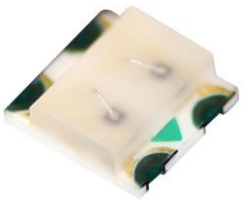
QUELIGHTING

Sustainable Lighting Solution



QLSP24RYG
(Red+Yellow Green)

Product Outline:

SMD LED lamps from Quelighting are available in miniature sizes and special configurations for automated PC board assembly and space-sensitive applications. These SMD LED lamps are suitable for use in a wide variety of electronic equipment, including cordless and cellular phones, notebook computers, network systems, home appliances, and indoor signboard applications.

Features:

- Color in Red and Yellow Green
- Compatible with automatic placement equipment.
- RoHS compliant
- Package Dimension = 1.6mmX1.6mmX0.4mm
- Full-color type
- Compatible with infrared and vapor phase reflow solder process.
- Custom Bin available upon special request

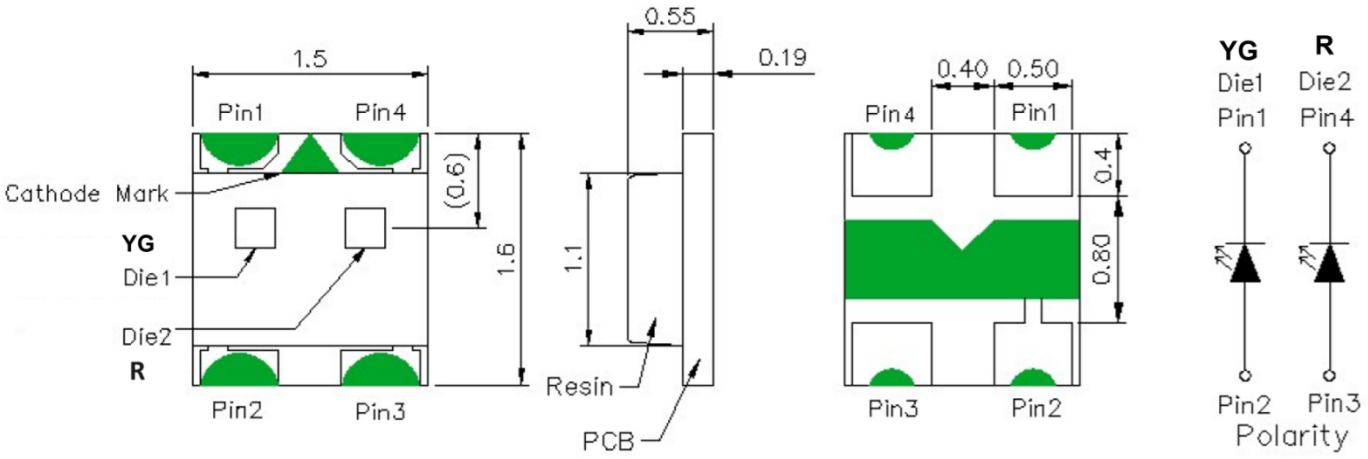
Application:

- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.
- Micro displays

Compliance and Certification:

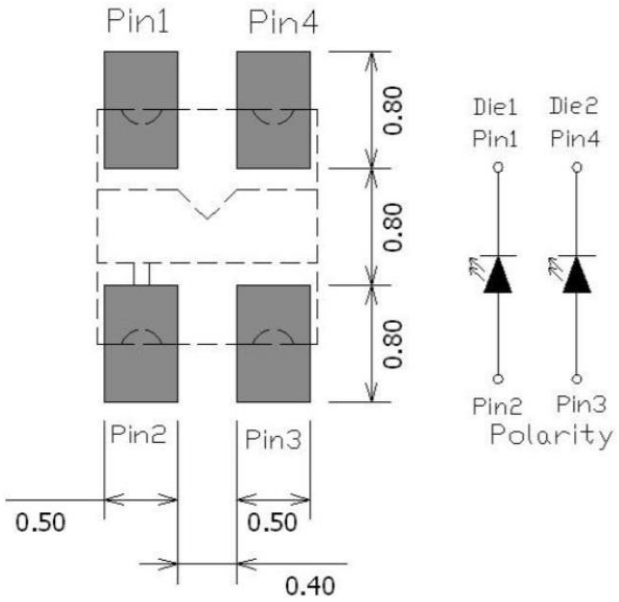
Mechanical Property:

(Dimension)



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

Recommended Solder footprint:



* All dimensions are in millimeters.
* Reflow soldering must not be performed more than twice.

Characteristics

■ Absolute Maximum Ratings

(Ta=25℃)

Parameter	Color	Symbol	Rating	Unit
DC Forward Current	Red	If	20	mA
	Yellow Green	If	20	mA
Pulse Forward Current (Duty 1/10@1KHz)	Red	I_{FP}	100	mA
	Yellow Green	I_{FP}	100	mA
Total Power Dissipation	Red	Pd	50	mW
	Yellow Green	Pd	50	mW
Reverse Voltage		V_R	5	V
Storage Temperature		Tstg	-40 ~ 90	℃
Operation Temperature		Topr	-40 ~ 85	℃
Soldering Temperature		Tsol	260 < 10 sec	℃

(1) Proper current rating must be observed to maintain junction temperature below maximum at all time

■ Electrical / Optical Characteristic

(Ta=25 oC)

Parameter	Color	Symbol	Min.	Typ.	Max.	Unit
Luminous Intensity	Red	Iv	45		180	mcd
	Yellow Green		28.5		71.5	
Peak Wavelength	Red	λp		632		nm
	Yellow Green			573		
Dominant Wavelength	Red	λd	615		635	nm
	Yellow Green		567.5		576.5	
Forward Voltage	Red	Vf	1.6		2.4	V
	Yellow Green		1.6		2.4	
View Angle		θ		X=120 Y=130		deg

(1). Tolerance of Luminous Intensity: ±11%
(2). Tolerance of Dominant Wavelength ±1nm
(3). Tolerance of measurement: VF=+/- 0.1V

■ Groups

Forward Voltage (V_F) Bin:

VF Rank (V)			
Color	**Code name**	**Low**	**High**
Red	N8	1.6	2.4
Yellow Green	N8	1.6	2.4

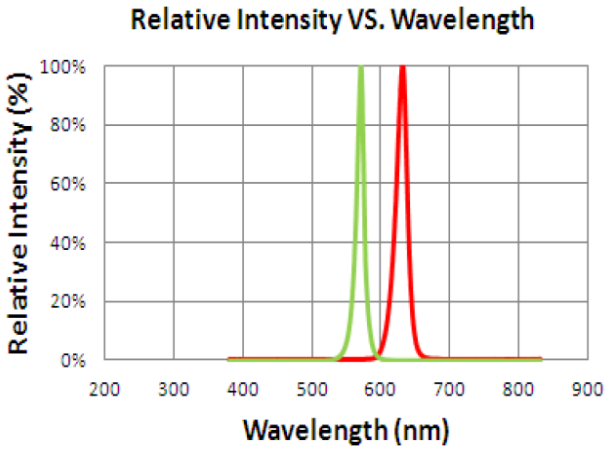
Luminous Intensity Bin:

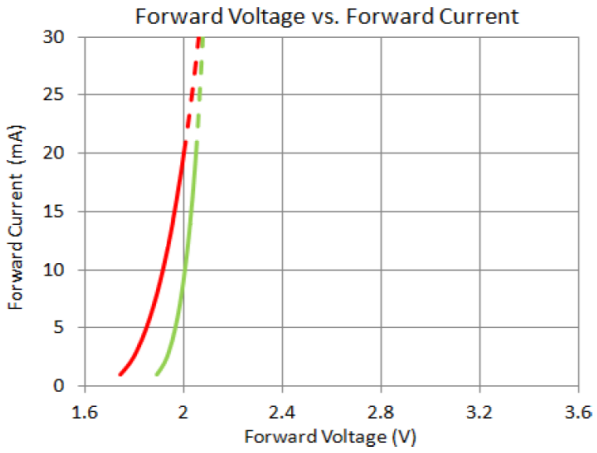
Rank (mcd)			
Color	**Code name**	**Low**	**High**
Red	P	45	71.5
	Q	71.5	112.5
Yellow Green	N	28.5	45
	P	45	71.5

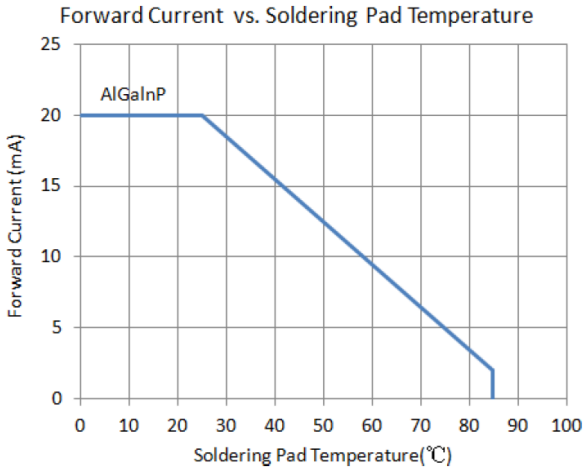
Dominant Wavelength Bin:

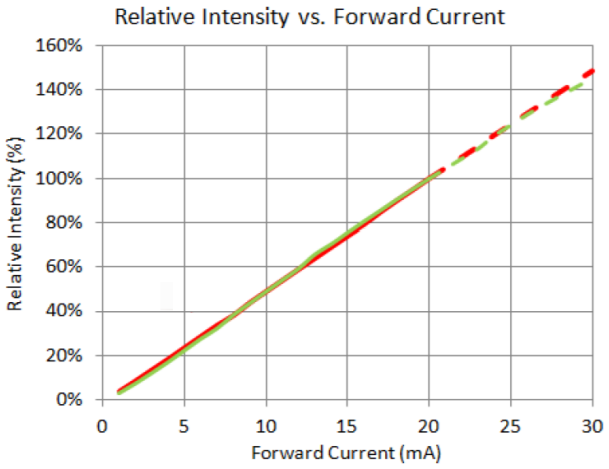
Rank (nm)			
Color	**Code name**	**Low**	**High**
Red	A79	615	635
Yellow Green	C	567.5	570.5
	D	570.5	573.5
	E	573.5	576.5

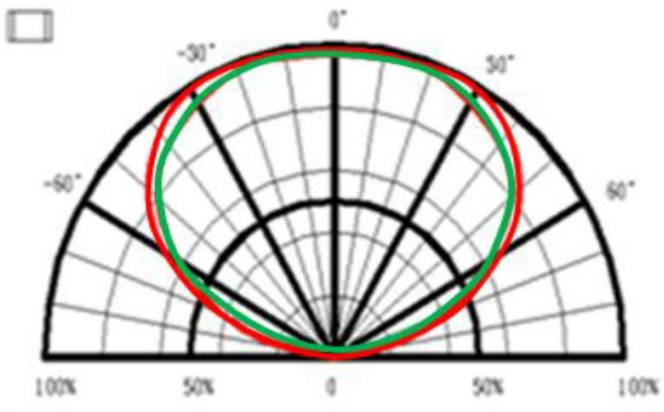
Characteristic Curves

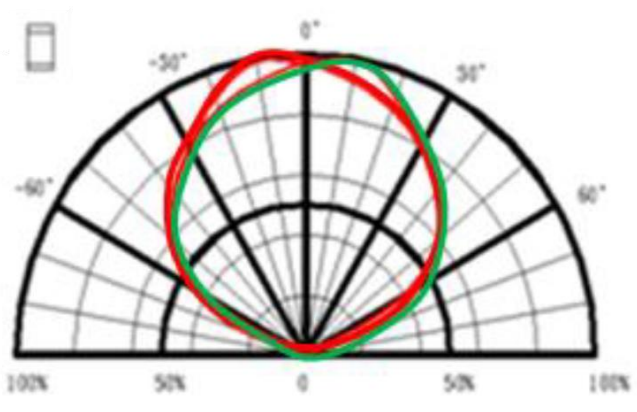












■ Reliability test:

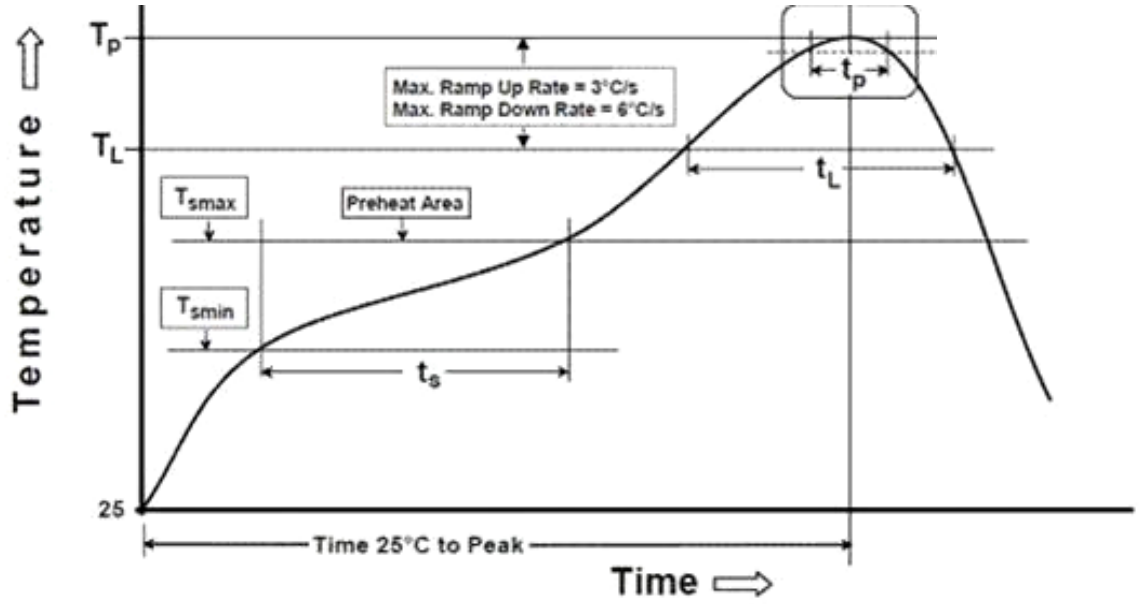
No	Item	Condition	Time/Cycle	Sample size
1	Steady State Operating Life of Room Temperature	25℃ Operating	1000 Hrs	20 pcs
2	Steady State Operating Life of Low Temperature -40℃	-40℃ Operating	1000 Hrs	20 pcs
3	Steady State Operating Life of Low Temperature 60℃	60℃ Operating	1000 Hrs	20 pcs
4	Steady State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

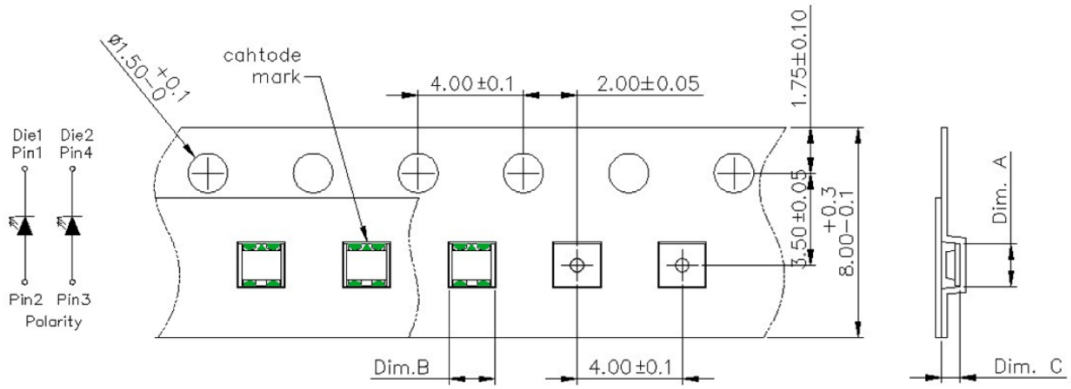
Solder Profile:

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

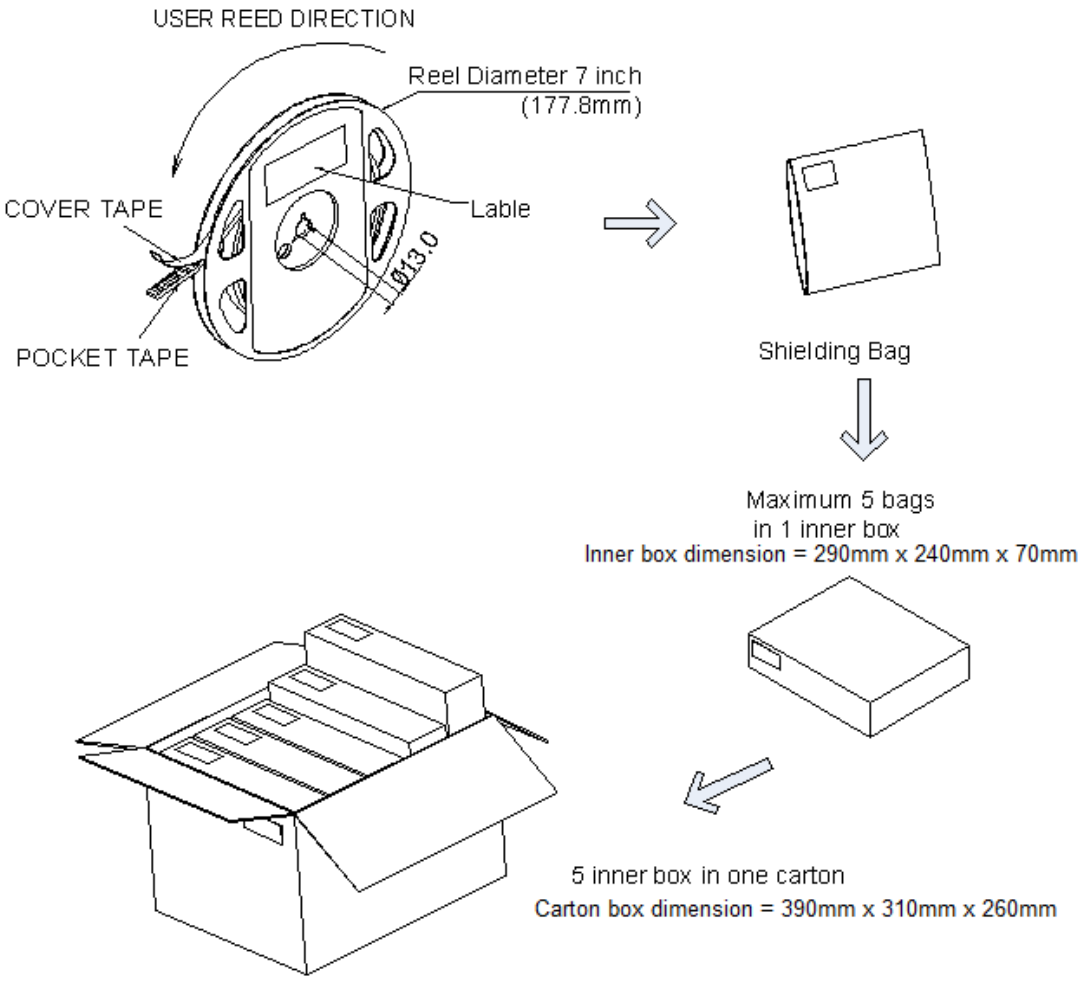


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100℃	150℃
Temperature Max(T_{smax})	150℃	200℃
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_P)	3℃/second max.	3℃/second max.
Liquidous Temperature(T_L)	183℃	217℃
Time(t_L) maintained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

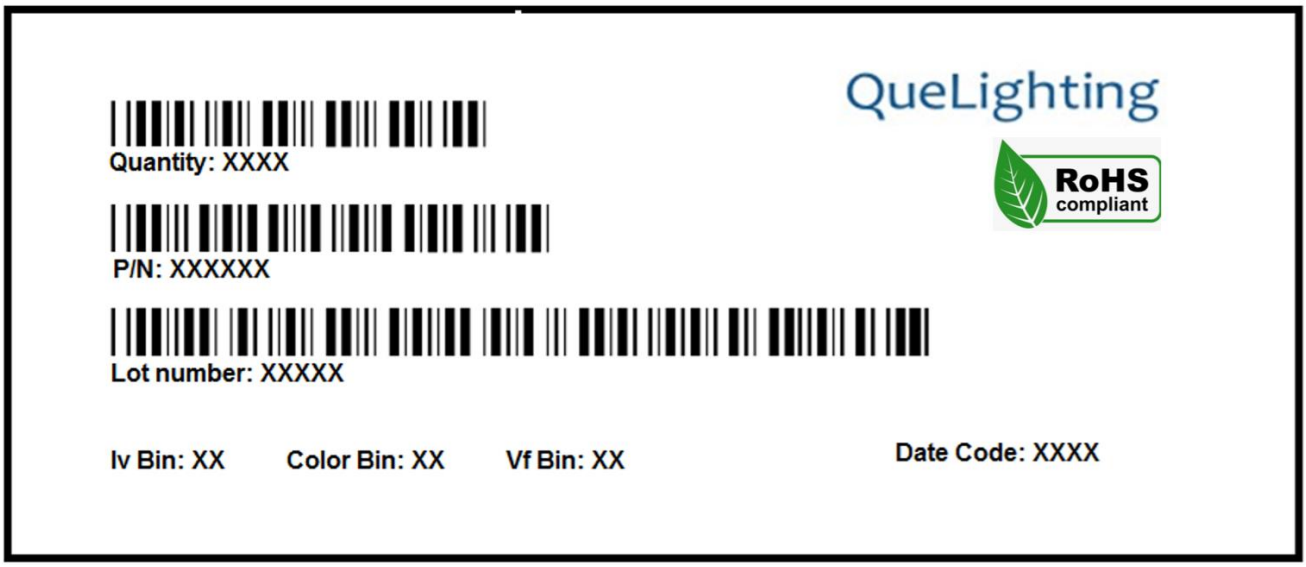
Taping & Packing:



Dim. A	Dim. B	Dim. C
1.75±0.05	1.65±0.05	0.70±0.05



Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP24RYG		2000 pcs

Revision History:

Revision Date:	Changes:	Version #:
02-10-2024	Initial release	1.0