

**Harvatek 5.0mm Round LED LAMP****HV-RG23309M-L51**

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	*****	*****	HV-RG23309M-L51
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## **DISCLAIMER**

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## **LIFE SUPPORT POLICY**

HARVATEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of HARVATEK or HARVATEK INTERNATIONAL. As used herein:

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

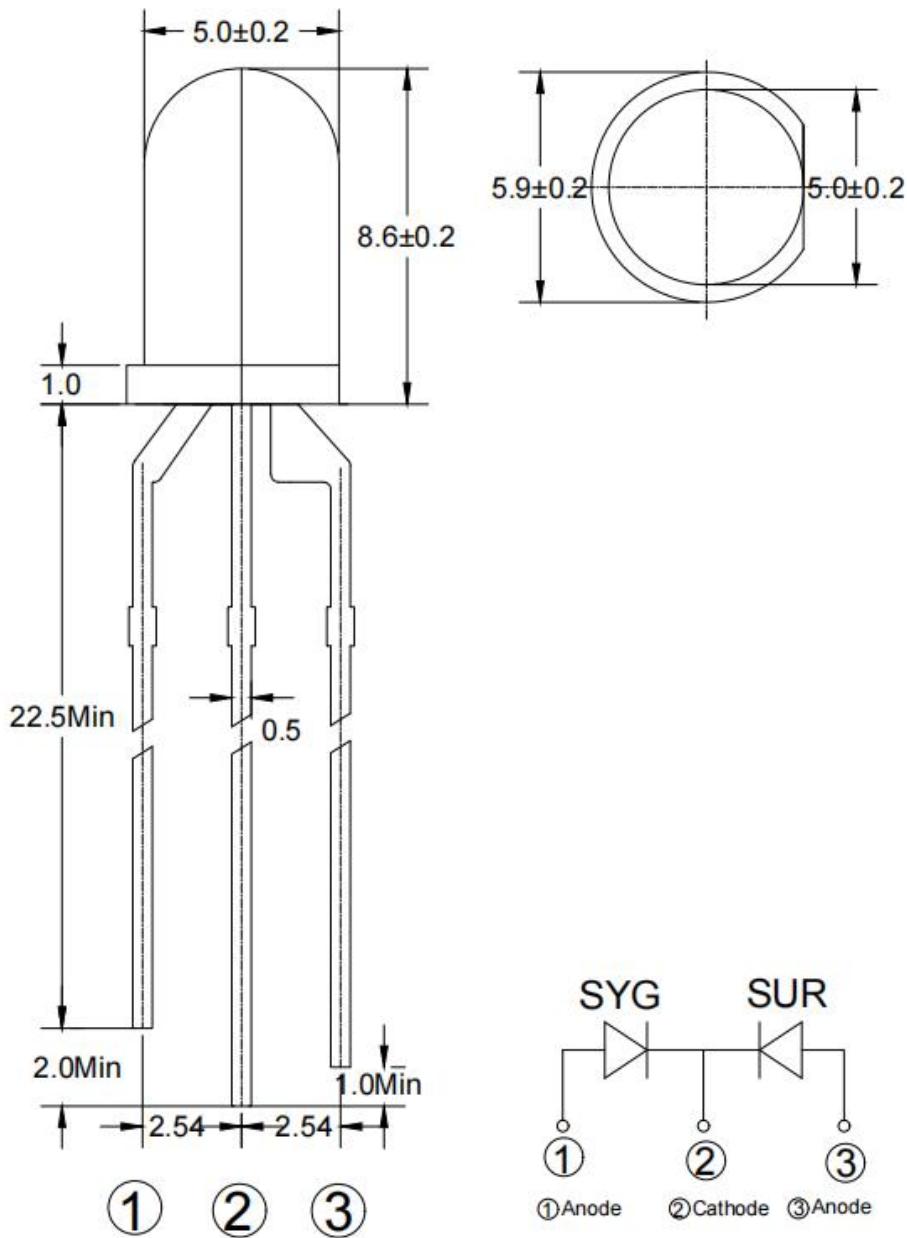
**H V - RG 23309 M - L51**

Series Name	Color Code	Remark
HV : HARVATEK	RG23309:  5.0mm Round LED LAMP,8.6mm Lens. GaP 622nm Red chip GaP 572nm Green chip  M : White Diffused  L51: HARVATEK Part No.	

## Features:

- Stable Color
- Popular 5.0mm through hole package, 8.6mm lens height.
- White Diffused lens.

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

1. All dimensions are millimeters.
2. Tolerance is +/-0.25mm 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	T <sub>opr</sub>	-40to+85	°C
Storage Temperature	T <sub>stg</sub>	-40to+85	°C
Soldering Temperature*1	T <sub>sol</sub>	260±5	°C
Power Dissipation	P <sub>d</sub>	75	mW
Reverse Voltage	V <sub>R</sub>	5	V
Peak Forward Current*2	I <sub>FP</sub>	75	mA

\*1:Soldering time  $\leq$  5 seconds. \*2:Pulse Width  $\leq$  100μs 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	R/G	/	2.0	2.4	V
Reverse Current	$I_R$	$V_R= 5$ V	R/G	/	/	10	$\mu$ A
Luminous Intensity	$I_V$	$I_F=20$ mA	R	10	30	/	mcd
			G	10	30	/	
Viewing Angle	$2\theta_{1/2}$	$I_F=20$ mA	R/G	/	85	/	deg
Peak Wavelength	$\lambda_p$	$I_F=20$ mA	R	/	630	/	nm
			G	/	575	/	
Dominant Wavelength	$\lambda_d$	$I_F=20$ mA	R	/	622	/	nm
			G	/	572	/	
Spectrum Radiation Bandwidth	$\Delta\lambda$	$I_F=20$ 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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## Specifications for Bin Grading:(R)

I <sub>v</sub> (mcd)		
Grade	Min.	Max.
L	10	20
M	16	32
N	25	50
P	40	80
Q	63	125

Notes: Luminous intensity: +/-15%.

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## Specifications for Bin Grading:(G)

I <sub>v</sub> (mcd)		
Grade	Min.	Max.
L	10	20
M	16	32
N	25	50
P	40	80
Q	63	125

λ d (nm)		
Grade	Min.	Max.
5	566	569
6	568	571
7	570	573
8	572	575
9	574	577

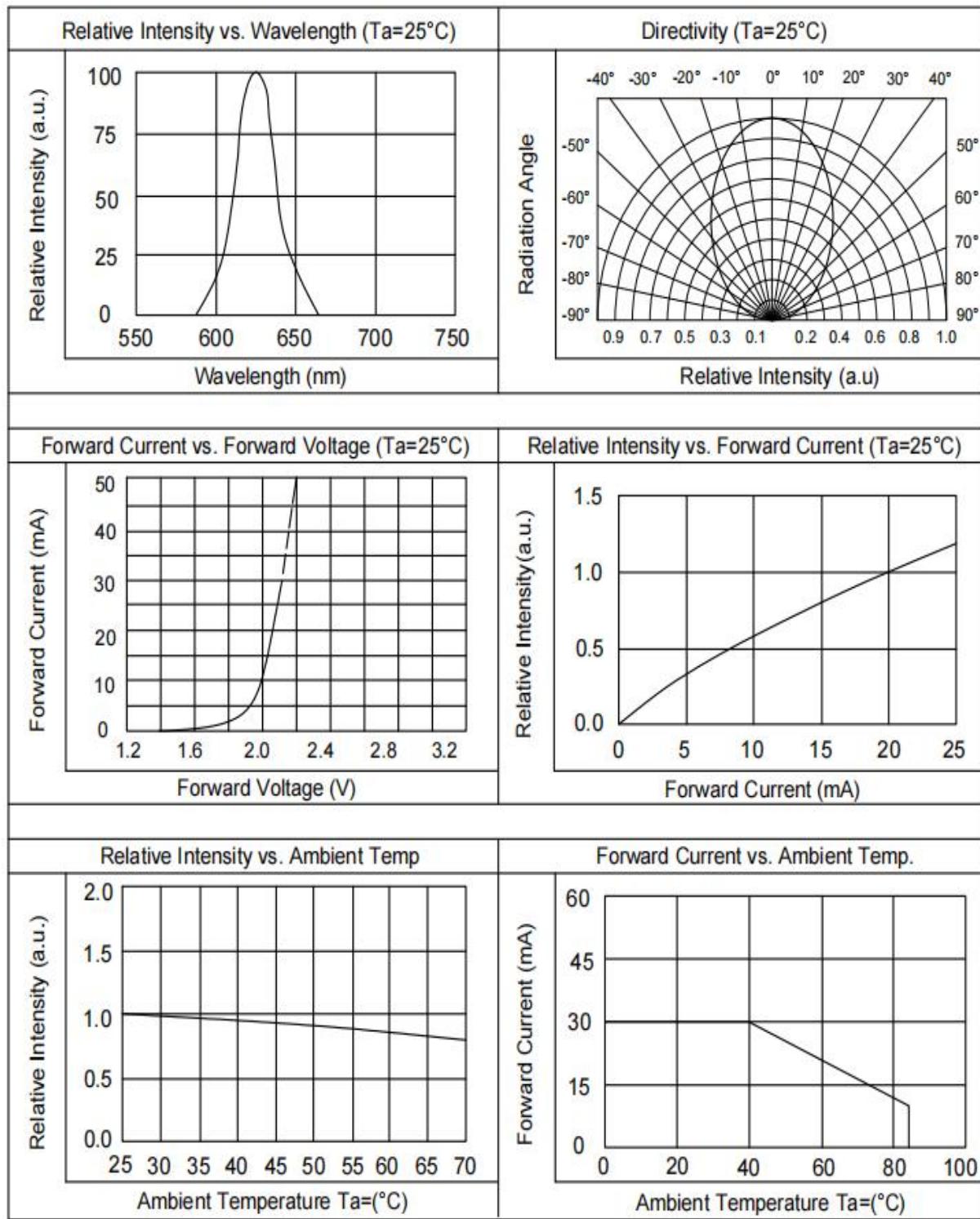
**Notes:**

1. Luminous intensity: +/-15%.

2. Wavelength: +/-1nm.

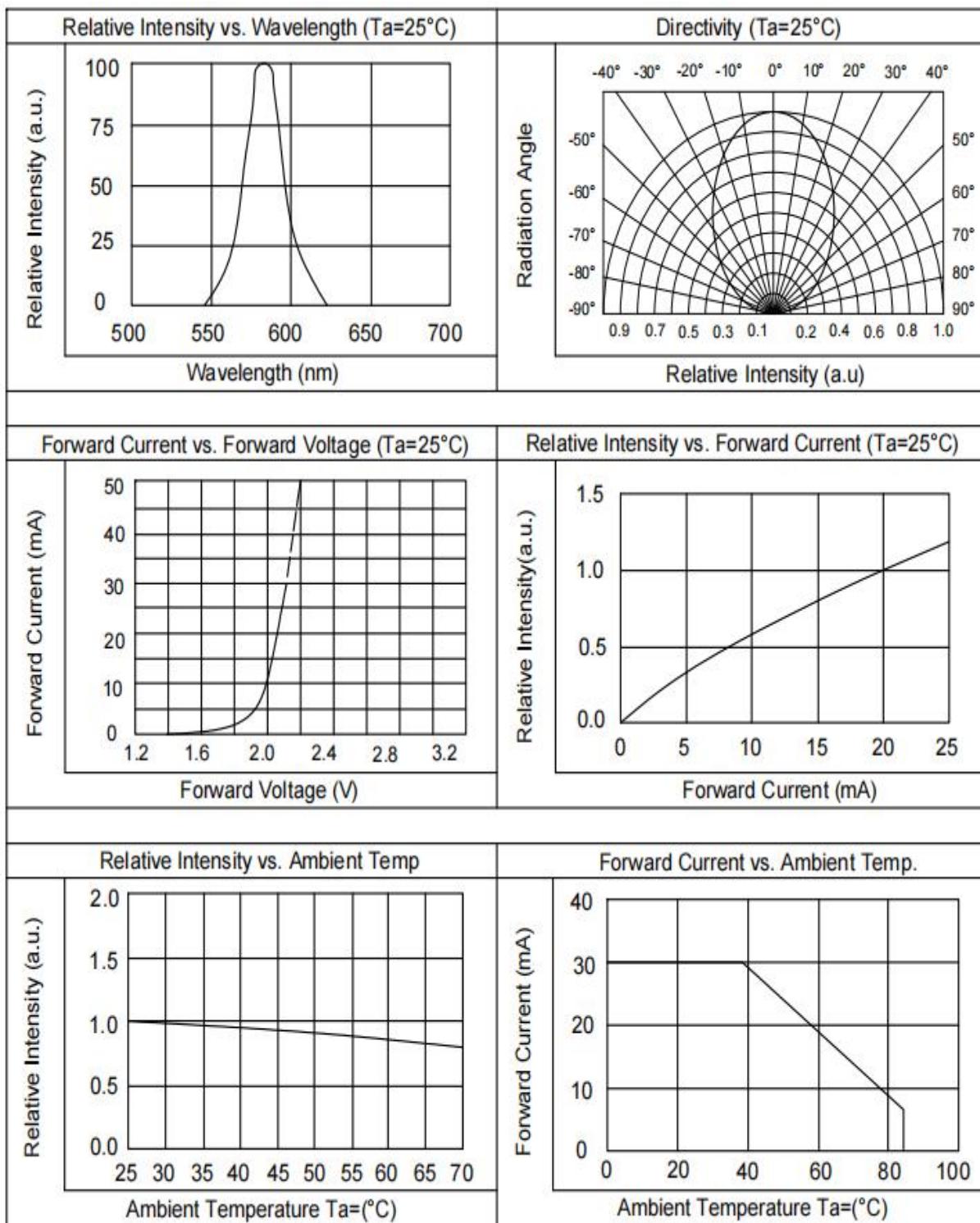
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## Typical Electro-Optical Characteristics Curves(R)



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## Typical Electro-Optical Characteristics Curves(G)



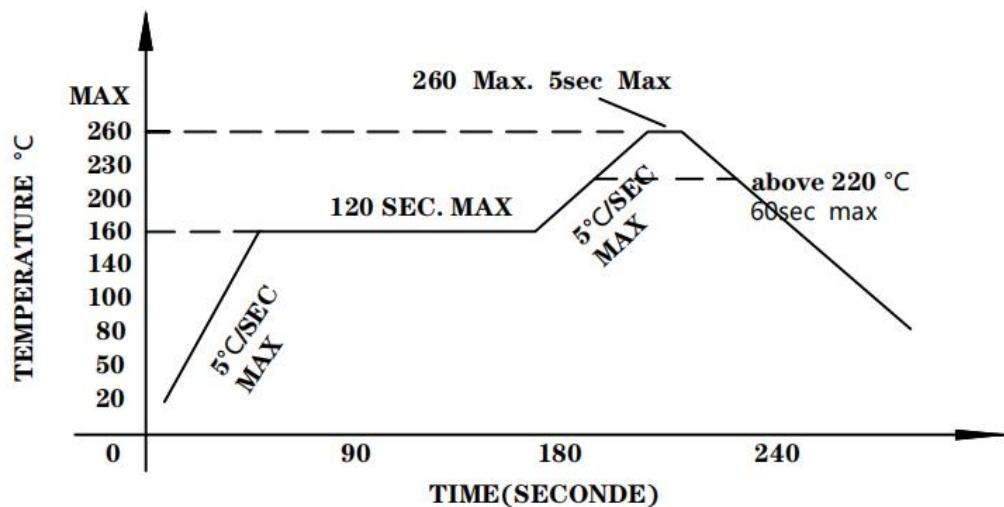
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## Soldering condition

1. 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.
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 <sub>v</sub> ≤I <sub>vt</sub> *0.5 or V <sub>f</sub> ≥U or V <sub>f</sub> ≤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<sub>vt</sub>: To test I<sub>v</sub> value of the chip before the reliability test.

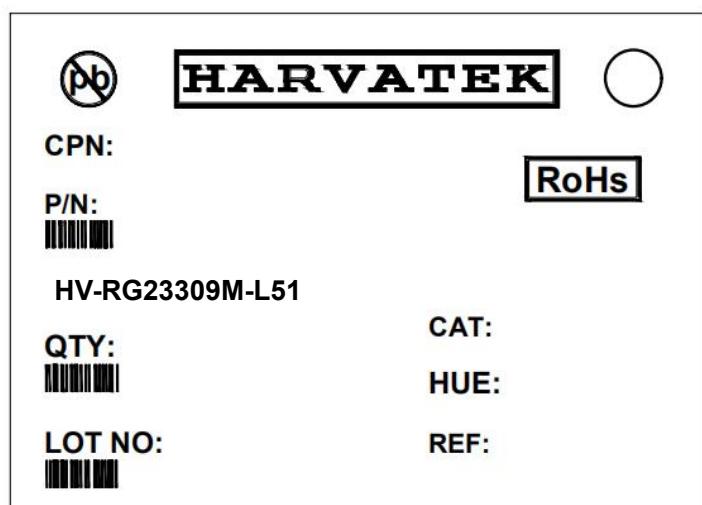
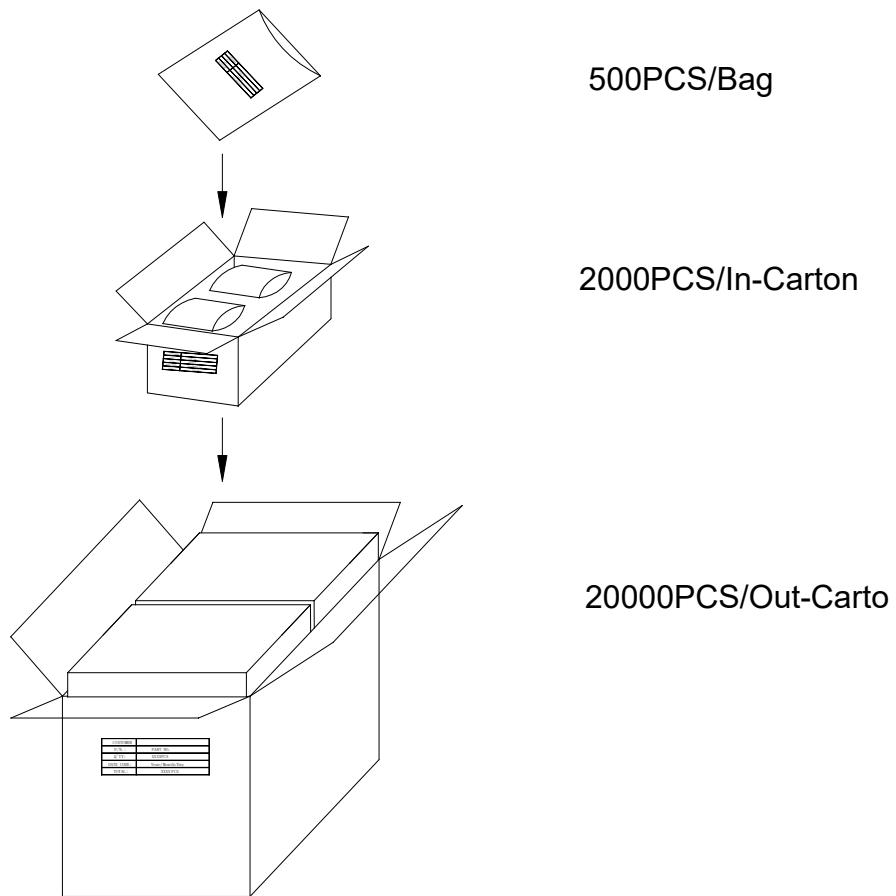
I<sub>v</sub>: The test value of the chip that has completed the reliability test

U: Upper Specification Limit

L: Lower Specification Limit

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## Packing Specification:



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