QUELIGHTING

Sustainable Lighting Solution

QLSP38BF

(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
- With Zener diode
- RoHS compliant
- Custom Bin available upon special request

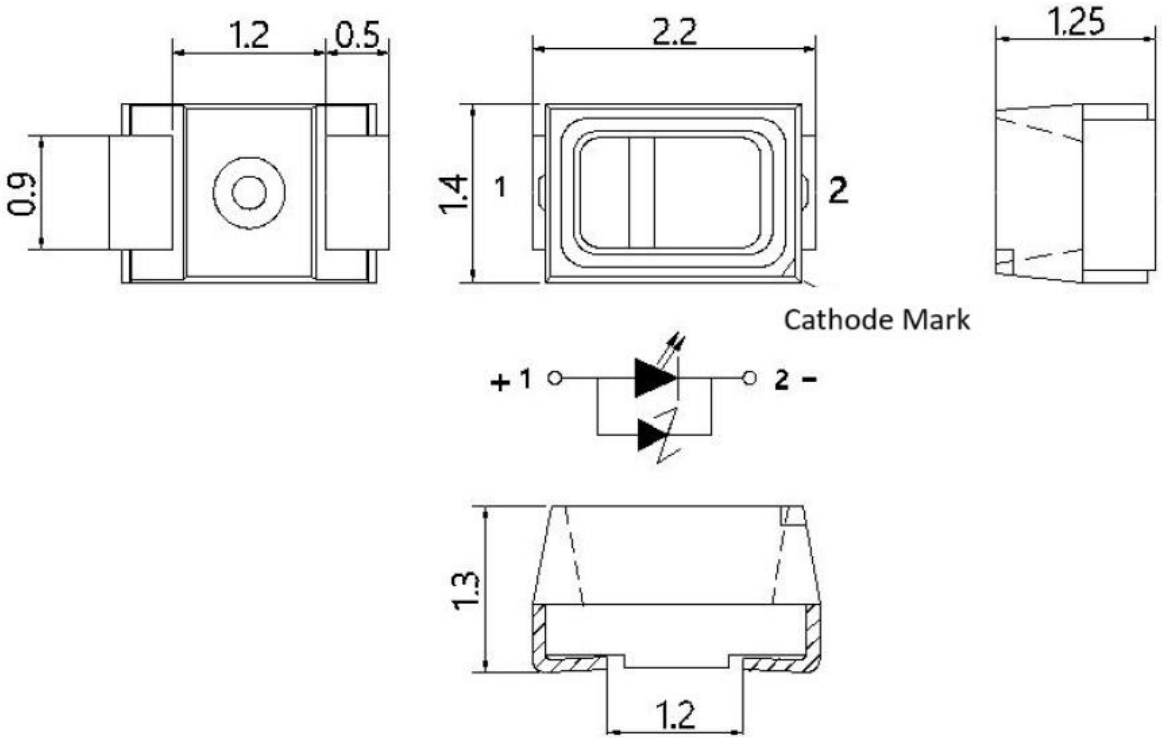
Application:

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

Compliance and Certification:

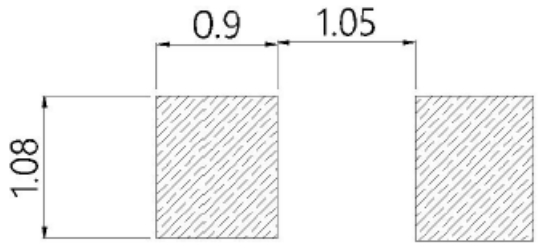
Mechanical Property:

(Dimension)



* All dimensions are in millimeters, * Tolerances are ± 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	30	mA
Power Dissipation	Pd	0.1	W
Pulse Forward Current	Ifp	60	mA
LED Junction Temperature	TJ	120	℃
Storage Temperature	Tstg	-40 ~ 80	℃
Operation Temperature	Topr	-40 ~ 85	℃
Soldering Temperature	Tsol	260 < 5 sec	℃
Electrostatic Discharge (HBM)	ESD	8000	V

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

■ Electrical / Optical Characteristic

(Ta=25 oC)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	Vf	30mA	2.8		3.4	V
Brightness			300	500		mcd
View Angle	θ			120		deg
Reverse current	Ir	Vr = 5V		10		uA
Dominant Wavelength			460		470	nm

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

■ Specification

Wavelength Bin:

Rank @ 30mA			
Code name	**Min.**	**Max.**	**Units**
DC	460	465	nm
DD	465	470	

The forward voltage tolerance is ± 2nm

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 ± 0.1V

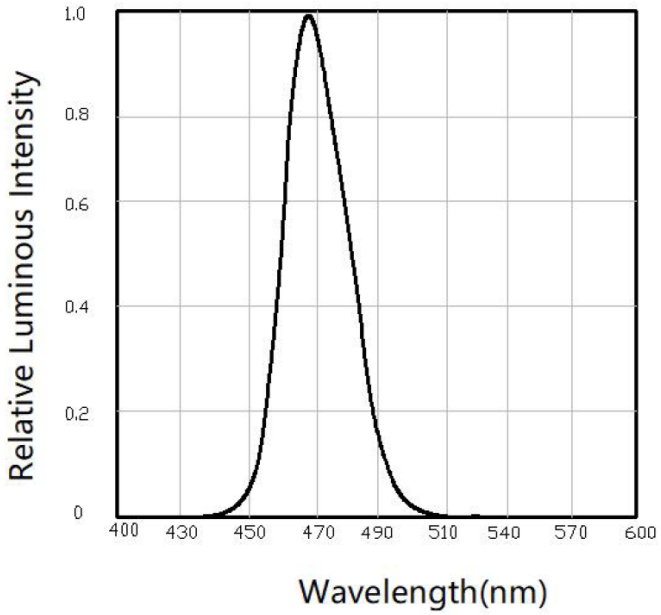
Luminous Intensity Bin:

Intensity Rank (mcd) @ 30mA			
Code name	**Min.**	**Max.**	**Units**
M5	300	360	mcd
M6	360	450	
M7	450	560	
M8	560	715	

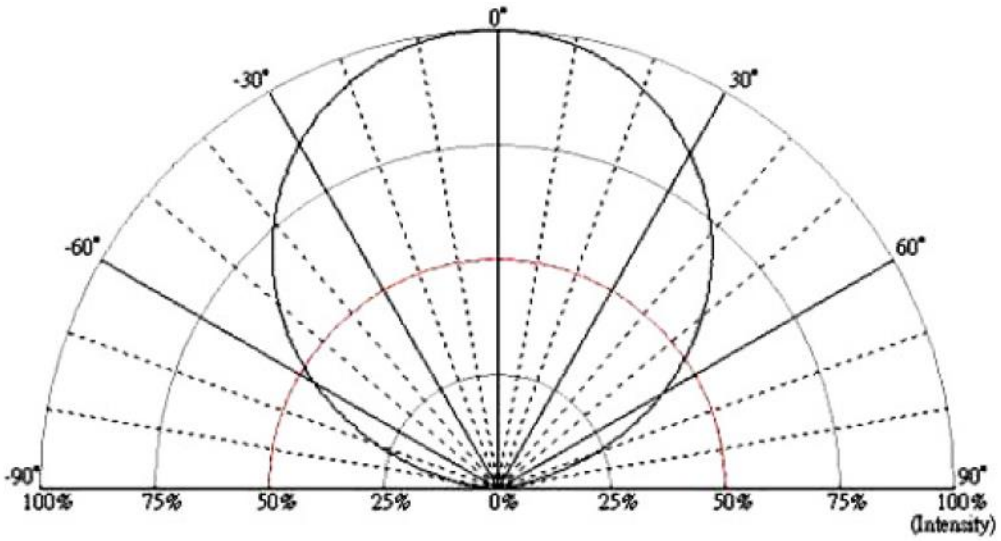
Luminous intensity tolerance is ± 7%

■ Characteristic Curves

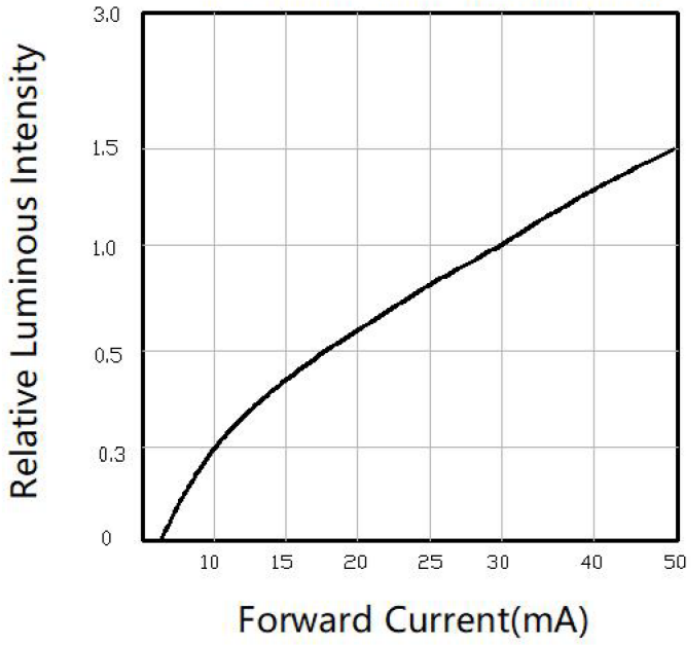
(1) Color Spectrum



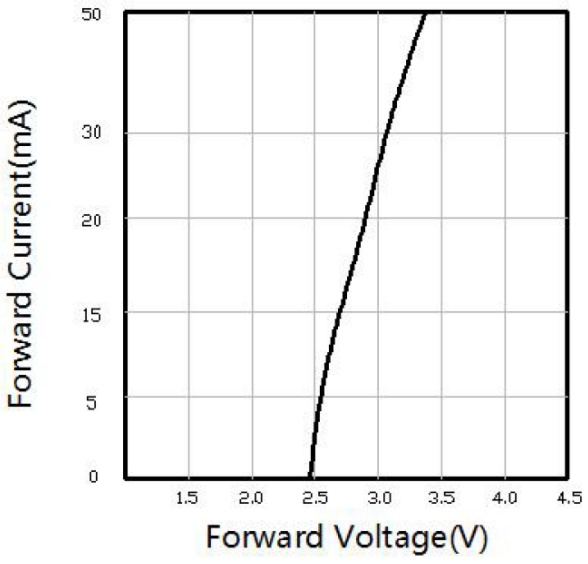
(2). Typical Representative Spatial Radiation Pattern



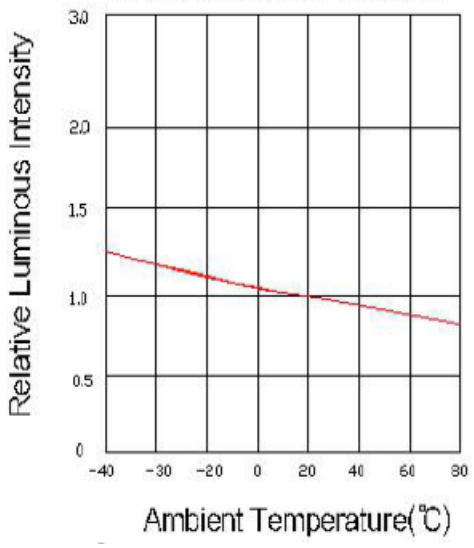
(3). Forward Current vs Relative Luminous Intensity



(4). Forward Current vs Forward Voltage



(5). Ambient Temp vs Relative Intensity



■ Reliability test:

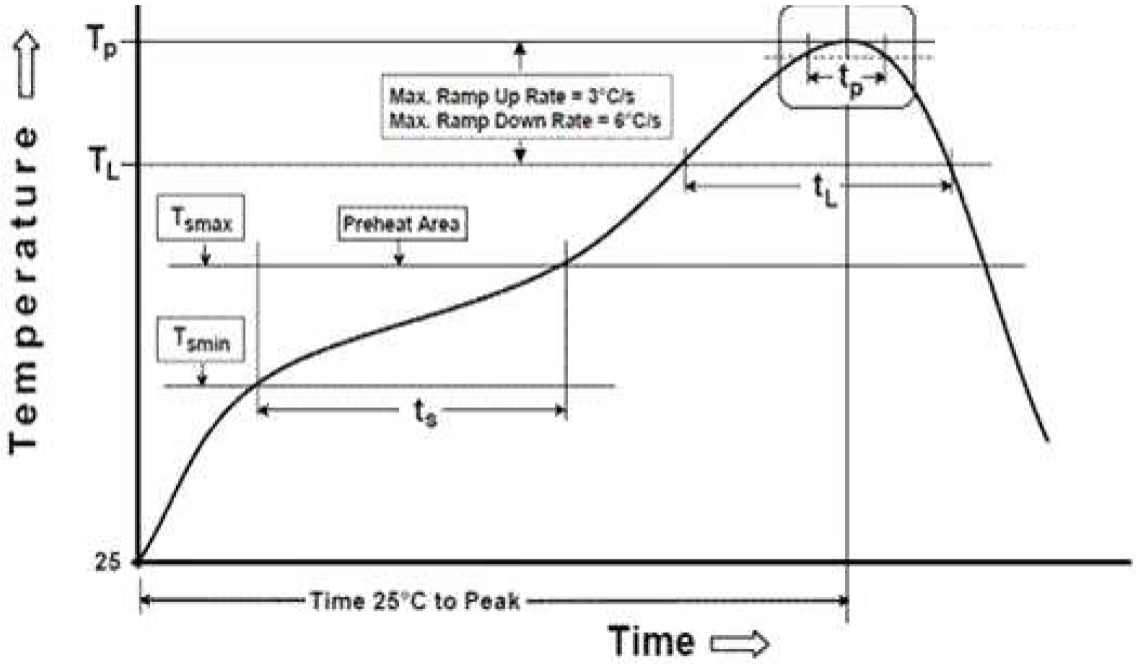
No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25℃ Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60℃	60℃ Operating	1000 Hrs	20 pcs
4	Steady State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

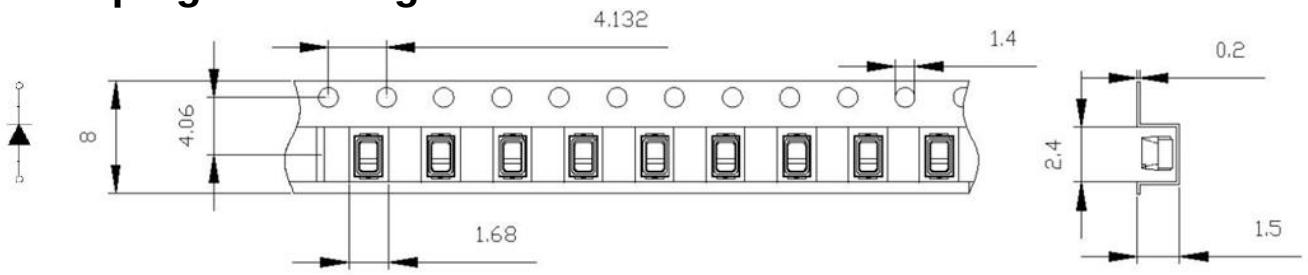
Solder Profile:

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

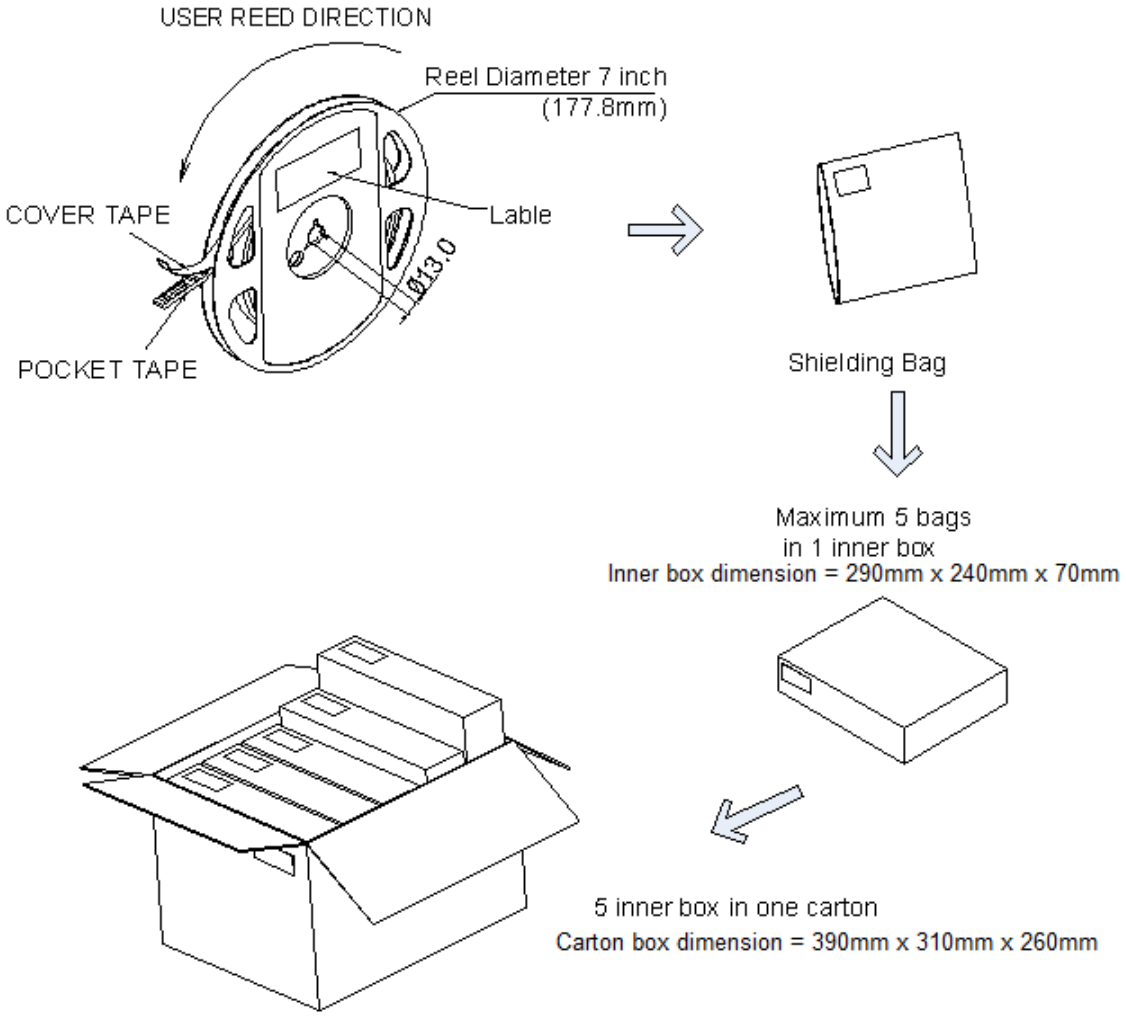


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100℃	150℃
Temperature Max(T_{smax})	150℃	200℃
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_P)	3℃/second max.	3℃/second max.
Liquidous Temperature(T_L)	183℃	217℃
Time(t_L) maintained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

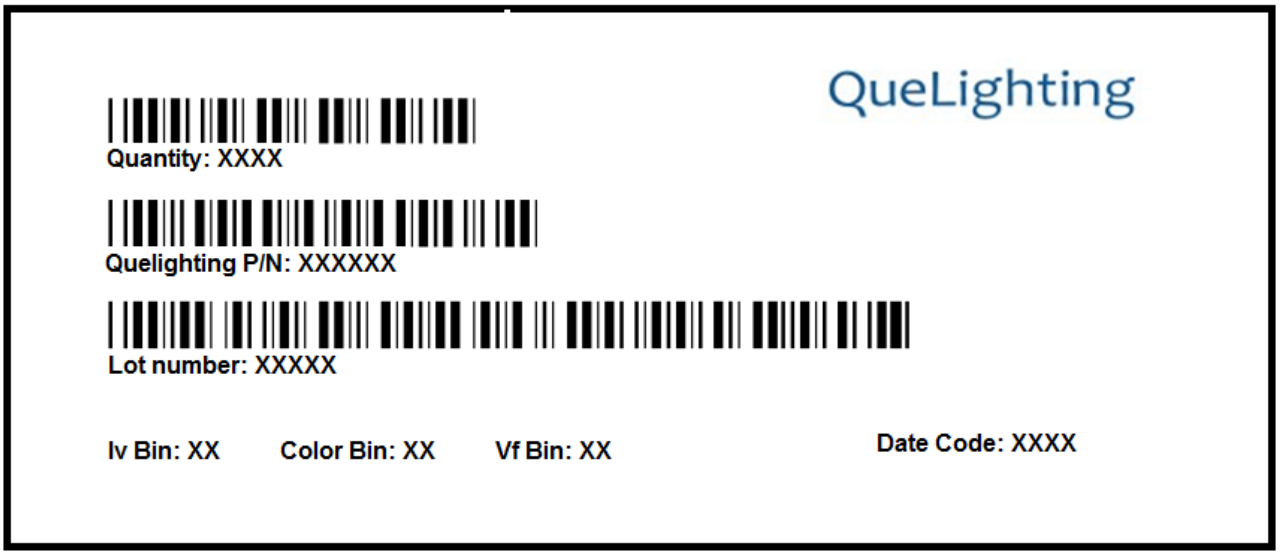
■ Taping & Packing:



Unit : mm



■ Labeling



■ Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP38BF		3000 pcs

■ Revision History:

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