

**Harvatek 3.0mm Round IR LED LAMP****HV-94I2004C-L52**

Official Product	HV-94I2004C-L52	Customer Part No.		Data Sheet No.
	*****	*****		HV-94I2004C-L52
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		Dec.30 2022	Version of 1.2	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 - 94 I 2004 C - L52**

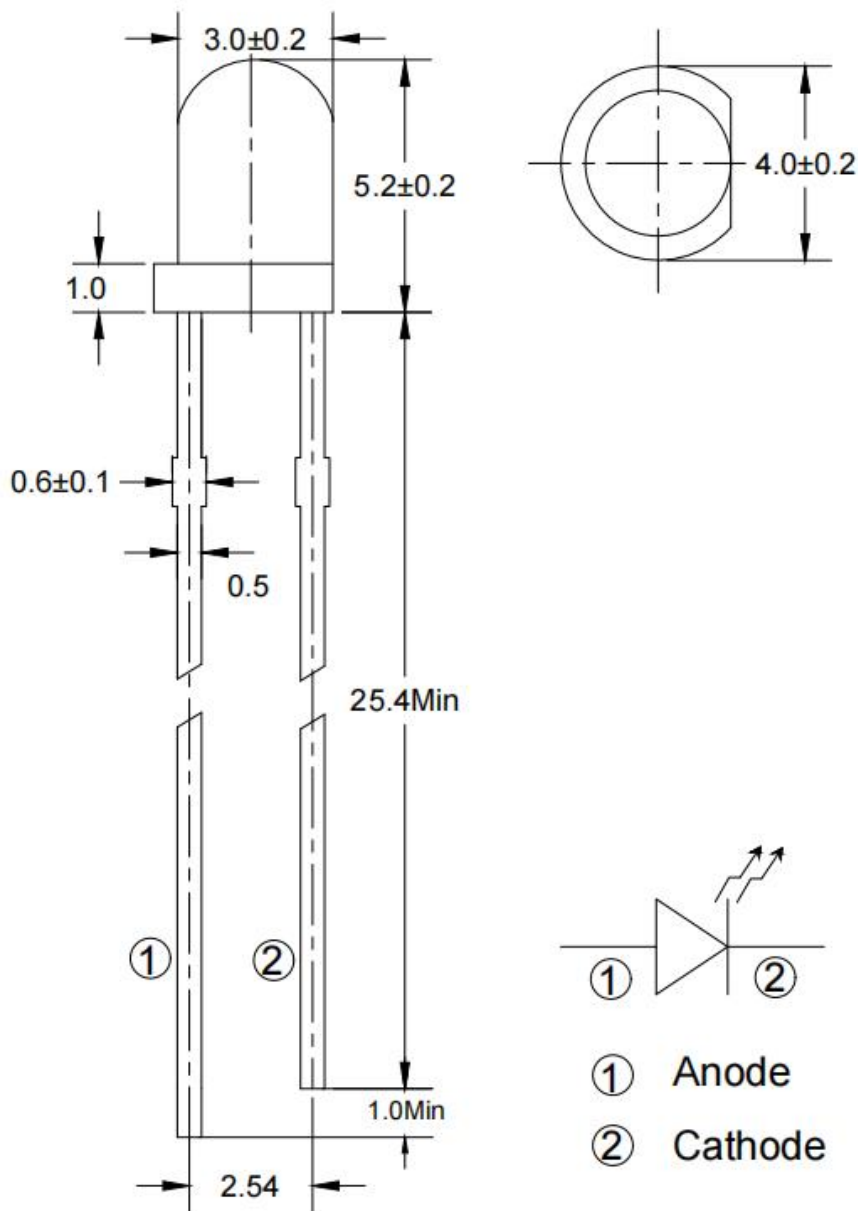
Series Name	Color Code	Remark
HV : HARVATEK	94I: 940nm AlGaAs IR Chip. 2004: 3.0mm Round Lamp, 5.2mm Lens C: Water Clear L52:HARVATEK Part No.	

## 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  $\pm 0.25$  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>	100	mA
Operating Temperature	Topr	-40to+85	°C
Storage Temperature	Tstg	-40to+85	°C
Soldering Temperature*1	Tsol	260±5	°C
Power Dissipation	P <sub>d</sub>	150	mW
Reverse Voltage	V <sub>R</sub>	5	V
Peak Forward Current*2	I <sub>FP</sub>	500	mA

\*1:Soldering time ≦ 5 seconds.\*2: Pulse Width ≦ 100μs and Duty ≦ 1% .

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## Electrical and Optical Characteristic

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	$V_F$	$I_F=20\text{ mA}$	/	1.2	1.6	V
Reverse Current	$I_R$	$V_R=5\text{ V}$	/	/	100	$\mu\text{A}$
Radiant Intensity	$I_e$	$I_F=20\text{ mA}$	4	10	/	mW/sr
		* $I_F=100\text{ mA}$	/	40	/	
Viewing Angle	$2\theta_{1/2}$	$I_F=20\text{ mA}$	/	55	/	deg
Peak Wavelength	$\lambda_p$	$I_F=20\text{ mA}$	/	940	/	nm
Spectrum Radiation Bandwidth	$\Delta\lambda$	$I_F=20\text{ mA}$	/	40	/	nm

### Notes:

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

2. \* $I_F$  Conditions--Pulse Width  $\leq 100\mu\text{s}$  and Duty  $\leq 1\%$ .

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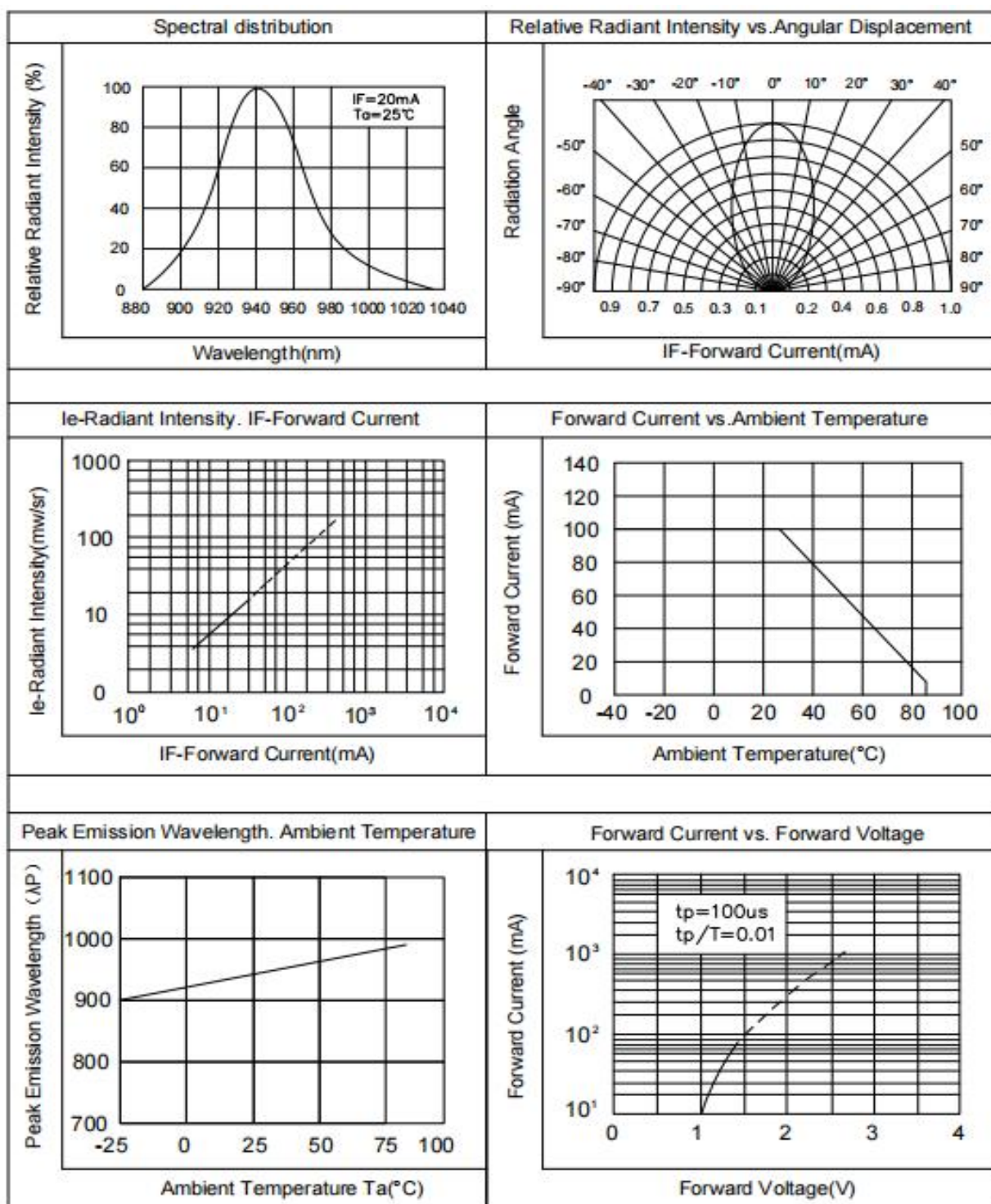
**Specifications for Bin Grading:**

Ie (mW/sr)		
Grade	Min.	Max.
K	4.00	6.40
L	5.60	8.90
M	7.80	12.50
N	11.00	17.60
P	15.00	24.00

Notes: Radiant Intensity: +/-15%.

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## Typical Electro-Optical Characteristics Curves



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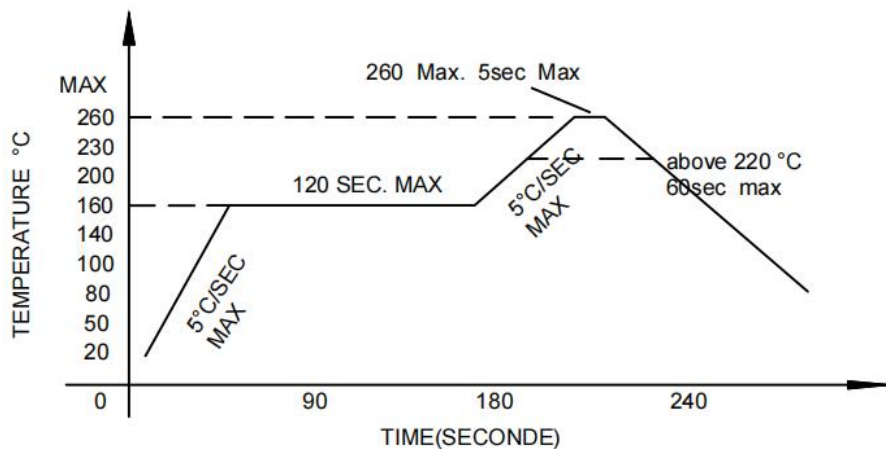


## Soldering condition

- 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°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	$I_e \leq I_{et} * 0.5$ 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:  $I_{et}$ : To test  $I_e$  value of the chip before the reliability test.

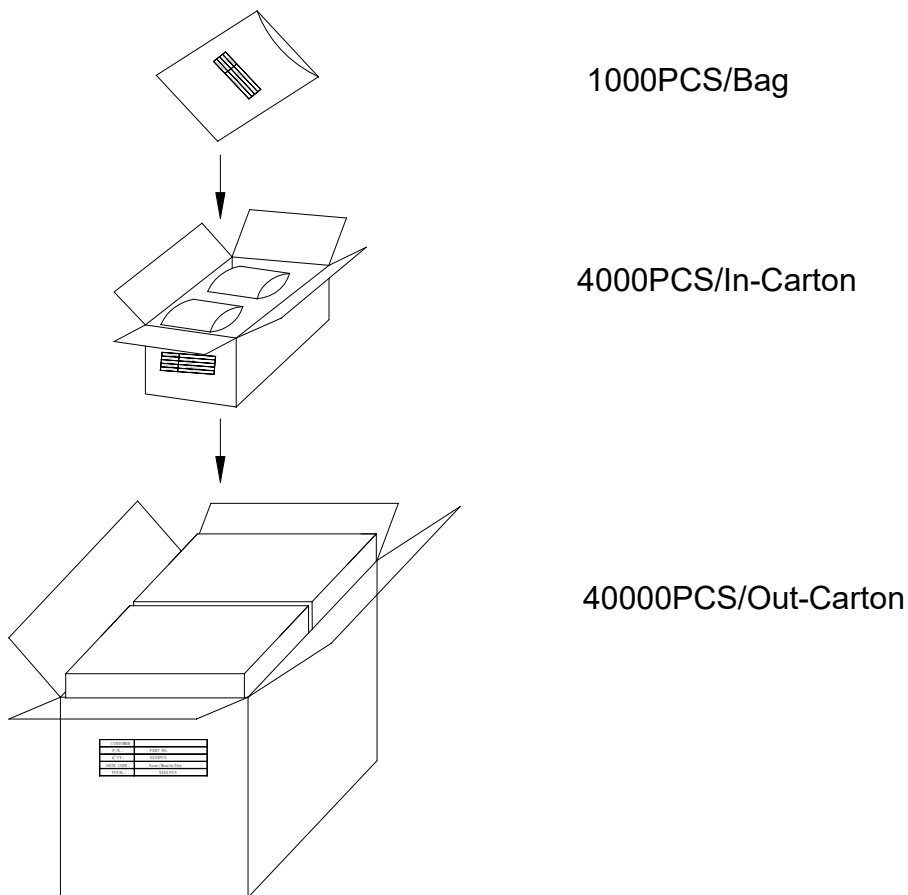
$I_e$ : The test value of the chip that has completed the reliability test.






U: Upper Specification Limit.

L: Lower Specification Limit.

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## Packing Specification:



	<b>HARVATEK</b>	
CPN:		<b>RoHs</b>
P/N:		
	<b>HV-94I2004C-L52</b>	
QTY:		CAT:
		HUE:
LOT NO:		REF:

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**Revision History**

Revision	Page	Version No.	Revision Date
Initial Release		1.0	03-26-2021
Add over furnace temperature		1.1	05-09-2022
Increase test conditions	6	1.2	12-30-2022

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