

Harvatek 3.0mm Round PT LED LAMP**HV-1302004C-U1930**

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|--|-------------------|-------------------|----------------|-------------------|
| Official Product | HV-1302004C-U1930 | Customer Part No. | | Data Sheet No. |
| | ***** | ***** | | HV-1302004C-U1930 |
| Specifications are subject to change without notice. Data and drawings herein are copyrighted. | | Jul.15 2022 | Version of 1.0 | Page 1/12 |

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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 - 1 3 0 2 0 0 4 C - U1930

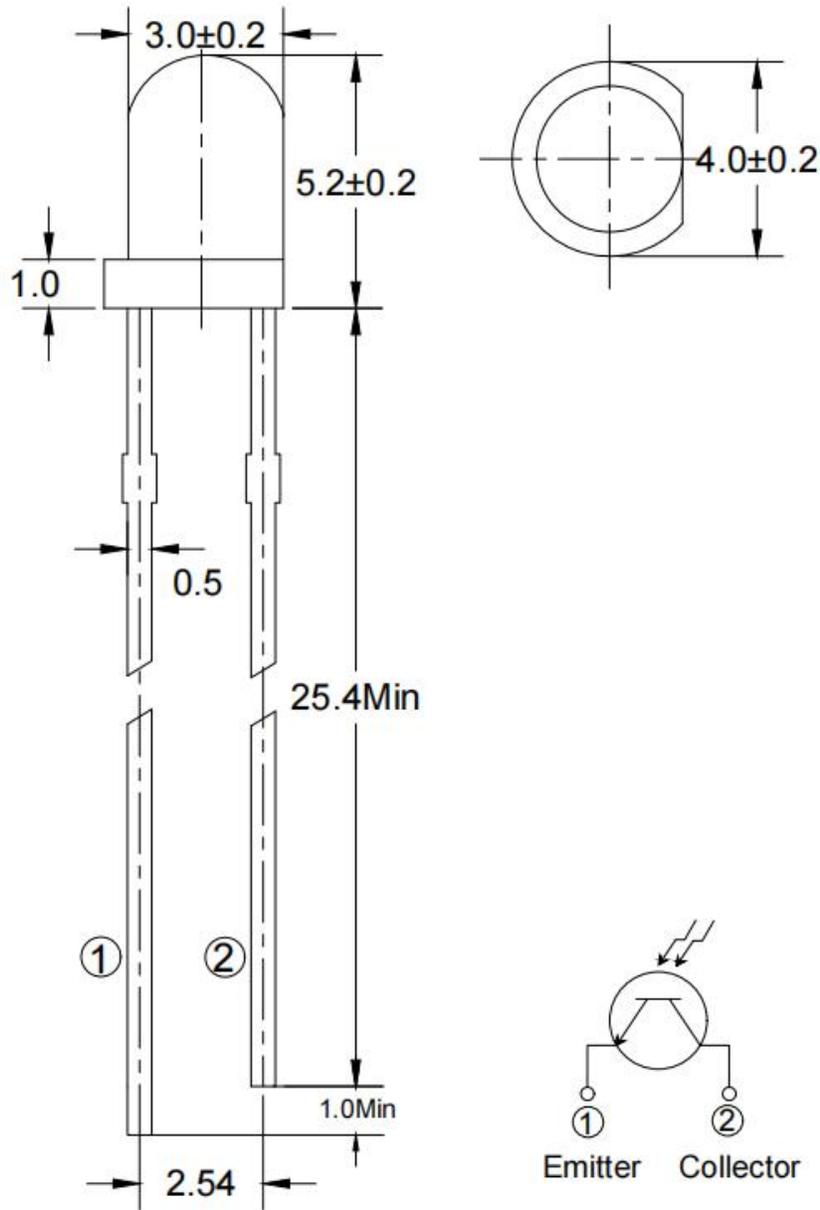
| Series Name | Color Code | Remark |
|------------------|---|------------------------------------|
| HV : HARVATEK | 130: 940nm PT Chip. 2004 : 3.0mm Round Lamp, 5.2mm Lens. C : Water Clear. | U1930: Customer Product Code |

Features:

- Stable Color.
- Popular 3.0mm through hole package, 5.2mm lens height.
- Water Clear Lens.

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Package Dimensions:



Notes:

- 1.All dimensions are millimeters.
- 2.Tolerance is +/-0.25mm unless otherwise noted.
- 3.Specifications are subject to change without notice.

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Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Rating | Unit |
|---------------------------|-----------|-----------|------|
| Collector Current | I_c | 20 | mA |
| Operating Temperature | T_{opr} | -40to+85 | °C |
| Storage Temperature | T_{stg} | -40to+100 | °C |
| Soldering Temperature*1 | T_{sol} | 260±5 | °C |
| Power Dissipation | P_d | 75 | mW |
| Collector-Emitter Voltage | V_{ceo} | 30 | V |
| Emitter-Collector Voltage | V_{eco} | 5 | V |

*1:Soldering time \leq 5 seconds.

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Electrical and Optical Characteristic

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------------------------|-----------------|--|------|------|------|---------|
| On State Collector Current | $I_{C(on)}$ | $V_{ce}=5V$ $E_e=1mW/cm^2$ | 0.9 | 2.2 | / | mA |
| Collector Dark Current | I_{ceo} | $E_e=0mW/cm^2$ $V_{ce}=20V$ | / | / | 100 | nA |
| Collector – Emitter Breakdown Voltage | BV_{ceo} | $I_c=100\mu A$ $E_e=0mW/cm^2$ | 30 | / | / | V |
| Emitter-Collector Breakdown Voltage | BV_{eco} | $I_c=100\mu A$ $E_e=0mW/cm^2$ | 5 | / | / | V |
| Collector-Emitter Saturation Voltage | $V_{ce(sat)}$ | $I_c=2mA$ $E_e=1mW/cm^2$ | / | / | 0.4 | V |
| Peak Wavelength | λ_p | / | / | 940 | / | nm |
| Rang of Spectral Bandwidth | $\lambda_{0.5}$ | / | 400 | / | 1100 | nm |
| Rise Time | t_r | $V_{CE}=5V$ $I_C=1mA$ $R_L=1000\Omega$ | / | 15 | / | μS |
| Fall Time | t_f | | / | 15 | / | μS |

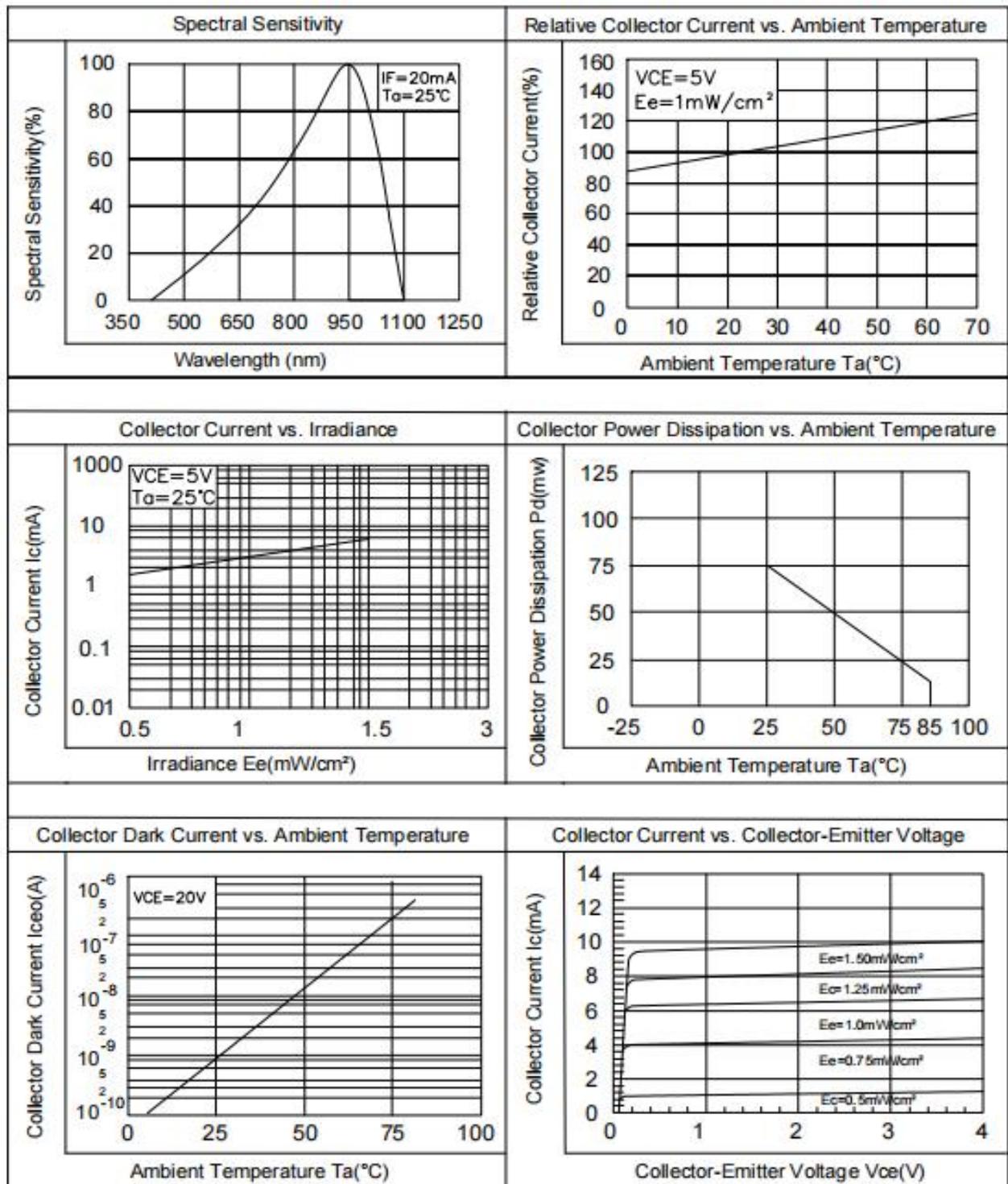
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Specifications for Bin Grading:

| Ic(mA) | | |
|--------|------|------|
| Grade | Min. | Max. |
| G | 0.9 | 1.6 |
| H | 1.45 | 2.25 |
| J | 2.1 | 3.2 |
| K | 3.1 | 4.85 |
| L | 4.7 | 6.75 |
| M | 6.6 | 7.9 |
| N | 7.75 | 9.4 |
| P | 9.25 | 10.9 |

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Typical Electro-Optical Characteristics Curves



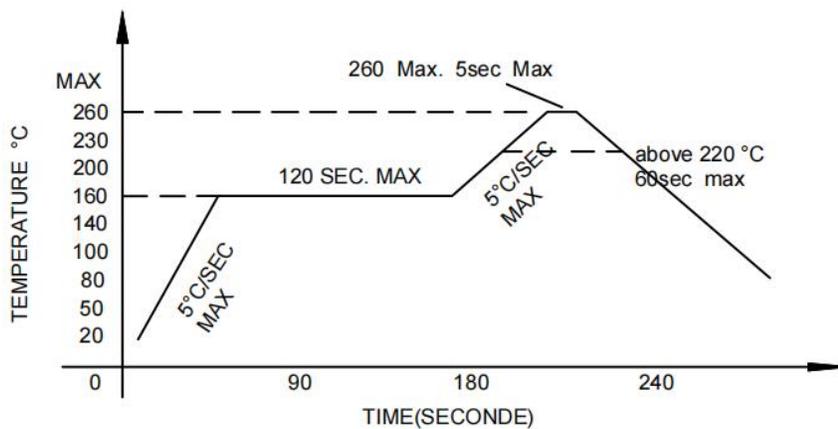
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Soldering condition

1. Careful attention should be paid during soldering. When soldering, leave more then 2mm from solder joint to Led, and soldering beyond the base of the tie bar is recommended.
2. Avoiding applying any stress to the lead frame while the LED are at high temperature particularly when soldering.
3. Dip and hand soldering should not be done more than one time.
4. After soldering the LED, the epoxy bulb should be protected from mechanical shock or vibration until the LED return to room temperature.
5. A rapid-rate process is not recommended for cooling the LED down from the peak temperature.
6. Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LED.
7. Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

• Recommended soldering conditions

| Hand Soldering | | Wave Soldering | |
|----------------------|------------------------------------|-------------------|-------------------------------------|
| Temp. at tip of iron | 300°C Max. (30W Max.) | Preheat temp. | 160°C Max. (120 sec Max.) |
| Soldering time | 3 sec Max. | Bath temp. & time | 260 Max., 5 sec Max |
| Distance | 2mm Min.(From solder joint to Led) | Distance | 2mm Min. (From solder joint to Led) |



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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 | $I_c \leq I_{ct} * 0.5$ or $V_f \geq U$ or $V_f \leq L$ | 0/1 |
| 2 | Temperature Cycle | H:+100°C 15min ∫ 5min L:-40°C 15min | 300 CYCLES | 76 PCS | | 0/1 |
| 3 | Thermal Shock | H:+100°C 5min ∫ 10sec 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 IF=20mA | 1000 HRS | 76 PCS | | 0/1 |
| 7 | High Temperature / High Humidity | 85°C/85%RH | 1000 HRS | 76 PCS | | 0/1 |

Note: I_{ct} : To test I_c value of the chip before the reliability test.

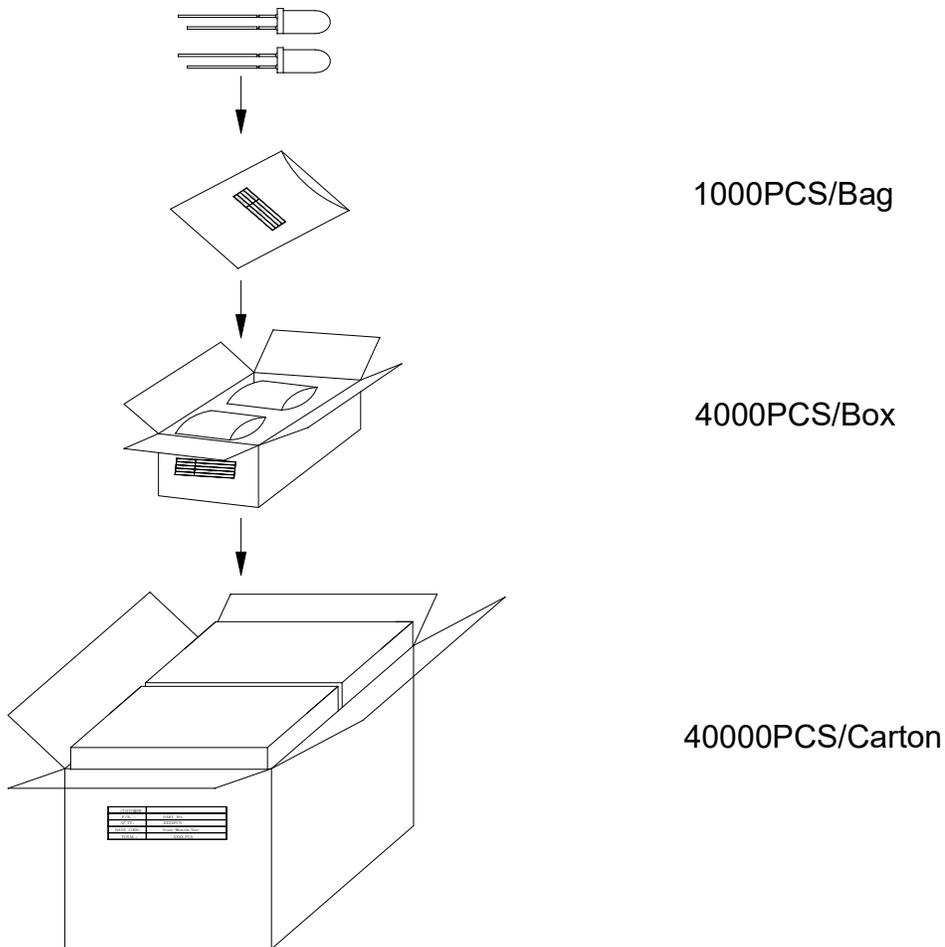
I_c : The test value of the chip that has completed the reliability test.

U: Upper Specification Limit.

L: Lower Specification Limit.

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Packing Specification:



| | | |
|---------|-------------------|-------------|
| | HARVATEK | |
| CPN: | | RoHs |
| P/N: | | |
| | HV-1302004C-U1930 | |
| QTY: | | CAT: |
| | | HUE: |
| LOT NO: | | REF: |

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Revision History

| Revision | Page | Version No. | Revision Date |
|-----------------|------|-------------|---------------|
| Initial Release | | 1.0 | 07-15-2022 |
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