

**Harvatek 5.0mm Round LED LAMP****HV-57G5023D-TR1-U1856**

|  |                       |                   |                |                       |
|--|-----------------------|-------------------|----------------|-----------------------|
| Official Product   | HV-57G5023D-TR1-U1856 | Customer Part No. |                | Data Sheet No.        |
|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
| Specifications are subject to change without notice. Data and drawings herein are copyrighted. |                       | Sep.03 2024       | Version of 1.0 | Page 1/14             |

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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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|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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## Compliance and Certification

ISO9002, QS9000 and ISO14001 Certified

RoHS Compliant



## Orderable Information

**H V - 57 G 5023 D - TR1 - U1856**

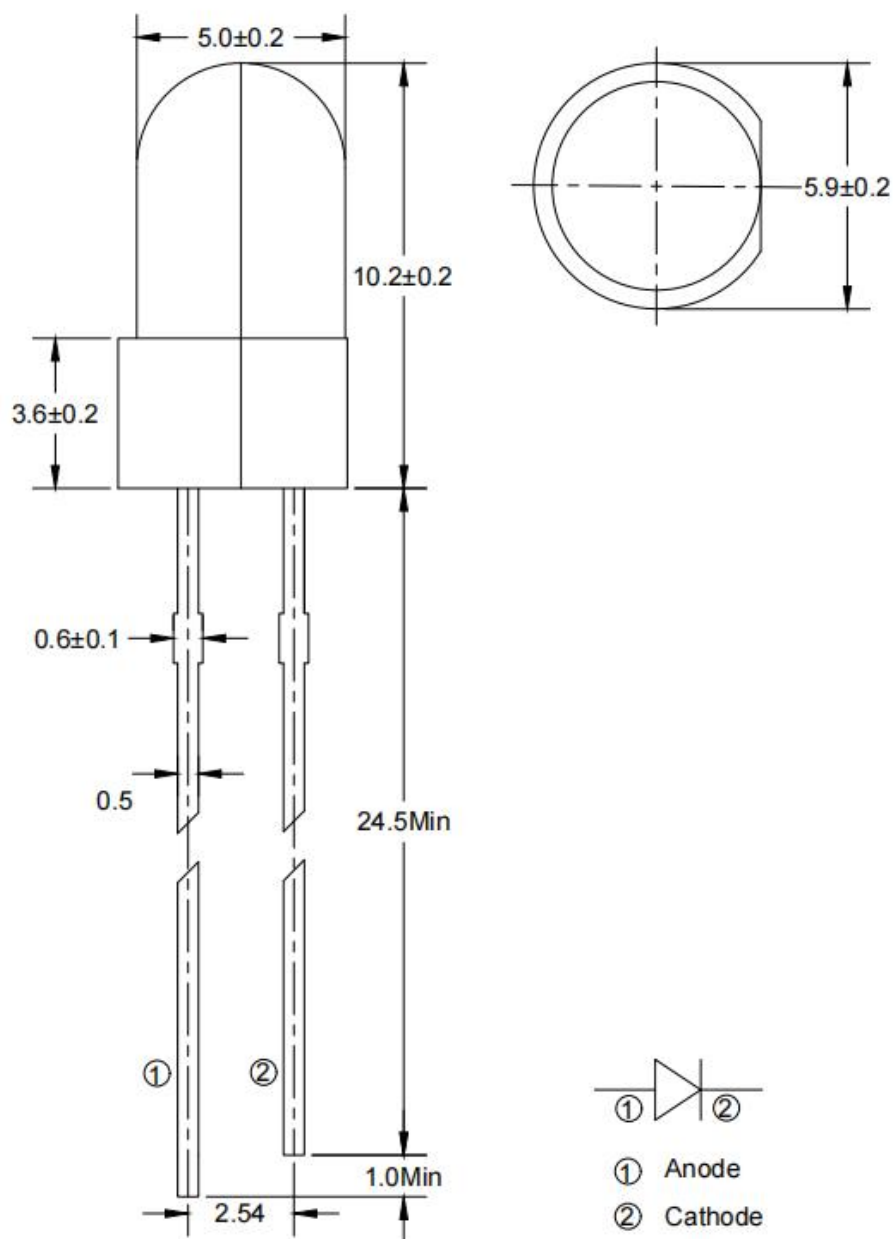
| Series Name      | Color Code   | Remark                          |
|------------------|--|---------------------------------|
| HV :<br>HARVATEK | 57G5023:<br>5.0mm Round LED LAMP,10.2mm Lens.<br>AlGaInP570nm Green chip.<br>D : Green Diffused.<br>TR1:Taping Reel. | U1856:<br>Customer Product Code |

## Features:

- Stable Color.
- Popular 5.0mm through hole package, 10.2mm lens height.
- Green Diffused lens.

|  |                       |                               |                       |
|--|-----------------------|-------------------------------|-----------------------|
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|  | *****                 | *****                         | HV-57G5023D-TR1-U1856 |
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## Package Dimensions:



### Notes:

- 1.All dimensions are millimeters.
- 2.Tolerance is  $\pm 0.25 \text{mm}$  unless otherwise noted.
- 3.Specifications are subject to change without notice.

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|--|-----------------------|-------------------|-----------------------|
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|  | *****                 | *****             | HV-57G5023D-TR1-U1856 |
| Specifications are subject to change without notice. Data and drawings herein are copyrighted. |                       | Sep.03 2024       | Page 4/14             |

**Absolute Maximum Ratings at Ta=25°C**

| Parameter               | Symbol    | Rating   | Unit |
|-------------------------|-----------|----------|------|
| Forward Current         | $I_F$     | 30       | mA   |
| Operating Temperature   | $T_{opr}$ | -40to+85 | °C   |
| Storage Temperature     | $T_{stg}$ | -40to+85 | °C   |
| Soldering Temperature*1 | $T_{sol}$ | 260      | °C   |
| Power Dissipation       | $P_d$     | 75       | mW   |
| Reverse Voltage         | $V_R$     | 5        | V    |
| Peak Forward Current*2  | $I_{FP}$  | 75       | mA   |

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

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|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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## Electrical and Optical Characteristic

| Parameter                    | Symbol          | Condition          | Min. | Typ. | Max. | Unit          |
|------------------------------|-----------------|--------------------|------|------|------|---------------|
| Forward Voltage              | $V_F$           | $I_F=20\text{ mA}$ | /    | 2.0  | 2.4  | V             |
| Reverse Current              | $I_R$           | $V_R=5\text{ V}$   | /    | /    | 10   | $\mu\text{A}$ |
| Luminous Intensity           | $I_v$           | $I_F=20\text{ mA}$ | 10   | 40   | /    | mcd           |
| Viewing Angle                | $2\theta_{1/2}$ | $I_F=20\text{ mA}$ | /    | 60   | /    | deg           |
| Dominant Wavelength          | $\lambda_d$     | $I_F=20\text{ mA}$ | /    | 570  | /    | nm            |
| Peak Wavelength              | $\lambda_p$     | $I_F=20\text{ mA}$ | /    | 575  | /    | nm            |
| Spectrum Radiation Bandwidth | $\Delta\lambda$ | $I_F=20\text{ mA}$ | /    | 20   | /    | 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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|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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## Specifications for Bin Grading:

| Iv (mcd) |      |      |
|----------|------|------|
| Grade    | Min. | Max. |
| L        | 10   | 20   |
| M        | 16   | 32   |
| N        | 25   | 50   |
| P        | 40   | 80   |

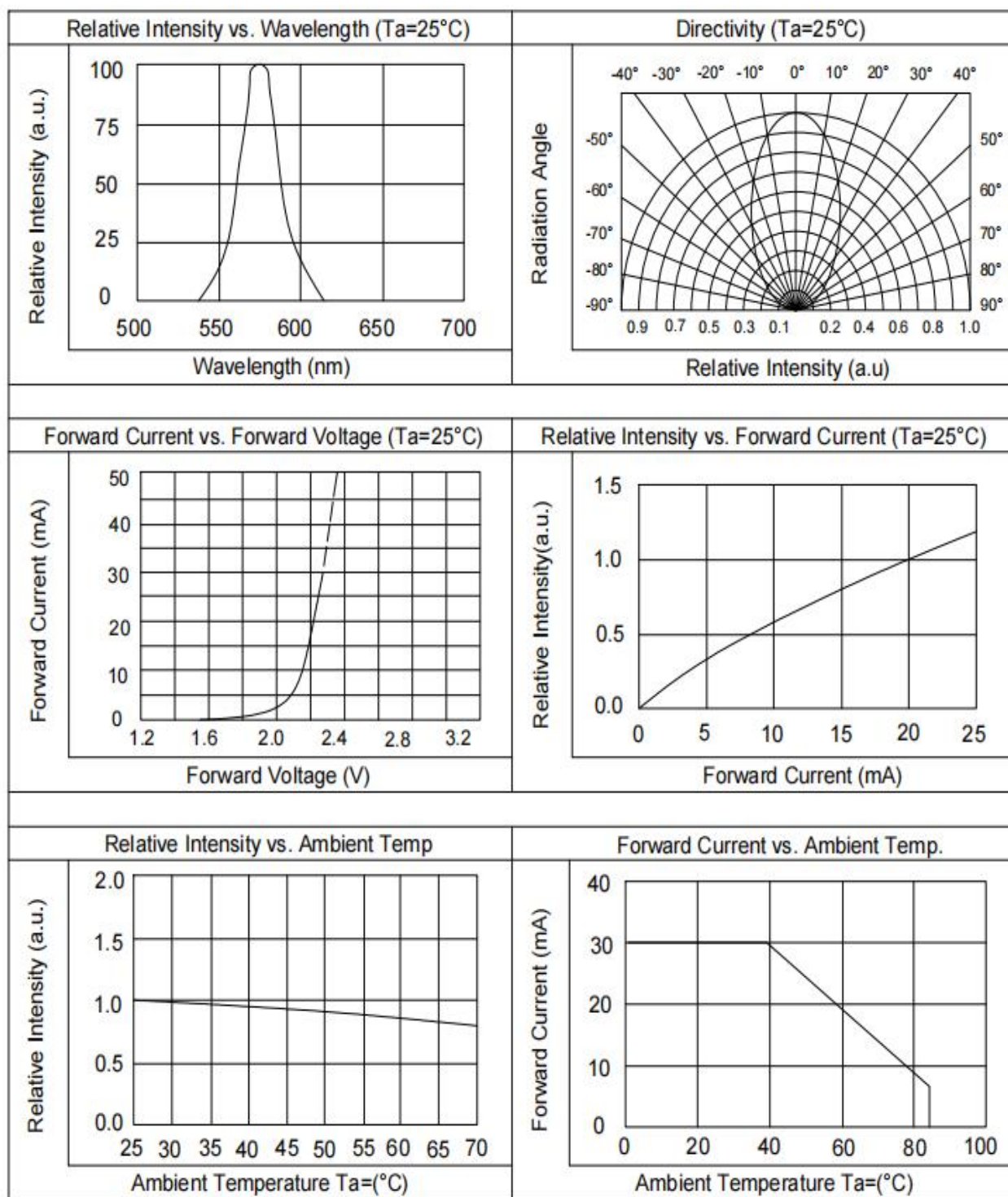
| $\lambda_d$ (nm) |      |      |
|------------------|------|------|
| Grade            | Min. | Max. |
| 5                | 566  | 569  |
| 6                | 568  | 571  |
| 7                | 570  | 573  |
| 8                | 572  | 575  |
| 9                | 574  | 577  |

### Notes:

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

|  |                       |                   |                |                       |
|--|-----------------------|-------------------|----------------|-----------------------|
| Official Product   | HV-57G5023D-TR1-U1856 | Customer Part No. |                | Data Sheet No.        |
|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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## Typical Electro-Optical Characteristics Curve



|  |                       |                   |                       |
|--|-----------------------|-------------------|-----------------------|
| Official Product   | HV-57G5023D-TR1-U1856 | Customer Part No. | Data Sheet No.        |
|  | *****                 | *****             | HV-57G5023D-TR1-U1856 |
| Specifications are subject to change without notice. Data and drawings herein are copyrighted. |                       | Sep.03 2024       | Page 8/14             |
|  |                       | Version of 1.0    |                       |

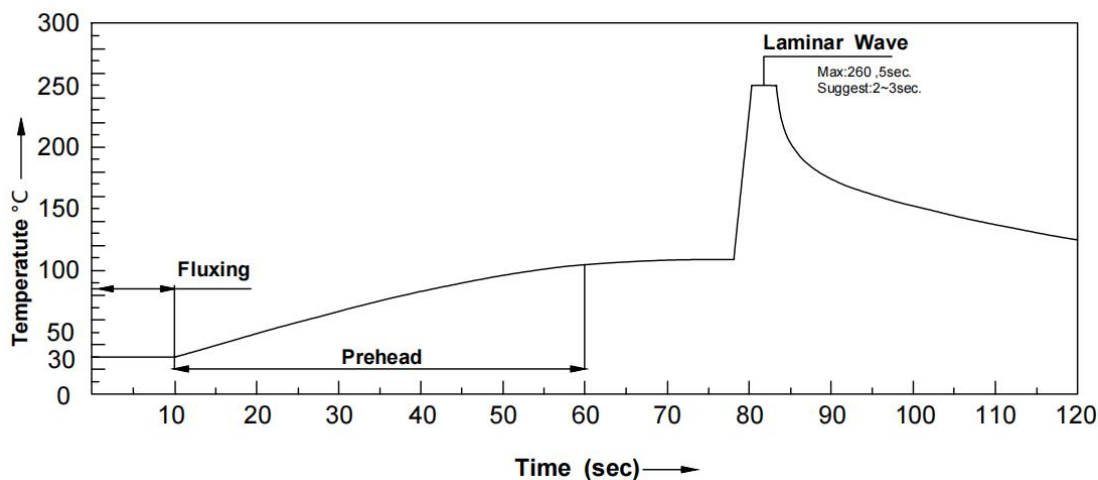


## Soldering condition

- Careful attention should be paid during soldering. When soldering, leave more than 2mm from solder joint to Led, and soldering beyond the base of the tie bar is recommended.
- Avoiding applying any stress to the lead frame while the LED are at high temperature particularly when soldering.
- Dip and hand soldering should not be done more than one time.
- After soldering the LED, the epoxy bulb should be protected from mechanical shock or vibration until the LED return to room temperature.
- A rapid-rate process is not recommended for cooling the LED down from the peak temperature.
- 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.
- 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℃ Max. (30W Max.)               | Preheat temp.     | 100℃ Max. (60 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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|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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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      | $I_v \leq I_{vt} * 0.5$<br>or<br>$V_f \geq U$<br>or<br>$V_f \leq L$ | 0/1   |
| 2  | Temperature Cycle                | H:+100°C 15min<br>∫ 5min<br>L:-40°C 15min | 300 CYCLES       | 76 PCS      |   | 0/1   |
| 3  | Thermal Shock                    | H:+100°C 5min<br>∫ 10sec<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:  $I_{vt}$ : To test  $I_v$  value of the chip before the reliability test.

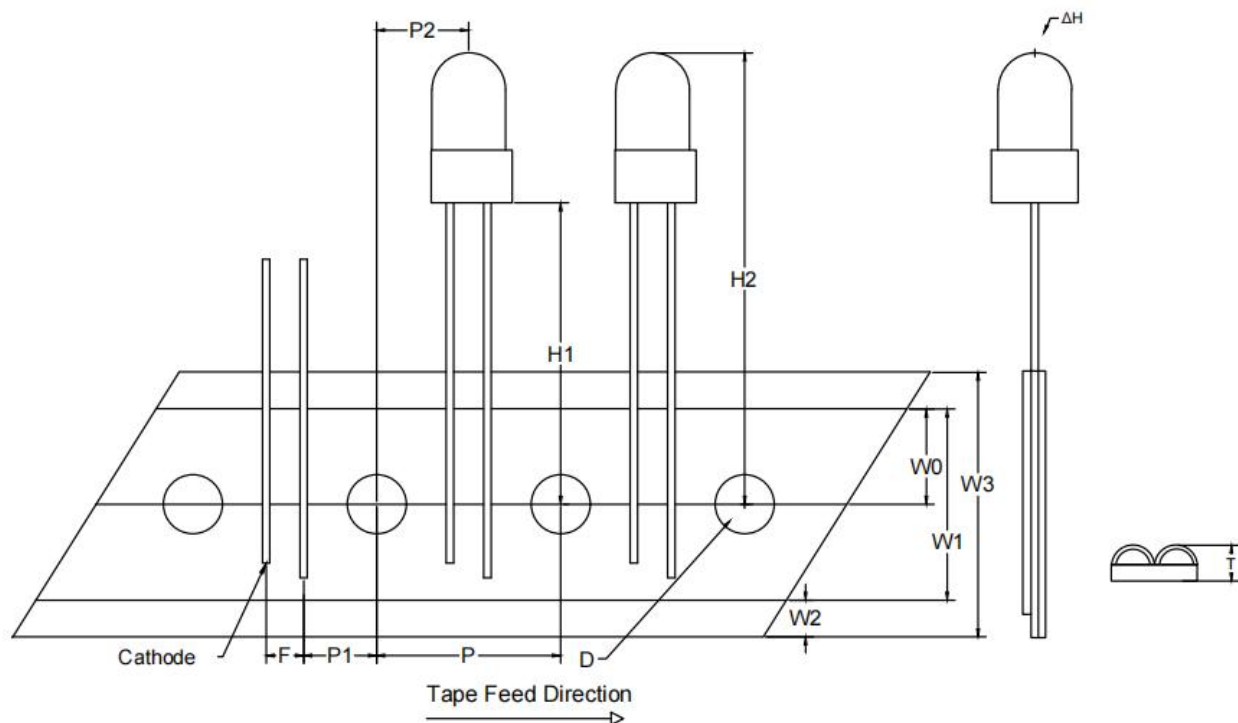
$I_v$ : The test value of the chip that has completed the reliability test.

U: Upper Specification Limit.

L: Lower Specification Limit.

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|  | *****                 | *****             |                | HV-57G5023D-TR1-U1856 |
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## Carrier Tape Dimensions:



### Notes:

Lead spacing is measured where the lead emerge from the package.

|  |                       |                   |                |                       |
|--|-----------------------|-------------------|----------------|-----------------------|
| Official Product   | HV-57G5023D-TR1-U1856 | Customer Part No. |                | Data Sheet No.        |
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| Specifications are subject to change without notice. Data and drawings herein are copyrighted. |                       | Sep.03 2024       | Version of 1.0 | Page 11/14            |

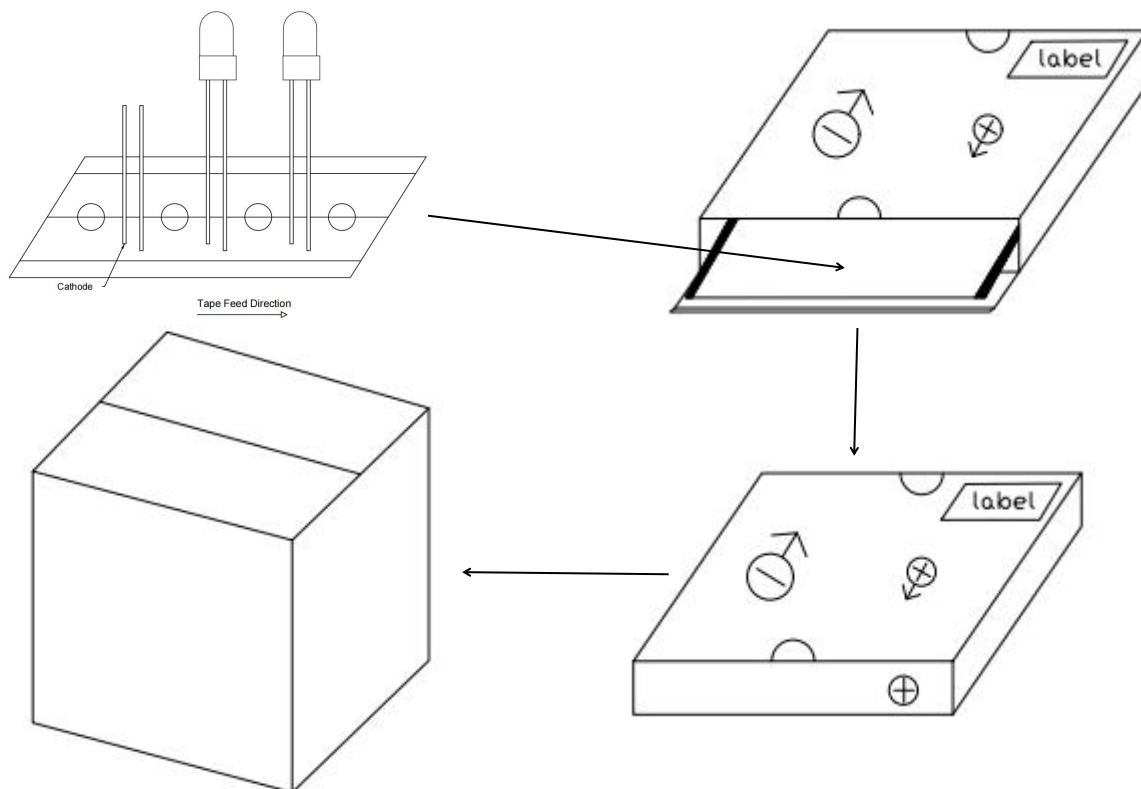
## Taping Sizes

| Symbol Items                          | Symbol | Specifications |       |           |
|---------------------------------------|--------|----------------|-------|-----------|
|                                       |        | Avg.           |       | Tolerance |
|                                       |        | mm             | Inch  | (mm)      |
| Tape Feed Hole Diameter               | D      | 4              | 0.157 | ±0.2      |
| Component Lead Pitch                  | F      | 2.54           | 0.100 | ±1.0      |
| Front-to-Rear Deflection              | ΔH     | 2              | 0.079 | ±5°       |
| Feed Hole to Bottom of Component      | H1     | 23.8           | 0.937 | ±1.0      |
| Feed Hole to Overall Component Height | H2     | 34             | 1.339 | ±1.0      |
| Feed Hole Pitch                       | P      | 12.5           | 0.492 | ±0.3      |
| Lead Location                         | P1     | 5              | 0.197 | ±1.0      |
| Center of Component Location          | P2     | 6.25           | 0.246 | ±1.2      |
| Overall Taped Package Thickness       | T      | 1.42           | 0.056 | MAX       |
| Feed Hole Location                    | W0     | 6.5            | 0.256 | ±0.5      |
| Adhesive Tape Width                   | W1     | 13             | 0.512 | ±0.5      |
| Adhesive Tape Position                | W2     | 2.5            | 0.098 | ±1.0      |
| Tape Width                            | W3     | 18             | 0.709 | ±1.0      |

Note: Tolerances unless mentioned ±1mm. Unit = mm.

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## Packing Specification:



Packing Quantity: 2000PCS/In-Carton, 20000PCS/Out-Carton.

### Note:

After packing into the box, the head is located in the box large negative symbol upward, positive symbol facing themselves

|                              |                 |             |
|------------------------------|-----------------|-------------|
|                              | <b>HARVATEK</b> |             |
| CPN:                         |                 | <b>RoHs</b> |
| P/N:                         |                 |             |
|                              |                 |             |
| <b>HV-57G5023D-TR1-U1856</b> |                 |             |
| QTY:                         |                 | CAT:        |
|                              |                 | HUE:        |
| LOT NO:                      |                 | REF:        |
|                              |                 |             |

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| Specifications are subject to change without notice. Data and drawings herein are copyrighted. | Sep.03 2024           | Version of 1.0    | Page 13/14            |

## Revision History

| Revision        | Page | Version No. | Revision Date |
|-----------------|------|-------------|---------------|
| Initial Release |      | 1.0         | 09-03-2024    |
|                 |      |             |               |
|                 |      |             |               |
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