

**Harvatek 3.0mm ROUND LED LAMP****HV-47B2004M**

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| Official Product  | HV-47B2004M  | Customer Part No. | Data Sheet No. |
|---|--------------|-------------------|----------------|
|   | *****        | *****             | CDAE-010-191   |
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## **LIFE SUPPORT POLICY**

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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## Compliance and Certification

ISO9002, QS9000 and ISO14001 Certified

RoHS Compliant



## Orderable Information

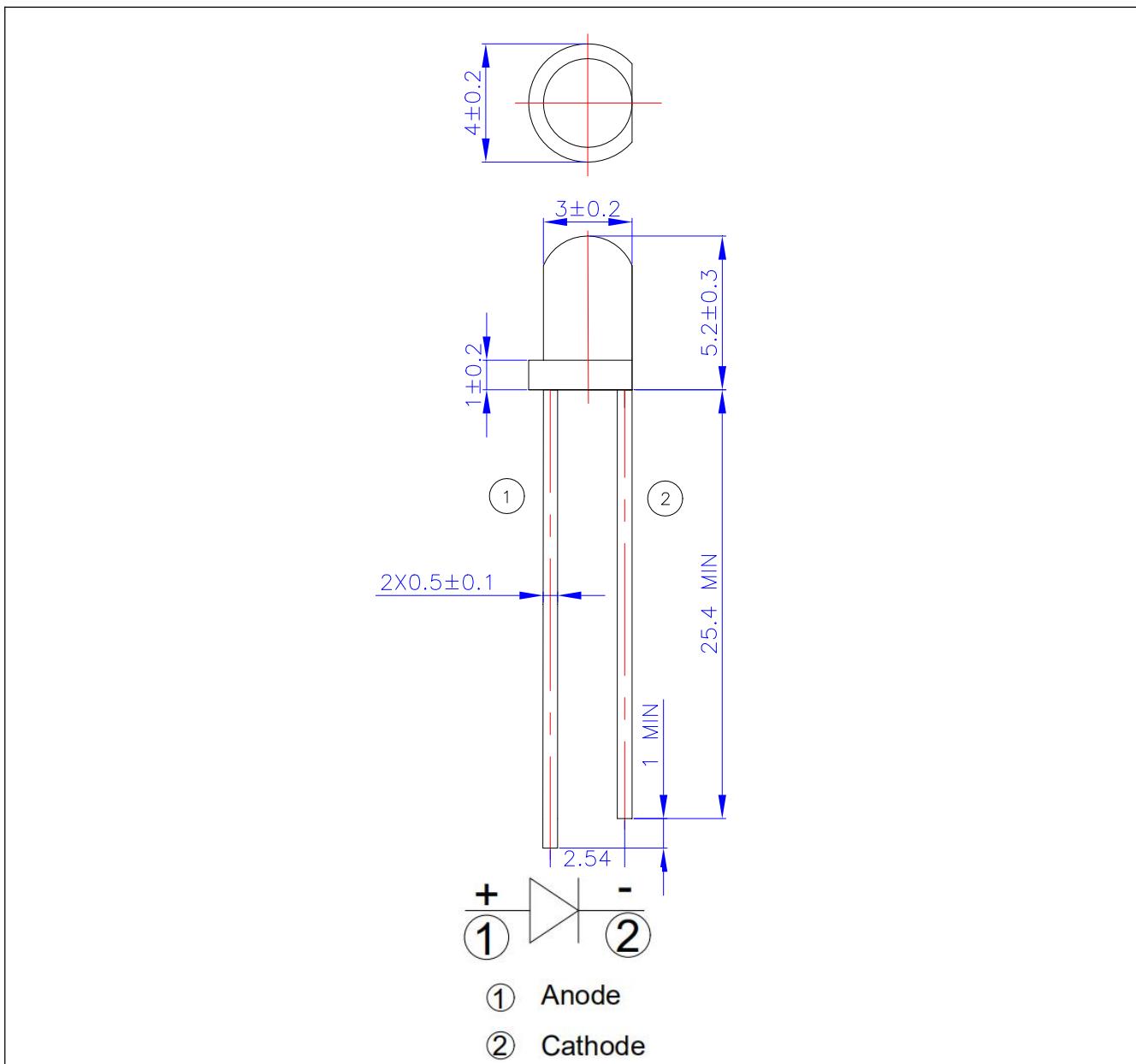
H V - 47 B 2 0 0 4 M

| Series Name      | Color Code  | Remark |
|------------------|---|--------|
| HV :<br>HARVATEK | 47B200:<br>3.0mm ROUND LED LAMP,5.2mm Lens.<br>InGaN 468nm Bule Chip<br>4:HARVATEK Part No.<br>M: White Diffused. |        |

## Features:

- Stable Color
- Popular 3.0mm through hole package, 5.2mm lens height.
- White Diffused lens.

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**Package Dimensions:****Notes:**

1. All dimensions are millimeters.
2. Tolerance is  $\pm 0.25$  mm unless otherwise noted.
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**Absolute Maximum Ratings at Ta=25°C**

| Parameter               | Symbol           | Rating    | Unit |
|-------------------------|------------------|-----------|------|
| Forward Current         | I <sub>F</sub>   | 30        | mA   |
| Operating Temperature   | Topr             | -40to+85  | °C   |
| Storage Temperature     | T <sub>stg</sub> | -40to+100 | °C   |
| Soldering Temperature*1 | T <sub>sol</sub> | 260±5     | °C   |
| Power Dissipation       | P <sub>d</sub>   | 114       | mW   |
| Reverse Voltage         | V <sub>R</sub>   | 5         | V    |
| Peak Forward Current*2  | I <sub>FP</sub>  | 0.1       | A    |

\*1:Soldering time  $\leq$  5 seconds. \*2:Pulse Width  $\leq$  100  $\mu$  s and Duty  $\leq$  1%

|   |              |                   |                |
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**Electrical and Optical Characteristic**

| Parameter                    | Symbol          | Condition   | Min. | Typ. | Max. | Unit    |
|------------------------------|-----------------|-------------|------|------|------|---------|
| Forward Voltage              | $V_F$           | $I_F=20$ mA | /    | 3.0  | 3.8  | V       |
| Reverse Current              | $I_R$           | $V_R= 5$ V  | /    | /    | 10   | $\mu$ A |
| Luminous Intensity           | $I_V$           | $I_F=20$ mA | 100  | 300  | /    | mcd     |
| Viewing Angle                | $2\theta_{1/2}$ | $I_F=20$ mA | /    | 50   | /    | deg     |
| Dominant Wavelength          | $\lambda_d$     | $I_F=20$ mA | 463  | 468  | /    | nm      |
| Peak Wavelength              | $\lambda_p$     | $I_F=20$ mA | 460  | 465  | /    | nm      |
| Spectrum Radiation Bandwidth | $\Delta\lambda$ | $I_F=20$ mA | /    | 25   | /    | nm      |

Notes:  $\theta_{1/2}$  is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

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**Specifications for Bin Grading:**

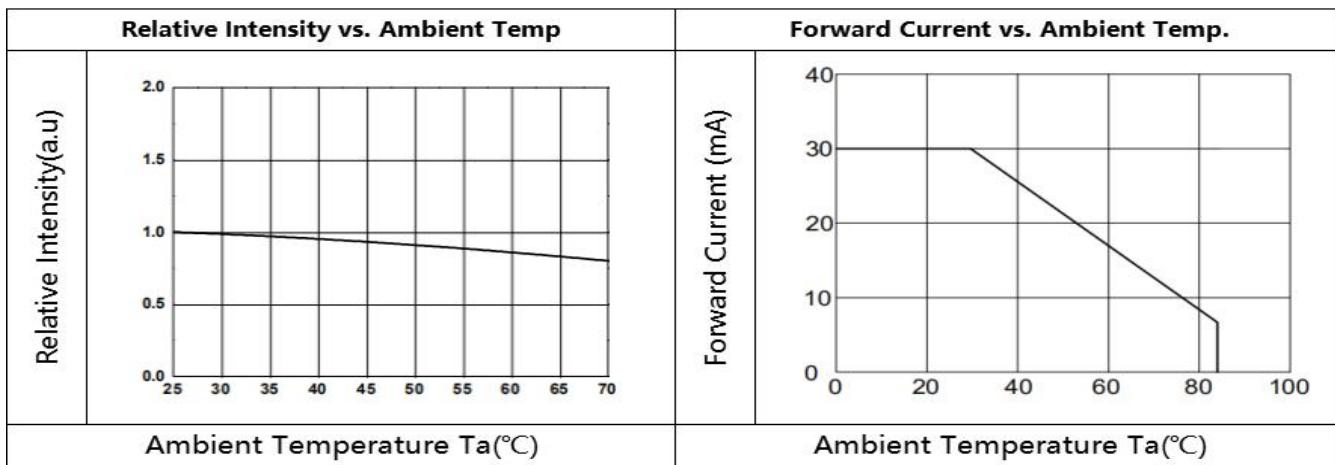
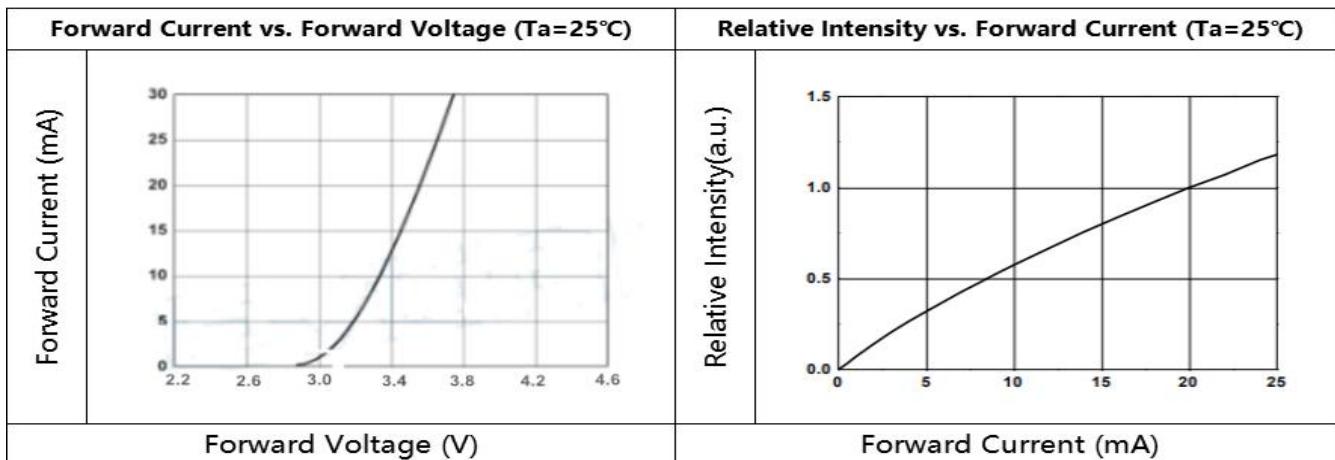
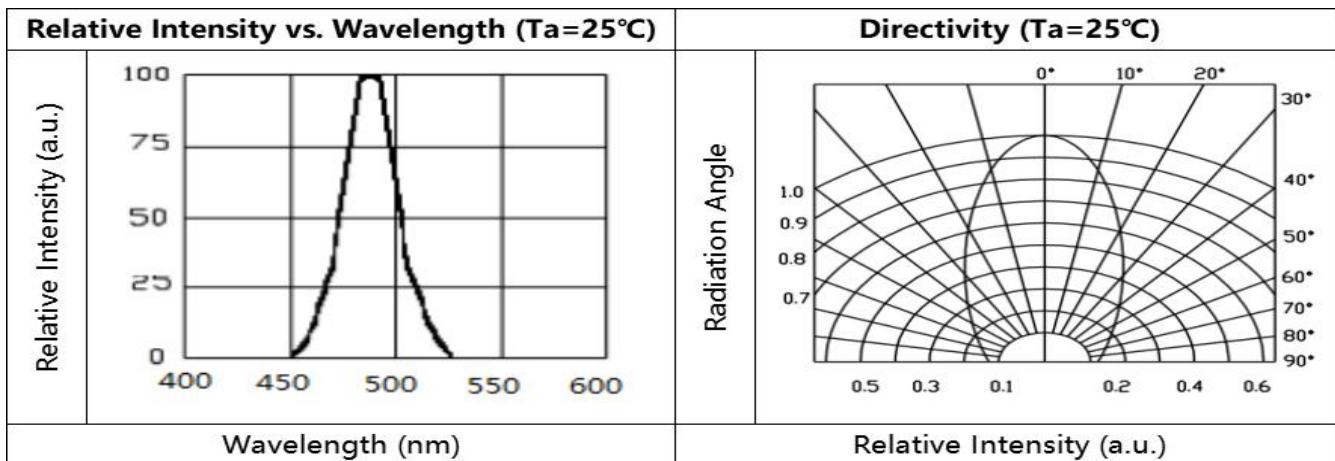
| I <sub>v</sub> (mcd) |      |      |
|----------------------|------|------|
| Grade                | Min. | Min. |
| R                    | 100  | 200  |
| S                    | 160  | 320  |
| T                    | 250  | 500  |
| U                    | 400  | 800  |
| V                    | 630  | 1250 |
| W                    | 1000 | 2000 |
| X                    | 1600 | 3200 |
| Y                    | 2500 | 4500 |

| λ d (nm) |       |       |
|----------|-------|-------|
| Grade    | Min.  | Max.  |
| 2        | 463   | 466.5 |
| 3        | 465.5 | 468.5 |
| 4        | 467.5 | 470.5 |
| 5        | 469.5 | 472.5 |
| 6        | 471.5 | 474.5 |
| 7        | 473.5 | 476.5 |
| 8        | 475.5 | 478.5 |
| 9        | 477.5 | 480   |

**Notes:**

1. Luminous intensity: +/-15%.
2. Wavelength: +/-1nm

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**Typical Electro-Optical Characteristics Curves**

|   |                      |                            |                                |
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**Reliability test items and conditions:**

The reliability of products shall be satisfied with items listed below.

Confidence level: 97%

LTPD:3%

| No | Item                             | Test Conditions                 | Test Hours/Cycle | Sample Size | Failure Judgment Criteria                                   | Ac/Er |
|----|----------------------------------|---------------------------------|------------------|-------------|---|-------|
| 1  | Solder Heat                      | TEMP:260°C±5°C                  | 10 SEC           | 76 PCS      | Iv $\leq$ Ivt*0.5<br>or<br>Vf $\geq$ U<br>or<br>Vf $\leq$ L | 0/1   |
| 2  | Temperature Cycle                | H:+100°C 15min<br>L:-40°C 15min | 300 CYCLES       | 76 PCS      |   | 0/1   |
| 3  | Thermal Shock                    | H:+100°C 5min<br>L:-10°C 5min   | 300 CYCLES       | 76 PCS      |   | 0/1   |
| 4  | High Temperature Storage         | TEMP:100°C                      | 1000 HRS         | 76 PCS      |   | 0/1   |
| 5  | Low Temperature Storage          | TEMP:-40°C                      | 1000 HRS         | 76 PCS      |   | 0/1   |
| 6  | DC Operating Life                | TEMP:25°C<br>IF=20mA            | 1000 HRS         | 76 PCS      |   | 0/1   |
| 7  | High Temperature / High Humidity | 85°C/85%RH                      | 1000 HRS         | 76 PCS      |   | 0/1   |

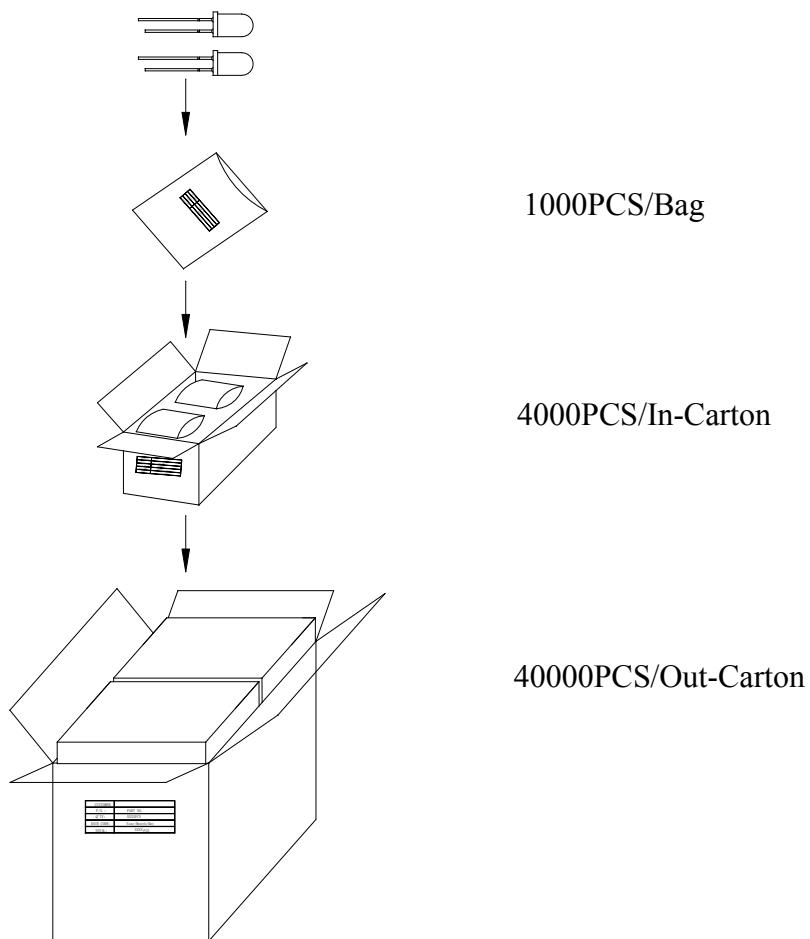
Note: Ivt: To test Iv value of the chip before the reliability test.

Iv: The test value of the chip that has completed the reliability test

U: Upper Specification Limit

L: Lower Specification Limit

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**Packing Specification:**

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**Revision History**

| <b>Revision</b>              | <b>Page</b> | <b>Version No.</b> | <b>Revision Date</b> |
|------------------------------|-------------|--------------------|----------------------|
| Initial Release              |             | 1.0                | 09-18-2018           |
| Modifies Dominant Wavelength | 6           | 1.1                | 11-11-2019           |
|                              |             |                    |                      |
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