

**Harvatek International 5mm Super Bright Through Hole Lamp
HV-8XX2X Series**

Official Product	HV-8XX2X series	Customer Part No.		Data Sheet No.
	*****	*****		HV-8XX2X series
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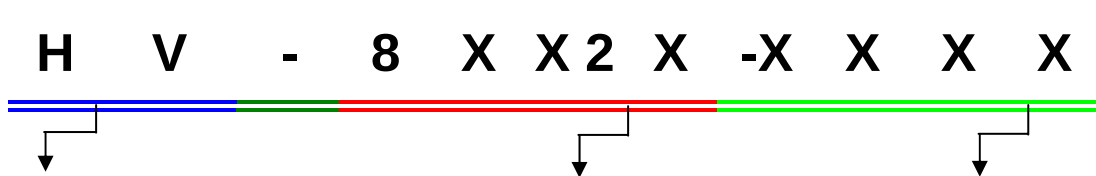
LIFE SUPPORT POLICY

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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



Series Name	Color Code	Customer Code
HV= Harvatek Through Hole Lamp	8CB20 = 430nm Blue, 5mm clear lens 8B20 = 468nm Blue, 5mm clear lens 8B21 = 468nm Bright Blue, 5mm clear lens 8B22 = 468nm Super Bright Blue, 5mm clear lens 8BG20 = 502nm Bluish Green, 5mm clear lens 8BG21 = 502nm Bright Bluish Green, 5mm clear lens 8BG22 = 502nm Super Bright Bluish Green, 5mm clear lens 8BG23 = 502nm Ultra Bright Bluish Green, 5mm clear lens 8TG20 = 518nm True Green, 5mm clear lens 8TG21 = 518nm Bright True Green, 5mm clear lens 8TG22 = 518nm Super Bright True Green, 5mm clear lens 8TG23 = 518nm Ultra Bright True Green, 5mm clear lens 8Y20 = 590nm Yellow, 5mm clear lens 8Y21 = 590nm Bright Yellow, 5mm clear lens 8Y22 = 590nm Super Bright Yellow, 5mm clear lens 8Y23 = 590nm Ultra Bright Yellow, 5mm clear lens 8A20 = 610nm Amber, 5mm clear lens	XXXX = Customer code

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Series Name	Color Code	Customer Code
HV= Harvatek Through Hole Lamp	8A21 = 610nm Bright Amber, 5mm clear lens 8A22 = 610nm Super Bright Amber, 5mm clear lens 8A23 = 610nm Ultra Bright Amber, 5mm clear lens 8E20 = 620nm Orange, 5mm clear lens 8E21 = 620nm Bright Orange, 5mm clear lens 8E22 = 620nm Super Bright Orange, 5mm clear lens 8E23 = 620nm Ultra Bright Orange, 5mm clear lens 8R20 = 632nm Red, 5mm clear lens 8R21 = 632nm Bright Red, 5mm clear lens 8R22 = 632nm Super Bright Red, 5mm clear lens 8R23 = 632nm Ultra Bright Red, 5mm clear lens 8SR20 = 640nm Deep Red, 5mm clear lens 8SR21 = 640nm Bright Deep Red, 5mm clear lens 8SR22 = 640nm Super Bright Deep Red, 5mm clear lens 8SR23 = 640nm Ultra Bright Deep Red, 5mm clear lens	XXXX = Customer code

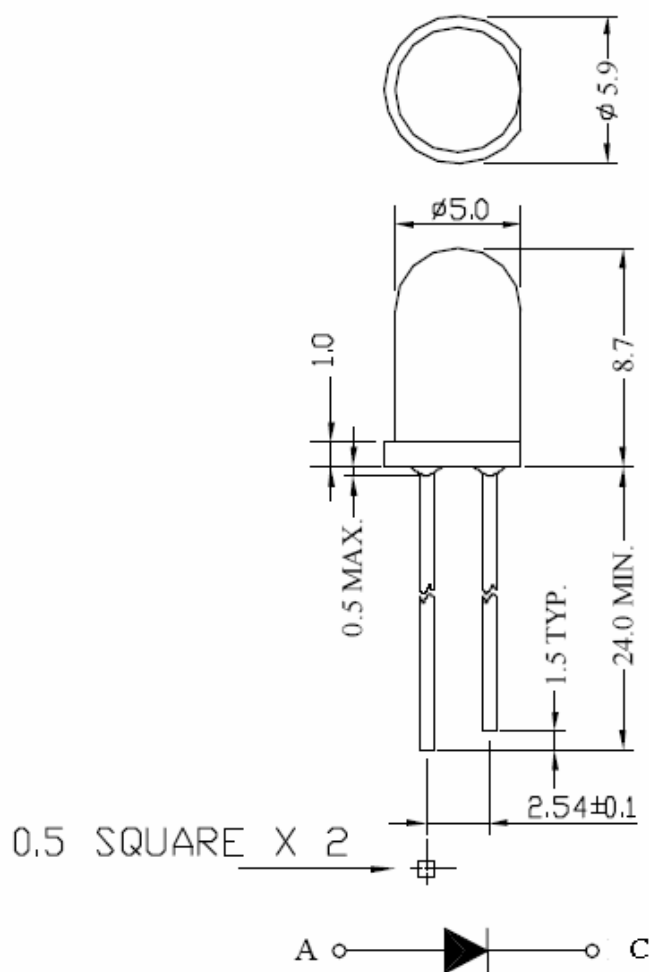
Die Technology:

Technology	Part number	Color
AllnGaP	8Y2X series	590nm Yellow
AllnGaP	8A2X series	610nm Amber
AllnGaP	8E2X series	620nm Orange
AllnGaP	8R2X series	632nm Red
AllnGaP	8SR2X series	640nm Deep Red
GaN	8CB2X series	430nm Blue
InGaN	8B2X series	468nm Blue
InGaN	8BG2X series	502nm Bluish Green
InGaN	8TG2X series	518nm True Green

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Features:

- Stable Color
- Popular 5mm through hole package, 8.7mm lens height.
- Water clear lens
- InGaN and AlInGaP technology
- Solid state reliability
- Package in Bulk volume
- Special packaging available upon request



-All Dimensions are in millimeters

-Tolerance = +/- 0.25mm

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Absolute Maximum Ratings at Ta=25C

Parameter	Symbol	AlInGaP Material	GaN Material	InGaN Material	Unit
Power Dissipation	P _d	72	135	125	mW
Reverse Voltage	V _r	5	5	5	V
Forward Current	I _F	30	30	30	mA
Reverse Current	I _r	100	50	50	μA
Peak Current (1/10 Duty Cycle, 0.1ms pulse width)	I _F (Peak)	100	100	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	6000	1000	1000	V

Electrical and Optical Characteristic (@ 25 degree C)

Parameter	8CB20	8B20	8B21	8B22	8BG20	Test Condition
Luminous Intensity:						
Min (mcd)	90	600	900	950	1500	If=20mA
Typ (mcd)	200	1400	2000	2200	2300	If=20mA
Forward voltage (Vf)						
Typ	3.8	3.5	3.5	3.5	3.5	If=20mA
Max	4.5	4.2	4.2	4.2	4.2	If=20mA
Peak Wavelength (nm)	428	468	468	468	502	If=20mA
Spectral line half width (nm)	65	26	26	26	35	If=20mA
Viewing angle	15	15	15	15	15	If=20mA

- Brightness tolerance = +/- 15%

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Parameter	8BG21	8BG22	8BG23	8TG20	8TG21	Test Condition
Luminous Intensity:						
Min (mcd)	1800	2000	2300	1500	1800	If=20mA
Typ (mcd)	2650	3000	4000	2300	2650	If=20mA
Forward voltage (Vf)						
Typ	3.5	3.5	3.5	3.5	3.5	If=20mA
Max	4.2	4.2	4.2	4.2	4.2	If=20mA
Peak Wavelength (nm)	502	502	502	525	525	If=20mA
Spectral line half width (nm)	35	35	35	35	35	If=20mA
Viewing angle	15	15	15	15	15	If=20mA

Parameter	8TG22	8TG23	8Y20	8Y21	8Y22	Test Condition
Luminous Intensity:						
Min (mcd)	2400	2750	900	950	1350	If=20mA
Typ (mcd)	5600	7000	2000	2200	2700	If=20mA
Forward voltage (Vf)						
Typ	3.5	3.5	1.9	1.9	1.9	If=20mA
Max	4.2	4.2	2.4	2.4	2.4	If=20mA
Peak Wavelength (nm)	525	525	589	589	589	If=20mA
Spectral line half width (nm)	35	35	15	15	15	If=20mA
Viewing angle	15	15	10	10	10	If=20mA

- Brightness tolerance = +/- 15%

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Parameter	8Y23	8A20	8A21	8A22	8A23	Test Condition
Luminous Intensity:						
Min (mcd)	1500	1350	1400	1450	1500	If=20mA
Typ (mcd)	3300	2500	2700	3000	3300	If=20mA
Forward voltage (Vf)						
Typ	1.9	1.9	1.9	1.9	1.9	If=20mA
Max	2.4	2.4	2.4	2.4	2.4	If=20mA
Peak Wavelength (nm)	589	610	610	610	610	If=20mA
Spectral line half width (nm)	15	17	17	17	17	If=20mA
Viewing angle	10	10	10	10	10	If=20mA

Parameter	8E20	8E21	8E22	8E23	8R20	Test Condition
Luminous Intensity:						
Min (mcd)	900	1350	--	--	909	If=20mA
Typ (mcd)	2200	2600	--	--	2000	If=20mA
Forward voltage (Vf)						
Typ	1.9	1.9	1.9	1.9	1.9	If=20mA
Max	2.4	2.4	2.4	2.4	2.4	If=20mA
Peak Wavelength (nm)	620	620	620	620	632	If=20mA
Spectral line half width (nm)	18	18	18	18	20	If=20mA
Viewing angle	10	10	10	10	10	If=20mA

- Brightness tolerance = +/- 15%

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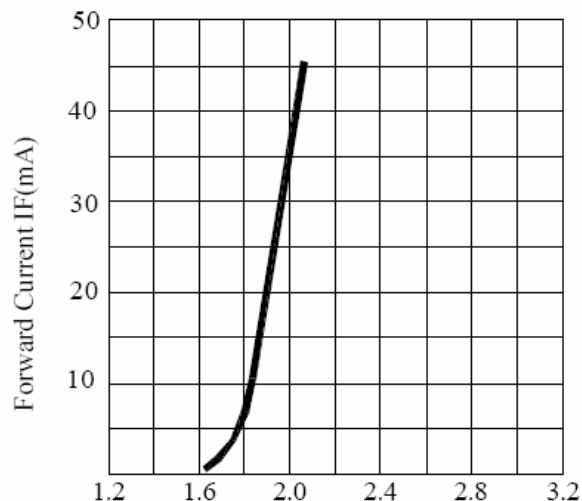
Parameter	8R21	8R22	8R23	8SR20	8SR21	Test Condition
Luminous Intensity:						
Min (mcd)	1350	1400	2000	300	429	If=20mA
Typ (mcd)	2800	3500	4000	750	1000	If=20mA
Forward voltage (Vf)						
Typ	1.9	1.9	1.9	1.9	1.9	If=20mA
Max	2.4	2.4	2.4	2.4	2.4	If=20mA
Peak Wavelength (nm)	632	632	632	640	640	If=20mA
Spectral line half width (nm)	20	20	20	20	20	If=20mA
Viewing angle	10	10	10	10	10	If=20mA

Parameter	8SR22	8SR23	Test Condition
Luminous Intensity:			
Min (mcd)	620	900	If=20mA
Typ (mcd)	1400	2000	If=20mA
Forward voltage (Vf)			
Typ	1.9	1.9	If=20mA
Max	2.4	2.4	If=20mA
Peak Wavelength (nm)	640	640	If=20mA
Spectral line half width (nm)	20	20	If=20mA
Viewing angle	10	10	If=20mA

- Brightness tolerance = +/- 15%

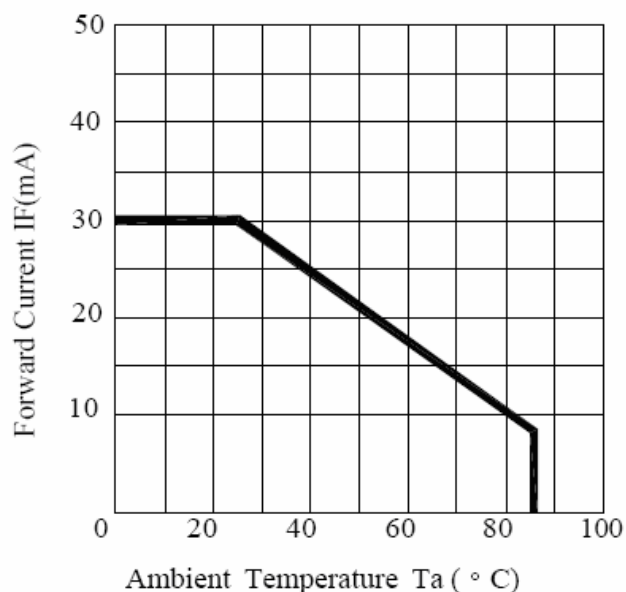
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Typical Characteristic Curves (@ 25 ° C)

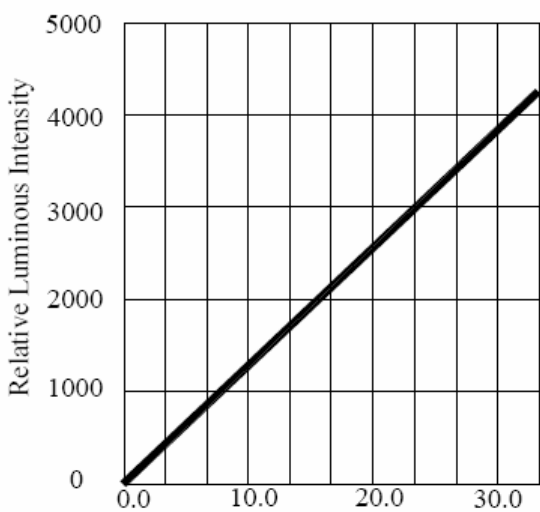


FORWARD CURRENT VS. APPLIED VOLTAGE

AllInGaP Material

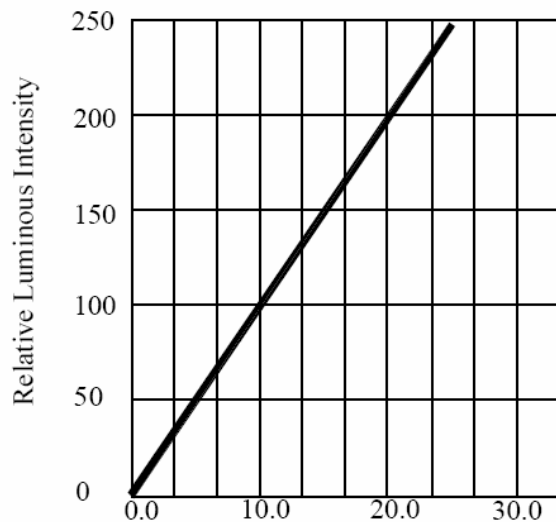


AMBIENT TEMPERATURE VS. FORWARD CURRENT



FORWARD CURRENT VS. LUMINOUS INTENSITY

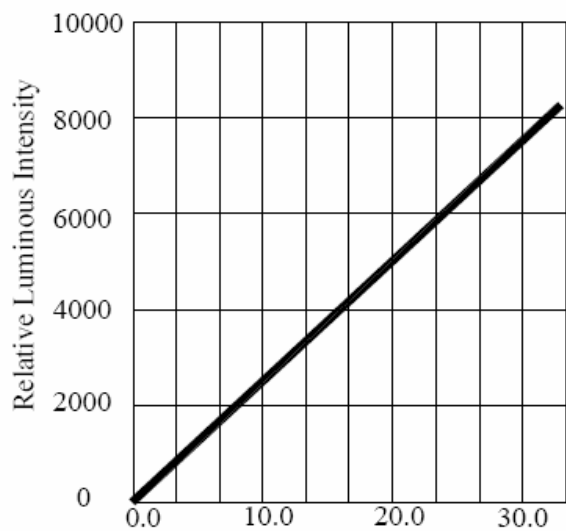
AllInGaP Material



FORWARD CURRENT VS. LUMINOUS INTENSITY

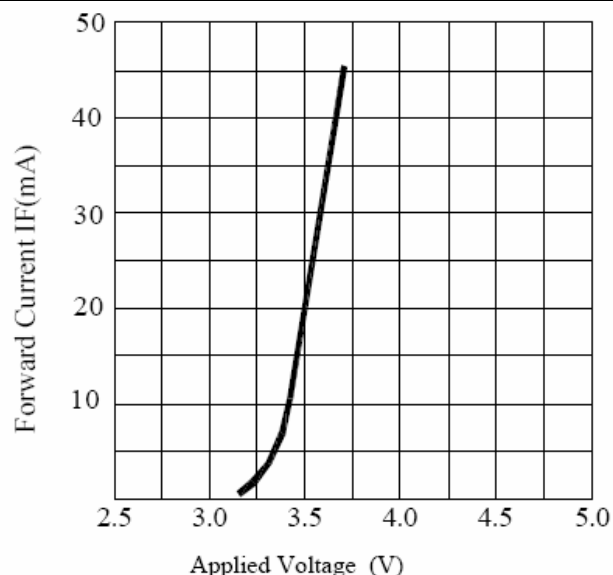
InGaN and GaN Blue

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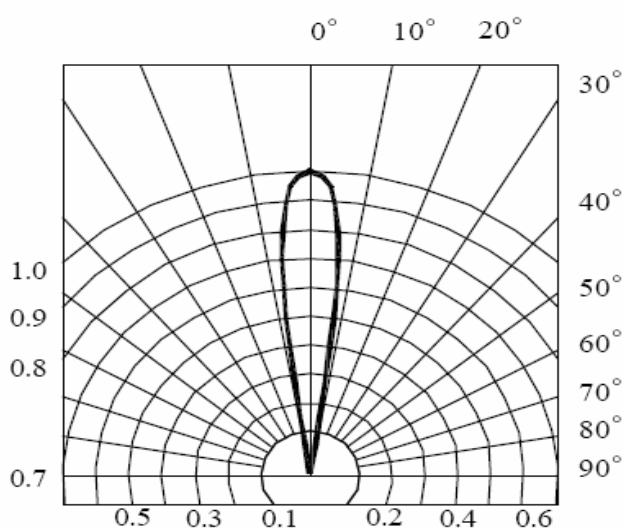
Forward Current (mA)
FORWARD CURRENT VS. LUMINOUS INTENSITY

InGaN Material (other than Blue)



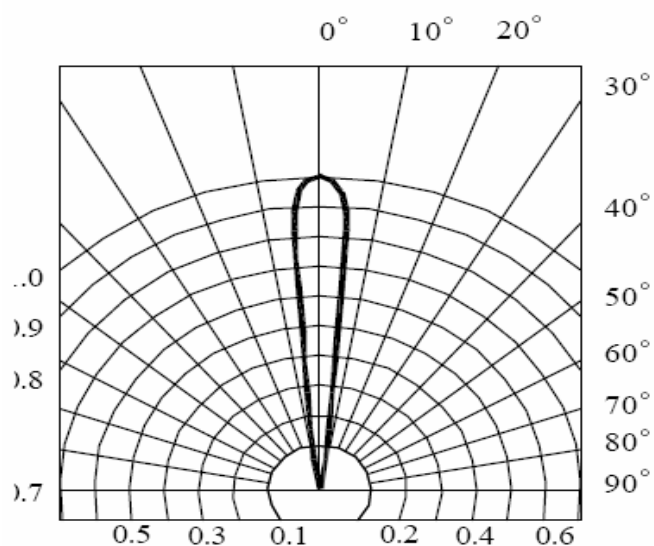
FORWARD CURRENT VS. APPLIED VOLTAGE

InGaN Material



RADIATION DIAGRAM

For InGaN Material

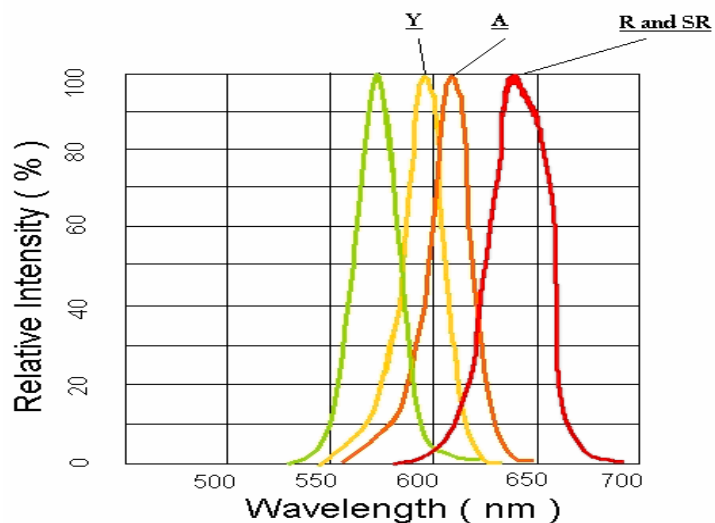


RADIATION DIAGRAM

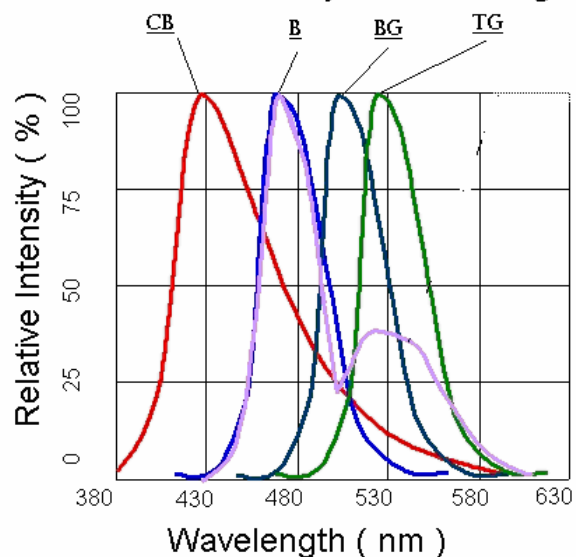
For AlInGaP Material

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Relative Intensity vs. Wavelength



Relative Intensity vs. Wavelength



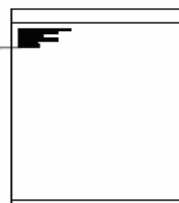
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Packaging for AlInGaP Material

ENCASED TYPE

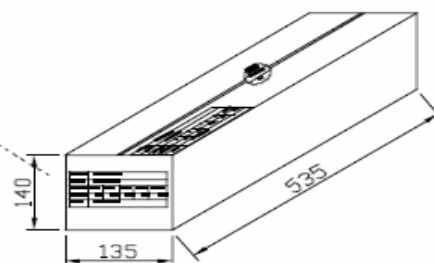
PLASTIC PACKAGE
QUANTITY: 1,000 PCS

Harvatek
PART NO : Hv -XXXXX-XXXX
QTY : PCS
LOT NO :XXXXXXXXXX
DATE :
BIN CODE:
Barcode:



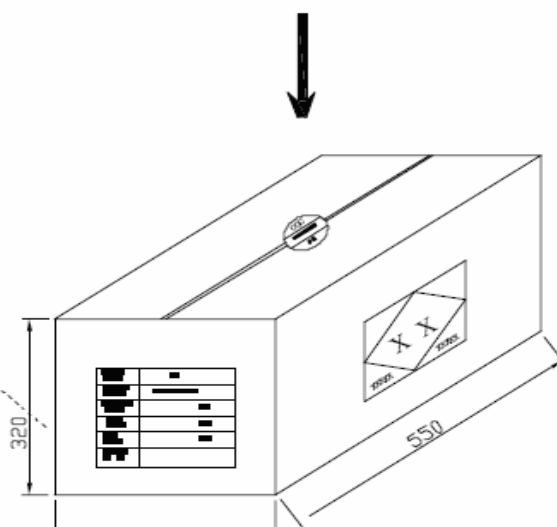
INNER BOX
QUANTITY: 10 PACKETS
TOTAL: 10,000 PCS

PART NO.	Hv -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				



OUTER CARTON
QUANTITY: 4 BOX
TOTAL: 40,000 PCS

CTNO. 箱 號	XX
PART NO. 料 號	HXX-XXXXX-XXXX
QUANTITY 數 量	PCS
N.W. 淨 重	KGS
G.W. 毛 重	KGS
REMARK 備 註	
BarCode	



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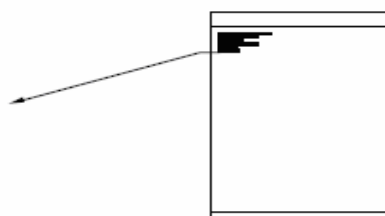
Packaging for GaN and InGaN Material

ENCASED TYPE

PLASTIC PACKAGE

QUANTITY: 200 PCS

Harvatek
PART NO : HV -XXXXX-XXXX
QTY : PCS
LOT NO :XXXXXXXXXX
DATE :
BIN CODE:
Barcode:

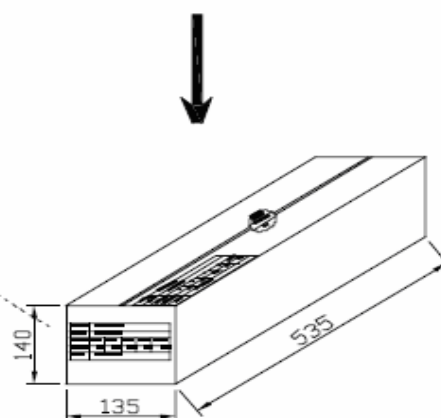


INNER BOX

QUANTITY: 40 PACKETS

TOTAL: 8,000 PCS

PART NO.	HV -XXXXX-XXXX				
LOT NO.	XXXXXXXXXX				
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QUANTITY	PCS	PCS	PCS	PCS	PCS
DATE	XXXX, XX, XX				

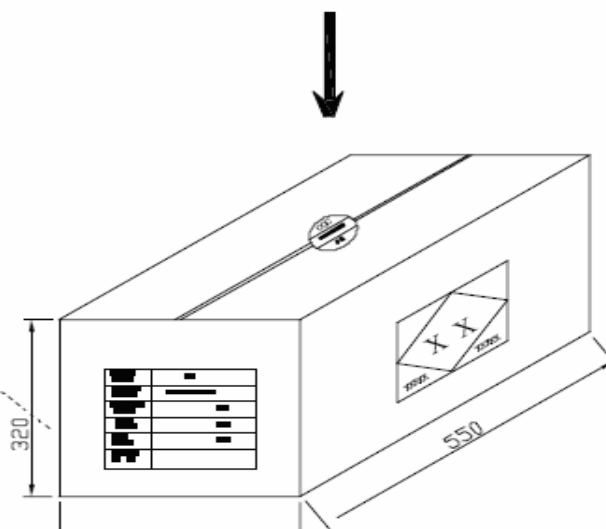


OUTER CARTON

QUANTITY: 4 BOX

TOTAL: 32,000 PCS

CT NO. 箱 號	XX
PART NO. 料 號	HXX-XXXXX-XXXX
QUANTITY 數量	PCS
N.W. 淨 重	KGS
G.W. 毛 重	KGS
REMARK 備 註	
BarCode	



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