Harvatek 3.0mm Round Type Arrayed LEDs

HV-313401/230/UTC

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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.

Compliance and Certification

ISO9002, QS9000 and ISO14001 Certified
RoHS Compliant

Orderable Information

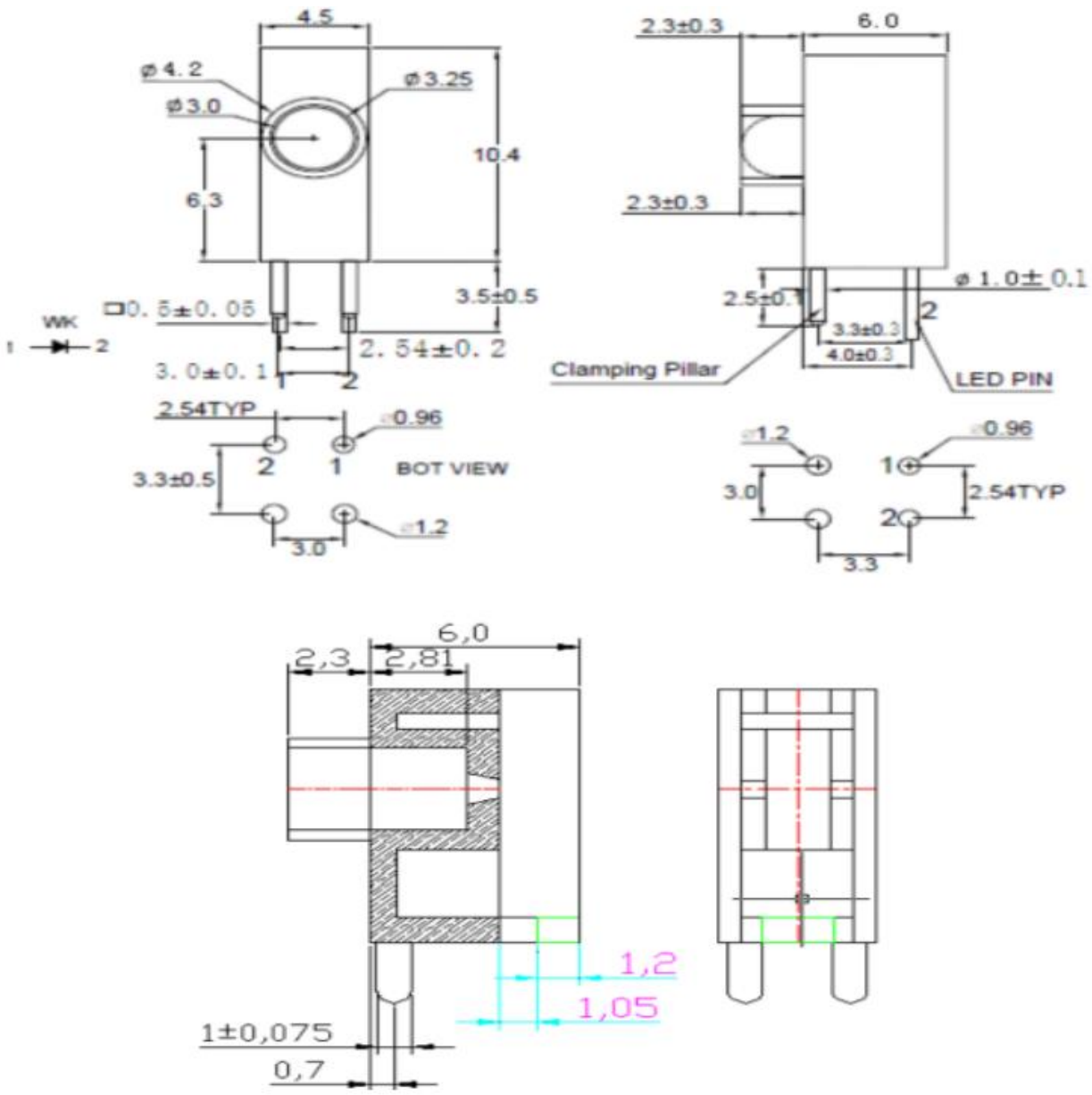
H V - 31 3401 / 2 3 0 / U T C

Series Name	Color Code	Remark
HV : **HARVATEK**	**31: 1 Lamp.** **3401: HARVATEK Part No.** **230: 3.0mm Round LED LAMP.** **UT :** **InGaN 470nm Chip.Emitted color is white** **C : Water clear.**	

Features:

- Stable Color.
- Popular 3.0mm through hole package.
- Water clear Lens.

Package Dimensions:



Notes:

1.All dimensions are millimeters.

2.Tolerance is +/-0.25mm unless otherwise noted.

3.Specifications are subject to change without notice.

Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Rating	Unit
Forward Current	I_F	30	mA
Operating Temperature	Topr	-25to+85	℃
Storage Temperature	Tstg	-30to+100	℃
Soldering Temperature*1	Tsol	260±5	℃
Power Dissipation	P_d	108	mW
Reverse Voltage	V_R	5	V
Peak Forward Current*2	I_{FP}	0.1	A

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

Electrical and Optical Characteristic

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=20 mA	2.6	3.2	3.6	V
Reverse Current	I_R	V_R= 5 V	／	／	10	μA
Luminous Intensity	I_V	I_F=20 mA	／	4500	／	mcd
Chromaticity Coordinates	X	I_F=20 mA	／	0.27	／	／
	Y	I_F=20 mA	／	0.25	／	／
Viewing Angle	2θ½	I_F=20 mA	／	40	／	deg

Notes:

θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

Specifications for Bin Grading:

VF (V)			Test Condition
Grade	Min	Max	
1	2.6	3	
2	2.9	3.2	IF=20mA
3	3.1	3.4	
4	3.3	3.6	

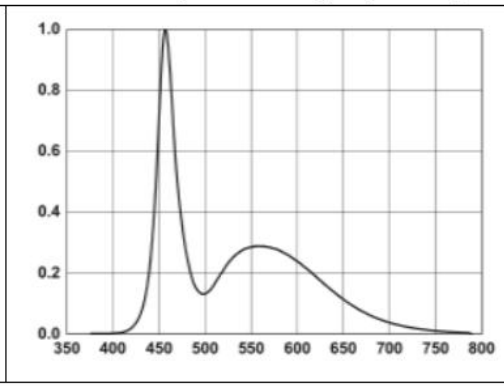
Note: Voltage difference+ /-0.1V.

IV (mcd)			Test Condition
Grade	Min	Max	
X	1600	3200	
Y	2500	4500	
Z	3900	8500	IF=20mA
Z1	6700	12000	
Z2	10000	18000	

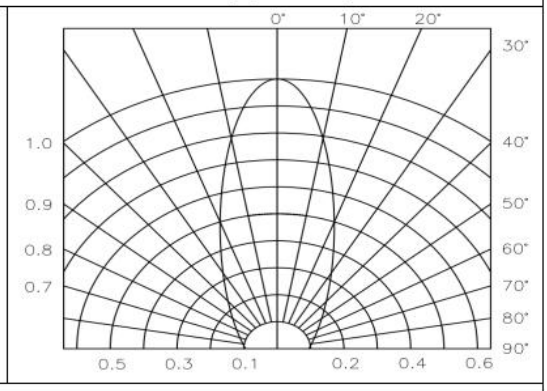
Notes:Luminous intensity:+/-15%.

Typical Electrical / Optical Characteristics Curves

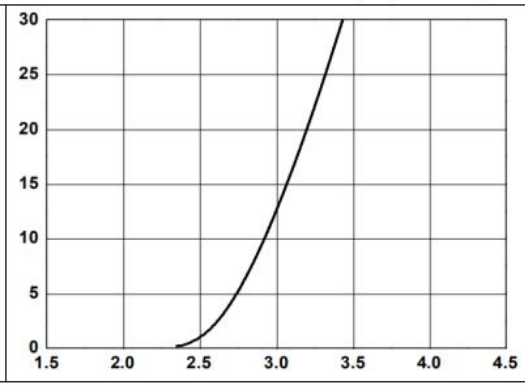
Relative Intensity vs. Wavelength (Ta=25℃)



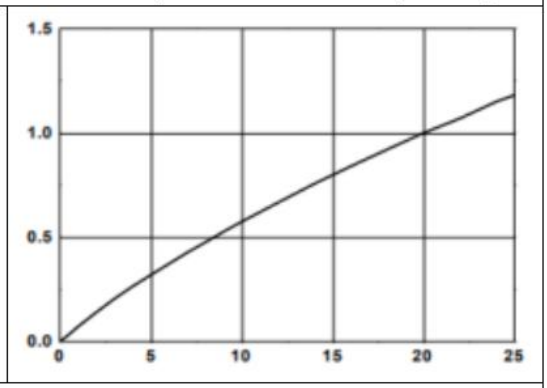
Directivity (Ta=25℃)



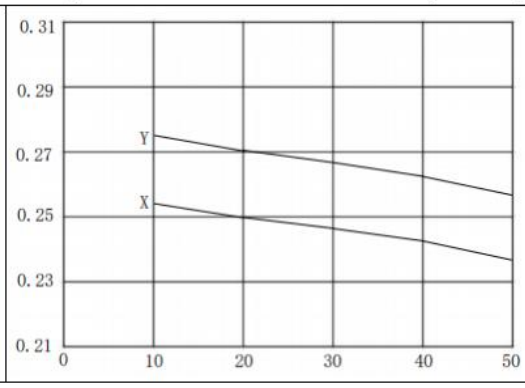
Forward Current vs. Forward Voltage (Ta=25℃)



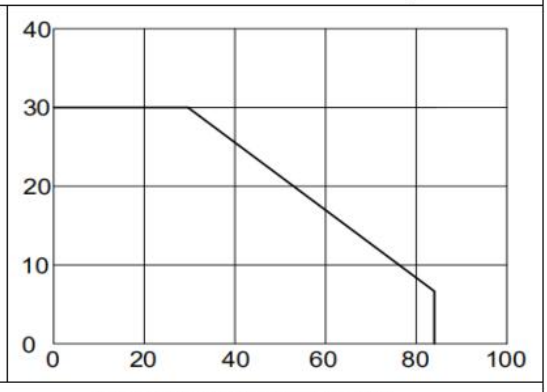
Relative Intensity vs. Forward Current (Ta=25℃)



Chromaticity Coordinate vs. Forward Current(Ta=25℃)

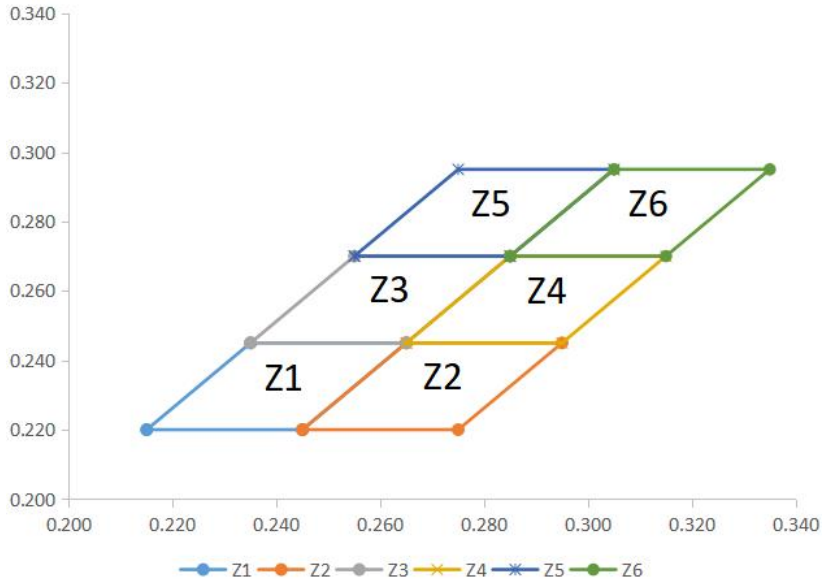


Forward Current vs. Ambient Temp.



C.I.E. Chromaticity Diagram

Z1	X	0.215	0.235	0.265	0.245	0.215
	Y	0.220	0.245	0.245	0.220	0.220
Z2	X	0.245	0.265	0.295	0.275	0.245
	Y	0.220	0.245	0.245	0.220	0.220
Z3	X	0.235	0.255	0.285	0.265	0.235
	Y	0.245	0.270	0.270	0.245	0.245
Z4	X	0.265	0.285	0.315	0.295	0.265
	Y	0.245	0.270	0.270	0.245	0.245
Z5	X	0.255	0.275	0.305	0.285	0.255
	Y	0.270	0.295	0.295	0.270	0.270
Z6	X	0.285	0.305	0.335	0.315	0.285
	Y	0.270	0.295	0.295	0.270	0.270



Note:

1.Test current is IF = 20mA.
2.CIE(X, Y) coordinates for each angle measurement, the difference between the maximum measured value and the minimum measured value X can not exceed 0.04, and Y can not exceed 0.05.

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℃±5℃	10 SEC	76 PCS	Iv≦Ivt*0.5 or Vf≧U or Vf≦L	0/1
2	Temperature Cycle	H:+100℃ 15min ∫ 5min L:-40℃ 15min	300 CYCLES	76 PCS		0/1
3	Thermal Shock	H:+100℃ 5min ∫ 10sec L:-10℃ 5min	300 CYCLES	76 PCS		0/1
4	High Temperature Storage	TEMP:100℃	1000 HRS	76 PCS		0/1
5	Low Temperature Storage	TEMP:-40℃	1000 HRS	76 PCS		0/1
6	DC Operating Life	TEMP:25℃ IF=20mA	1000 HRS	76 PCS		0/1
7	High Temperature / High Humidity	85℃/85%RH	1000 HRS	76 PCS		0/1

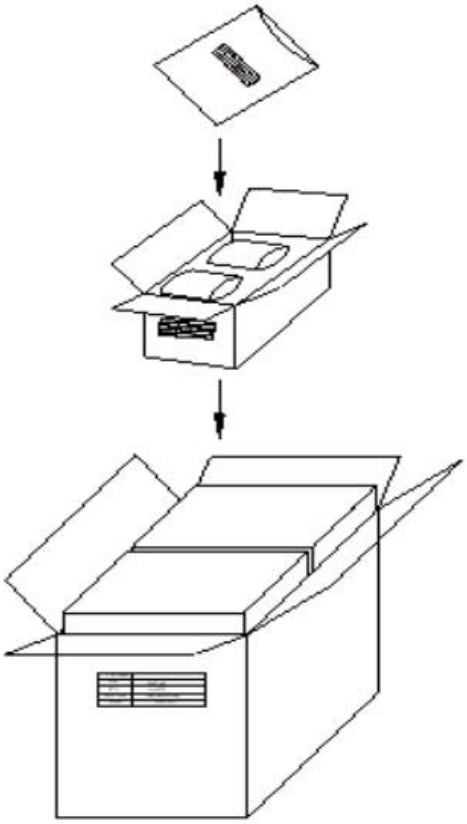
Note：Ivt：To test Iv value of the chip before the reliability test.

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

U：Upper Specification Limit.

L：Lower Specification Limit.

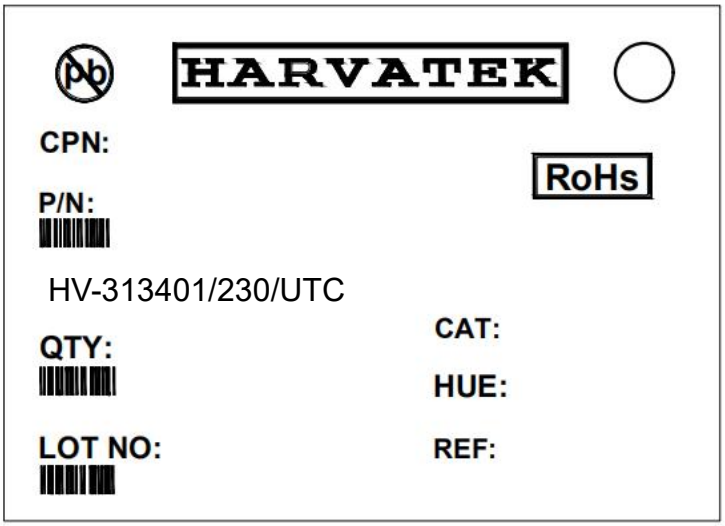
Packing Specification:



500PCS/Bag

2000PCS/In-Carton

20000PCS/Out-Carton



Revision History

Revision	Page	Version No.	Revision Date
Initial Release		1.0	06-06-2020
Modification angle and CIE	6,8,9	1.1	11-18-2020
Modify the packaging	11	1.2	06-11-2024