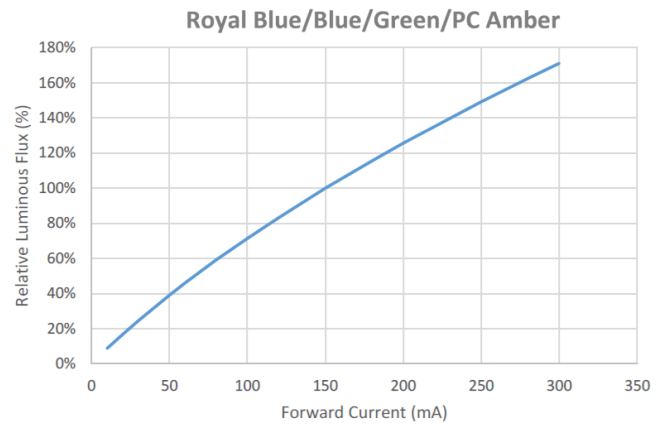
Forward Voltage vs. Forward Current



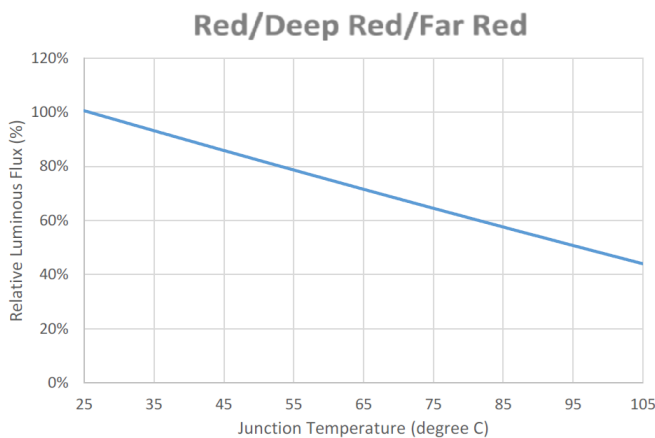
Forward Voltage vs. Forward Current



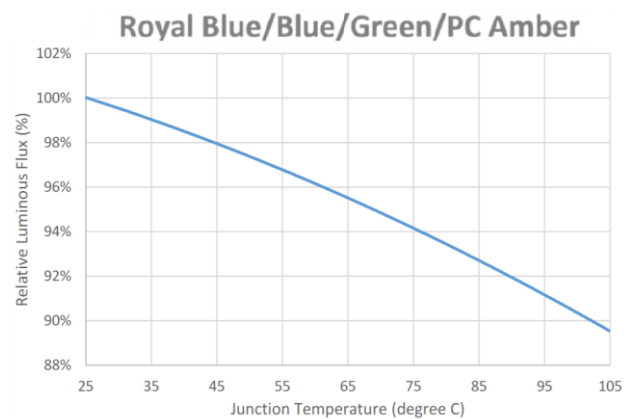
Forward current vs. Relative luminous intensity



Forward current vs. Relative luminous intensity

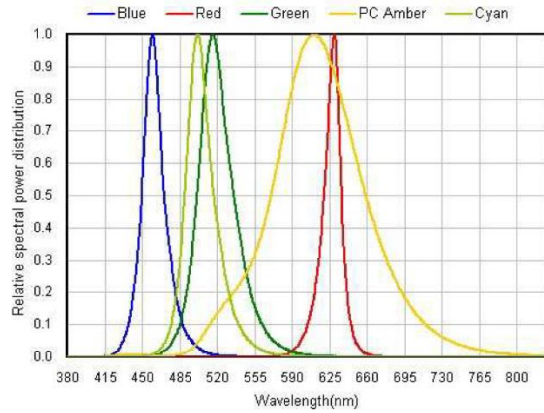


Relative Luminous Intensity VS Junction Temperature

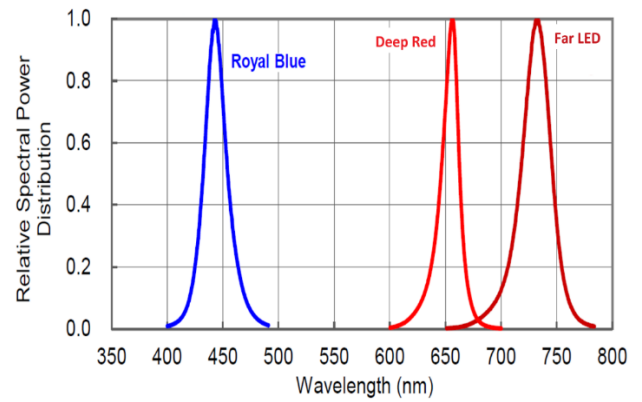


Relative Luminous Intensity VS Junction Temperature

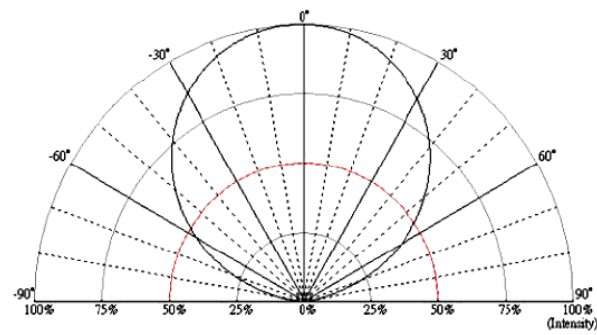




Color Spectrum



Color Spectrum



Radiation Pattern



■ 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 Tslid 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

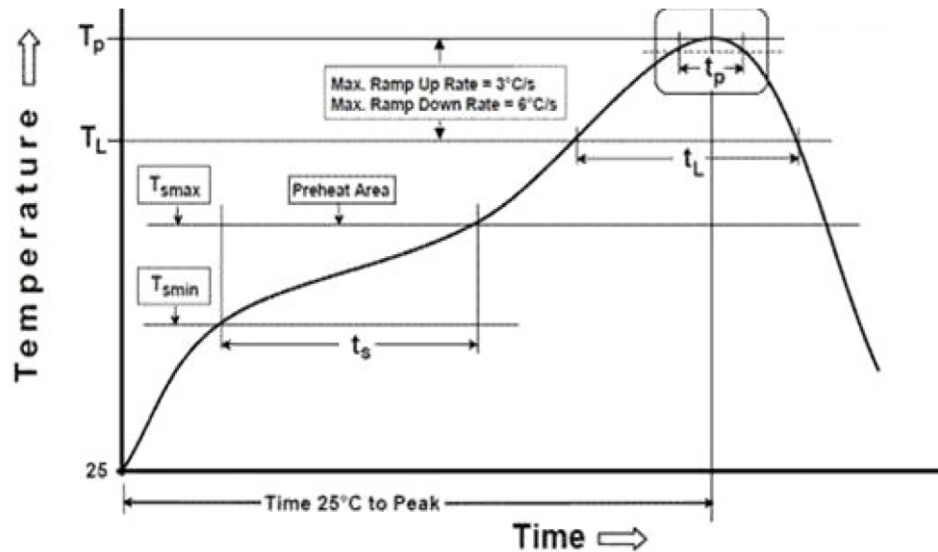
■ Judgment Criteria:

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	150 mA	$\Delta Vf < 10\%$
Luminous Flux	Iv	150 mA	$\Delta Iv < 30\%$



Solder Profile:

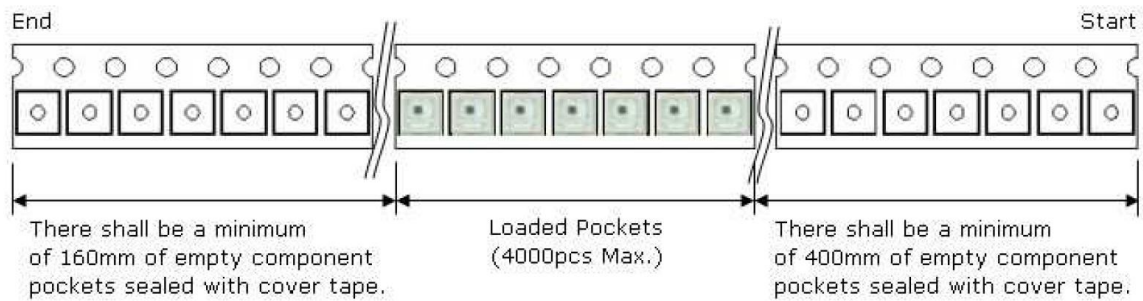
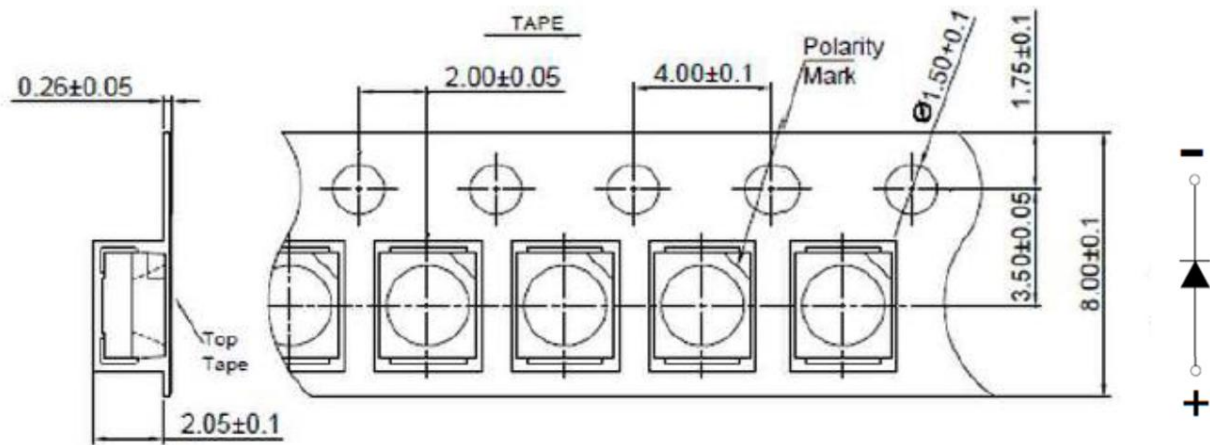
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100°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.		

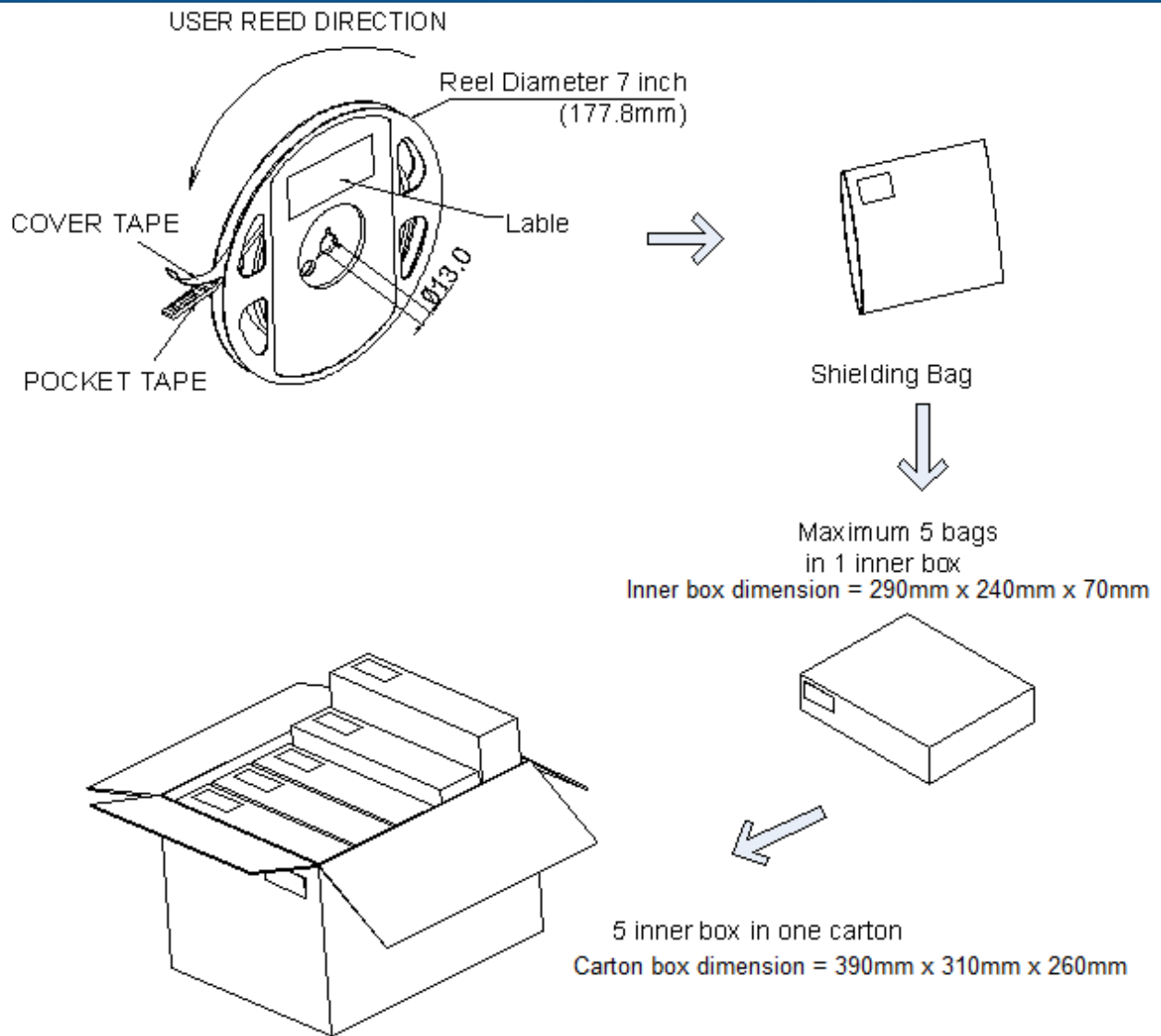


Taping & Packing:



Unit : mm





Labeling


Quantity: XXXX

P/N: XXXXXX

Lot number: XXXXX




lv Bin: XX

Color Bin: XX

Vf Bin: XX

Date Code: XXXX

Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP19XH		1000,4000 pcs
QLSP19DRH		3000 pcs
QLSP19FRH		3000 pcs



Revision History:

Revision Date:	Changes:	Version #:
12-25-2024	Initial release	1.0

