



QLPD01DXLB  
(PHOTO DIODE)



## Product Outline:

QLPD01DXLB is an Photodiode LED. 5mm round lens type with Black resin. This Photo Diode pairs well with QLIR01DXGCD (5mm IR emitter).

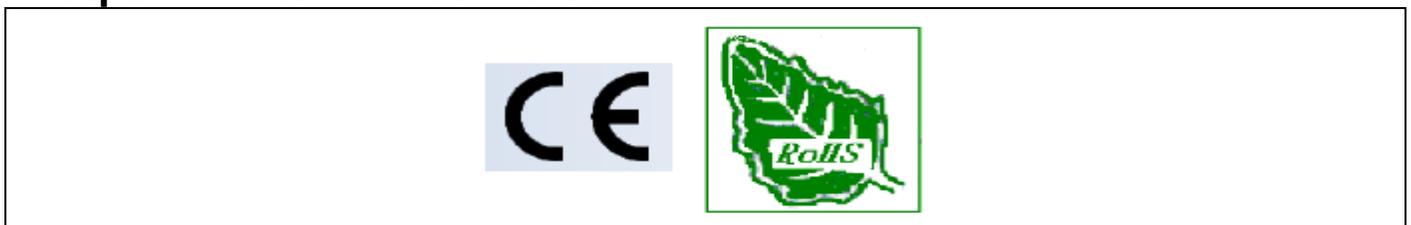
## Features:

- With Black resin
- 35° Viewing angle ( $\pm 10^\circ$ )
- RoHS compliant
- Custom Bin available upon special request

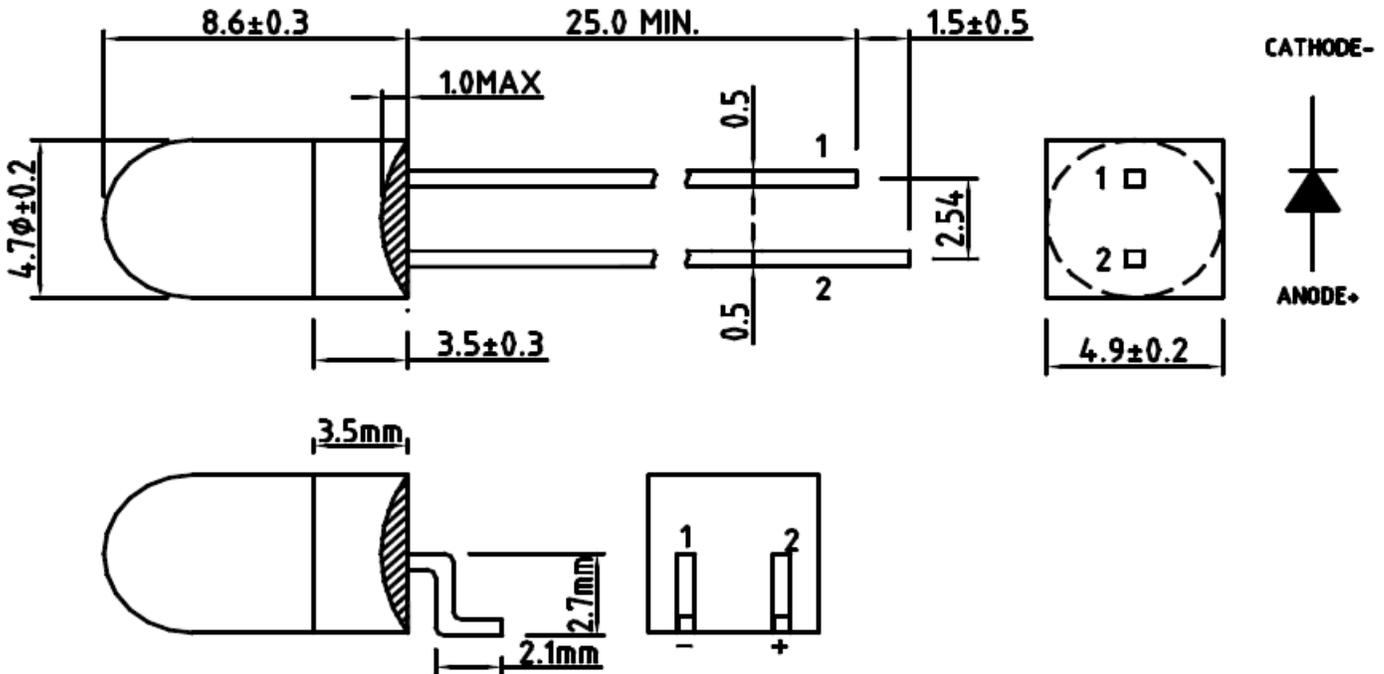
## Application:

- Access Control & Security
- Home & Building Automation
- Appliances & Tools
- Light curtain ....etc
- Elevator & Industrial applications

## Compliance and Certification:



■ **Mechanical Property:**  
(Dimension)



**SING:** 1. Cathode  
2. Anode

Tolerance is  $\pm 0.25$ mm unless otherwise specified

■ **ELEMENT APPEARANCE**

Model No.	Material	Lighting Color	Resin Color
QLPD01DXLB	-	Non-Visible	Black

■ **ABSOLUTE MAXIMUM RATINGS AT Ta=25°C**

Characteristic	Symbol	Rating	Unit
Operating temperature	Topr	-40 to +85	°C
Storage temperature	Tstg	-25 to +85	°C



## ■ ELECTRO-OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse breakdown voltage	V(BR)R	$I_r = 100 \mu A$ , $E_e = 0 \text{ mW/cm}^2$	30	170		V
Reverse dark current	ID	$V_R = 10V$ , $E_e = 0 \text{ mW/cm}^2$		5	30	nA
Total capacitance	Ct	$V_r = 5V$ , $f = 1\text{Mhz}$ , $E_e = 0 \text{ mW/cm}^2$		11		pF
Reverse Light current	$I_L$	$E_e = 0.5 \text{ Mw/cm}^2$ $\lambda_p = 940 \text{ nm}$	25	45		$\mu A$
Rise Time	$T_r$	$V_r = 10V$ , $R_L = 1000\Omega$		50		ns
Fall Time	$T_f$	$V_r = 10V$ , $R_L = 1000\Omega$		50		ns
Wavelength of the max. sensitivity	$\lambda_p$		840		980	nm
Viewing angle	2θ 1/2			35		Deg

\*Radiant Intensity Measurement allowance is ±15%

\*\* Forward voltage Measurement allowance is ±0.05V

\*\*\* Peak emission wavelength Measurement allowance is ±1nm

### Reverse light current bin ( $I_L$ ):

Ee=0.5mW/cm2 (mA)			
Unit	Bin Code name	Min.	Max.
$\mu A$	2	25	45
	3	34	45
	4	45	60

Measurement tolerance is +/- 15%



## ■ Characteristic Curves

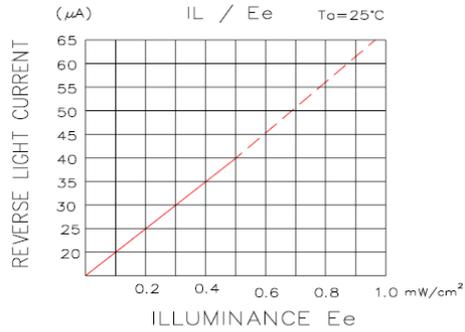


FIG:1 REVERSE LIGHT CURRENT VS.ILLUMINANCE

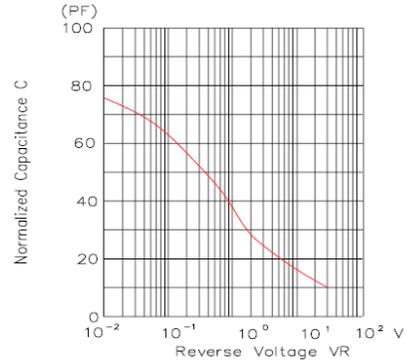


FIG:2 CAPACITANCE VS,REVERSE VOLTAGE  
 $F = 1\text{MHz}; E_e = 0\text{mW}/\text{cm}^2$

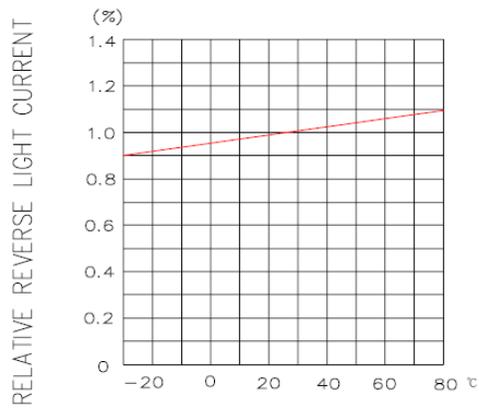


FIG:3 RELATIVE REVERSE LIGHT CURRENT VS.AMBIENT TEMPERATURE

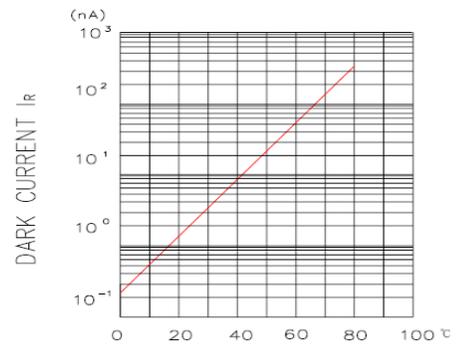
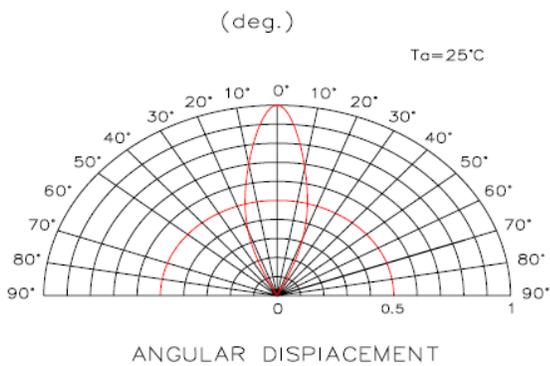


FIG:4 DARK CURRENT VS,AMBIENT TEMPERATURE  
 $V_R = 10\text{V}, E_e = 0\text{mW}/\text{cm}^2$



**■ Reliability test:**

No	Item	Condition	Time/Cycle	Criteria	Ac / Re	Sample size
1	Soldering Heat Test	260°C	5 sec	Open / Short	0 / 1	60 pcs
2	Thermal Shock	0 (5min) °C ~100 (5min) °C	20 cycle	Open / Short	0 / 1	60 pcs
3	High Temp. Storage	100°C	1000 Hrs	Open / Short	0 / 1	60 pcs
4	Low Temp. Storage	-40°C	1000 Hrs	Open / Short	0 / 1	60 pcs
5	Temperature Cycle Test	-40 ~85 °C	100 Cycles , 200Hrs	Open / Short	0 / 1	60 pcs
6	High Temp. High Humidity Test	60 , 90% RH °C	1000 Hrs	Open / Short	0 / 1	60 pcs
7	DC Operation Life Test	IF=100mA	1000 Hrs	Power decay	≤ 30%	60 pcs



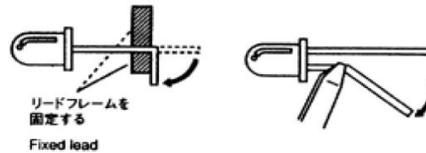
## ■ APPLICATION NOTES :

### Static Electricity and Surge

Static electricity and surge damage LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. All devices, equipment and machinery must be electrically grounded.

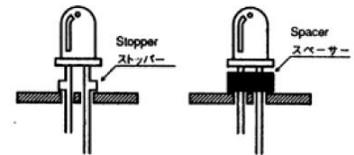
### Lead Forming

The leads should be bent at a point at least 3mm from the epoxy resin of the LEDs. Bending should be performed with the base firmly fixed by means of a jig or radio pliers.

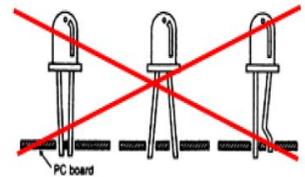


### Mounting Method

The leads should be formed so they are aligned exactly with the holes on the PC board. This will eliminate any stress on the LEDs. Use LEDs with stoppers or resin spacer to accurately position the LEDs. The epoxy resin base should not be touching the PC board when mounting the LEDs.



Mechanical stress to the resin may be caused by the warping of the PC board when soldering. The LEDs must not be designed into a product or system where the epoxy lens is pressed into a plastic or metal board. The lens part of the LED must not be glued onto plastic or metal. The mechanical stress to the lead-frame must be minimized.



### Soldering

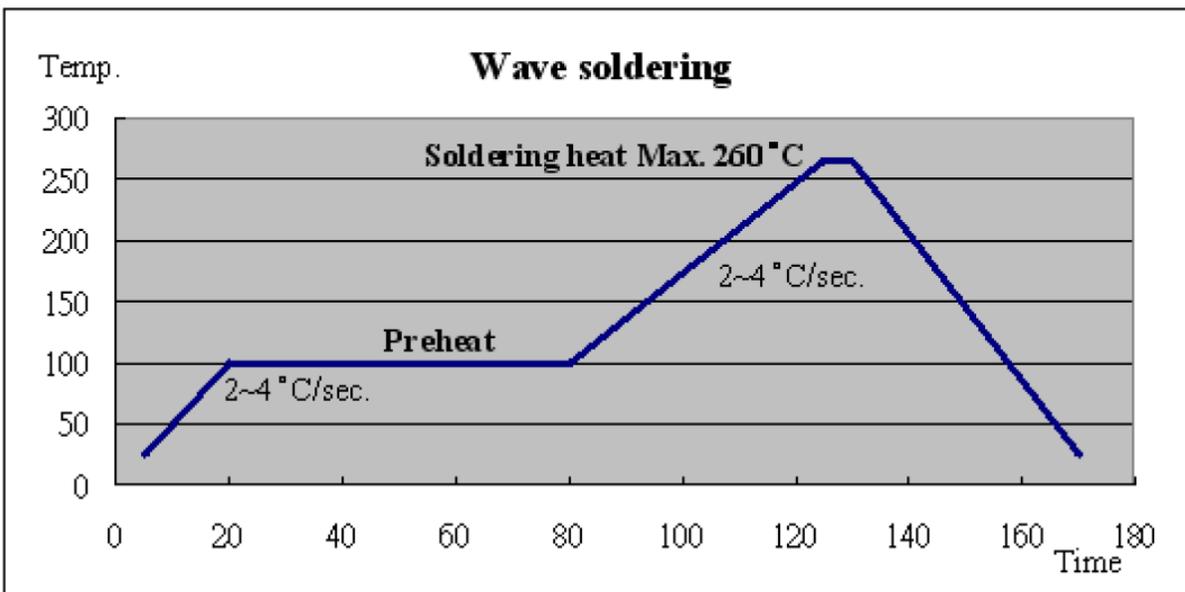
Solder the LEDs no closer than 3mm from the base of the epoxy resin. For solder dipping, it may be necessary to fix the LEDs for correct positioning. When doing this, any mechanical stress to the LEDs must be avoided. When soldering, do not apply any mechanical force to the leadframe while heating. Repositioning after soldering must be avoided.



## ■ Solder Profile:

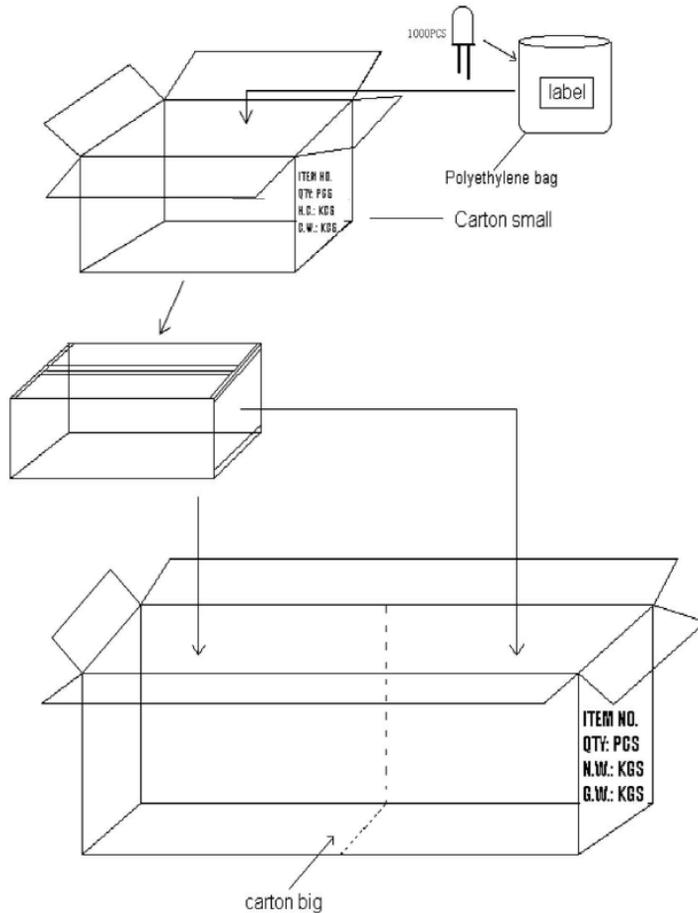
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

Shape	Lead Frame Type / Holder Type
Hand soldering	1.Temp.at tip of iron : 300 °C MAX. 2.Soldering time : 3 sec MAX. 3.Distance : 3 mm MIN (from solder joint to case)
DIP soldering	1.Preheat temp : 100 °C MAX , 60 sec MAX. 2.Bath temp : 260 °C MAX. 3.Bath time : 5 sec MAX. 4.Distance : 3 mm MIN (From solder joint to case).
Reflow soldering	NO
Shape	SMD Type
Hand soldering	1.Temp.at tip of iron : 300 °C MAX. 2.Soldering time : 3 sec MAX.
DIP soldering	1.Preheat temp. : 120-150 °C , 60-120 sec. 2.Bath temp. : 260 °C MAX. 3.Bath time : 5 sec
Reflow soldering	1.Preheat temp. : 150-180 °C , 120 sec MAX. 2.Peak temp. : 260 °C MAX. 3.Peak time : 10 sec MAX.



## ■ Taping & Packing:

The boxes are not water resistant and they must be kept away from water and moisture. The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags. Cardboard boxes will be used to protect the LEDs from mechanical shocks during transportation.



## 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 bag
QLPD01DXDLB		1000pcs



## Revision History:

Revision Date:	Changes:	Version #:
10-08-2023	Initial release	1.0

