

**Harvatek International 4-Pin Power LED
HPRA-320XX Series**

Official Product	HPRA-320XX series	Customer Part No.		Data Sheet No.
	*****	*****		HPRA-320XX series
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		Jun. 14, 2005	Version of 1.0	Page 1/9

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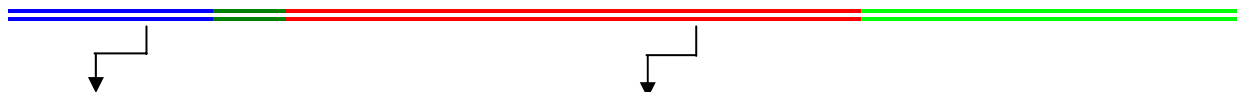
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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided 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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Orderable Information

HP RA - 3 2 0 X X - X X X X

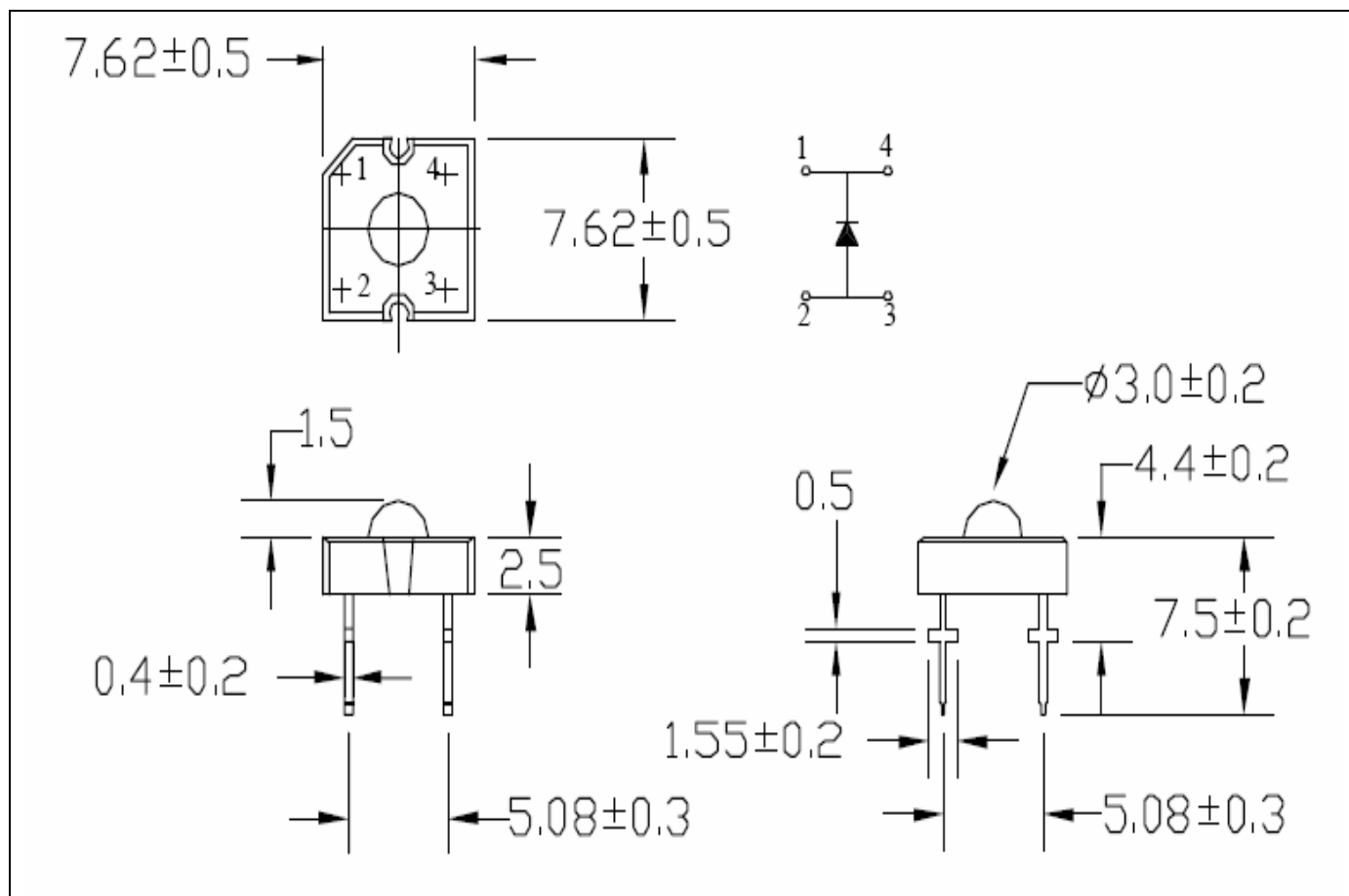


Series Name	Color Code	Customer Code
HPRA = 4-Pin Power Series	320B = 470nm Blue InGaN 320BG = 505nm Bluish Green InGaN 320TG = 525nm True Green InGaN 320YG = 575nm Yellow Green AlInGaP 320Y = 590nm Yellow AlInGaP 320AE = 600nm Orange Yellow AlInGaP 320A = 610nm Amber AlInGaP 320E = 620nm Reddish Orange AlInGaP 320R = 630nm Red AlInGaP 320SR = 640nm Super Red AlInGaP	XXXX = Customer specific code

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Features:

- Ultra High intensity
- CMOS and TTL compatible
- Solid state reliability
- AlInGaP and InGaN Chip
- Water Clear Lens
- 4-Pin High power package



Units are in mm

Tolerance is ± 0.25 mm unless otherwise specified

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Absolute maximum Rating (@ 25 degree C)

Parameter	Symbol	AlInGaP	InGaN	Unit
Power Dissipation	P _d	160	120	mW
Reverse Voltage	V _r	5	5	V
Forward Current	I _F	70	30	mA
Reverse Current	I _r	100	50	μA
Peak Current (1/10 Duty Cycle, 0.1ms pulse width)	I _F (Peak)	200	100	mA
Operating Temperature Range	T _{opr}	-25 to +85		° C
Storage Temperature Range	T _{stg}	-40 to +100		° C
Lead Soldering Temp		260		° C
Electrostatic discharge (HBM)	ESD	5	4	KV

Electrical and Optical Characteristic (@ 25 degree C)

HPRA-320 Series				
Parameters	-B	-BG	-TG	Test Condition
Luminous Intensity:				
Min (mcd)	450	1050	1200	If=30mA
Typ (mcd)	700	1700	1850	If=30mA
Forward voltage (V _f)				If=30mA
Typ	3.2	3.2	3.2	If=30mA
Max	4.0	4.0	4.0	If=30mA
Peak Wavelength (nm)	468	500	520	If=30mA
Spectral line half width (nm)	26	35	35	If=30mA
Viewing Angle 2θ ½ (degree)	30	30	30	If=30mA
Viewing Angle Ø0.90v (degree)	90	90	90	If=30mA

Luminous Intensity tolerance = +/- 15%

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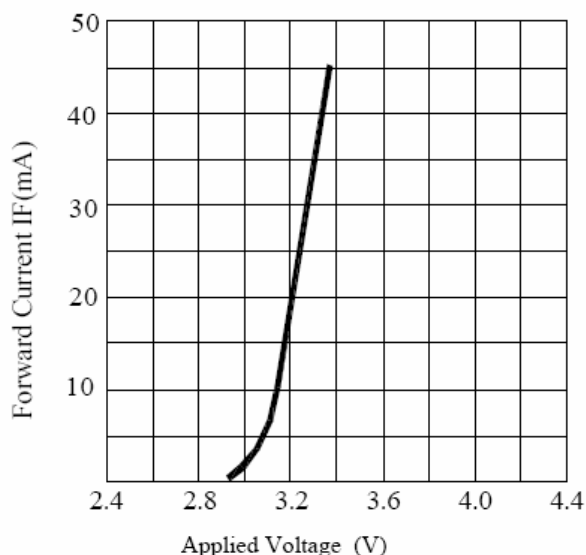
HPRA-320 Series						
Parameters	-YG	-Y	-AE	-A	-E	Test Condition
Luminous Intensity:						
Min (mcd)	500	700	500	500	540	If=70mA
Typ (mcd)	700	1200	800	700	900	If=70mA
Forward voltage (Vf)						
Typ	1.9	1.9	1.9	1.9	1.9	If=70mA
Max	2.4	2.4	2.4	2.4	2.4	If=70mA
Peak Wavelength (nm)	575	589	598	610	620	If=70mA
Spectral line half width (nm)	20	15	16	17	18	If=70mA
Viewing Angle $2\theta_{1/2}$ (degree)	30	30	30	30	30	If=70mA
Viewing Angle $\theta_{0.90v}$ (degree)	90	90	90	90	90	If=70mA

HPRA-320 Series			
Parameters	-R	-SR	Test Condition
Luminous Intensity:			
Min (mcd)	600	550	If=70mA
Typ (mcd)	900	950	If=70mA
Forward voltage (Vf)			
Typ	1.9	1.9	If=70mA
Max	2.4	2.4	If=70mA
Peak Wavelength (nm)	630	640	If=70mA
Spectral line half width (nm)	20	20	If=70mA
Viewing Angle $2\theta_{1/2}$ (degree)	30	30	If=70mA
Viewing Angle $\theta_{0.90v}$ (degree)	90	90	If=70mA

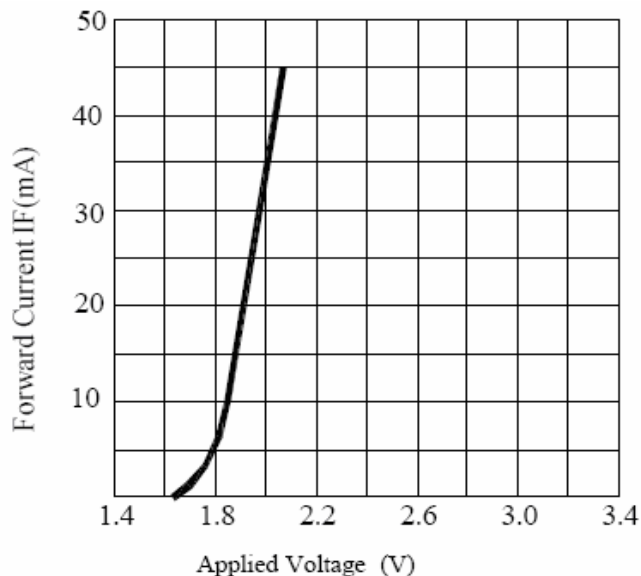
Luminous Intensity tolerance = +/- 15%

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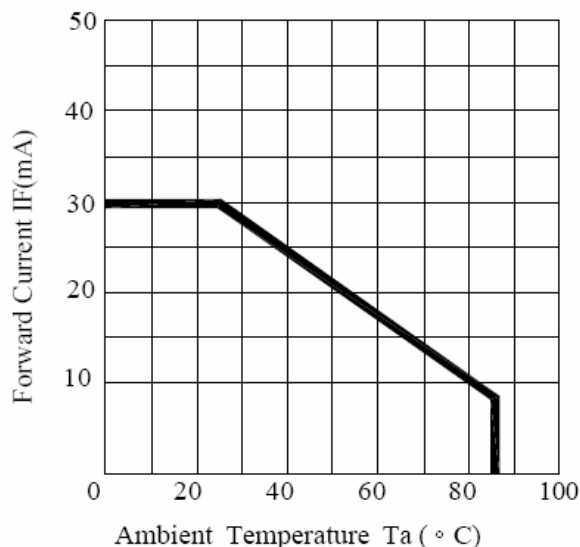
Characteristic Curves



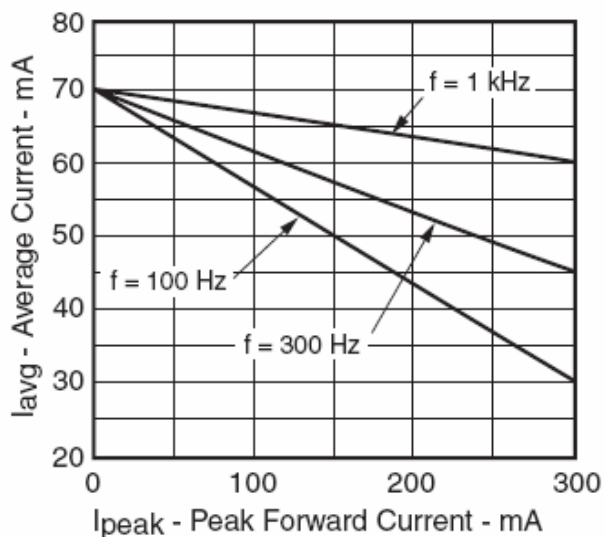
FORWARD CURRENT VS. APPLIED VOLTAGE
InGaN Material



FORWARD CURRENT VS. APPLIED VOLTAGE
AlInGaP Material

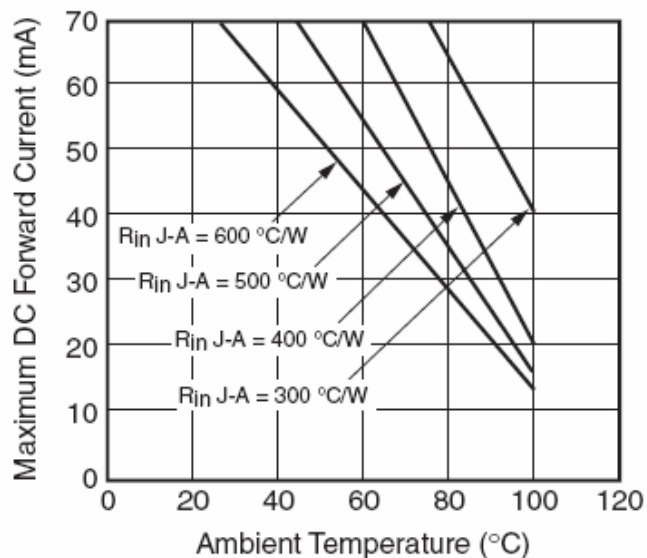


AMBIENT TEMPERATURE VS. FORWARD CURRENT

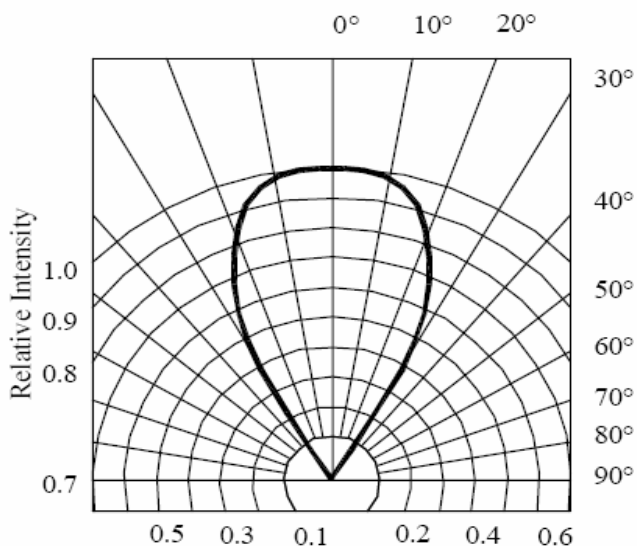


Maximum Average Current vs. Peak Forward Current

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**Maximum DC Forward Current
vs. Ambient Temperature**



RADIATION DIAGRAM

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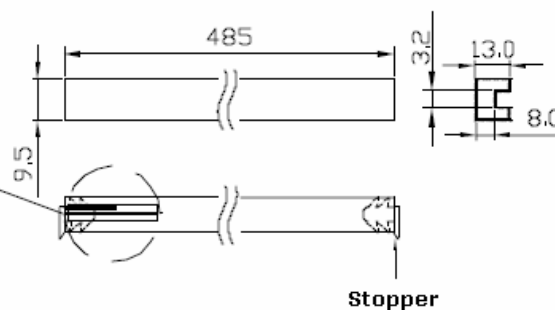
ENCASED TYPE

TUBE:

QUANTITY: 60 PCS

PART NO : HPRA-XXXXX-XXXX

LOT :XXXXXXXXXX QTY'S :XXPCS BIN CODE:XX-XX

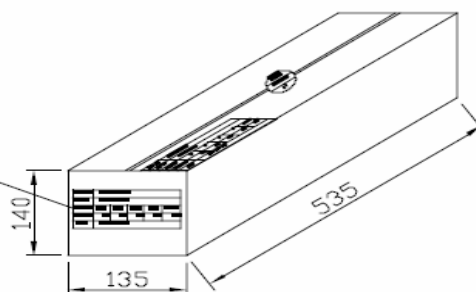


INNER BOX

QUANTITY: 126 tubes

TOTAL: 7,560 PCS

PART NO.	HPRA-XXXXX-XXXX				
LOT NO.	XXXXXXXXXX				
BIN CODE	Xx X	Xx X	Xx X	Xx X	TOTAL
QUANTITY	PCS	PCS	PCS	PCS	PCS
DATE	XXXX, XX, XX				
Bar Code					

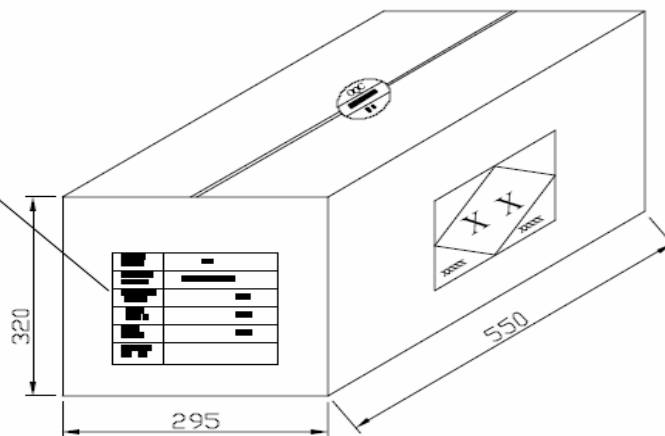


OUTER CARTON

QUANTITY: 4 BOX

TOTAL: 30,240 PCS

C/T NO. 箱 號	XX
PART NO. 料 號	HPRA-XXXXX-XXXX
QUANTITY 數 量	PCS
N.W. 淨 重	KGS
G.W. 毛 重	KGS
REMARK 備 註	
Bar Code	



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