

Technical Data Sheet

5mm Round Type LED Lamp SLB5401

■ Features

- Mono-color type: Blue
- Dominant wavelength $\lambda_d=457\text{nm}$
- Reliable and robust
- 2.54mm Lead spacing
- Pb free
- The product itself will remain within RoHS compliant version.



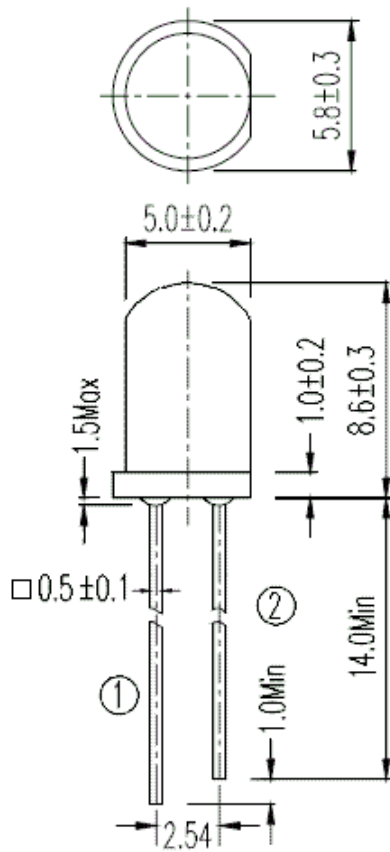
■ Descriptions

- The SLB5401 is specially designed for applications requiring higher brightness.
- The SLB5401 is molded in a water clear plastic package .

■ Applications

- Backlighting in dashboard and switch.
- Backlight for LCD, switch and symbol.
- Indicator and backlighting in telephone and fax.
- General use.

■ Package Dimensions

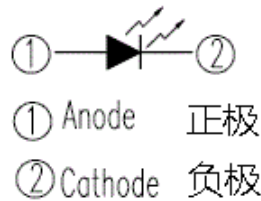


Notes:

1. All dimensions are in millimeters
2. Tolerances unless dimensions ± 0.25 mm

说明：

1. 所有尺寸单位为毫米
2. 未注明的公差为 ± 0.25 mm



■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I_F	20	mA
Peak Forward Current	I_{FP}	50	mA
Reverse Voltage	V_R	10	V
Lead Soldering Temperature	T_{sol}	260	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +85	$^\circ\text{C}$
Power Dissipation at(or below) 25 $^\circ\text{C}$ Free Air Temperature	P_d	60	mW

Notes: *1: I_{FP} Conditions--Pulse Width $\leq 100 \mu\text{s}$ and Duty $\leq 1\%$.

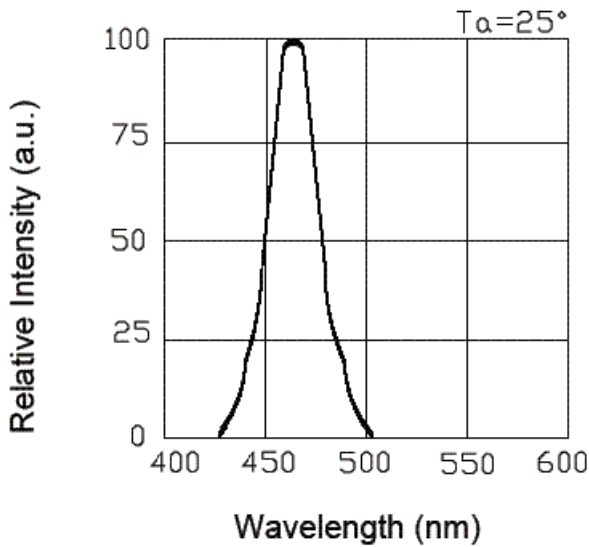
*2: Soldering time ≤ 5 seconds.

■ **Electro-Optical Characteristics (Ta=25°C)**

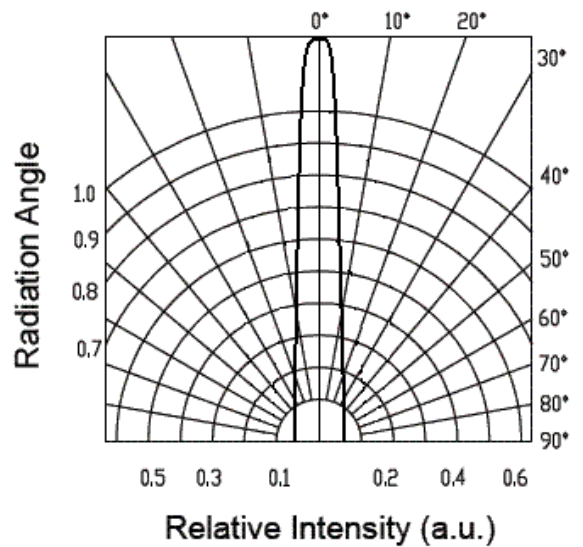
Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Luminous Intensity	I_v	$I_F=20mA$	30	45	--	cd
View Angle	$2\theta_{1/2}$	$I_F=20mA$	--	15	--	deg
Dominant Wavelength	λ_d	$I_F=20mA$	455	457	460	nm
Spectral Bandwidth	$\Delta\lambda$	$I_F=20mA$	--	20	----	nm
Forward Voltage	V_F	$I_F=20mA$	3.0	3.2	3.5	v
Reverse Current	I_R	$V_R=10V$	--	--	1	μA

■ **Typical Electro-Optical Characteristics Curves**

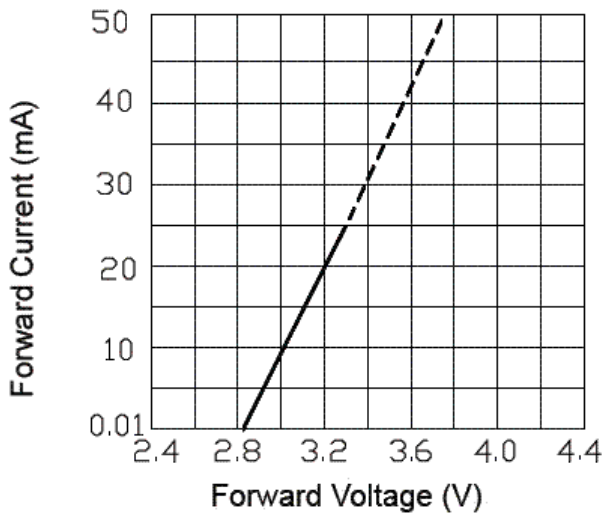
Relative Intensity vs. Wavelength (Ta=25°C)



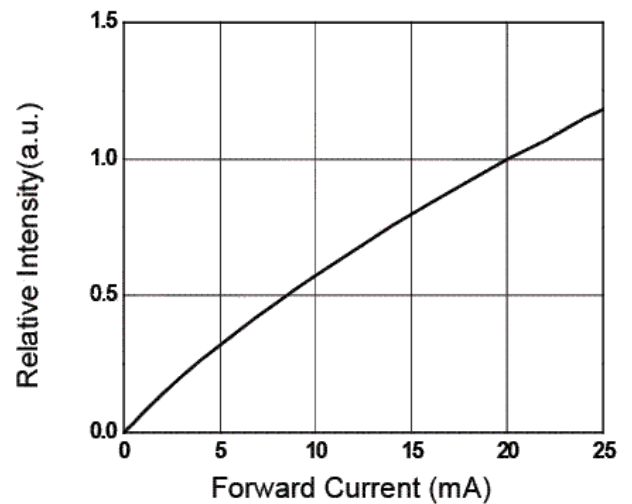
Directivity (Ta=25°C)



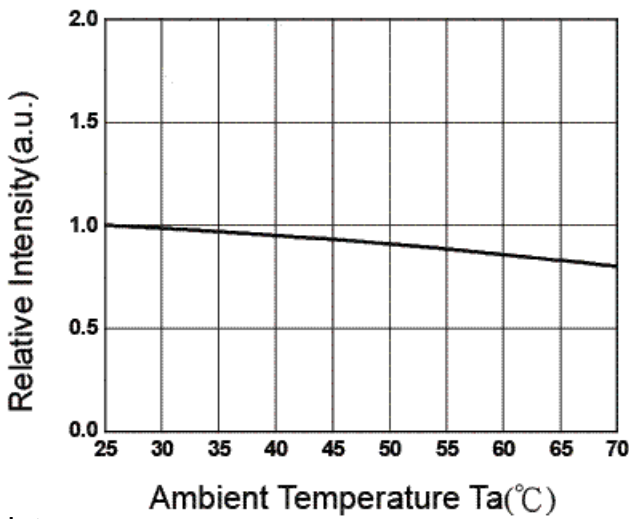
Forward Current vs. Forward Voltage (Ta=25°C)



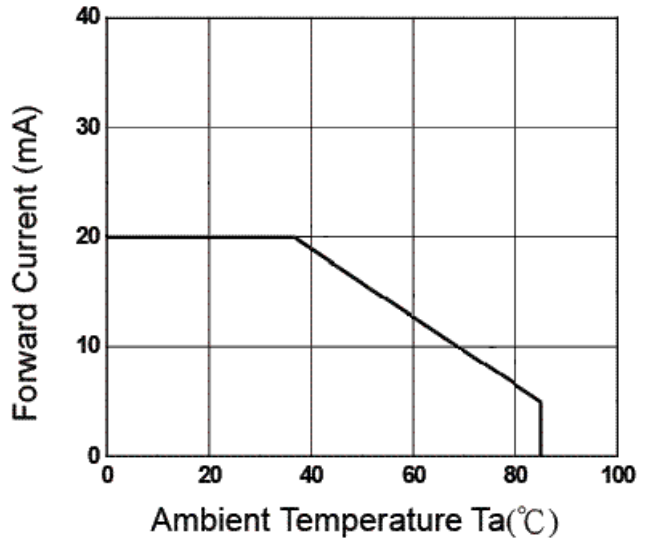
Relative Intensity vs. Forward Current (Ta=25°C)



Relative Intensity vs. Ambient Temp.



Forward Current vs. Ambient Temp.



Notes:

1. Over-current-proof

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Lead Forming

- 2.1 During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
- 2.2 Lead forming should be done before soldering.
- 2.3 Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- 2.4 Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.
- 2.5 When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

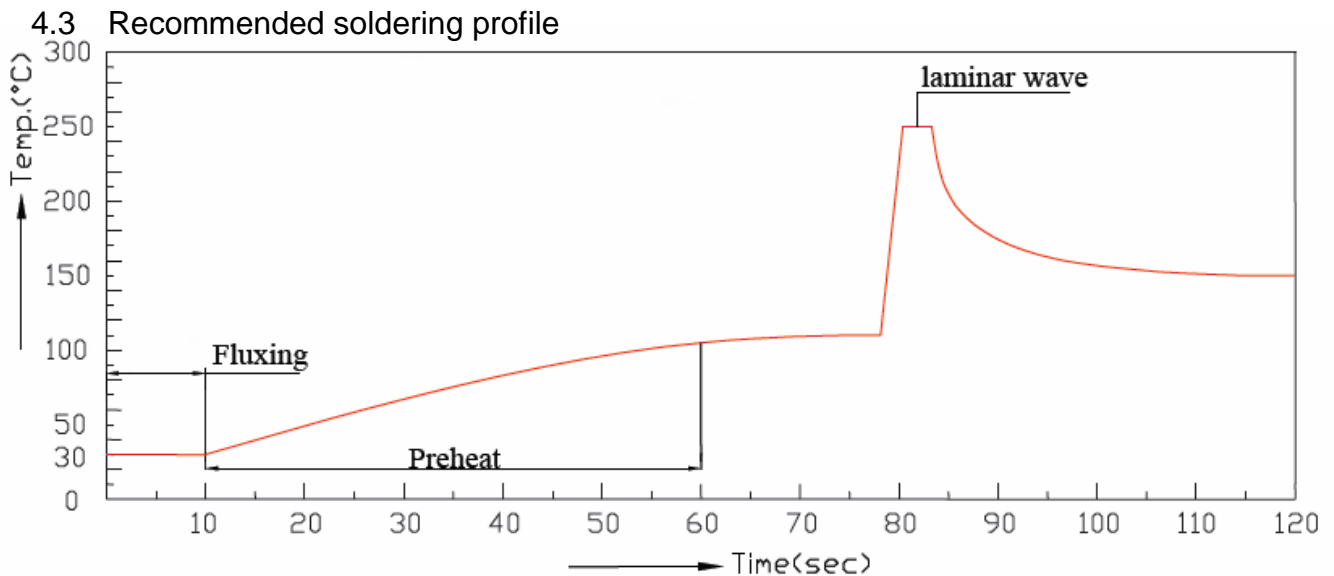
3. Storage

- 3.1 Do not open moisture proof bag before the products are ready to use.
- 3.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.
- 3.3 The LEDs should be used within a year.
- 3.4 After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
- 3.5 The LEDs should be used within 168 hours (7 days) after opening the package.

4. Soldering Condition

- 4.1 Careful attention should be paid during soldering. When soldering, leave more then 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
- 4.2 Recommended soldering conditions:

Hand Soldering		Dip Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)



- 4.4 Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- 4.5 Dip and hand soldering should not be done more than one time
- 4.6 After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- 4.7 A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- 4.8 Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.
- 4.9 Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

5. Cleaning

- 5.1 When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.
- 5.2 Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED

6. ESD (Electrostatic Discharge)

- 6.1 The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:
- Eliminating the charge
 - Grounded wrist strap, ESD footwear, clothes, and floors
 - Grounded workstation equipment and tools
 - ESD table/shelf mat made of conductive materials
- 6.2 Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- 6.3 If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:

Dissipating static charge with conductive materials
Preventing charge generation with moisture
Neutralizing the charge with ionizers

7. Directions for use

The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage.

8. Other

- 8.1 Above specification may be changed without notice. SHUGUAN will reserve authority on material change for above specification
- 8.2. When using this product , please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. SHUGUAN assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification