
specification for approval

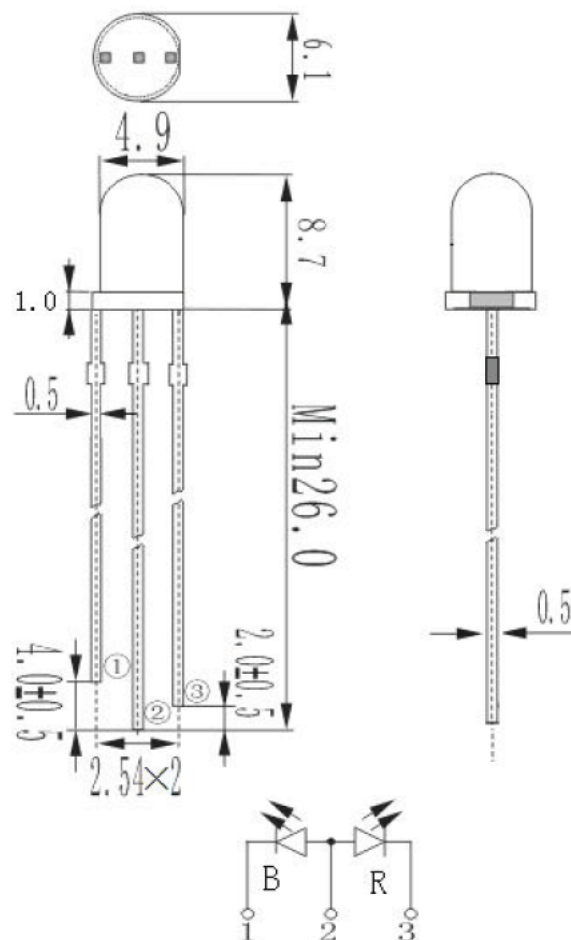
Product name: IE-5RB9UW-B/10

**ATTENTION**

OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

- Φ5 LAMP LED
- Long life-solid state reliability
- Low power consumption
- IDEAL FOR BACKLIGHT AND INDICATOR.

Package Dimensions

Tolerance Grade	Dimension Tolerance (UNIT:mm)			
	0.5~3	3~6	6~30	30~120
	±0.1	±0.2	±0.3	±0.5
CHIP Emitting Color	Red Blue	Lens Color	White Diffused	

■ Absolute Maximum Rating

Item	Symbol	Value		Unit
		R	B	
Forward Current	IF	30	30	mA
Peak Forward Current*	IFP	100	100	mA
Reverse Voltage	VR	6	6	V
Power Dissipation	PD	60	80	mW
Electrostatic discharge (HBM)	ESD	2000	2000	V
Operation Temperature	Topr	-25~+100		℃
Storage Temperature	Tstg	-40~+100		℃
Lead Soldering Temperature*	Tsol	Max. 265℃ for 5sec Max.		

*IFP Conditions: F=1KHZ, Duty cycle 1/10

*Tsol Conditions: 1.5mm from the base of the epoxy bulb

■ Typical Optical/ Electrical Characteristics Ta=25℃

Item	Symbol	Condition	Emitting Color	Min.	Typ.	Max.	Unit
Luminous Intensity	Iv	IF=20mA	R	380	--	1900	mcd
			B	250	--	1270	mcd
Forward Voltage	VF		R	1.6	2.0	2.4	V
			B	2.8	3.0	3.6	V
Viewing Angle	2θ 1/2		R	--	55	--	deg
			B	--	50	--	
Dominant Wavelength	λD		R	618	--	630	nm
			B	460	--	470	nm
Reverse Current	IR	Vr=5V	--	--	--	10	uA

Notes:

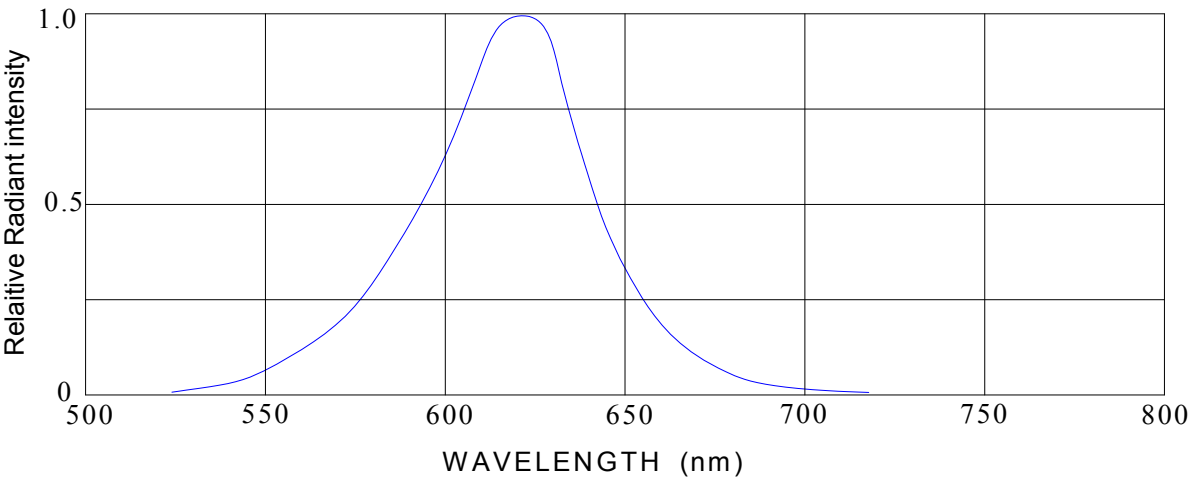
Tolerance : $V_F \pm 0.1V$, $\lambda_d \pm 2 \text{ nm}$, $IV(\phi V) \pm 15\%$

■ Reliability Performance

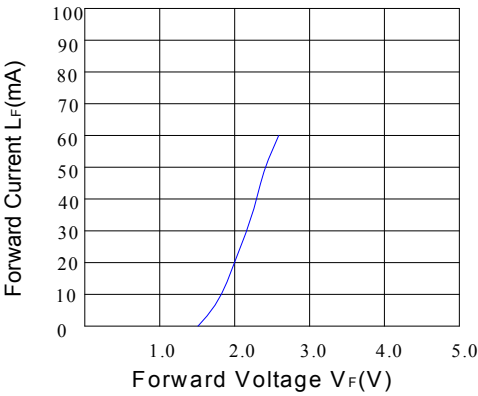
Test Items And Result

Test Classification	Test Item	Test Conditions	Test Duration	Sample Size	AC/RE
Life Test	Room Temperature DC Operating Life Test	$T_a = 25^\circ\text{C} \pm 5^\circ\text{C}$, $I_f = 20\text{mA}$	1000 hrs	22 pcs	0/1
Environment Test	Thermal Shock Test	$100^\circ\text{C} \pm 5^\circ\text{C}$ 5min ↑ ↓ $-40^\circ\text{C} \pm 5^\circ\text{C}$ 5min.	100 cycles	22 pcs	0/1
	Temperature Cycle Test	$100^\circ\text{C} \pm 5^\circ\text{C}$ 30min ↑ ↓ 5min $-40^\circ\text{C} \pm 5^\circ\text{C}$ 30min.	100 cycles	22 pcs	0/1
	High Temperature & High Humidity Test	$85^\circ\text{C} \pm 5^\circ\text{C}/85\% \text{ RH}$ $I_F = 20\text{mA}$	1000 hrs	22 pcs	0/1
	High Temperature Storage	$T_a = 100^\circ\text{C} \pm 5^\circ\text{C}$	1000 hrs	22 pcs	0/1
	Low Temperature Storage	$T_a = -40^\circ\text{C} \pm 5^\circ\text{C}$	1000 hrs	22 pcs	0/1
Mechanical Test	Resistance to Soldering Heat	Temp = 260°C max T = 5sec max	1 times	22 pcs	0/1
	Lead Integrity	Load 2.5N(0.25kgf) $0^\circ \sim 90^\circ \sim 0^\circ$	3 times	22 pcs	0/1
Salt Spray Test	Salt Spray Experiment	$T_a = 35^\circ\text{C}$ Spray quantity(ml/80cm ² /H) 1.0~2.0ml Concentration(NaCl) 5%	0 hrs	22 pcs	0/1

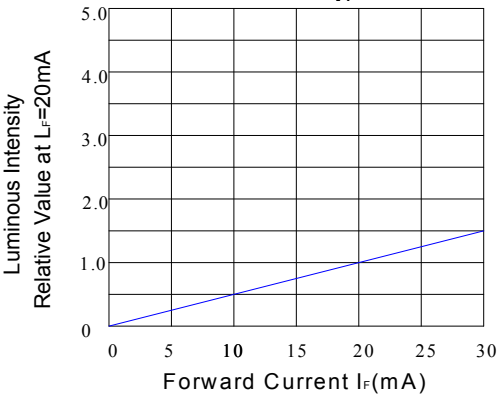
RELATIVE INTENTY VS WAVELENGTH



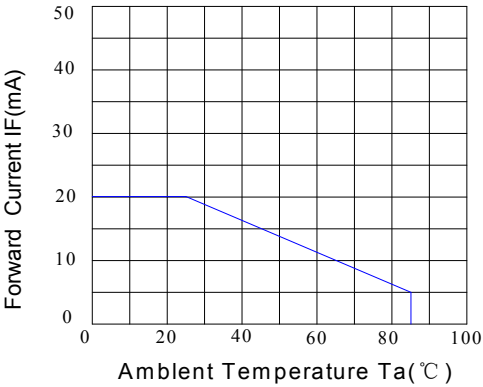
$I_F \sim V_F$



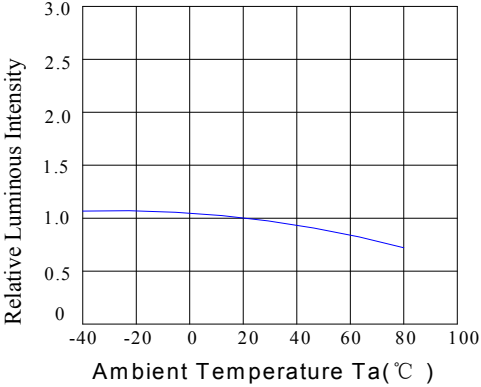
$I_V \sim I_F$



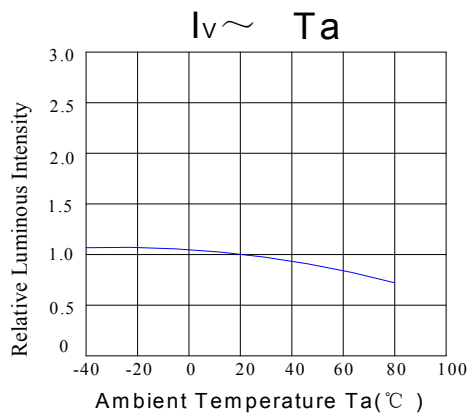
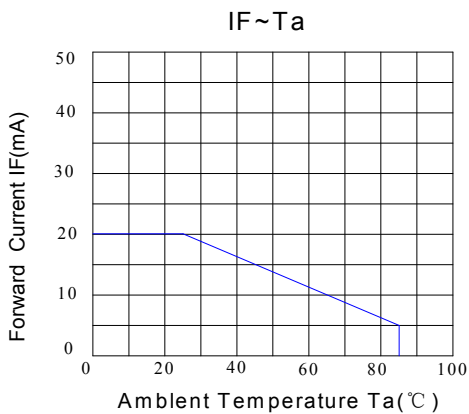
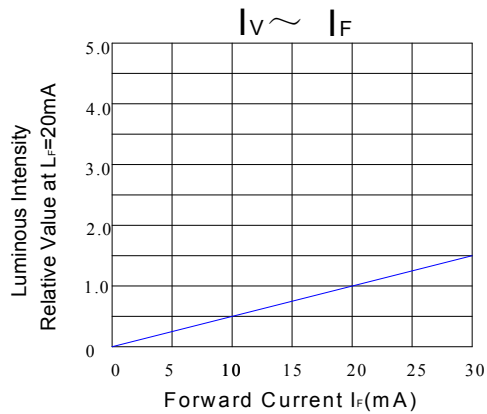
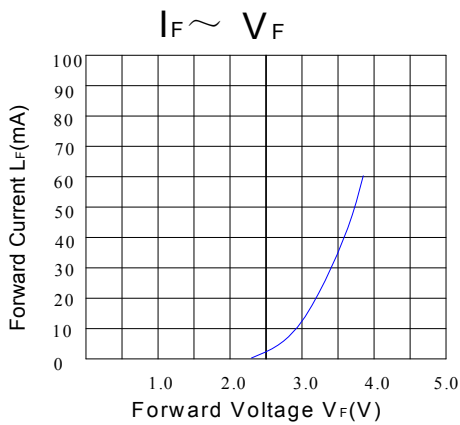
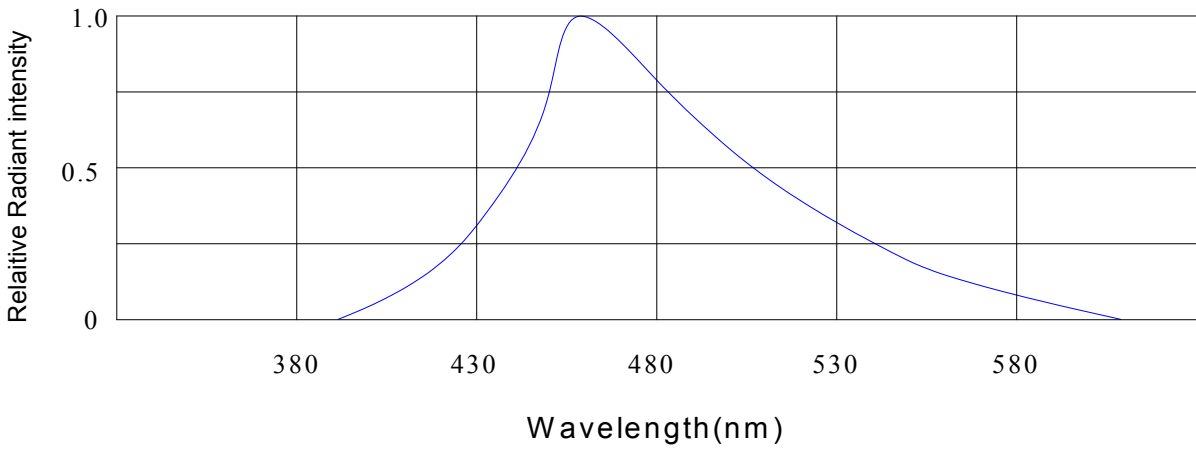
$I_F \sim T_a$



$I_V \sim T_a$



RELATIVE INTENSITY vs WAVELENGTH



Precautions

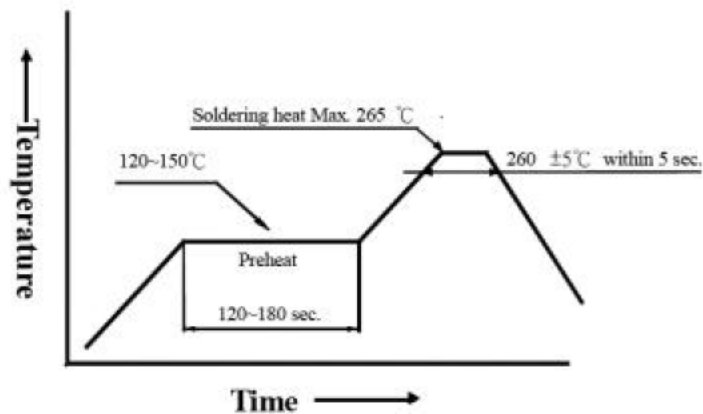
1.Soldering:

DIP soldering (Wave Soldering)

Preheating: 120°C~150°C, within 120~180 sec.

Operation heating: 260°C±5°C within 5 sec. 265°C(Max)

Gradual Cooling (Avoid quenching).



Be careful because damages always caused during soldering. Please note that stress to the leads and expose bulb should be avoided during soldering particularly when heated. When soldering, leave certain distance from soldering joint to base, the distance is determined by different soldering techniques.

Manual welding LED chips, can not weld LED two pins at the same time.

This LED products can not be reflow soldering

2.Storage

Under the storage conditions of 30°C or less and humidity less than 60%RH, the LEDs can be storage for 3months.

Storage in a sealed container with moisture absorbent material can prolong the storage time to a certain extent but storage conditions may cause the lead frames to corrode or degradation of LED characteristics. It is recommended that the LEDs be used as soon as possible.

3. Static electricity

Static electricity of surge voltage damages the LED .Damaged LED will show some unusual chrematistics such as the forward voltage becomes lower or the LED do not light at the low current even not light. All devices equipment and machinery must be properly grounded. At the same time, it is recommended that wrist Bands or anti-electrostatic gloves anti-electrostatic containers be used when dealing with the LED.

When the working environment of electrostatic value more than 1000 v, it is recommended to use zener diode LED lamp bead.

4. Design Consideration

When designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED .In the meanwhile , resistors for protection should be applied otherwise slight voltage shift will cause big current change, bum out may happen.

Thermal Design is paramount important in because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LED when making the system design.

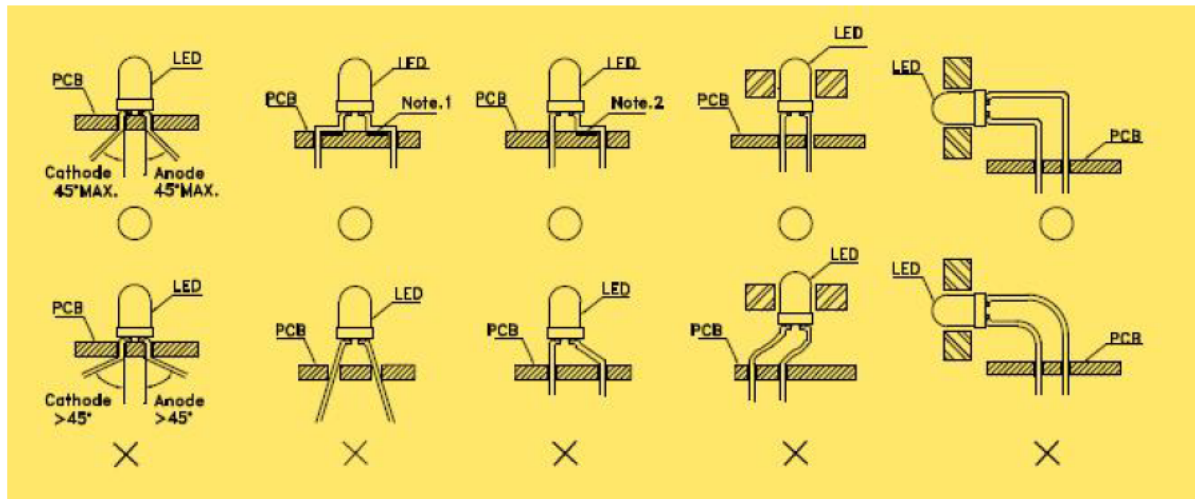
LED working status can not be more than 5 volts.

5. Lead Forming

Any lead forming must be done before soldering, not during or after soldering. When forming leads ,the leads should bent at a point at least 3mm from the base of the expose bulb. Bending at the same point twice or even more should be avoided.

Please use proper tools to hold and bent the leads, do not use the base of the lead frame as a fulcrum during lead forming .Bending s tress to the base of the lead frame may cause character is tics change on LED or even break it.

Just for the same reason, when mounting the LED on to printed circuit board, the holes on the circuit board should be exactly aligned with the leads of the LED.



LED flat or make AI, suggest using $\Phi 4$, $\Phi 5$ LED chips, to avoid LED chips cracking caused by outside force, and please note dynamics for AI.

6.cleaning

Recommending using ethanol as solvent cleaning, do not use corrosive chemical liquid to clean LED, thus may damage epoxy resin of LED surface , even cause colloid cracks, meanwhile will produce corrosion rust on the LED tube feet.