



QLSP07RGBPW_B
(3535 Black-Face Multi-Color LED)



Product Outline:

This is a multi-color LED that provides high lumen output in the 3535 package. Creating a small optical light source because of the compact design it's ideal for color mixing applications

Features:

- Tri-Color LED, Red/Green/Blue/ pure white LED (CRI 80 min)
- With Black-face Lead frame
- High brightness output @ 20mA,
- Package Dimension = 3.5mmX3.5mmX2.8mm
- RoHS compliant
- Reflow solderable- JEDEC J-STD-020
- Custom Bin available upon special request
- View angel >120°
- Resin color by diffused white

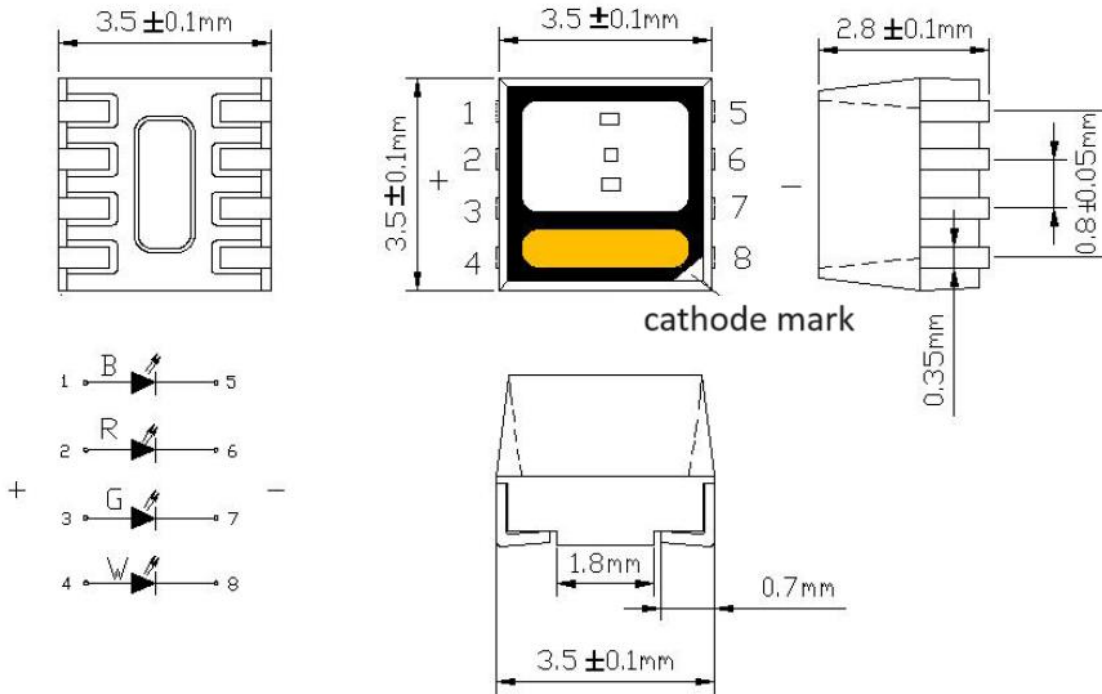
Application:

- Stage lighting,
- Architecture Lighting
- Garden Lighting
- Indoor directional lighting
- Entertainment lighting.

Compliance and Certification:

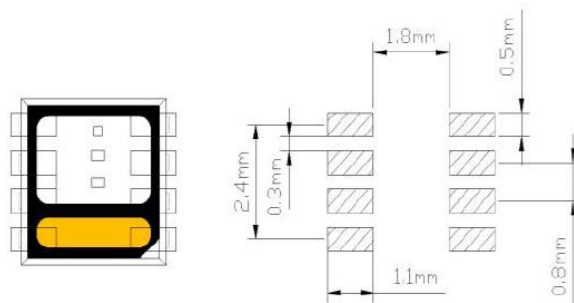


Mechanical Property: (Dimension)



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

Recommended Solder footprint:



- * All dimensions are in millimeters.
- * The LEDs is designed to be reflow soldered on to a PCB. IF dip soldered that QL cannot guarantee its reliability.



Characteristics

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
DC Forward Current	I _f	20	mA
Leakage Current (5V)	I _r	10	μA
Total Power Dissipation	P _d	180	mW
Pulse Forward Current	I _{fp}	30	mA
LED Junction Temperature	T _J	120	°C
Storage Temperature	T _{stg}	-40 ~ 100	°C
Operation Temperature	T _{opr}	-40 ~ 85	°C
Soldering Temperature	T _{sol}	260 < 10 sec	°C

- (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)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage - Red	V _f	20mA	2.0		2.4	V
Forward Voltage – Green	V _f		2.8		3.4	V
Forward Voltage - Blue	V _f		2.8		3.4	V
Forward Voltage – White	V _f		2.8		3.4	V
View Angle	θ			120		Deg
Color Rendering Index	CRI		80			Ra

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



■ Specification

Product	Color	Condition	Vf(V) Typ.	Dominant Wavelength (nm)	Luminous Intensity (mcd)	
					Min.	Typ.
QLSP08RGB_B	Red	20mA	2.2	620~630	500	650
	Green		3.2	515~530	1400	1500
	Blue		3.2	460~470	300	500
	Pure White	30mA	3.2	4800-5200k	8.0 lm	

*Tolerance = +/- 10%

■ Groups

Dominant Wavelength

Wd (nm) @20mA			
Color	Code name	x	y
Red	A8	620	625
	A9	625	630
Green	DM	515	520
	DN	520	525
	DP	525	530
Blue	DC	460	465
	DD	465	470

Measurement tolerance is +/- 1nm



Pure White color Bin:

4800-5200CCT @30mA			
Color	Code name	Min.	Max.
Pure White	50M	0.3400	0.3616
		0.3529	0.3727
		0.3502	0.3491
		0.3388	0.3407
		0.3400	0.3616

Forward Voltage (V_F) Bin:

VF Rank@20mA			
Color	Code name	Low	High
Red	R4	2.0	2.4
Green/Blue/White	25	2.8	3.4

The forward voltage tolerance is $\pm 0.1V$

Luminous Intensity Bin:

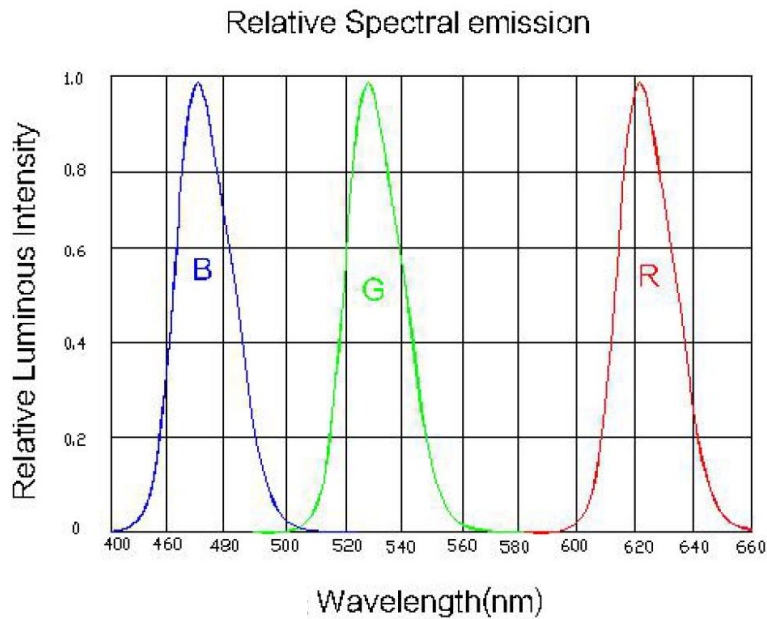
Rank (mcd)@20mA			
Color	Code name	Low	High
Red	P31	500 mcd	800 mcd
Green	N102	1400 mcd	1800 mcd
Blue	N32	300 mcd	500 mcd
Pure white	W	8 lm	10 lm

luminous flux tolerance is $\pm 7\%$

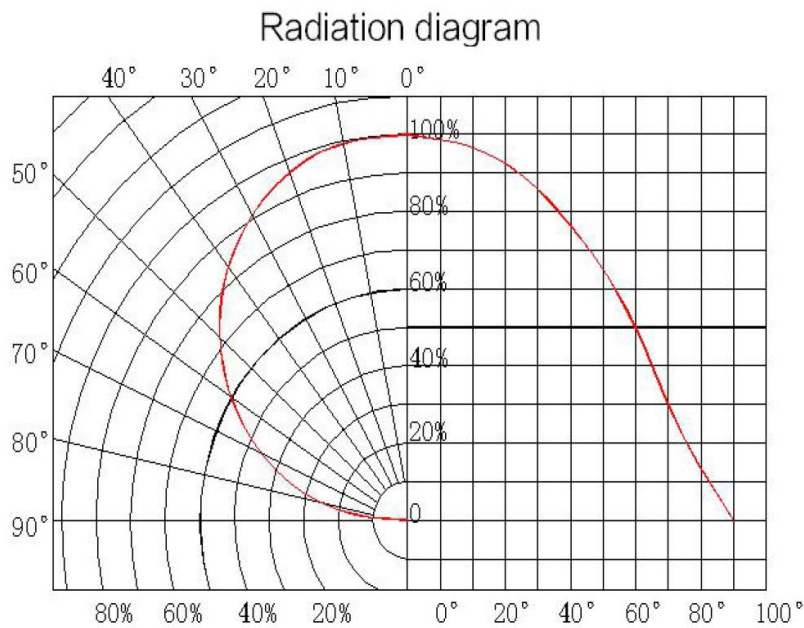


Characteristic Curves

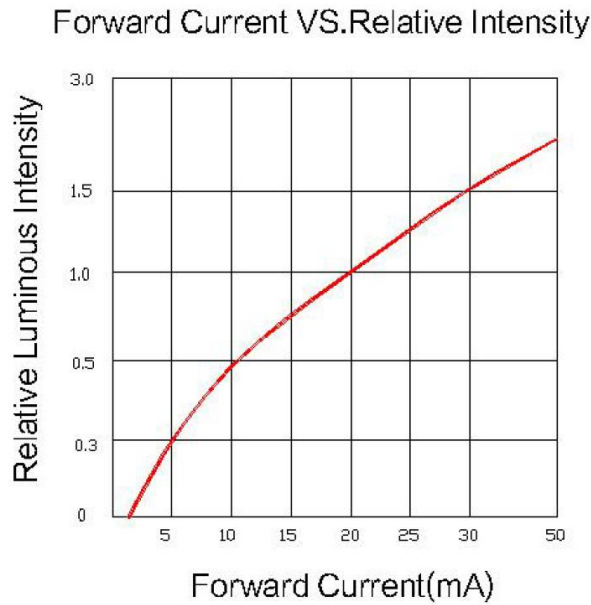
(1) Color Spectrum



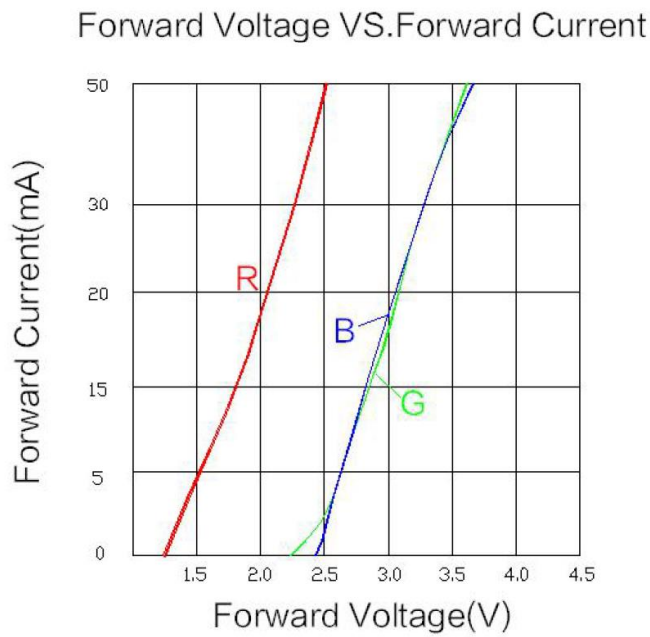
(2). Typical Representative Spatial Radiation Pattern



(3). Forward Current Characteristics



(4). Forward Current vs Forward Voltage



■ 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

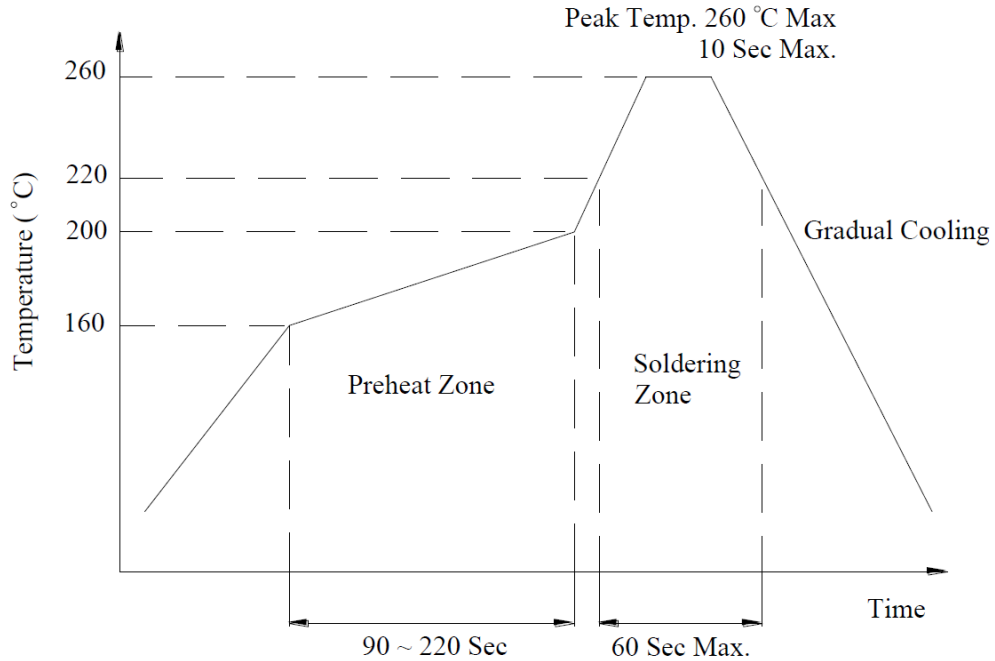
■ Judgment Criteria:

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



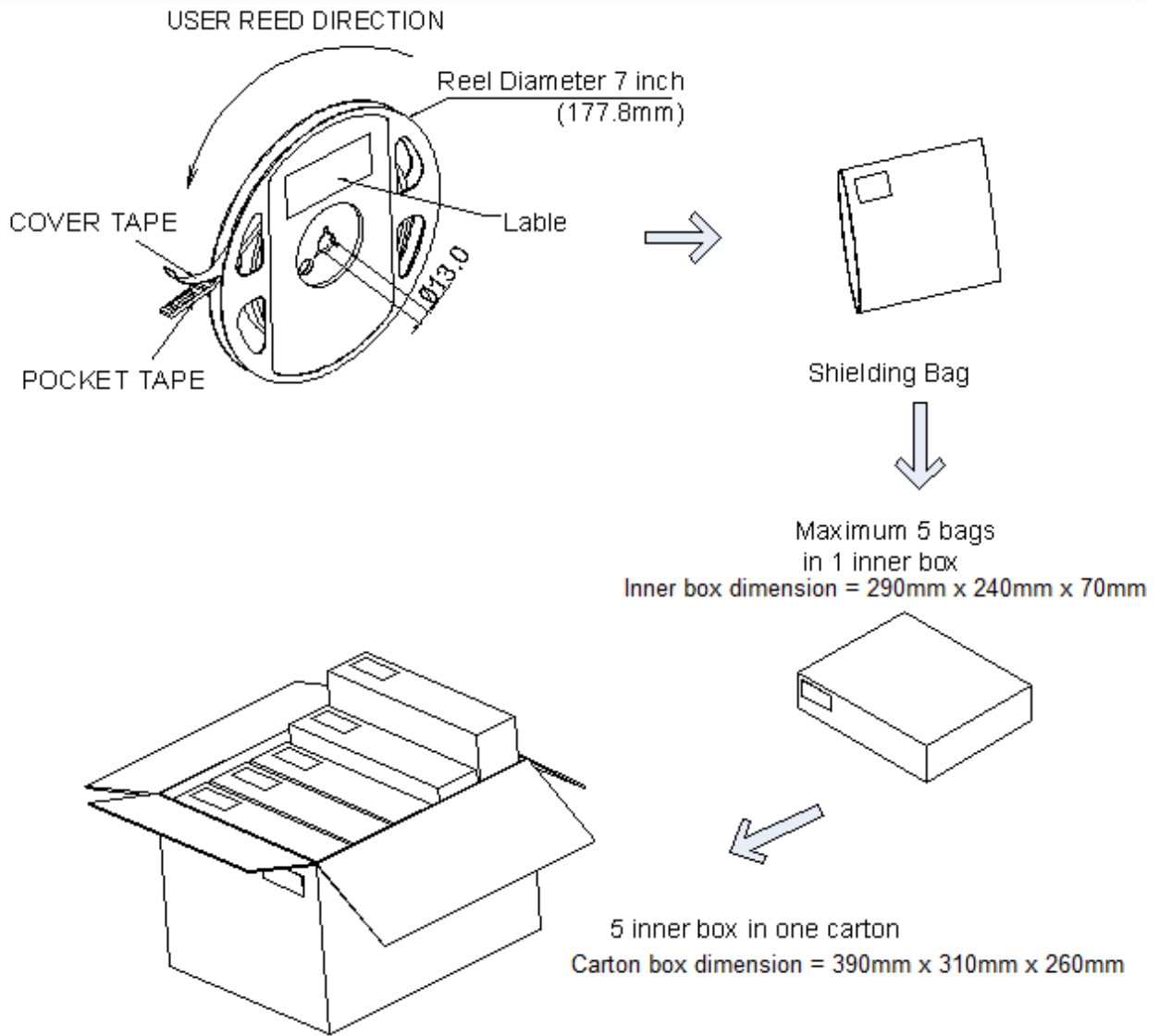
Note:

1. The recommended reflow temperature is 230°C(±5°C). The maximum soldering temperature should be limited to 240°C.
2. Do not stress the silicone resin while it is exposed to high temperature.
3. The number of reflow process should not exceed 3 times.

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
QLSP07RGBPW_B		2000 pcs



Revision History:

Revision Date:	Changes:	Version #:
09-23-2019	Initial release	1.0

