

**Harvatek 3.0mm ROUND Photo Transistor LED LAMP  
HV-1302004C**

Official Product	HV-1302004C	Customer Part No.		Data Sheet No.
	*****	*****		CDAE-010-551
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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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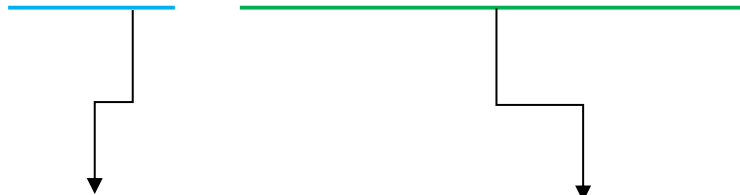
**Compliance and Certification**

ISO9002, QS9000 and ISO14001 Certified  
 RoHS Compliant



**Orderable Information**

**H V - 1 3 0 2 0 0 4 C**



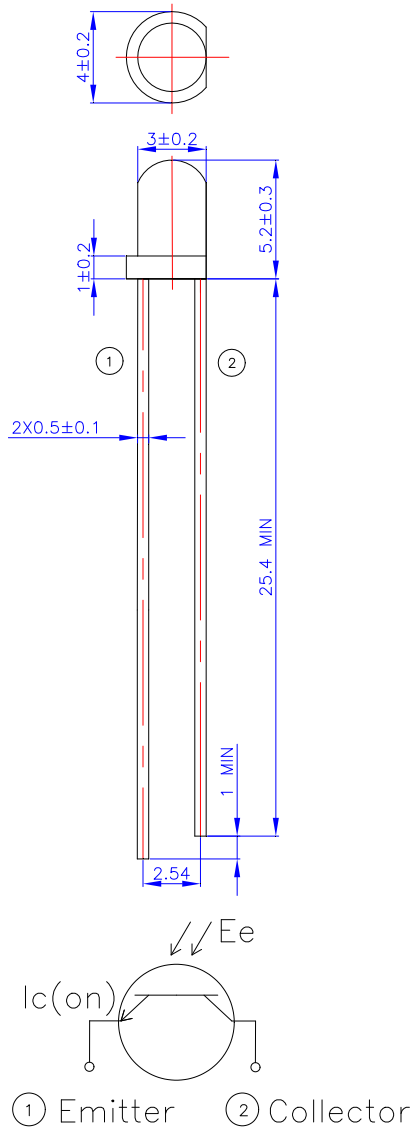
Series Name	Color Code	Remark
HV : HARVATEK	130: 940nm PT Chip. 200 : 3.0mm Round Lamp, 5.2mm Lens. 4:HARVATEK Part No. C : Water Clear.	

**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
Collector Current	I <sub>c</sub>	20	mA
Operating Temperature	T <sub>opr</sub>	-40to+85	°C
Storage Temperature	T <sub>stg</sub>	-40to+100	°C
Soldering Temperature*1	T <sub>sol</sub>	260±5	°C
Power Dissipation	P <sub>d</sub>	75	mW
Collector-Emitter Voltage	V <sub>ceo</sub>	30	V
Emitter-Collector Voltage	V <sub>eco</sub>	5	V

\*1:Soldering time ≦ 5 seconds.

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## Electrical and Optical Characteristic

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
On State Collector Current	$I_{C(on)}$	$V_{ce}=5V$ $E_e=0.555mW/cm^2$	0.9	2.2	/	$\mu A$
Collector Dark Current	$I_d$	$V_{ce}=20V$	/	/	100	nA
Collector – Emitter Breakdown Voltage	$BV_{ceo}$	$I_c=100\mu A$	30	/	/	V
Emitter-Collector Breakdown Voltage	$B V_{eco}$	$I_e=100\mu A$	5	/	/	V
Collector-Emitter Saturation Voltage	$V_{ce(sat)}$	$I_c=0.5mA$ $I_F=20 mA$	/	/	0.4	V
Peak Wavelength	$\lambda_p$	/	/	940	/	nm
Rang of Spectral Bandwidth	$\lambda_{0.5}$	/	840	/	1100	nm
Rise Time	$t_r$	$V_{CE}=5V$ $I_C=1mA$ $R_L=1000\Omega$	/	15	/	$\mu S$
Fall Time	$t_f$		/	15	/	$\mu S$

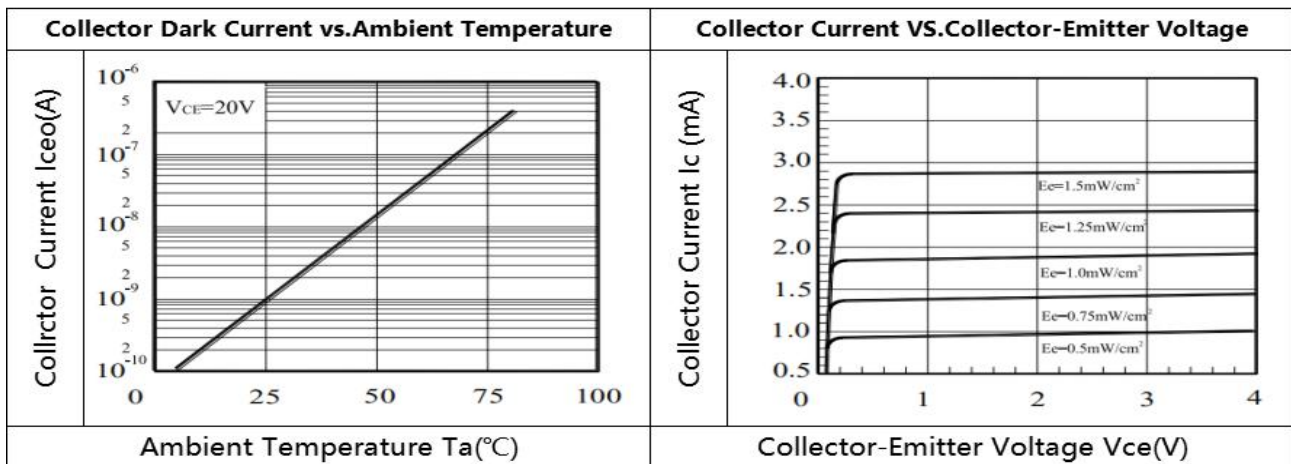
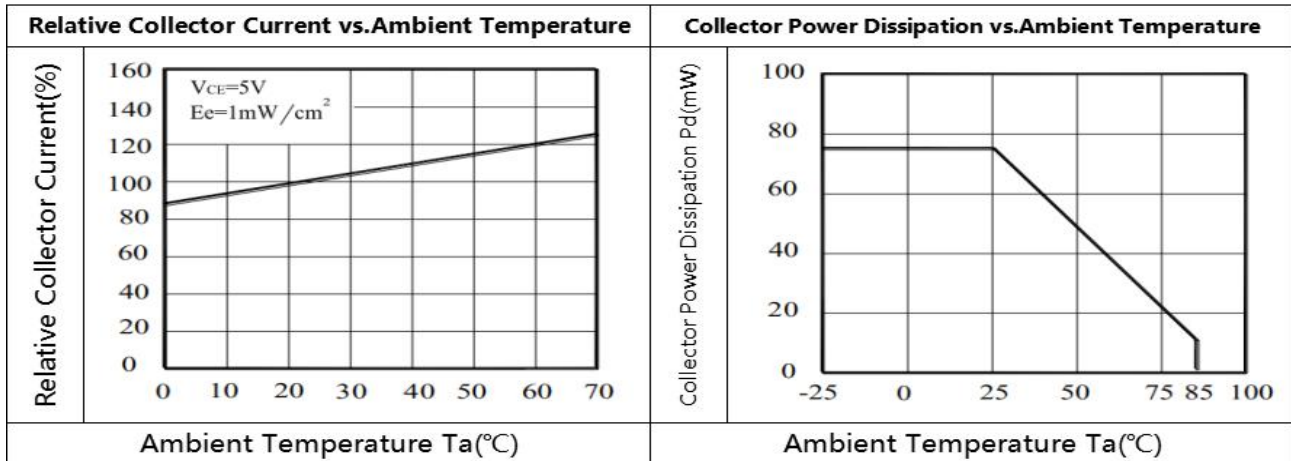
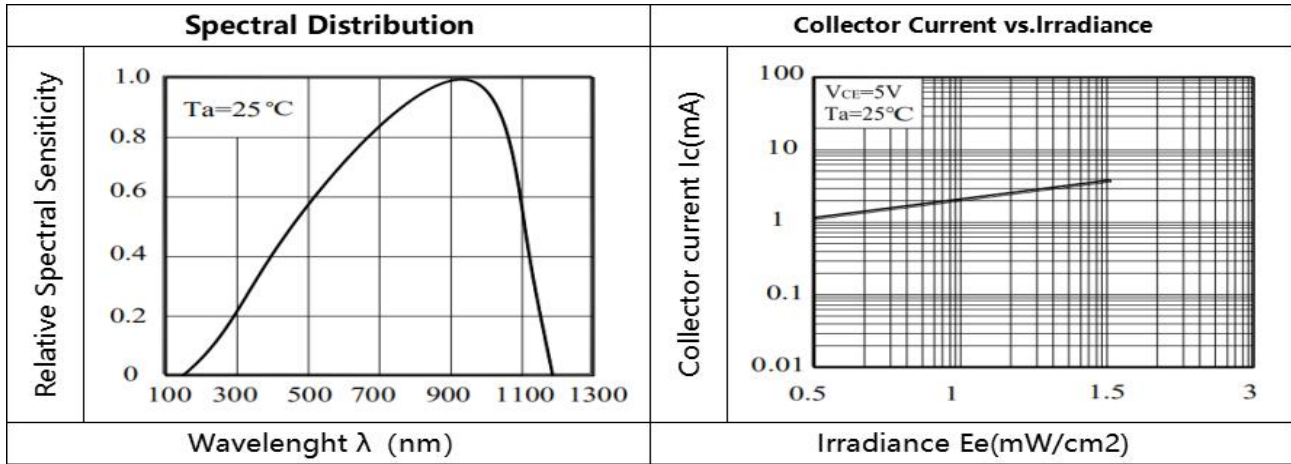
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**Specifications for Bin Grading:**

Ic(uA)		
Grade	Min.	Max.
G	0.9	1.9
H	1.14	2.6
J	1.77	3.61
K	2.67	5.07
L	4.18	7.07
M	5.68	8.48
N	7.18	9.98
P	8.68	11.5

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## Typical Electro-Optical Characteristics Curves



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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	$I_v \leq I_{vt} * 0.5$ 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:  $I_{vt}$ : To test  $I_v$  value of the chip before the reliability test.

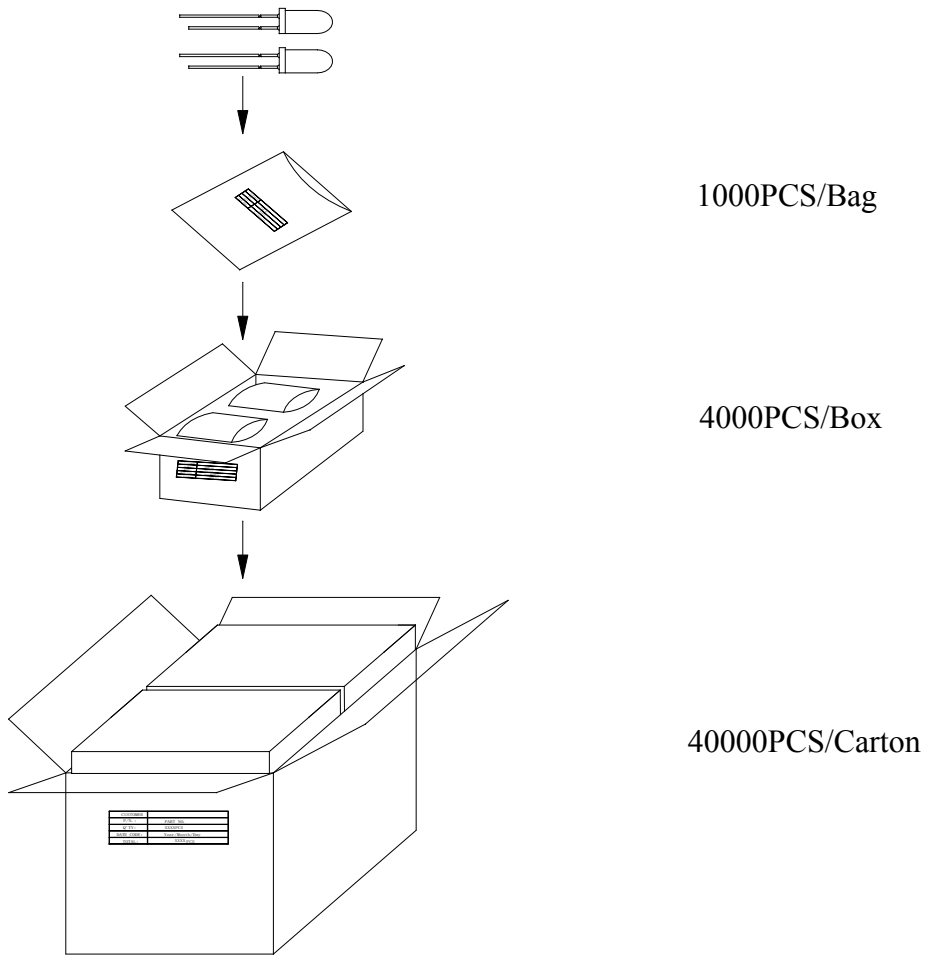
$I_v$ : The test value of the chip that has completed the reliability test

U: Upper Specification Limit

L: Lower Specification Limit

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## Packing Specification:



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**Revision History**

<b>Revision</b>	<b>Page</b>	<b>Version No.</b>	<b>Revision Date</b>
Initial Release		1.0	10-17-2018
Modifies Electrical and Optical Characteristic	6	1.1	11-11-2019

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