

# VISIBLE LIGHT PRODUCTS SPECIFICATION

## HB5d-433EBA-D

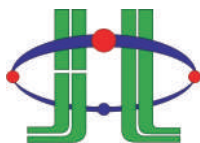


Drawn by	Checked by	Approved by



DATE:2010/6/23

REV:G



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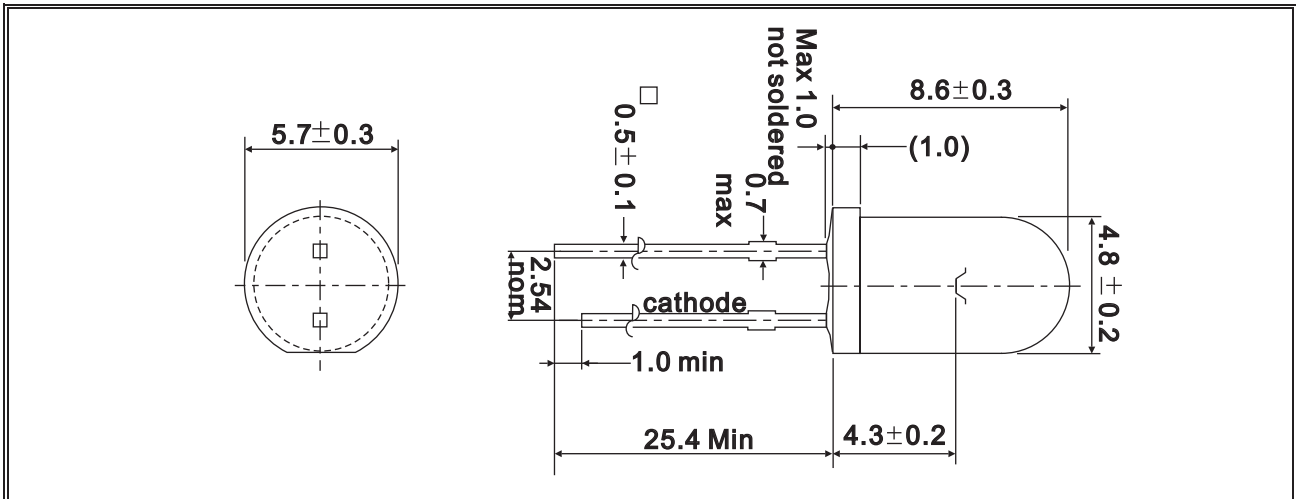
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DEVICES

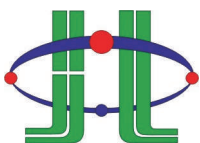
Part Number	Lens		Source	
	Color	Diffusion	Dice Source	Color
HB5d-433EBA-D	Water Clear	Non-Diffusion	GaNN/GaN	Bluish Green

PACKAGE DIMENSIONS:



NOTE:

- 1.All dimensions are in millimeter.
- 2.Lead spacing is measured where the lead emerge from the package.
- 3.Protruded resin under flange is 1.5mm max.
- 4.Specifications are subject to change without notice.
- 5.Tolerance is  $0.3$ mm unless otherwise noted.



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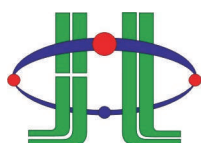
**ABSOLUTE MAXIMUM RATINGS**

TA=25°C

PARAMETER	SYMBOL	MAX. RATING	UNIT
Power Dissipation	Pd	120	mW
Continuous Forward Current	IF	30	mA
Peak Forward Current *1	IFM	100	mA
Reverse Voltage	VR	4	V
Electrostatic Discharge (HBM)	ESD	2000	V
LED Junction Temperature	Tj	100	°C
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Dip Soldering Temperature (3mm from case Bottom 260 °C for 5 seconds)			

\*1.Duty Ratio=0.1%,Pulse Width=10us.

\*2.Iron soldering in 350°C within 5 seconds will not cause damage to the dice. But be aware of the high temperature will not only make the epoxy soften but also cause the lead moving and the gold wire broken and even open. So before returning to the normal temperature PLEASE AVOID any serious pressure on the top of epoxy and lead.



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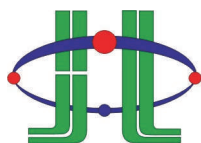
ELECTRIC-OPTICAL CHARACTERISTICS

TA=25°C

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
View Angle of Half Power	2θ <sub>1/2</sub>	IF=20mA		33		deg
Forward Voltage	V <sub>F</sub>			3.2	3.6	V
Reverse Current	I <sub>R</sub>	VR=5V			60	μA
Luminous Intensity *2	I <sub>V</sub>	IF=20mA	2500	5000		mcd
Peak Emission Wavelength	λ <sub>p</sub>			502		nm
Dominant Wave Length *3	λ <sub>d</sub> (HUE)			505		nm
Spectrum Width Of Half Valve	Δλ			30		nm
Terminal Capacitance	C <sub>t</sub>	V=0V F=1MHz		30		pF

\*2.Tolerance: 15% HUEY-JANN measuring equipment : EXELTRON 2001. 2.S370 made by U.D.T.

\*3.The dominant wavelength, λ<sub>d</sub>, is derived from the CIE Chromaticity Diagram and represents the color of the device.



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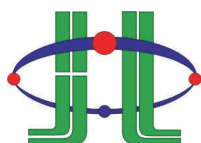
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RELIABILITY TEST

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1	Connect with a power if=20mA Ta=Under room temperature Test Time=1,000hrs	0/22
	High Temperature High Humidity Storage	MIL-STD-202:103B JIS-C-7021 :B-11	Ta=+85°C 5°C RH=90% ~ 95% Test Time=1000hrs	0/22
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High Ta=+100°C 5°C Test Time=1,000hrs	0/22
	Low Temperature Storage	JIS-C-7021 :B-12	Low Ta=-40°C 5°C Test Time=1,000hrs	0/22
	Temperature Cycling	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS-C-7021 :A-4	-40°C ~ +25°C ~ +85°C ~ +25°C 60min 20min 60min 20min Test Time=200cycle	0/22
Thermal Shock	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010	-40°C 5°C ~ +85°C 5°C 20min 20min Test Time=200cycle	0/22	

\*Failure Criteria:

1. VF arise  $\geq$  10%
2. IV decline  $\geq$  30%
3. A failure is an LED that is open or shorted

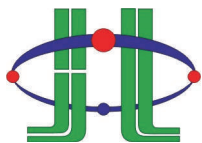
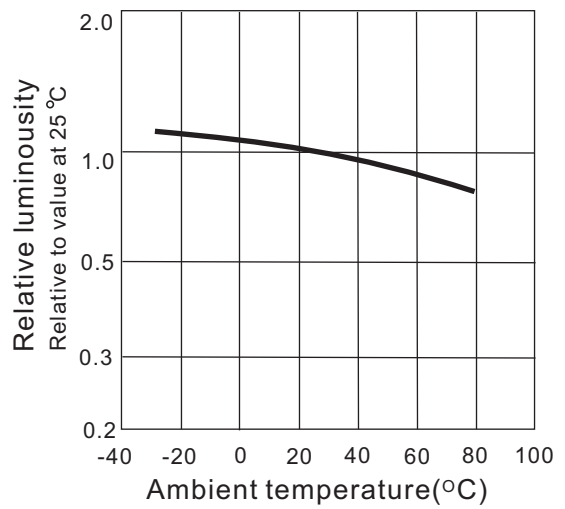
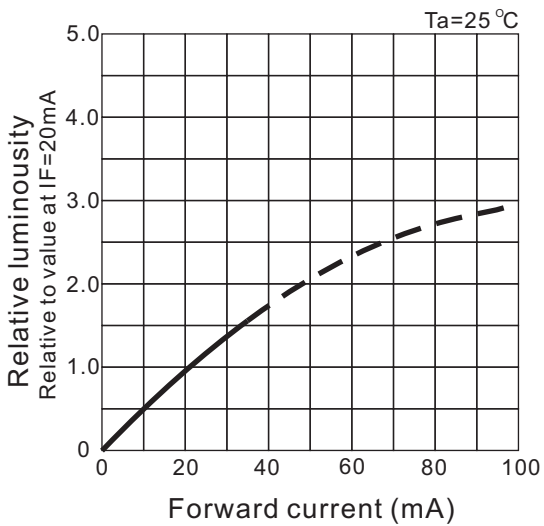
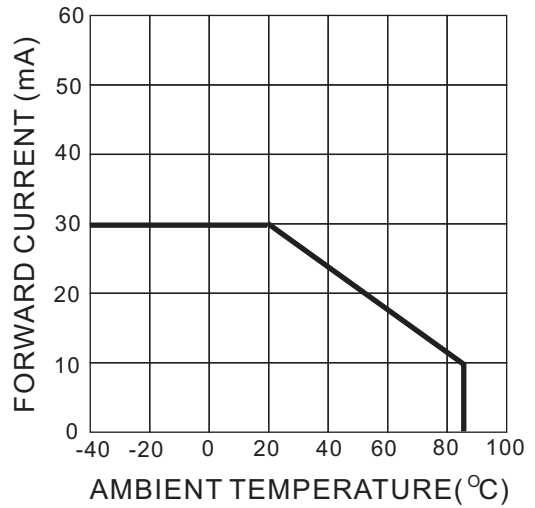
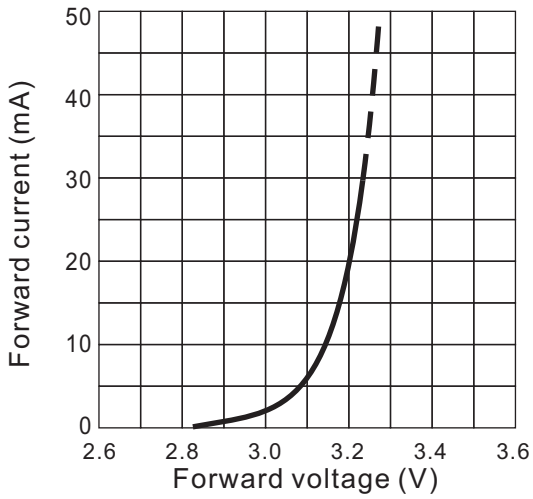


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TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES

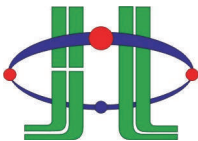
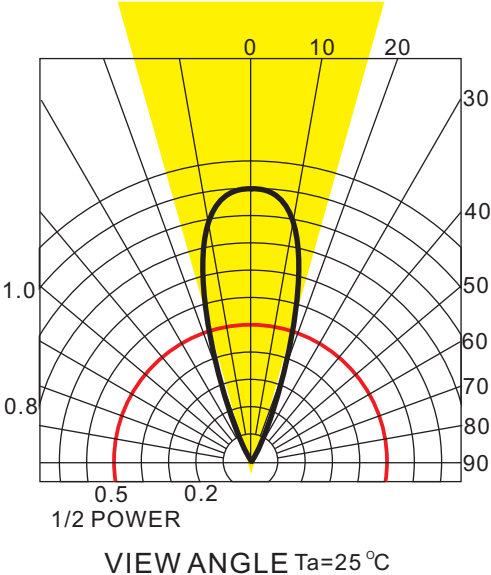
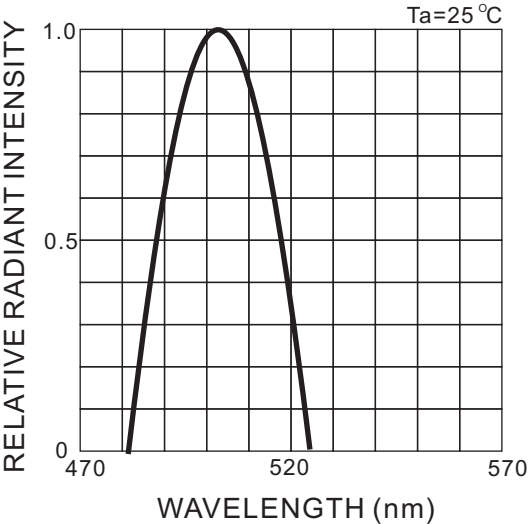


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LED VF Bin Selection

$I_F=20\text{mA}$

BIN CODE	Forward Voltage	
	Minimum	Maximum
i	2.8	3.0
j	3.0	3.2
k	3.2	3.4
m	3.4	3.6

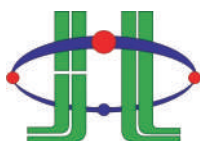
Voltage tolerance for each bin limit is  $\pm 0.03\text{V}$

Brightness Bin Selection

$I_F=20\text{mA}$

BIN CODE	Brightness in mcd	
	Minimum	Maximum
X	7200	9300
Y	9300	16000
Z	16000	21000

Brightness tolerance for each bin limit is  $\pm 15\%$



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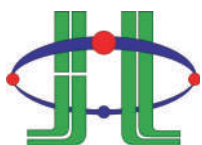
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Color Bin Selection

I<sub>F</sub>=20mA

Bin	Dominate Wavelength	
	Minimum	Maximum
2	495.0	498.0
3	498.0	501.0
4	501.0	504.0

Color tolerance for each bin limit is  $\pm 0.5\text{nm}$



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