



Data Sheet

Customer: _____
Part No: CL-SFC508WBGR-3K-02
Sample No: _____
Description: _____
Item No: _____

| Customer | | | |
|----------|------------|----------|------|
| Check | Inspection | Approval | Date |
| | | | |

Features

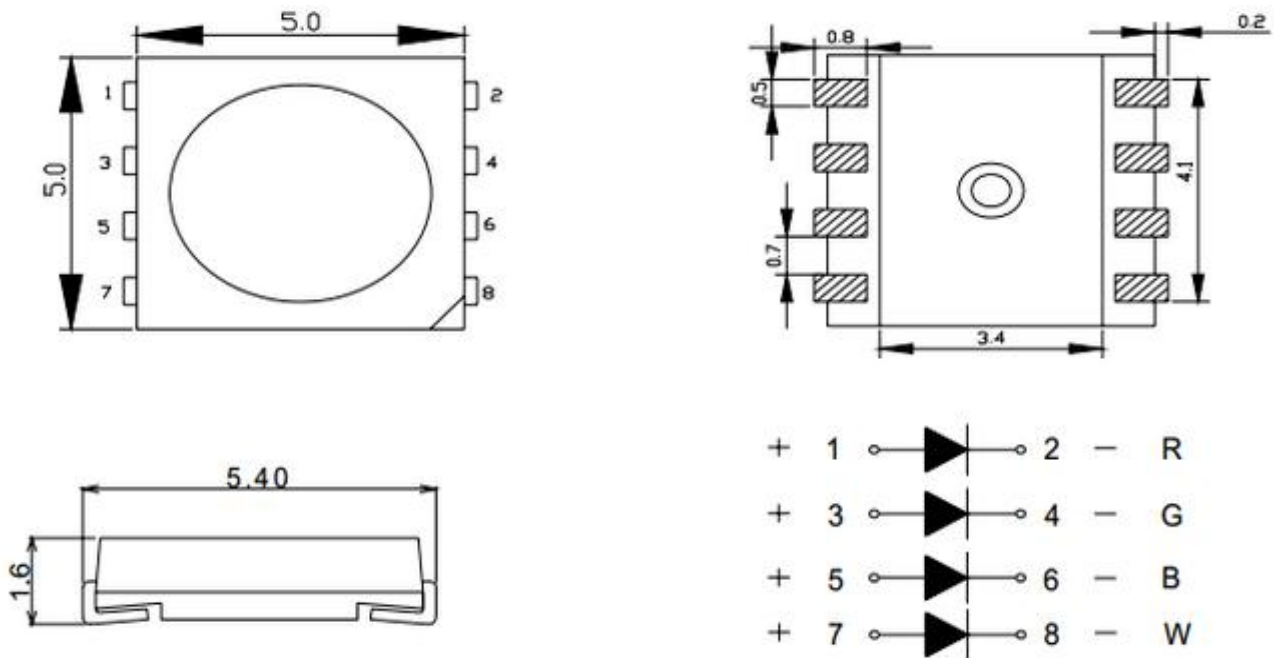
- Package Size: 5.0(L) × 5.4(W) × 1.6(T)mm
- Silicone Packed
- Suitable for different working environment
- Super long lifetime: 50000HRs
- Anti UV
- White colors are available in(2300K- 25000K)
- Wide viewing angle ($2\theta 1/2 = 120^\circ$)

Applications

- Indoor lighting: Fluorescent lamp, tube
- Commercial illumination and displays: Advertising words, light box
- LCD Backlighting
- Decorative lighting: light strip
- Automotive interior auxiliary lighting
- Other illumination and displays

Device Selection Guide

| ITEM | MATERIALS |
|--------------|-------------|
| Resin | Silicon |
| Bonding wire | 25 Em Au |
| Lens color | Water Clear |
| Dice | InGaN |

REFLECTOR COATING TYPE HIGH-PERFORMANCE LEDs
High Performance SMD Single-Color Top LEDs

NOTES:

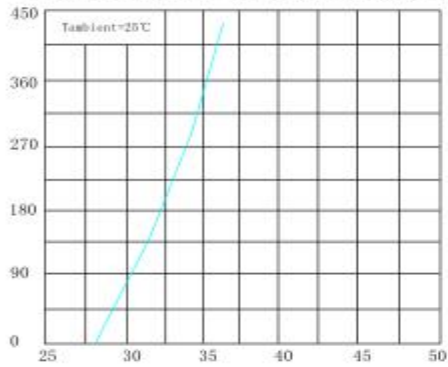
- 1、 All dimensions are in millimeters (inches);
- 2、 Tolerances are 0.2mm (0.008inch) unless otherwise noted

Absolute maximum ratings
(TA=25°C)

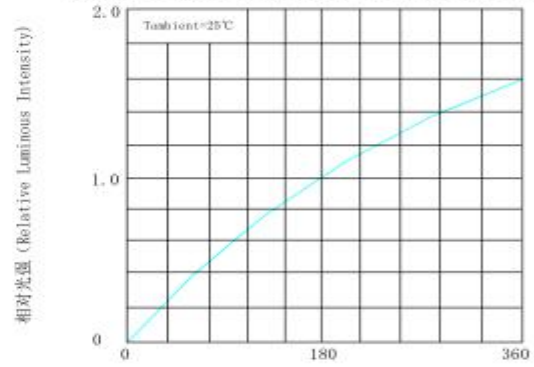
| Paramete | Symbol | Rat | Unit |
|---|-------------|--------------------------------|-----------|
| Forward current | I F | 20 | mA |
| Reverse voltage | VR | 5 | V |
| Power dissipation | Pd | 300 | mW |
| Operating Temperature | TOP | -20 ~+80 | °C |
| Storage Temperature | Tstg | -40 ~+80 | °C |
| Peak Forward Current (Duty 1/10 @ 1KHz) | IFP | 100 | mA |
| Lead Soldering Temperature (5mm From Body) | TSOI | 260°C For 5 Seconds)/°C | |

Electro-optical characteristics
(T A =25°C)

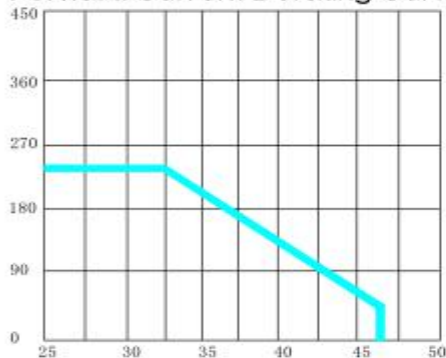
| Parameter | Test Condition | Symbo | Value | | | Unit |
|--------------------|----------------|-------|-------|------|-------|------|
| | | | Min | Avg | Max | |
| Forward voltage | I F =20mA R | Vf | 1.9 | 2.1 | 2.3 | v |
| | I F =20mA G | Vf | 2.8 | 3.0 | 3.2 | v |
| | I F =20mA B | Vf | 2.8 | 3.0 | 3.2 | v |
| | I F =20mA W | Vf | 2.8 | 3.0 | 3.2 | v |
| Wavelength | I F =20mA R | nm | 621.5 | --- | 626 | nm |
| | I F =20mA G | nm | 520.5 | --- | 525 | nm |
| | I F =20mA B | nm | 460 | --- | 464.5 | nm |
| Luminous intensity | I F =20mA R | mcd | 600 | --- | 800 | mcd |
| | I F =20mA G | mcd | 1200 | --- | 1600 | mcd |
| | I F =20mA B | mcd | 400 | --- | 600 | mcd |
| Color Temperature | I F =20mA W | TC | 2800 | 3000 | 3300 | K |
| Luminous Flux | I F =20mA W | φ | 7 | 8 | 9 | Lm |
| Viewing Angle | | 2θ1/2 | | 120 | | deg |
| Reverse Current | | IR | | | 10 | EA |

(Optical-Electrical Characteristic)
Volt-Ampere Characteristics


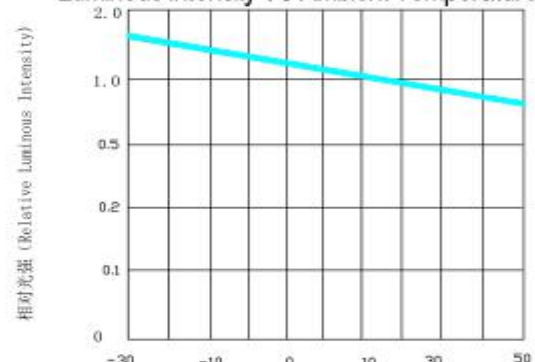
(Forward Voltage)(V)

Relative Luminous Intensity VS Forward Current


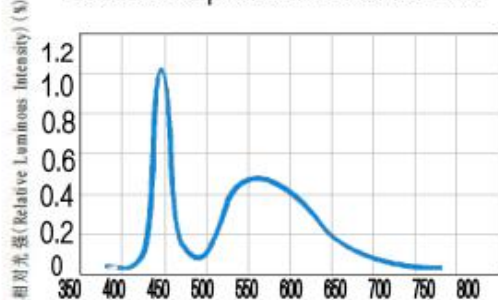
(Forward Current)(mA)

Forward Current Derating Curve


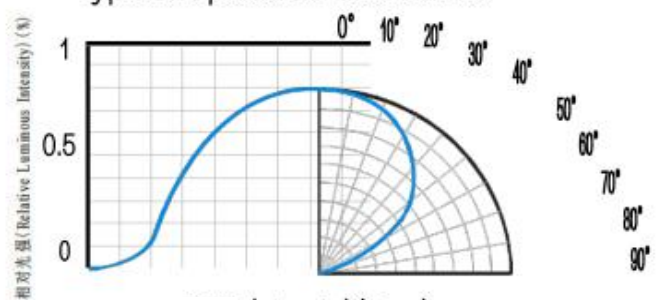
(Ambient Temperature)(°C)

Luminous Intensity VS Ambient Temperature


(Ambient Temperature)(°C)

Relative Spectral Distribution


(Wavelength)(nm)

Typical Spectral Distribution


(Angle)(Deg)

Reliability Test Items And Conditions

| Test Items | Reference | Test Conditions | Time | Quantity | Criterion |
|--|---------------------------|---------------------------------|-----------|----------|-----------|
| Thermal Shock | MIL-STD-202G | -40°C (30min) -100°C (30min) | 100Cycles | 22 | 0/22 |
| Temperature | JEITA ED-4701 200 203 | -10°C~65°C; 0%~90%RH | 10cycles | 22 | 0/22 |
| High temperature storage | JEITA ED -4071 200 201 | Ta=100°C | 1000H | 22 | 0/22 |
| Low temperature storage | JEITA ED -4071 200 202 | Ta=-40°C | 1000H | 22 | 0/22 |
| High temperature high humidity storage | JEITA ED -4071 100 103 | Ta=60°C; RH=90% | 1000H | 22 | 0/22 |
| High temperature life | JESD22-A108D | Ta=80°C | 1000H | 22 | 0/22 |
| Normal temperature life test | JESD22-A108D | Ta=25°C IF=150mA | 1000H | 22 | 0/22 |
| Resistance to soldering heat | GB/T 4937, II, 2.2&2.3 | Tsol*=(240±5)°C 10secs | 2 times | 22 | 0/22 |

Criteria For Judging Damage

| Test Items | Symbol | Test Conditions | Criteria For Judging Damage |
|------------------------------|----------------|----------------------------------|---|
| Forward Voltage | V _F | I _F = I _{FT} | Initial Data ±10% |
| Reverse Current | I _R | V _R = 5V | I _R ≤ 10uA |
| Luminous Intensity | I _V | I _F = I _{FT} | Average I _V attenuation ≤ 30%; single I _V attenuation ≤ 50% |
| Resistance to soldering heat | | | No cracks inside the material, no material bursting, peeling, no death light |

*Note T_{sol}-Temperature of tin liquid

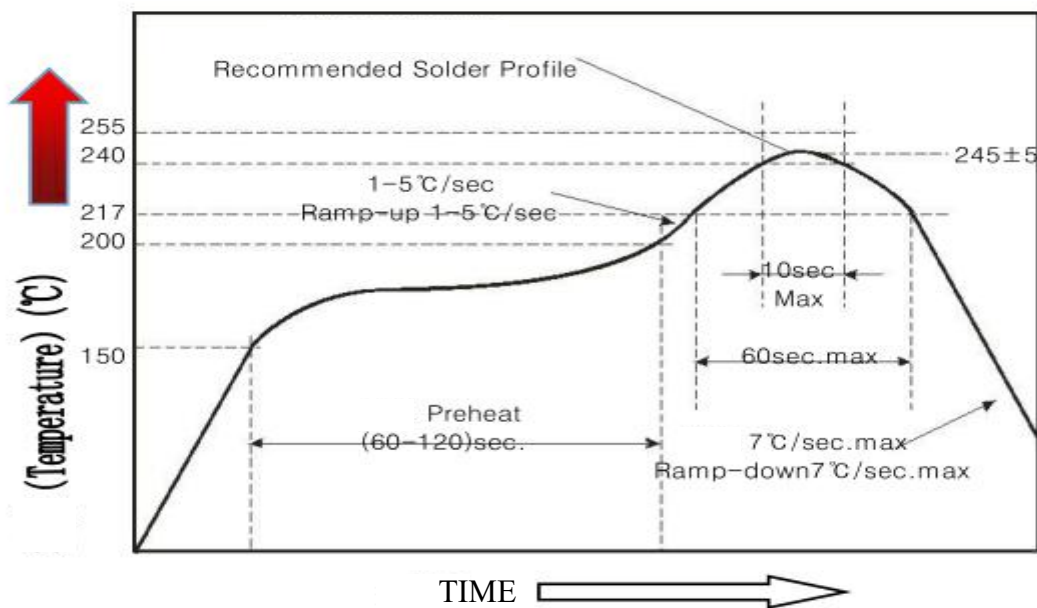
Useful hint:

1、 Hand Soldering

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 360 °C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.

Be careful because the damage of the product is often started at the time of the hand soldering.

2. Reflow Soldering: Use the conditions shown in the under Figure of Pb-Free Reflow Soldering



- Reflow soldering only allowed to do once

- Stress on the LEDs should be avoided during heating in soldering process

- After soldering, do not deal with the product before its temperature drop down to room Temperature.

Precautions(1)

1. Storage

Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum.

Before opening the package, the product should be kept at 30°C or less and humidity less than 60% RH, and be used within a year.

After opening the package, the product should be stored at 30°C or less and humidity less than 10%RH, and be soldered within 24 hours (1day). It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.

●If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (70±5)°C for 24 hours.

2. Static Electricity

Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristics such as the forward voltage becoming lower, or the LEDs 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 LEDs.

Precautions (2)

3. Vulcanization

LED curing is due to sulfur being in bracket and the +1 price of silver in the chemical reaction generated Ag₂S in the process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline ,seriously affecting the performance of the product. So we should take corresponding measures to avioding vulcanization, such as to avoid using sulphur volatile substances and keeping away from high sulphur content of the material.

4.Safety Advice For Human Eyes

Viewing direct to the light emitting center of the LEDs, especially those of great Luminous Intensity will cause great hazard to human eyes. Please be careful.

Luminous Intensity Bin Limits

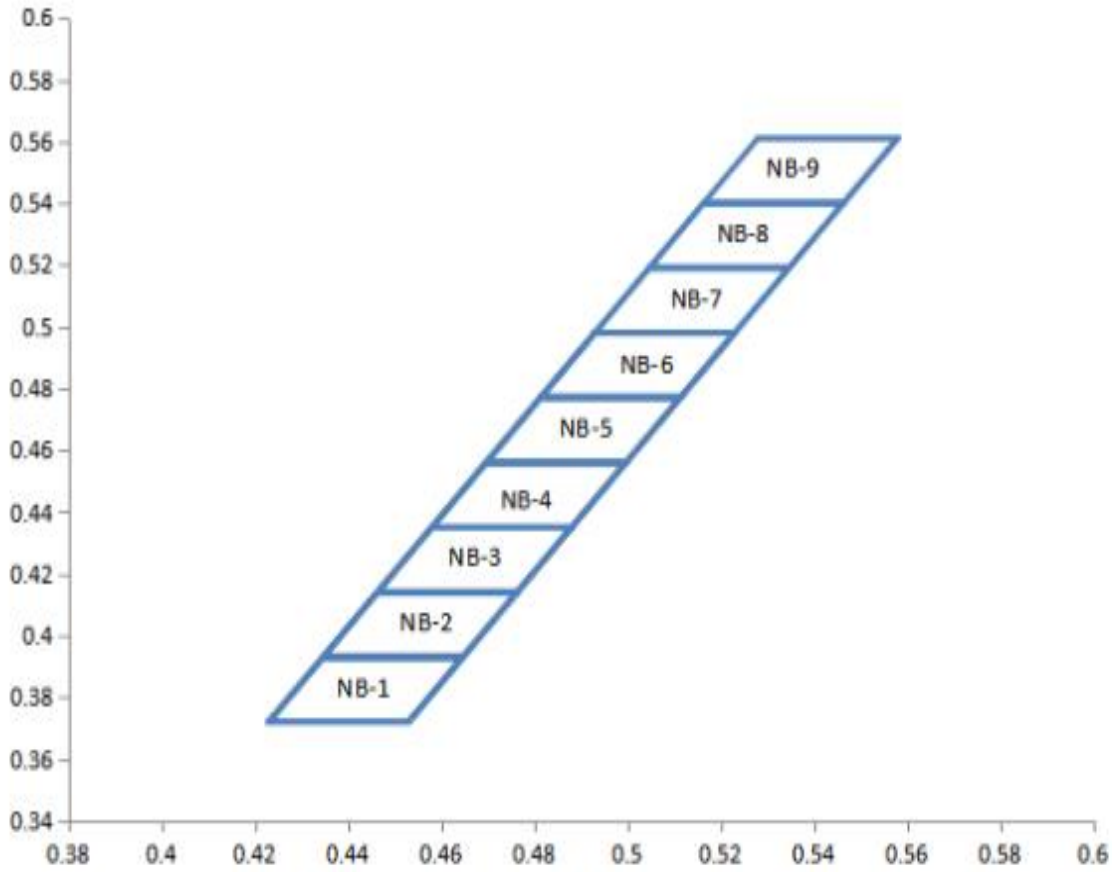
| BIN Code | Test Condition @20mA | |
|----------|----------------------------|-----------------------------|
| UHR | <u>V_{fmin}(v)</u> | <u>V_{fmax} (v)</u> |
| 1 | 2.0 | 2.2 |
| DLG | <u>V_{fmin}(v)</u> | <u>V_{fmax} (v)</u> |
| 1 | 3.0 | 3.2 |
| DNB | <u>V_{fmin}(v)</u> | <u>V_{fmax} (v)</u> |
| 1 | 3.0 | 3.2 |
| DBW | <u>V_{fmin}(v)</u> | <u>V_{fmax} (v)</u> |
| 1 | 3.0 | 3.2 |

Forward Voltage Bin Limits

| BIN Code | Test condition: @20mA | |
|----------|------------------------------|-------------------------------|
| UHR | <u>IV_{min}(mcd)</u> | <u>IV_{max} (mcd)</u> |
| 1 | 600 | 700 |
| 2 | 700 | 800 |
| DLG | <u>IV_{min}(mcd)</u> | <u>IV_{max} (mcd)</u> |
| 1 | 1200 | 1400 |
| 2 | 1400 | 1600 |
| DNB | <u>IV_{min}(mcd)</u> | <u>IV_{max} (mcd)</u> |
| 1 | 400 | 500 |
| 2 | 500 | 600 |
| DBW | <u>IV_{min}(lm)</u> | <u>IV_{max} (lm)</u> |
| 1 | 6 | 7 |
| 2 | 7 | 8 |

Dominant Wavelength BIN Limits

| BIN Code | Test condition: @20mA | |
|----------|------------------------------|------------------------------|
| UHR | <u>λ_{dmin} (nm)</u> | <u>λ_{dmax} (nm)</u> |
| 1 | 621.5 | 623 |
| 2 | 623 | 624.5 |
| 3 | 624.5 | 626 |
| DLG | <u>λ_{dmin} (nm)</u> | <u>λ_{dmax} (nm)</u> |
| 1 | 520.5 | 522 |
| 2 | 522 | 523.5 |
| 3 | 523.5 | 525 |
| DNB | <u>λ_{dmin} (nm)</u> | <u>λ_{dmax} (nm)</u> |
| 1 | 460 | 461.5 |
| 2 | 461.5 | 463 |
| 3 | 463 | 464.5 |



| | | | | | | | | |
|------|---------|-------|------|---------|-------|------|---------|-------|
| NB-1 | 0.423 | 0.372 | NB-2 | 0.43467 | 0.393 | NB-3 | 0.44633 | 0.414 |
| | 0.453 | 0.372 | | 0.46467 | 0.393 | | 0.47633 | 0.414 |
| | 0.46467 | 0.393 | | 0.47633 | 0.414 | | 0.488 | 0.435 |
| | 0.43467 | 0.393 | | 0.44633 | 0.414 | | 0.458 | 0.435 |
| NB-4 | 0.458 | 0.435 | NB-5 | 0.46967 | 0.456 | NB-6 | 0.48134 | 0.477 |
| | 0.488 | 0.435 | | 0.49967 | 0.456 | | 0.51134 | 0.477 |
| | 0.49967 | 0.456 | | 0.51134 | 0.477 | | 0.52301 | 0.498 |
| | 0.46967 | 0.456 | | 0.48134 | 0.477 | | 0.49301 | 0.498 |
| NB-7 | 0.49301 | 0.498 | NB-8 | 0.50468 | 0.519 | NB-9 | 0.51635 | 0.54 |
| | 0.52301 | 0.498 | | 0.53468 | 0.519 | | 0.54635 | 0.54 |
| | 0.53468 | 0.519 | | 0.54635 | 0.54 | | 0.55802 | 0.561 |
| | 0.50468 | 0.519 | | 0.51635 | 0.54 | | 0.52802 | 0.561 |