



QLSP15RNB
Reverse Mount
Bi-color Red/Blue



Product Outline:

This is a reverse mountable bi color LED with AllnGaP Red and InGaN Blue. With small footprint and compact size, this package is ideal for status indication.

Features:

- Package in 8mm tape on 7" diameter reel
- Compatible with automatic placement equipment.
- Compliance with EU REACH
- RoHS compliant
- Compatible with infrared and vapor phase reflow solder process.
- Custom Bin available upon special request
- View angel $>120^\circ$
- Color: AllnGaP Red / InGaN Blue

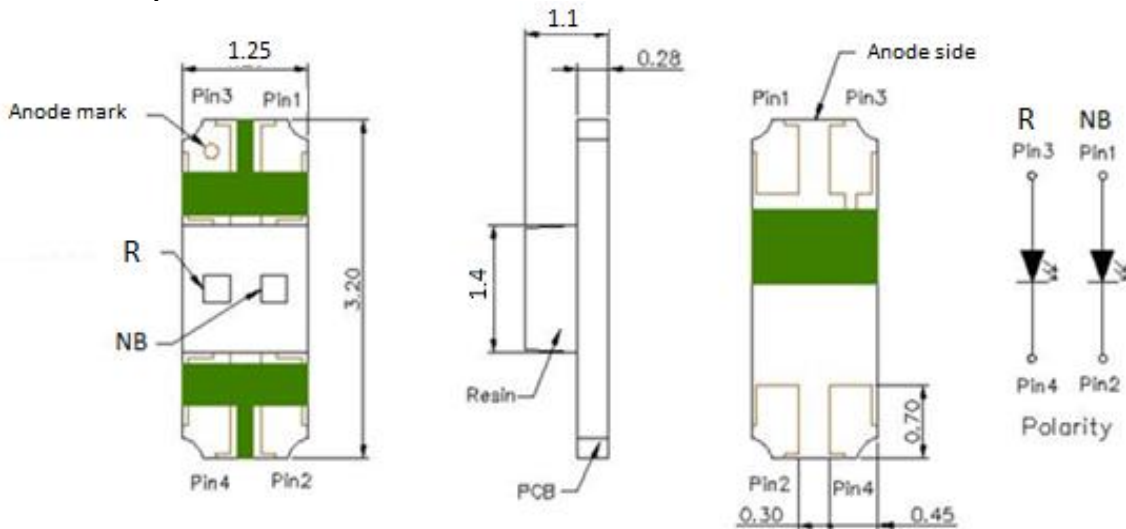
Application:

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

Compliance and Certification:

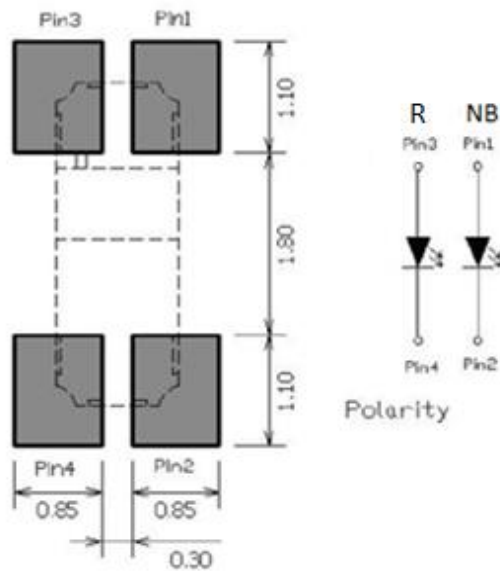


Mechanical Property: (Dimension)



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

Recommended Solder footprint:



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



Characteristics

■ Absolute Maximum Ratings

(Ta=25°C)

Color	P _D (mW)	I _F (mA)	I _{FP} * (mA)	T _{OP} (°C)	T _{ST} (°C)	V _R (V)
R (Red)	50	20	60	-40 ~ 85	-40 ~ 85	5
NB (Blue)	65	20	60	-40 ~ 85	-40 ~ 85	5

 *I_{FP}: is pulse @ 1/10 duty cycle and 0.1ms

■ Electrical / Optical Characteristic

(Ta=25 oC)

(AlInGaP RED = R)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v		120		mcd	I _F =20mA
Peak Wavelength	λ _p		632		nm	
Dominant Wavelength	λ _d		624		nm	
Forward Voltage	V _f	1.9		2.4	V	
View Angle	θ		120		deg	

(InGaN Blue = NB)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v		130		mcd	I _F =20mA
Peak Wavelength	λ _p		470		nm	
Dominant Wavelength	λ _d		472		nm	
Forward Voltage	V _f	2.9		3.4	V	
View Angle	θ		120		deg	

(1) Tolerance of Dominant Wavelength ±1nm

 (2) Tolerance of measurement: V_F=+/- 0.1V

(3) Tolerance of Luminous Intensity: ±11%



Binning

Brightness: (R&NB)

	Low (mcd)	High (mcd)
Full	100	600
1	100	200
2	200	300
3	300	400
4	400	600

Vf: (R)

	Low (V)	High (V)
A	1.9	2.1
B	2.1	2.3
C	2.2	2.4

Vf: (NB)

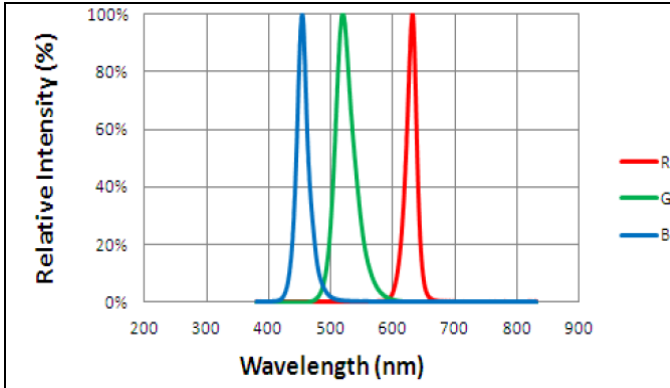
	Low (V)	High (V)
X	2.8	3.2
Y	3.0	3.4

Color: (NB & R)

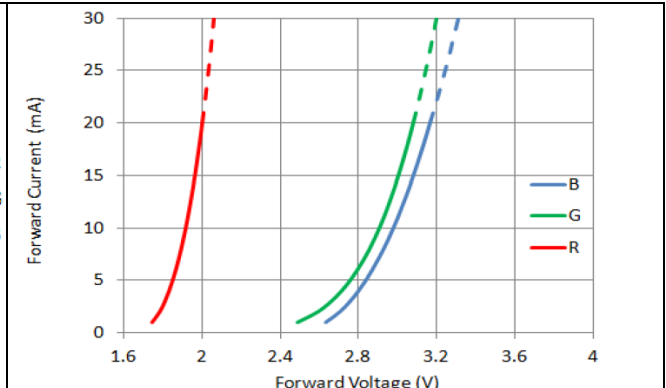
	Low (nm)	High (nm)
Full (Blue)	465	475
Full (Red)	615	625



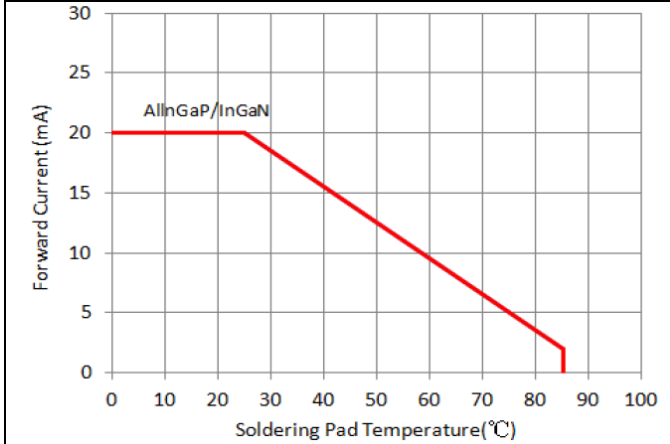
Characteristic Curves



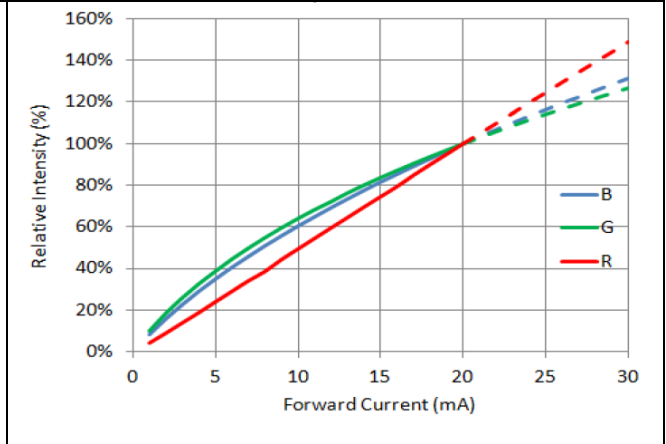
Relative Intensity vs Wavelength



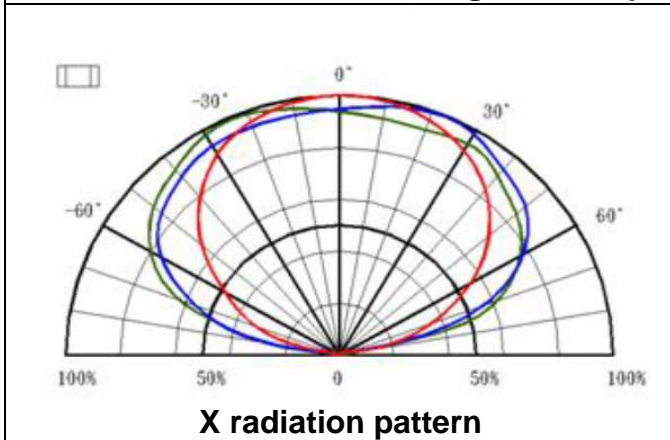
Forward current vs Forward Voltage



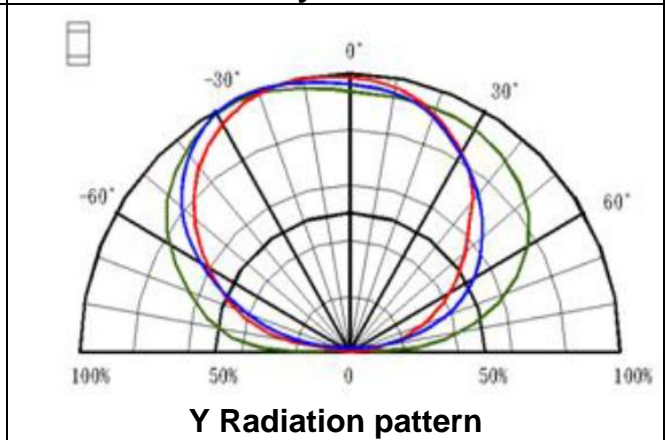
Forward Current vs Soldering Pad Temp



Relative Intensity vs Forward Current



X radiation pattern



Y 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

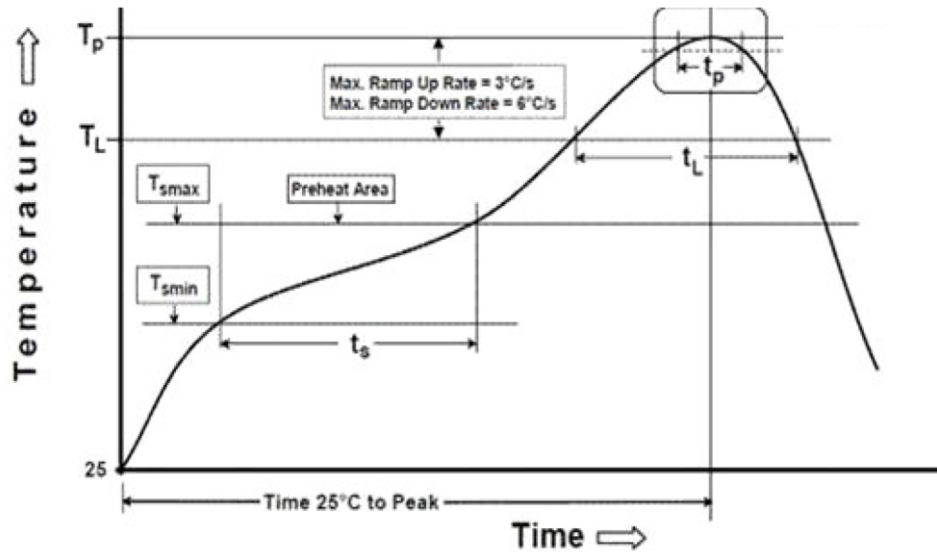
■ Judgment Criteria:

Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	R : IF=20 mA	$\Delta Vf < 10\%$
Luminous Flux	Iv		$\Delta Iv < 30\%$



Solder Profile:

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

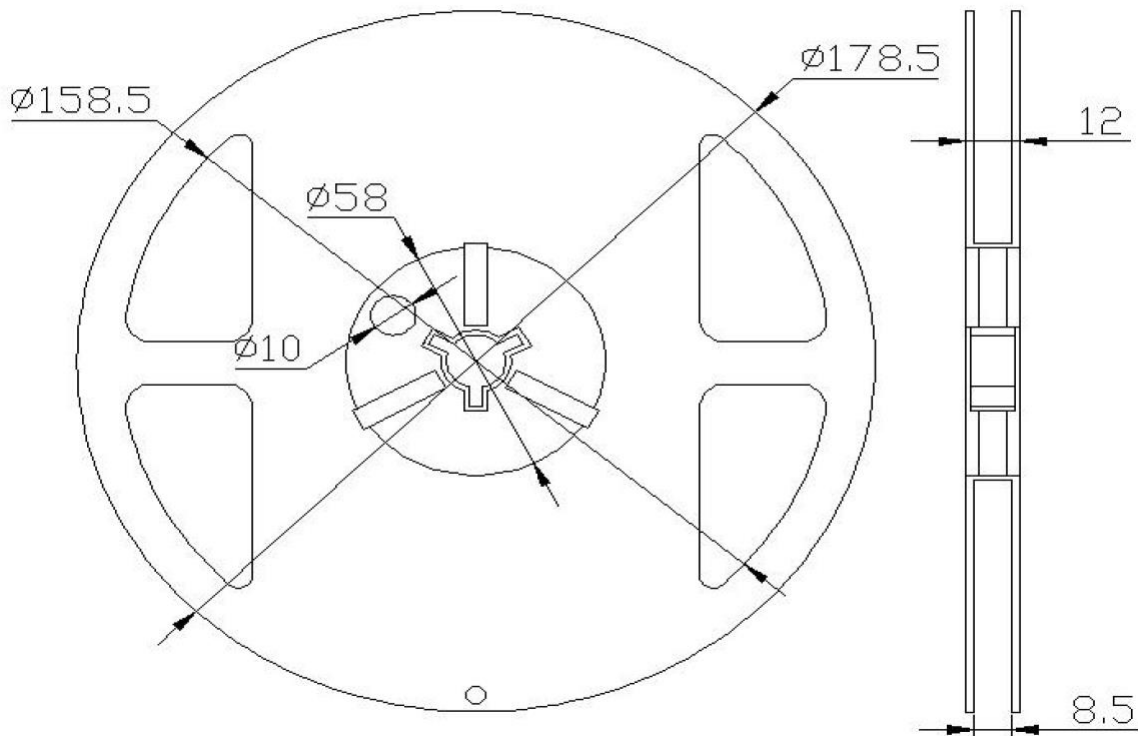
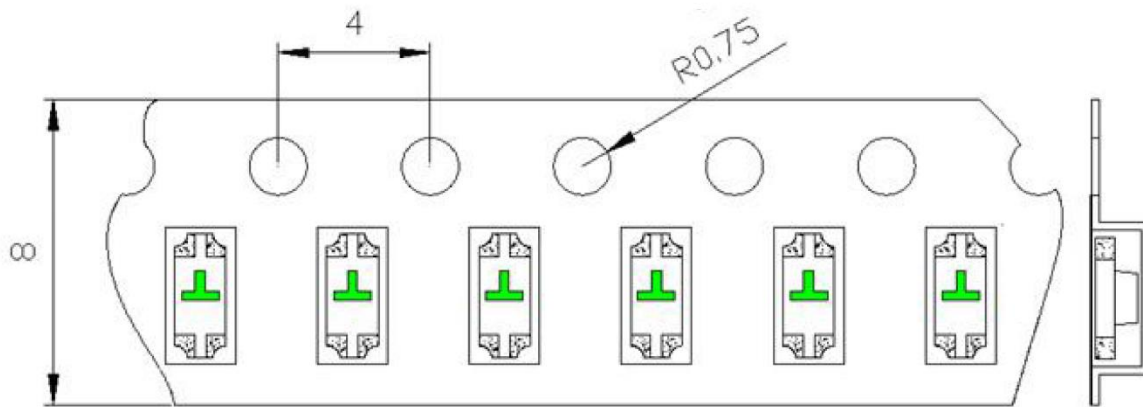


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100°C	150°C
Temperature Max(T_{smax})	150°C	200°C
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_p)	3°C/second max.	3°C/second max.
Liquidous Temperature(T_L)	183°C	217°C
Time(t_L)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

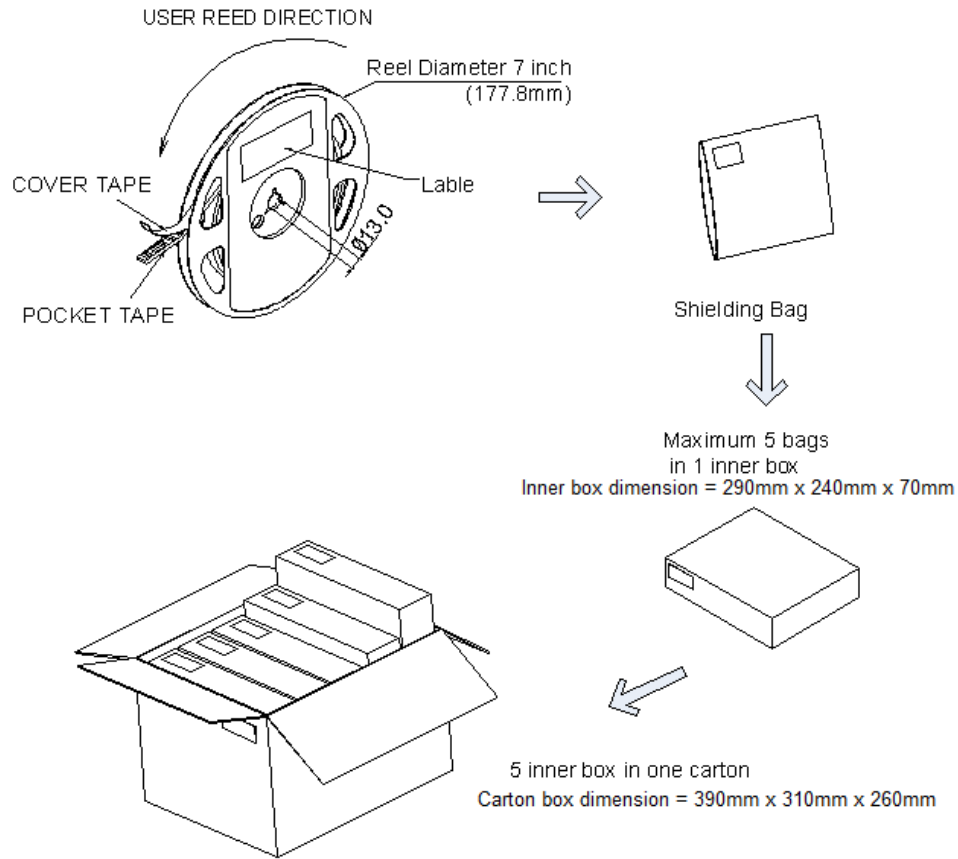


Taping & Packing:

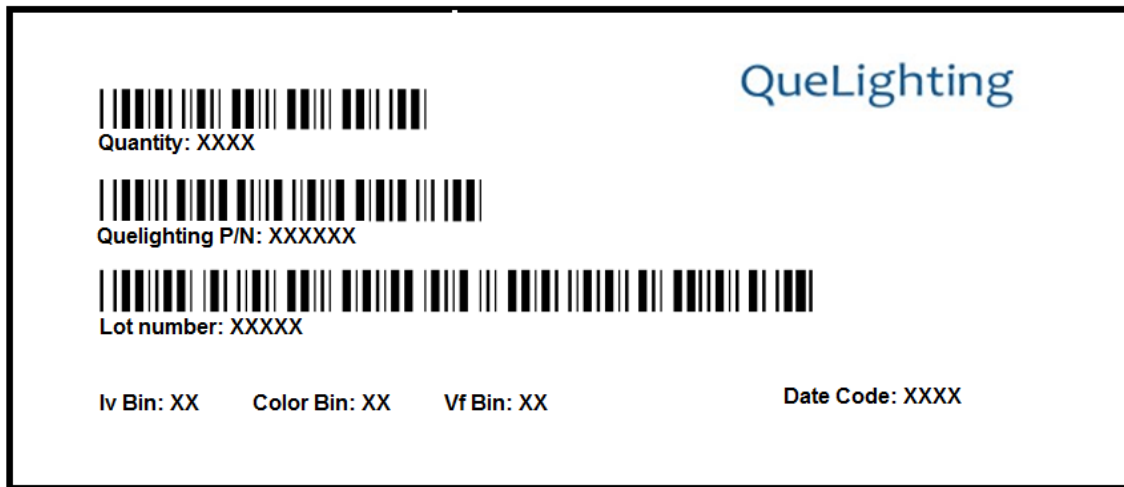


Unit : mm





Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP15RNB		3000 pcs



Revision History:

Revision Date:	Changes:	Version #:
2-5-2021	Initial release	1.0

