



QLSP15RGB
Reverse Mount
Tri color RGB



Product Outline:

This is a reverse mountable Tri color LED with AllnGaP Red and InGaN Blue & Green color. 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°
- Color: AllnGaP Red / InGaN Blue & Green

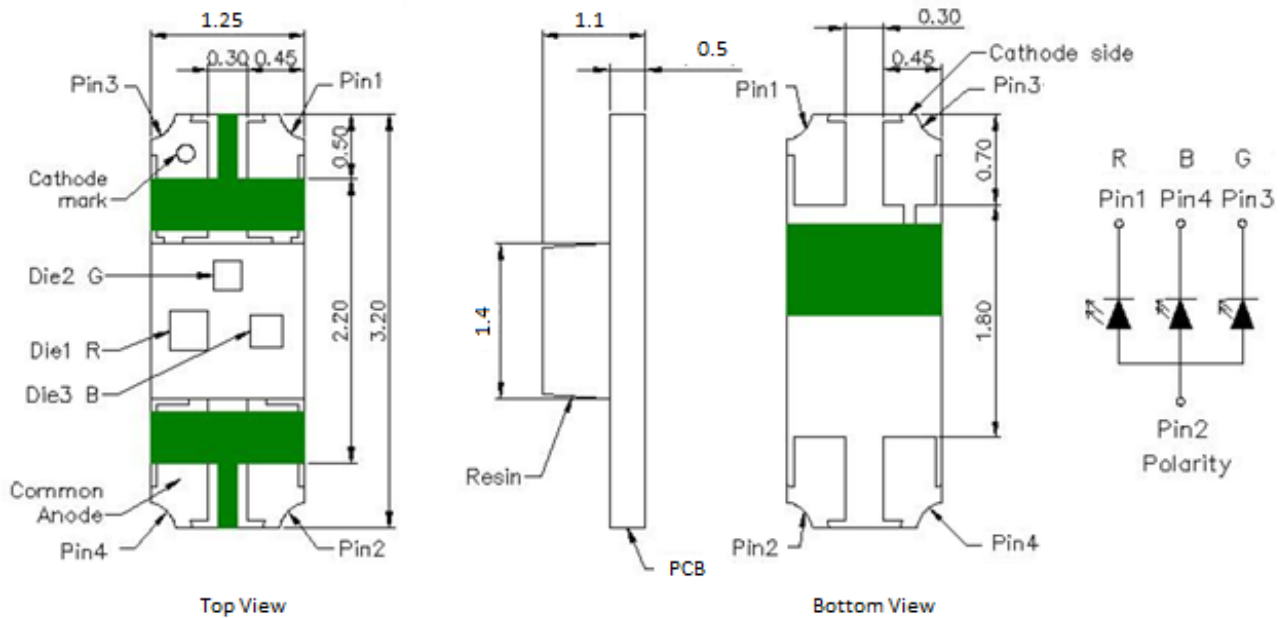
Application:

- 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:

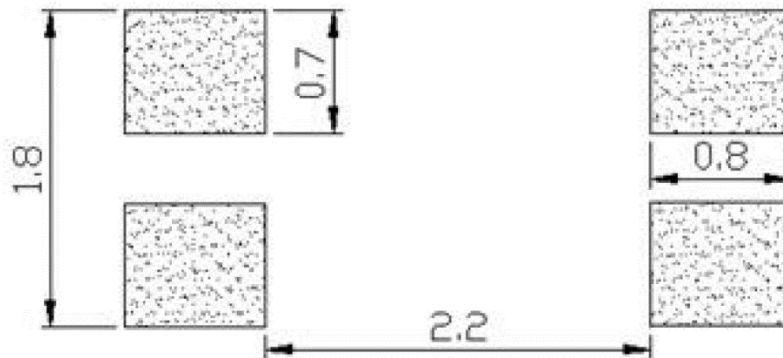


Mechanical Property: (Dimension)



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

Recommended Solder footprint:



Recommended hole size for reverse mount ~ 2.2mm diameter

* 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	100	-40 ~ 85	-40 ~ 85	5
B (Blue)	65	20	60	-40 ~ 85	-40 ~ 85	5
G (Green)	80	20	80	-40 ~ 85	-40 ~ 85	5

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

■ Electrical / Optical Characteristic

(Ta=25 oC)

(AlInGaP RED)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v		180		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 Green)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v		600		mcd	I _F =20mA
Peak Wavelength	λ _p		523		nm	
Dominant Wavelength	λ _d		525		nm	
Forward Voltage	V _f			3.4	V	
View Angle	θ		120		deg	



(InGaN Blue)

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			3.4	V	
View Angle	θ		120		deg	

 (1) Tolerance of Dominant Wavelength $\pm 1nm$

 (2) Tolerance of measurement: $V_F = \pm 0.1V$

 (3) Tolerance of Luminous Intensity: $\pm 11\%$

Binning

Brightness: (R&G&B)

	Low (mcd)	High (mcd)
Full	100	600
1	100	200
2	200	300
3	300	400
4	400	600
5	550	750

 V_f : (R)

	Low (V)	High (V)
A1	1.9	2.2
B1	2.1	2.4

 V_f : (B&G)

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



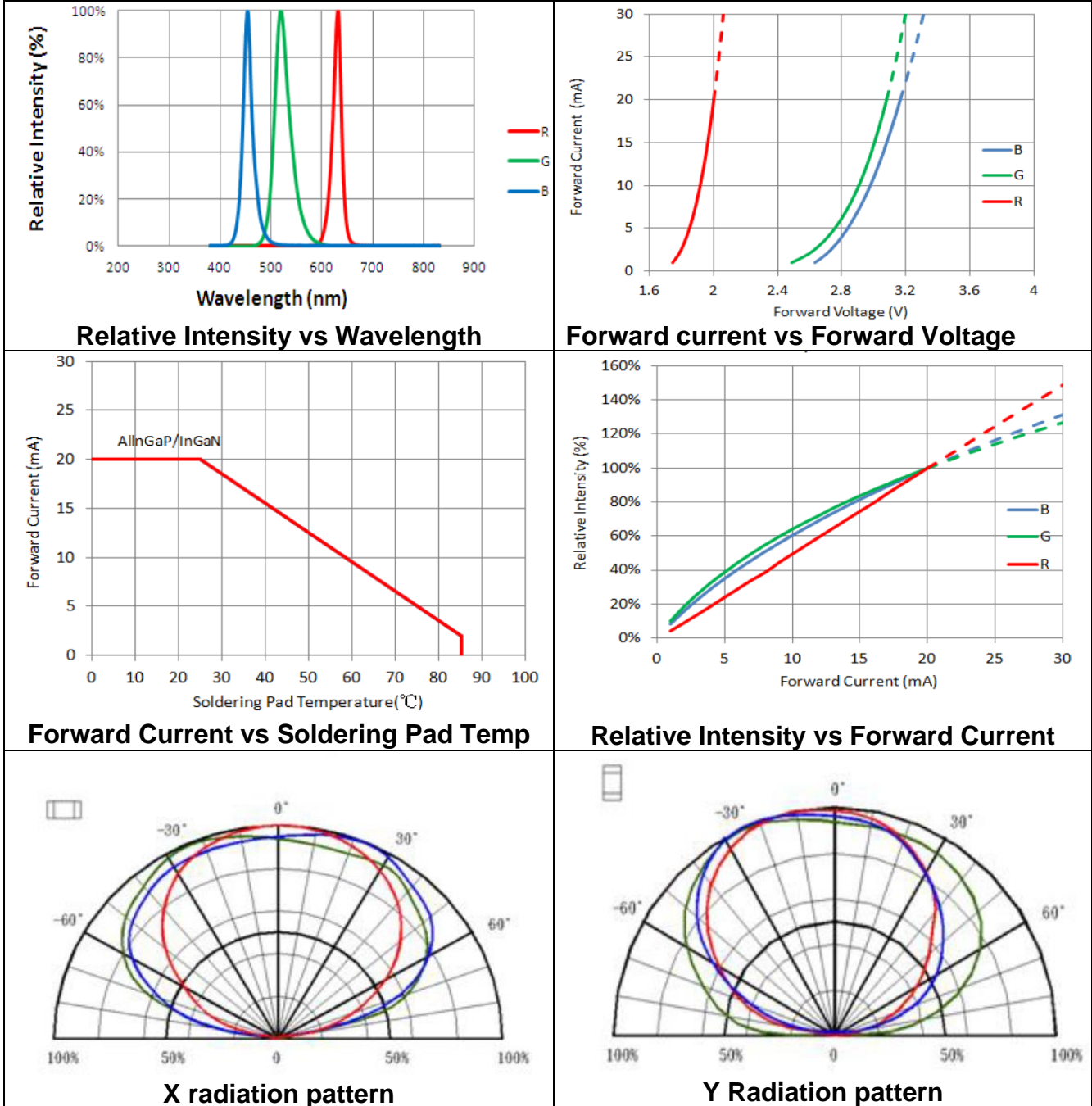
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Color: (R&G&B)

	Low (nm)	High (nm)
Full (Blue) = FB	465	475
Full (Red) = FR	615	625
Full (Green) = FG	518	524



Characteristic Curves



■ 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

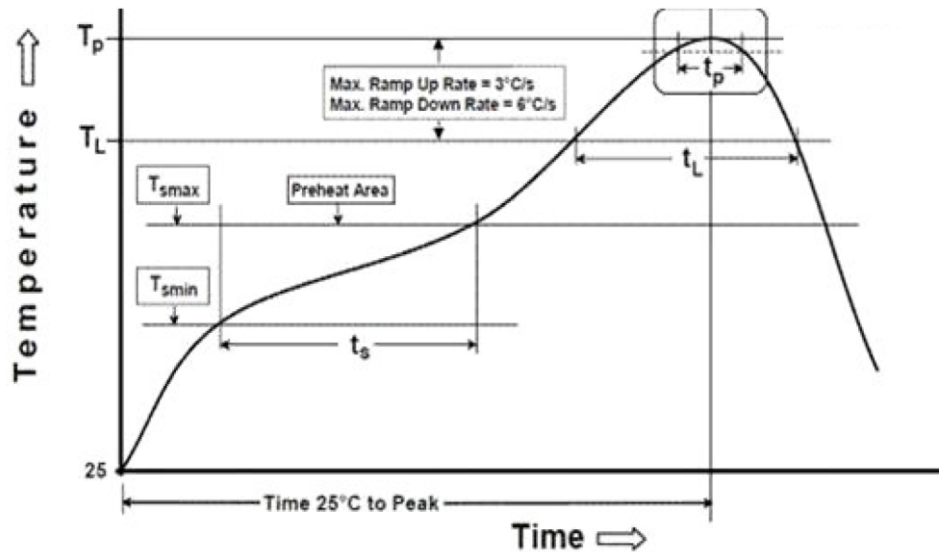
■ Judgment Criteria:

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



Solder Profile:

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

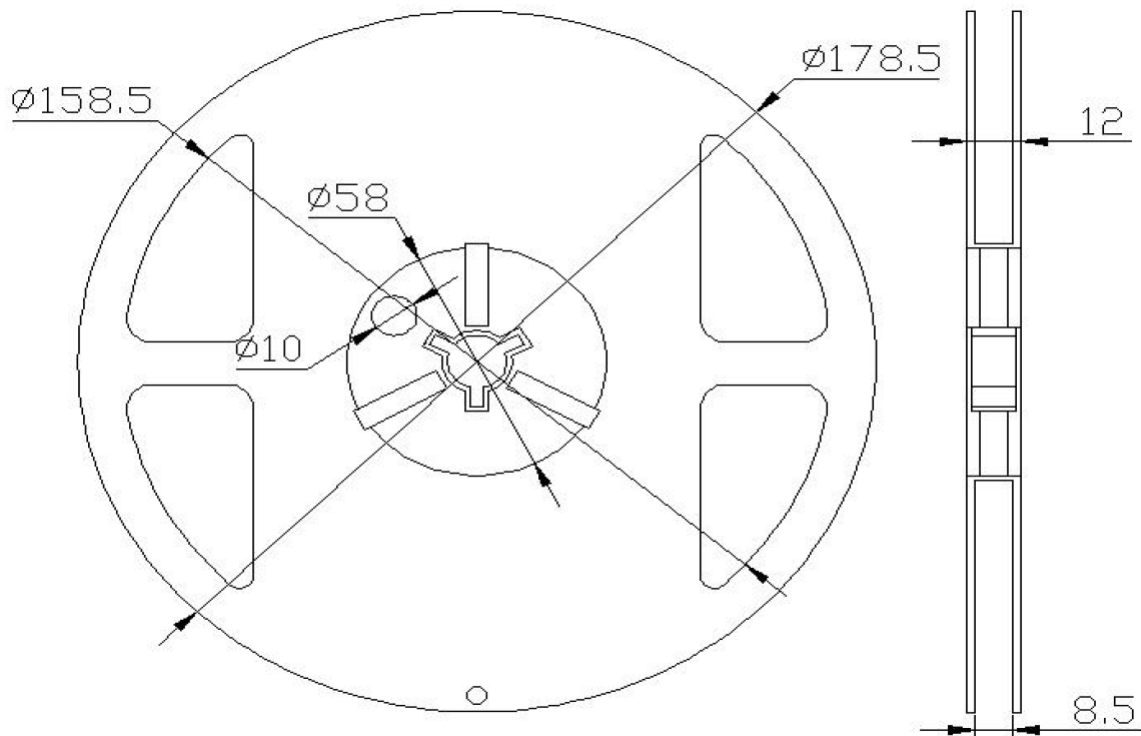
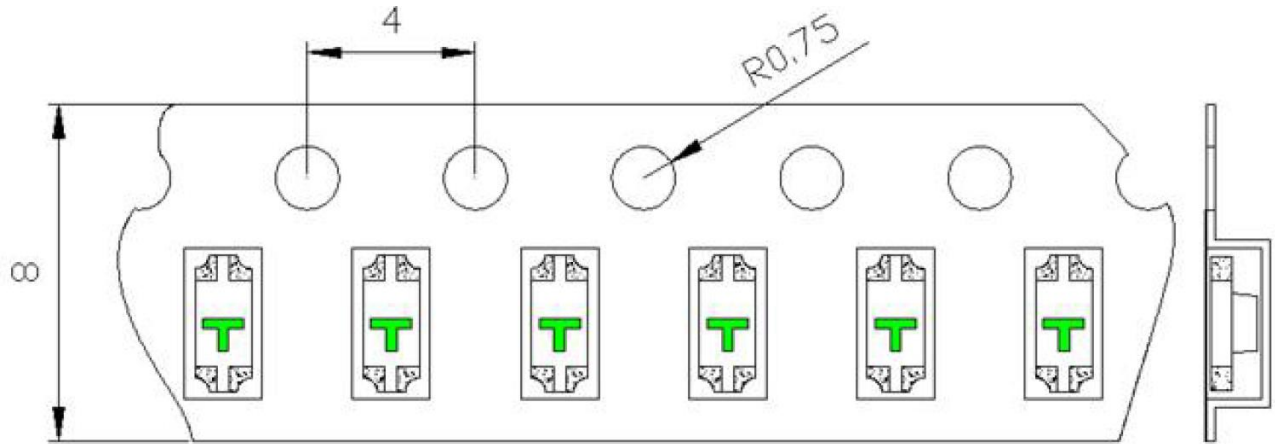


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Temperature Min(T_{smin})	100°C	150°C
Temperature Max(T_{smax})	150°C	200°C
Time(t_a) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up rate(T_L to T_p)	3°C/second max.	3°C/second max.
Liquidous Temperature(T_L)	183°C	217°C
Time(t_L)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

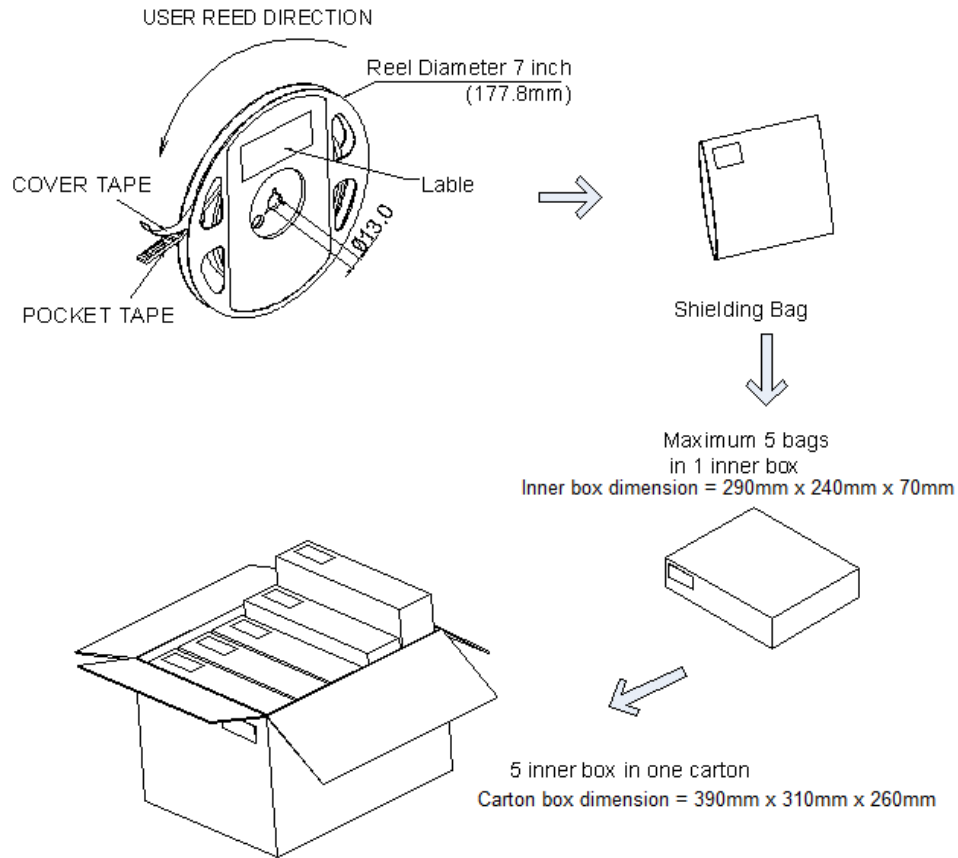
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.




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
QLSP15RGB		3000 pcs



Revision History:

Revision Date:	Changes:	Version #:
2-5-2021	Initial release	1.0
11-20-2022	Added recommended reverse mount hole dimension	1.1

