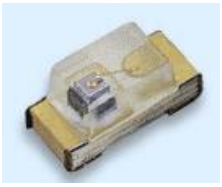
QUELIGHTING

Sustainable Lighting Solution



QLSP1308R-289 V1.0

(0603 Red LED)

Product Outline:

This is the much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.

Features:

- Compatible with automatic placement equipment.
- RoHS compliant
- Compatible with infrared and vapor phase reflow solder process.
- Custom Bin available upon special request
- View angel typ. 100°
- 0.8mm Height

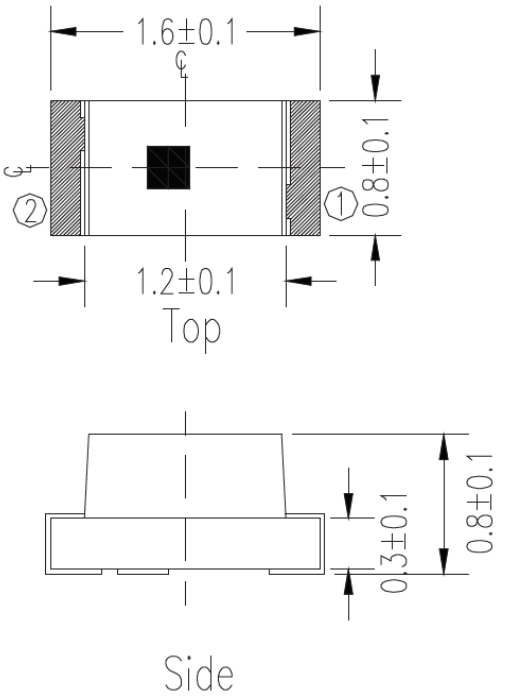
Application:

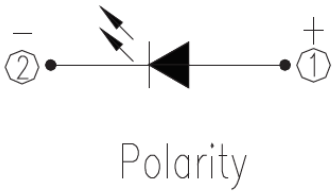
- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

Compliance and Certification:

Mechanical Property:

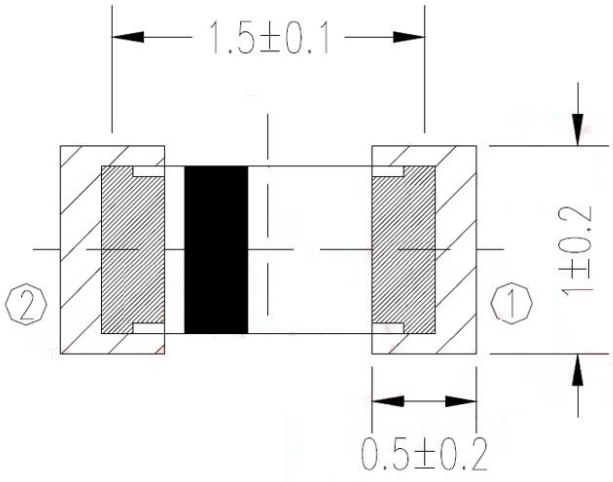
(Dimension)





* All dimensions are in millimeters,
* Tolerances are ± 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	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
DC Forward Current	If	25	mA
Pulse Forward Current (Duty 1/10 @1KHz)	I_{FP}	60	mA
Total Power Dissipation	Pd	60	mW
Electrostatic Discharge (HBM)	ESD	2000	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	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	45		112	mcd	I_F=20mA
Peak Wavelength	λp		632		nm	
Dominant Wavelength	λd	621		631	nm	
Forward Voltage	Vf	1.7		2.3	V	
View Angle	θ		100		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)				Condition
Color	**Code name**	**Low**	**High**	**unit**
Red	19	1.7	1.8	IF=20mA
	20	1.8	1.9	
	21	1.9	2.0	
	22	2.0	2.1	
	23	2.1	2.2	
	24	2.2	2.3	

Luminous Intensity Bin:

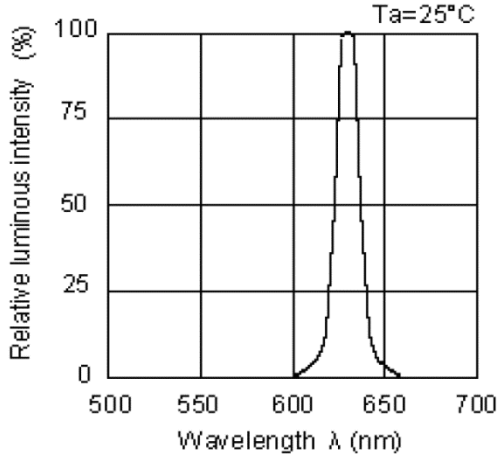
Rank (mcd)				Condition
Color	**Code name**	**Low**	**High**	**Unit**
Red	P1	45	57	IF=20mA
	P2	57	72	
	Q1	72	90	
	Q2	90	112	

Dominant Wavelength Bin:

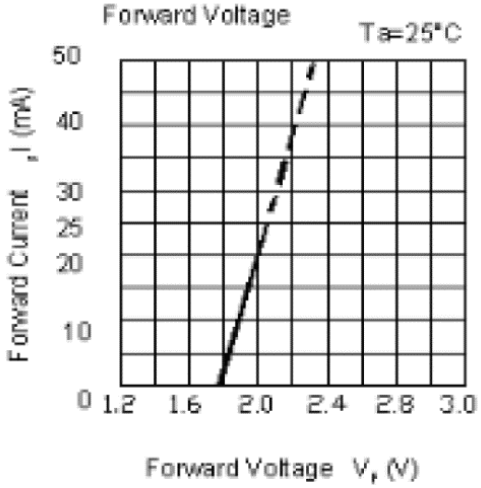
Rank (nm)				Condition
Color	**Code name**	**Low**	**High**	**Unit**
Red	FF1	621	626	IF=20mA
	FF2	626	631	

Characteristic Curves

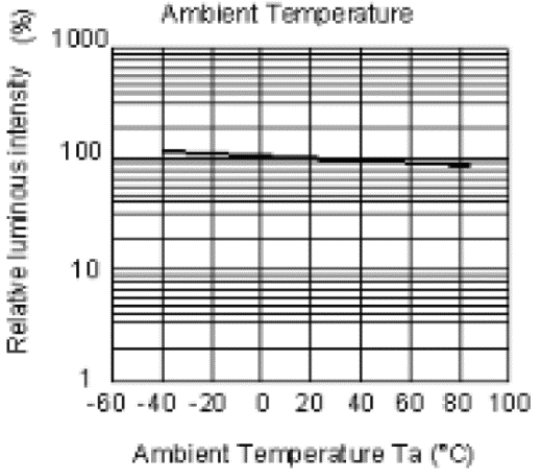
Spectrum Distribution



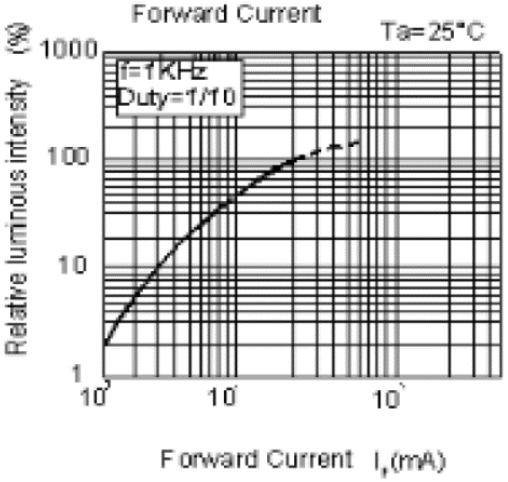
Forward Current vs.
Forward Voltage



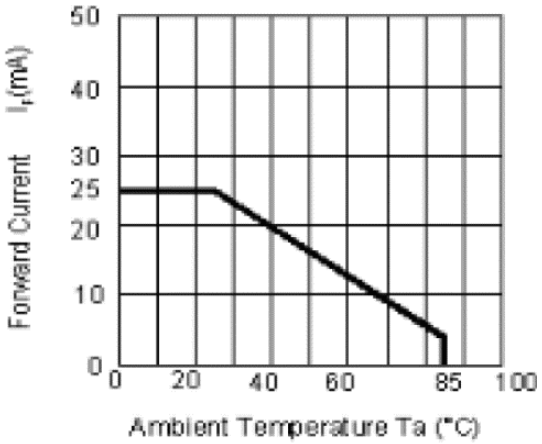
Luminous Intensity vs.
Ambient Temperature



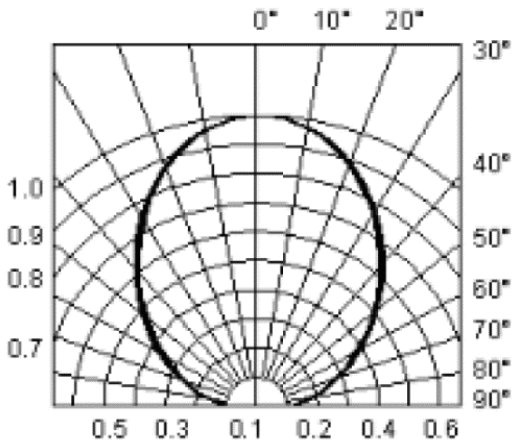
Luminous Intensity vs
Forward Current



Forward Current Derating Curve



Radiation Diagram Ta=25°C



■ 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:

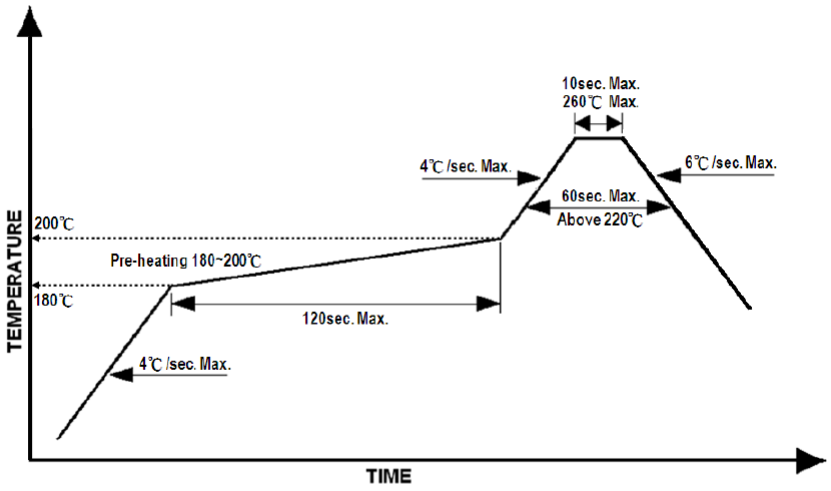
Item	Symbol	Test Condition	Judgment Criteria
Forward Voltage	Vf	R：IF=20 mA	△Vf< 10%
Luminous Flux	Iv		△Iv< 30%

Solder Profile:

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

1. Operating temp.: Above 220 ℃ ,60 sec.
2. Peak temp.:260 ℃Max.,10sec Max.
3. Reflow soldering should not be done more than two times.
4. Never attempt next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following:

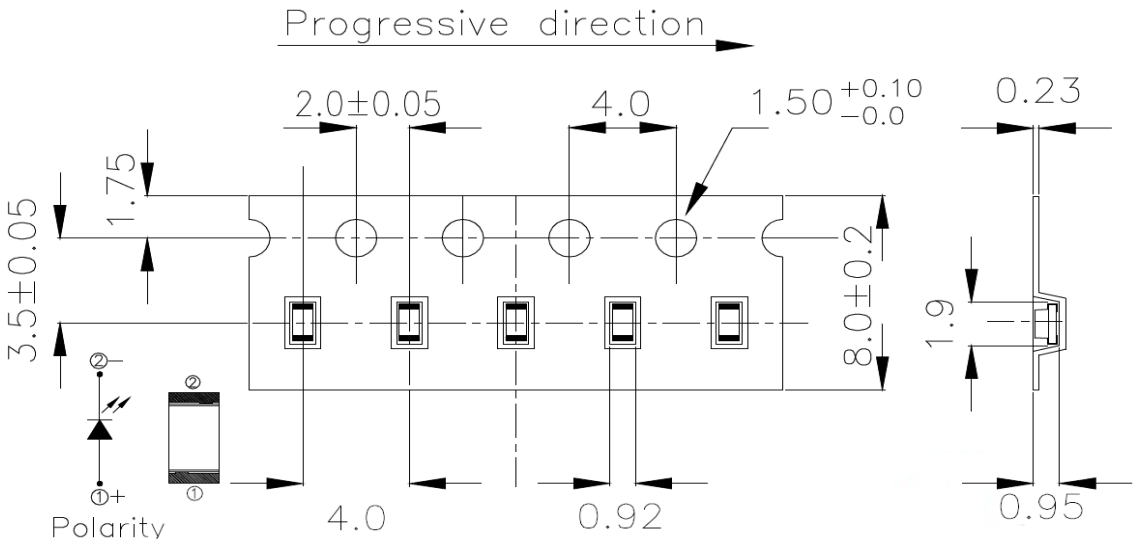
Lead-free Solder Profile



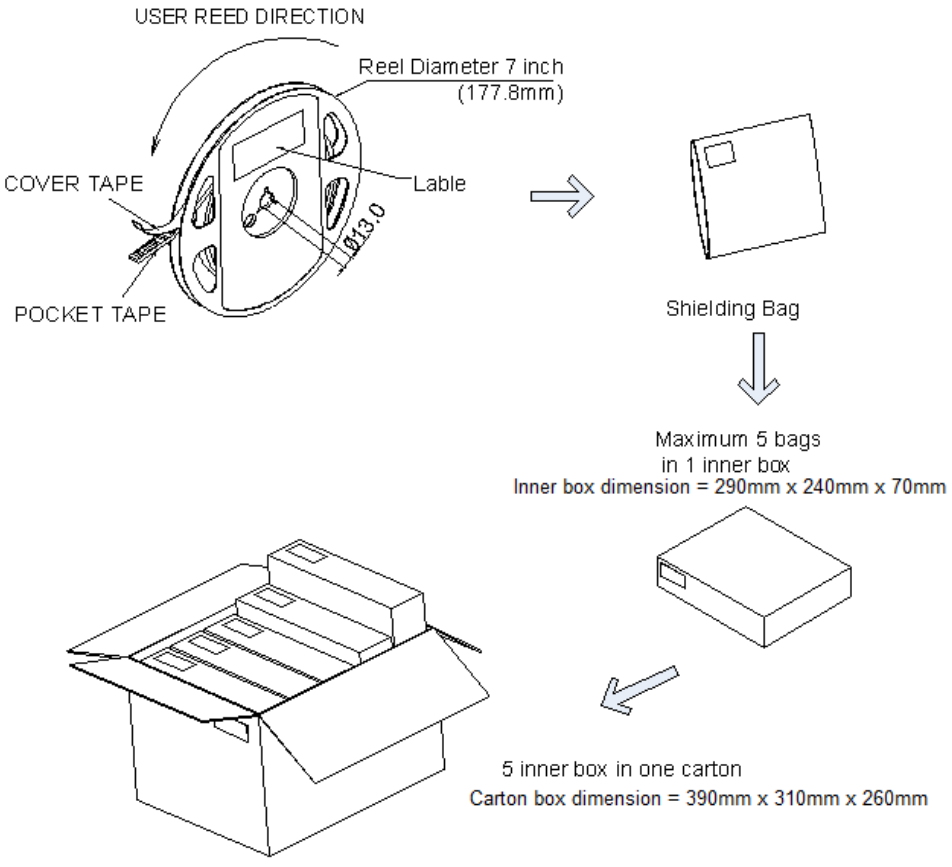
Reworking

- Rework should be completed within 5 seconds under 260℃.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

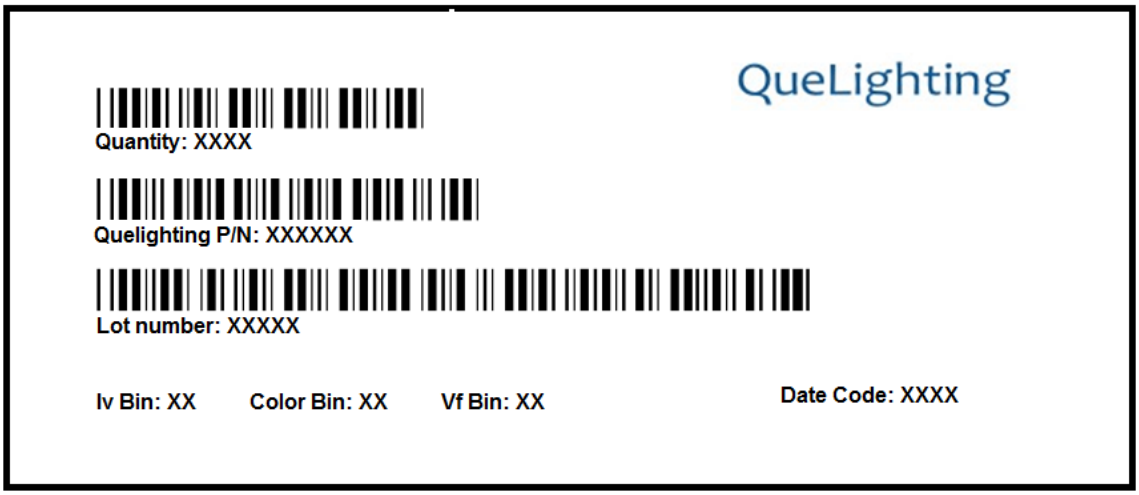
Taping & Packing:



Unit : mm



Labeling



Ordering Information:

Part #	Multiple Quantities	Quantity per Reel
QLSP1308R-289		3000 pcs

Revision History:

Revision Date:	Changes:	Version #:
03-13-2021	Initial release	1.0