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| Spec No | NPS0306-589 |
| Rev. | 09/03 |



PRODUCT SPECIFICATION

Model No: SBL-KHTLWAP-CH

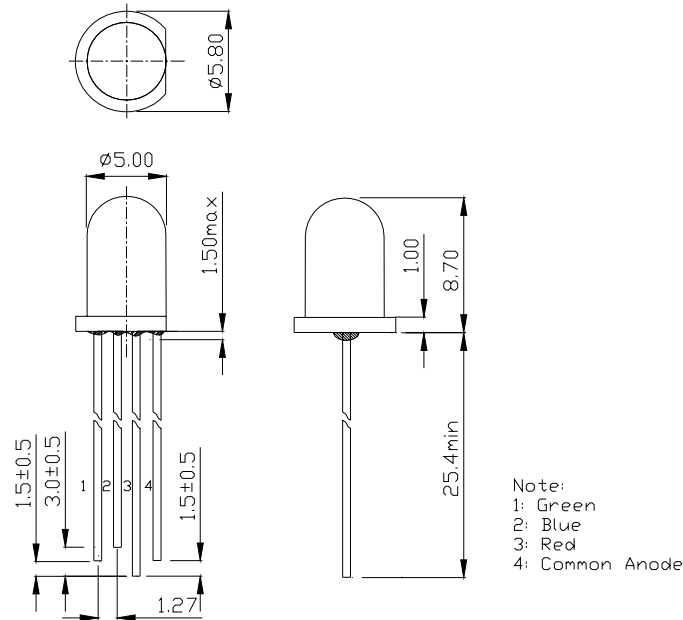
Descriptions:

- 5mm Standard Type
- Emitting Color: Full Color (R/G/B)
- Viewing Angle: 50°
- No Stopper

| CUSTOMER APPROVED SIGNATURES | APPROVED BY | CHECKED BY | PREPARED BY |
|------------------------------|-------------|------------|-------------|
| | Jaylee | Skyin | Doris |

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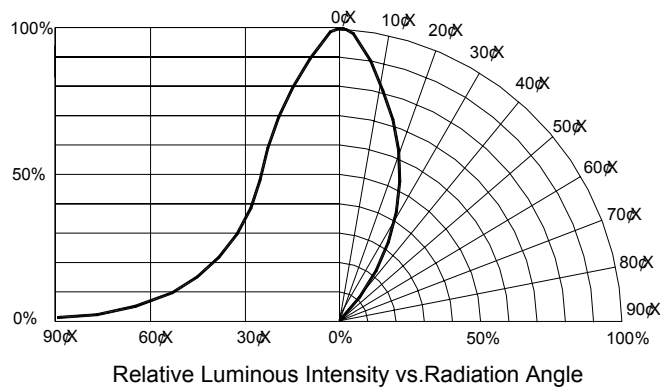
■ Package Dimensions



Notes:

1. All dimensions in mm tolerance is $\pm 0.2\text{mm}$ unless otherwise noted.
2. An epoxy meniscus may extend about 1.5mm down the leads.
3. Burr around bottom of epoxy may be 0.5mm max.

■ Far Field Pattern



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■ Absolute Maximum Ratings (Ta = 25°C)

| Items | Symbol | Absolute maximum Rating | | Unit |
|----------------------------------|------------------|---|-------------|------|
| | | Red | Green, Blue | |
| Power Dissipation | P _D | 150 | 120 | mW |
| Forward Current(DC) | I _F | 50 | 30 | mA |
| Peak Forward Current* | I _{FP} | 200 | 100 | mA |
| Reverse Voltage | V _R | 5 | | V |
| Electrostatic Discharge(Class I) | ESD | 400 | | V |
| Operation Temperature | T _{opr} | -20 ~ +75 | | °C |
| Storage Temperature | T _{stg} | -30 ~ +80 | | °C |
| Lead Soldering Temperature | T _{sol} | Max.260°C for 3 sec Max. (3mm from the base of the epoxy bulb) | | |

*Pulse width ≤ 0.1msec duty ≤ 1/10

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

| Items | | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------|-------------|-----------------|-----------------------|------|------|------|------|
| Forward Voltage | Red | V _F | I _F = 20mA | 1.8 | 2.2 | 2.4 | V |
| | Green | V _F | I _F = 20mA | 2.6 | 3.4 | 4.0 | V |
| | Blue | V _F | I _F = 20mA | 2.6 | 3.4 | 4.0 | V |
| Reverse Current | Red | I _R | V _R = 9V | --- | --- | 10 | μA |
| | Green, Blue | I _R | V _R = 5V | --- | --- | 50 | μA |
| Dominant Wavelength | Red | λ _D | I _F = 20mA | --- | 623 | --- | nm |
| | Green | λ _D | I _F = 20mA | --- | 525 | --- | nm |
| | Blue | λ _D | I _F = 20mA | --- | 470 | --- | nm |
| Luminous Intensity | Red | I _V | I _F = 20mA | --- | 180 | --- | mcd |
| | Green | I _V | I _F = 20mA | --- | 500 | --- | mcd |
| | Blue | I _V | I _F = 20mA | --- | 230 | --- | mcd |
| 50% Power Angle | | 2θ _½ | I _F = 20mA | --- | 50 | --- | Deg |

■ Notes:

1. Tolerance of measurement of luminous intensity : ±15%
2. Tolerance of measurement of dominant wavelength : ±1.0nm
3. Tolerance of measurement of forward voltage : ±0.05V
4. All ranks will be included per normal delivery and rank rations will be determined by SBO.
5. Please confirm with SBO salesman, if your request different from standard specification.

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■ Typical Electrical/ Optical Characteristics Curves
(Ta=25°C Unless Otherwise Noted)

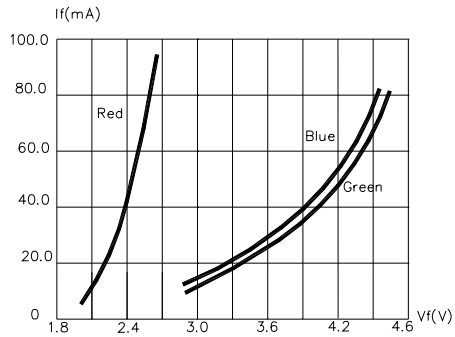


Fig.1 Forward Current vs. Forward Voltage

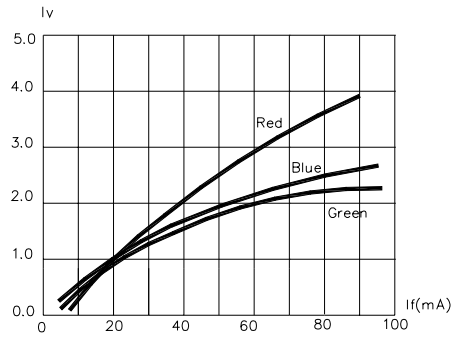


Fig.2 Relative Luminous Intensity vs. Forward Current

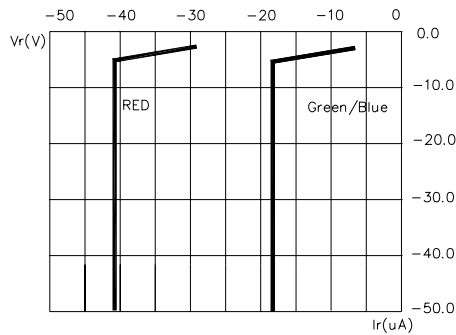


Fig.3 Reverse Current vs. Reverse Voltage

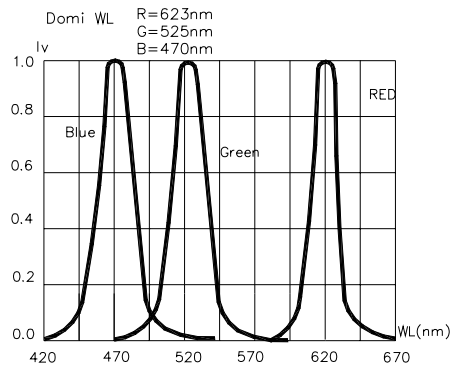


Fig.4 Relative Luminous Intensity vs. Wavelength

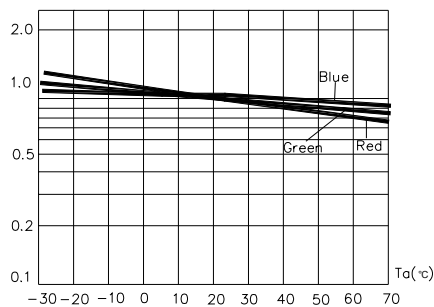


Fig.5 Relative Luminous Intensity vs. Ambient Temperature

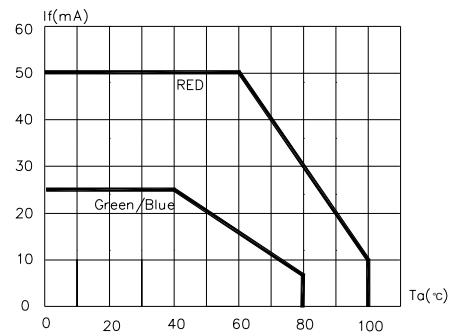


Fig.6 Maximum Forward Current vs. Ambient Temperature

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■ **Warranty:**

1. SBO warrants that its LEDs conform to the foregoing specifications and that SBO will convey good title to all LEDs sold.
2. In the event any LED supplied by SBO is found not to conform to the foregoing specifications within ninety days of receipt. SBO will repair or replace the LED, at SBO's option, provided that user
 - a) promptly notifies SBO in writing of the details of the defect
 - b) ships the LED at user's expense to SBO for examination, and the defect is due to the negligence of SBO and not mishandling or misuse by user.
3. SBO cannot take any responsibility for any troubles that are caused by using the LEDs at conditions exceeding our specifications.
4. These specifications are applied only when a LED stands alone and it is strongly recommended that the user of the LED confirms the properties upon assembly. SBO is not responsible for failures caused during and after assembling.
5. A claim report stating details about the defect shall be made when returning defective LEDs. SBO will investigate the report immediately and inform the user of the results.
6. These LEDs are designed and manufactured for standard applications such as electric home appliances, communication equipment, office equipment, electronic instrumentation and so on. It is recommended to consult with SBO in advance if user's application requires any particular quality or reliability that concerns human life. Examples would be medical equipment, aerospace applications, traffic signals, safety system equipment and so on.
7. SBO's liability for defective lamps shall be limited to replacement and in no event shall SBO be liable for consequential damages or lost profits.
8. Both SBO and the user confirm that any agreement regarding the quality is based only on the specifications herein. The agreement confirmed before this specifications shall become ineffective if it is not stated in these specifications.
9. Both parties shall sincerely try to find a solution when any inconvenience is found in these specifications.
10. These specifications can be revised on mutual agreement.
11. SBO understands that user accepts the content of this specification, if user does not return these specifications with your signature within 3 weeks after your receipt.