

**SURFACE MOUNT LED TAPE AND REEL**



Lead-Free Parts



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**LG-020WK-DT-L1-P-N12-A01**

**DATA SHEET**

DOC. NO : QW0905-LG-020WK-DT-L1-P-N12-A01

REV. : B

DATE : 25 - Oct. - 2017



**Features:**

1. Side view white LED.
2. white SMT package.
3. Leadframe package with individual 2 pin.
4. Wide viewing angle.
5. Soldering methods: IR reflow soldering.
6. Feature of the device: more light due to higher optical efficiency; extremely wide viewing angle; ideal for backlighting and coupling in light guide.

**Descriptions:**

The LG-020WK SMD has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combining blue LEDs and special phosphors. This feature makes the LED ideal for light guide application.

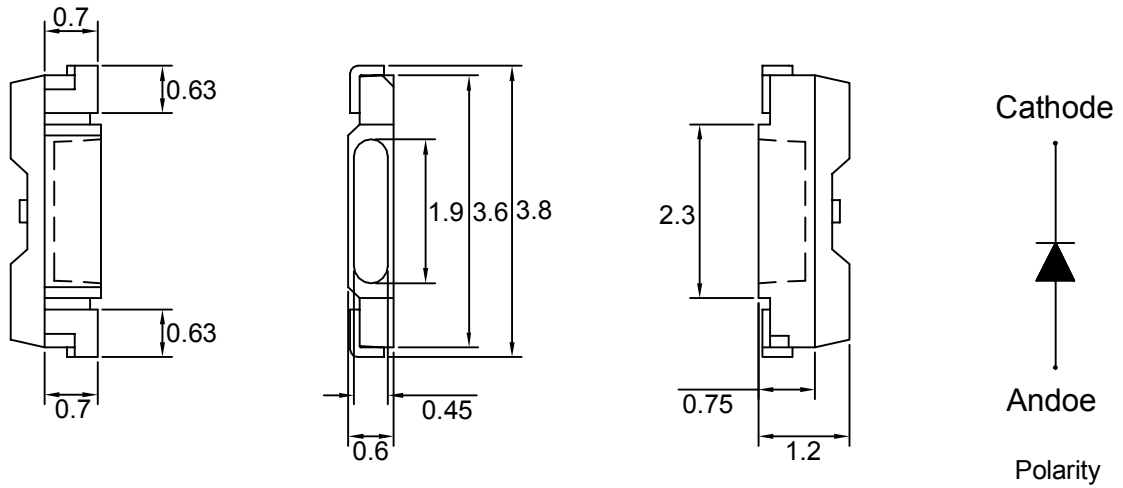
**Applications:**

1. LCD back light.
2. Mobile phones.
3. Indicators.
4. Switch lights.

**Device Selection Guide:**

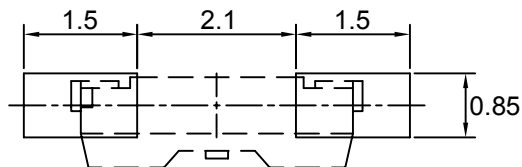
PART NO	MATERIAL	COLOR	
		Emitted	Lens
LG-020WK-DT-L1-P-N12-A01	InGaN	White	Yellow Diffused

### Package Dimensions



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.2\text{mm}$  unless otherwise noted.  
2.Specifications are subject to change without notice.

### Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit=mm.

### Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
Forward Current	IF	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	100	mA
Power Dissipation	PD	102	mW
Reverse Current @5V	Ir	50	μA
Electrostatic Discharge	ESD	500	V
Operating Temperature	Topr	- 40 ~ + 85	°C
Storage Temperature	Tstg	- 40 ~ + 100	°C

### Typical Electrical & Optical Characteristics (Ta=25 °C)

Items	Min.	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Luminous Intensity		Iv	1700	2000	----	mcd	IF=20mA
Chromaticity Coordinates		X	0.287	----	0.311	----	IF=20mA
		Y	0.276	----	0.315	----	IF=20mA
Forward Voltage		V <sub>F</sub>	2.8	----	3.4	V	IF=20mA
Viewing Angle		2θ 1/2	----	110	----	deg	IF=20mA

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.  
 2.The luminous intensity data did not including ±15% testing tolerance.  
 3.The color coordinates measurement allowance is ±0.01 testing tolerance.

### Luminous Intensity Classification

BIN CODE	Iv(mcd) at20mA	
	Min.	Max.
W32	1700	1750
W33	1750	1800
W34	1800	1850
W35	1850	1900
W36	1900	1950
W37	1950	2000
X11	2000	2050
X12	2050	2100
X13	2100	2150
X14	2150	2200

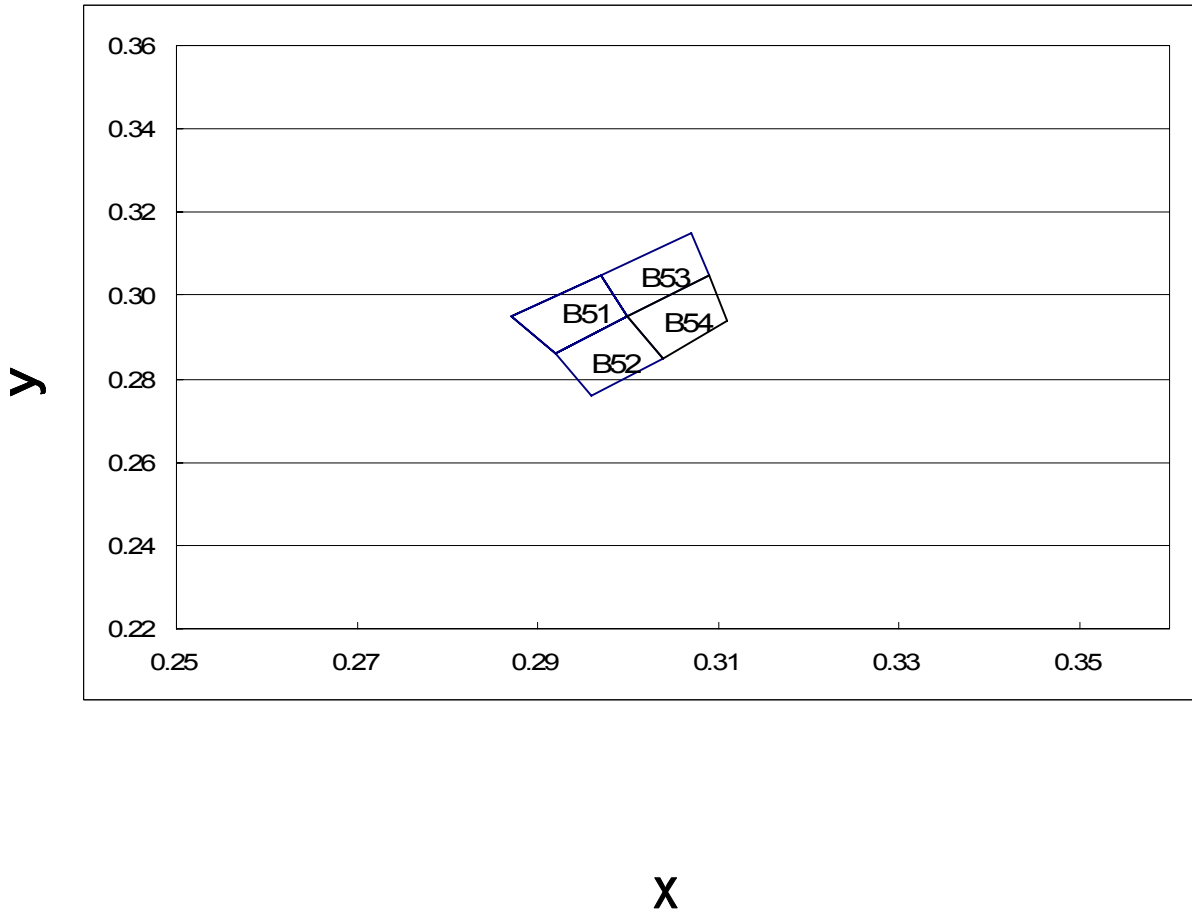
### Forward Voltage Classification

BIN CODE	Vf(v) at 20mA	
	Min.	Max.
1	2.8	2.9
2	2.9	3.0
3	3.0	3.1
4	3.1	3.2
5	3.2	3.3
6	3.3	3.4

**Chromaticity Coordinates Specifications For Bin Grading**

Color Coordinante at 20mA								
CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B51	0.2870	0.2950	0.2920	0.2860	0.3000	0.2950	0.2970	0.3050
B52	0.2920	0.2860	0.2960	0.2760	0.3040	0.2850	0.3000	0.2950
B53	0.2970	0.3050	0.3000	0.2950	0.3090	0.3050	0.3070	0.3150
B54	0.3000	0.2950	0.3040	0.2850	0.3110	0.2940	0.3090	0.3050

CIE Chromaticity Diagram



## Typical Electro-Optical Characteristics Curve

WK CHIP

Fig.1 Forward current vs. Forward Voltage

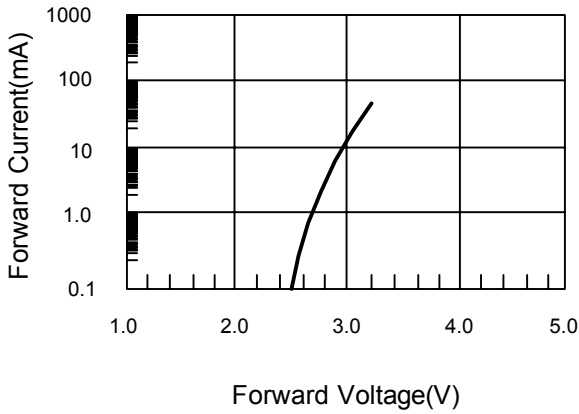


Fig.2 Relative Intensity vs. Forward Current

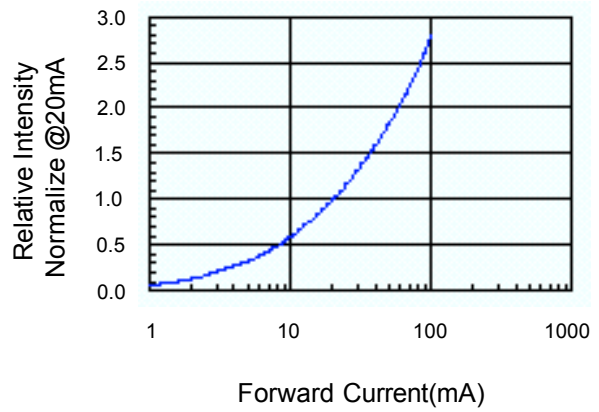


Fig.3 Forward Voltage vs. Temperature

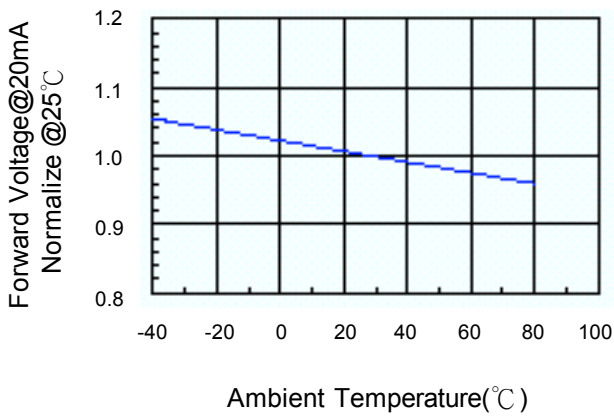


Fig.4 Relative Intensity vs. Temperature

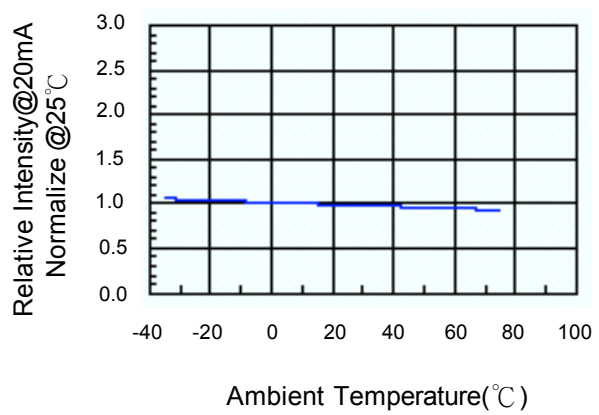


Fig.5 Luminous Spectrum (Ta=25°C)

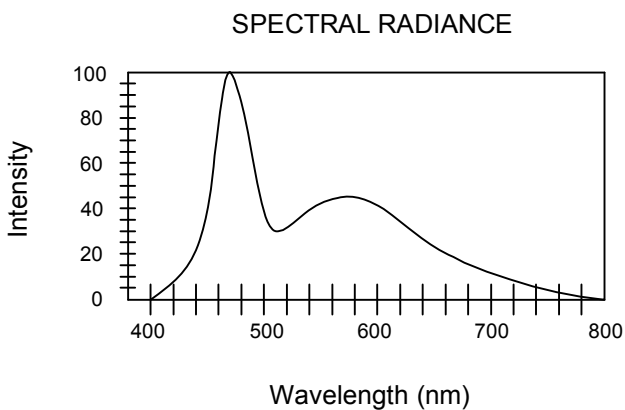
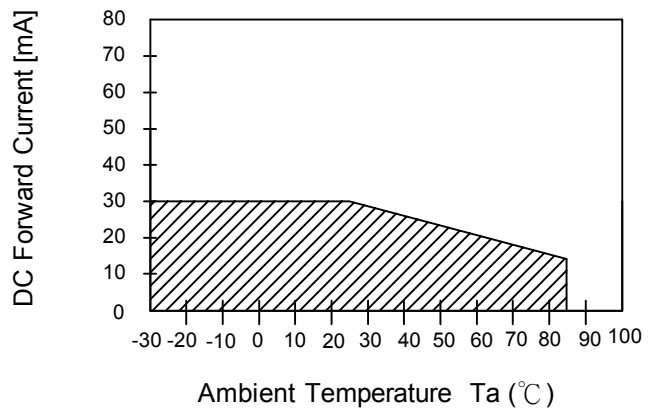
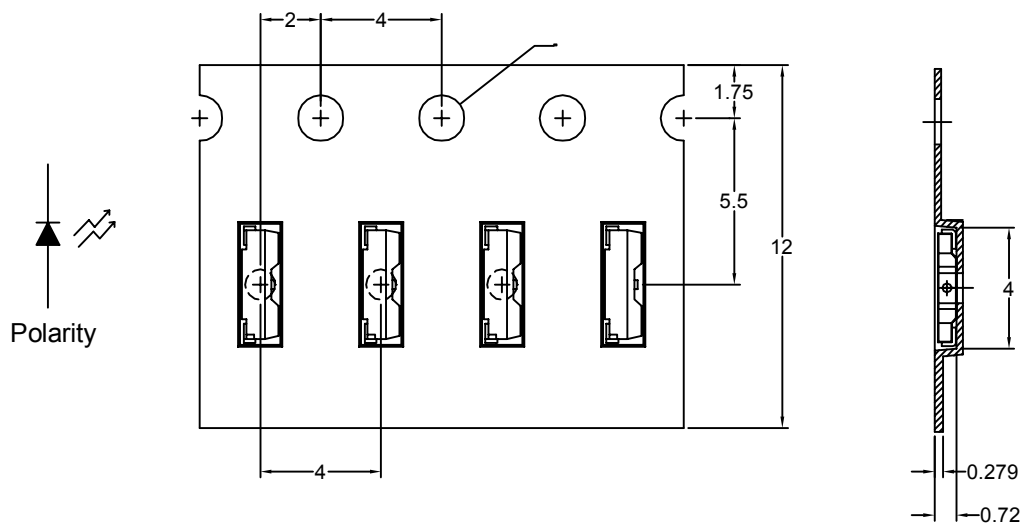


Fig.6 Forward Current vs. Temperature



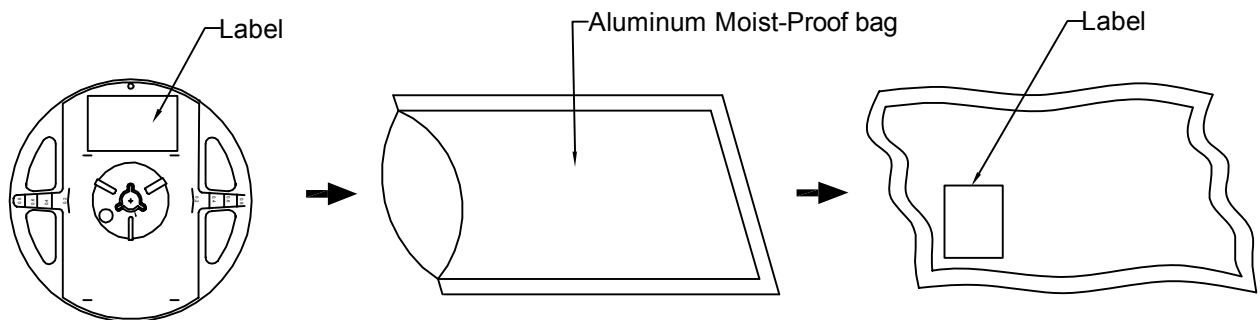


## Carrier Type Dimensions









Note : The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Angle  $\pm 0.5$ . Unit=mm.

### • Packing Specifications



Part No.	Description	Quantity/Reel
LG-020WK-DT-L1-P-N12-A01	12.0mm tape,7"reel	3000 PCS

## Label Explanation

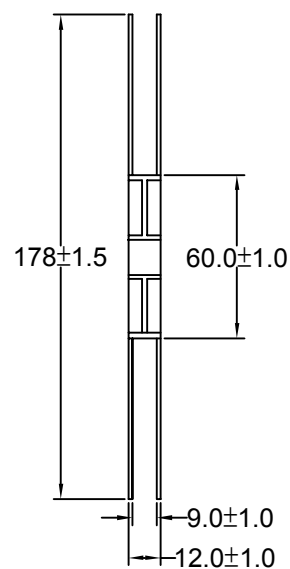
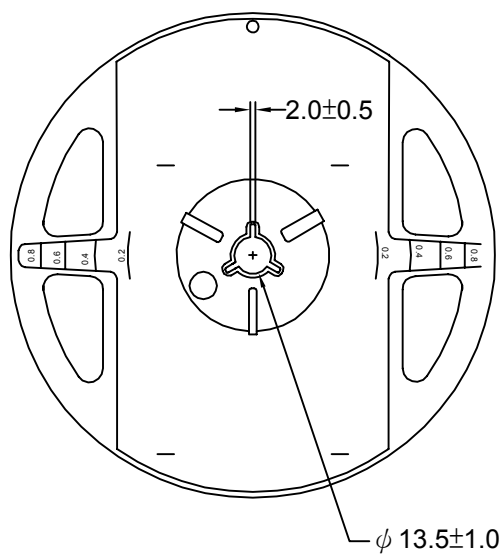
	LIGITEK ELECTRONICS CO., LTD.			
PART :		LG-020WK-DT-L1-P-N12-A01		
LOT :		GS117A0119		
QTY(PCS):		3000		
BIN/HUE :		W34/B52		VF:3-3.1

BIN : Luminous Flux

HUE : Chromaticity Coordinates  
(CIE\_x , CIE\_y)

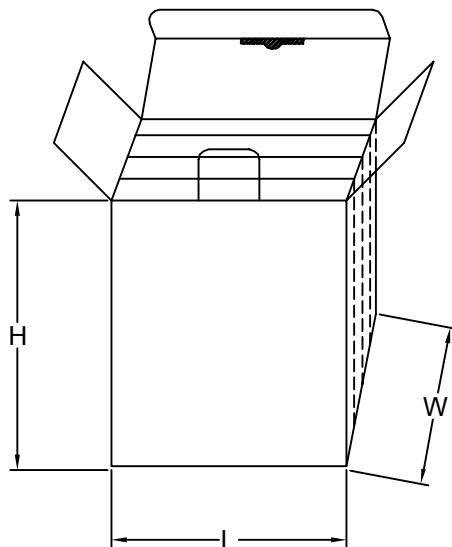
3 - 3.1 : Forward Voltage

## Reel Dimensions

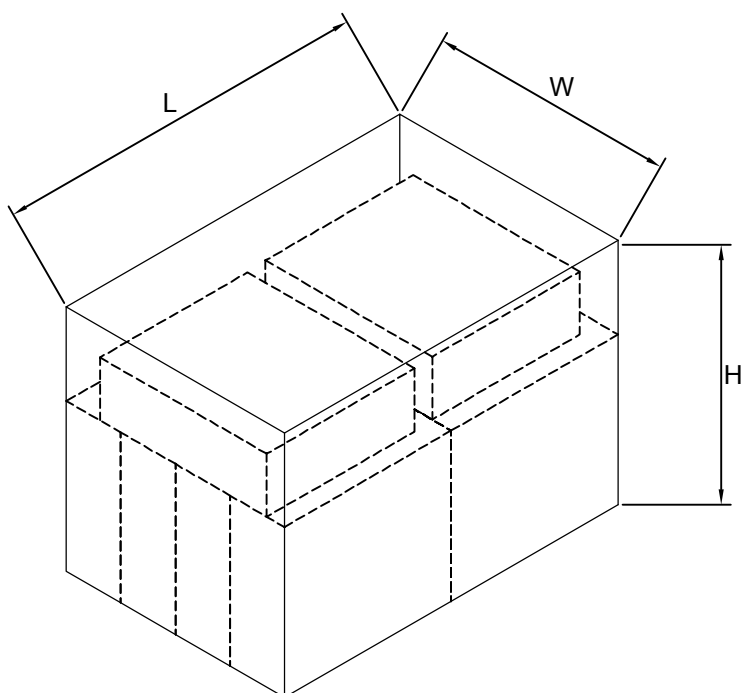


## Box Explanation

1. 4 BAG / INNER BOX
2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm

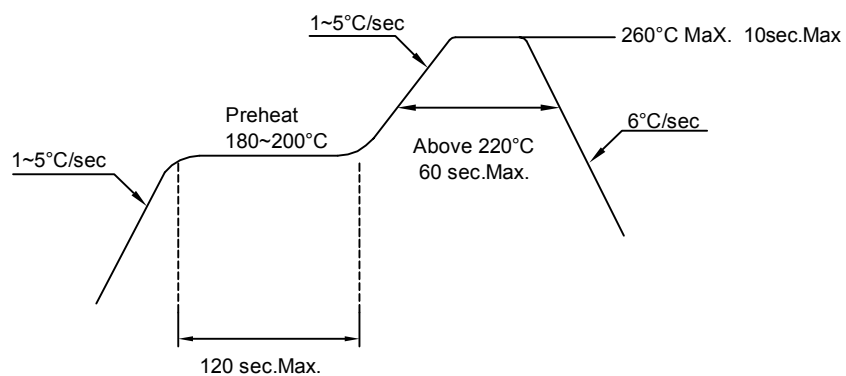


3. 10 INNER BOXES / CARTON
4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm



**Recommended Soldering Conditions****1. Hand Solder**

Basic spec is  $\leq 320^{\circ}\text{C}$  3 sec one time only.

**2. PB-Free Reflow Solder****Note:**

- 1.Reflow soldering should not be done more than two times.
- 2.When soldering,do not put stress on the LEDs during heating.
- 3.After soldering,do not warp the circuit board.

**Precautions For Use:****Storage time:**

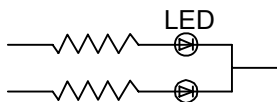
1. Calculated shelf life before opening is 12 months at  $< 30^{\circ}\text{C}$  and  $< 90\%$  relative humidity (RH)
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be
  - a) Assembled within 168 hours in an environment of  $\leq 30^{\circ}\text{C} / 60\%$  RH, or
  - b) Stored at ambient of 10% RH or less
3. Devices are required baking before assembly if:
  - a) Humidity Indicator Card reads  $>10\%$  (for level 2a -5a) or  $>60\%$  (for level 2) at ambient temperature  $23 \pm 5^{\circ}\text{C}$
  - b) 2.a) or 2.b) doesn't meet
4. If baking is required, devices should be baked for  $>72$  hours at  $60 \pm 5^{\circ}\text{C} / 5\%$  RH. Performing baking only once, and using the baked devices within 72 hours.

**Drive Method:**

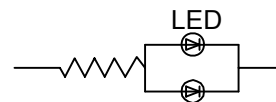
LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

**Cleaning:**

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

**ESD(Electrostatic Discharge):**

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=25°C 2.If=20mA 3.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature Storage Test	1.Ta=100°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature High Humidity Storage Test	1.Ta=85°C 2.RH=85% 3.t=1000hrs(-24hrs,+72hrs)	22
Environmental Test	Thermal Shock Test	1.Ta=100°C±5°C ~ -40°C±5°C 20min/ 10sec / 20min 2.total 100 cycles	22
	Temperature Cycling	1.100°C±5°C ~ -40°C±5°C 30mins / 5mins / 30mins 2.100 Cyeles	22
	IR Reflow	1.T=260°C Max. 10sec.Max. 2. 6 Min	22