

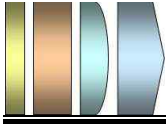
[Verticle] HoneyComb

InGaN Vertical Blue LED Chip

For Power LED Applications

Chip Information Sheet

2011-11-29



Verticle's World first HoneyComb™ LED Data Sheet

6CV1000-xxxx

Vertically structured Hexagonal InGaN LEDs designed and fabricated using Verticle's proprietary Intellectual Properties and Innovative Production Technologies. Especially high thermal and electrical conductive Cu Substrate makes it possible to apply to wide range of applications that require thermal benefits with light color consistency and better life time and reliability. In particular Honeycomb™ LED is very useful for optic design with circular lens system where near circular beam profile required for various package and module applications.

Advantages of HoneyComb™ LED are:

- Excellent heat dissipation due to Cu Substrate,
- Near circular beam profile with circular lens
- High Luminance,
- Low Leakage Current,

Verticle's LED can deliver following benefits to customer:

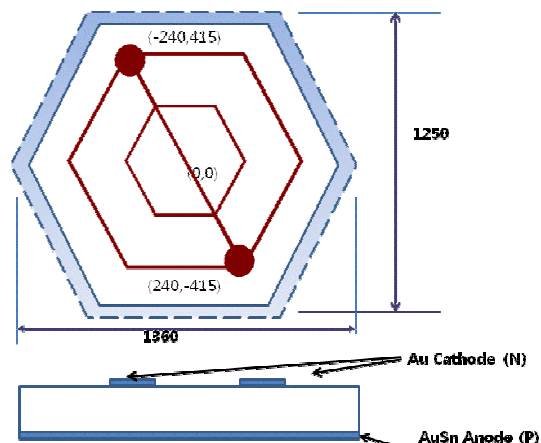
- Easy heat management
- Easy fit into tight space
- High brightness

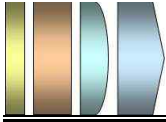
FEATURES

- Lambertian Radiation
- High Luminous Intensity
- Low Rth (Conductive-Metal Substrate)
- Forward Voltage : 3.2 V Typical at 350mA
- Low Reverse Current: 2 μ A Max at 5V
- Optical Power: 400 mW at 350mA (Typical)
- Wavelength(Wd) : 445 ~ 465 nm
- No Zener Diode

APPLICATIONS

- High Power LED
Street Light, Outdoor Illumination
Indoor Lighting
Projection Display
Fish-luring light
- Industrial Lighting Applications
Automotive
Traffic sign board
Camera Flash Lighting





CHIP CHARACTERISTICS

Parameter	Value	Tolerance	Unit
Chip size(With Scribe Lane)	Mark 1)	±20	μm
Chip Thickness	115	±15	μm
P-Metal size	Mark 1)	±10	μm
N-Metal Pad Size	(2x) 130 x 130	±5	μm
N-Metal Pad Thickness	3	±0.5	μm
Backside Metallization P electrode (Au alloy) Thickness	2	±0.5	μm

Mark 1) Refer the drawing on previous page

ELECTRO- OPTICAL CHARACTERISTICS (Ta=25 °C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Forward voltage	Vf	If = 350 mA		3.2	3.4	V
Reverse current	Ir	Vr = - 5 Volt		2.0		μA
Dominant Wavelength	λd	If = 350 mA	445		465	nm
Optical power	Po	If = 350 mA	360	400		mW

Absolute Maximum Rating

Parameter	Condition	Rating	Unit
DC Forward Current	Ta=25 °C	1000	mA
Peak Forward Current	1/10 duty cycle @ 1 kHz	1250	mA
LED Junction Temperature	-	145	°C
Reverse Voltage		5	V
Operating Temperature Range		-40 to +100	°C
Storage Temperature Range		-40 to +125	°C
Temperature during packaging		280(<10sec)	°C

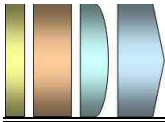
Notes:

All measurements were made using a Au-plated TO39 header without an encapsulant.

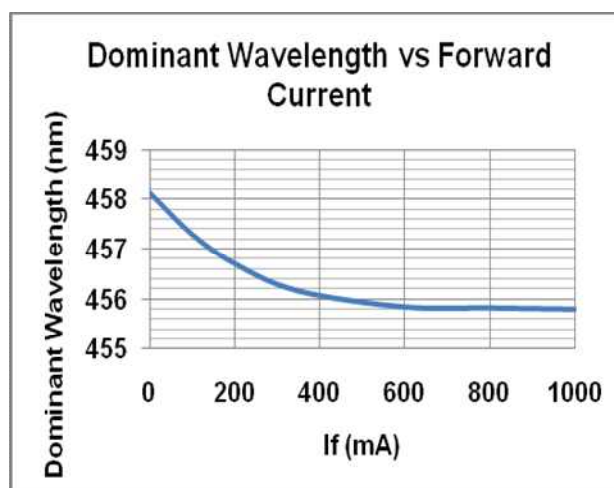
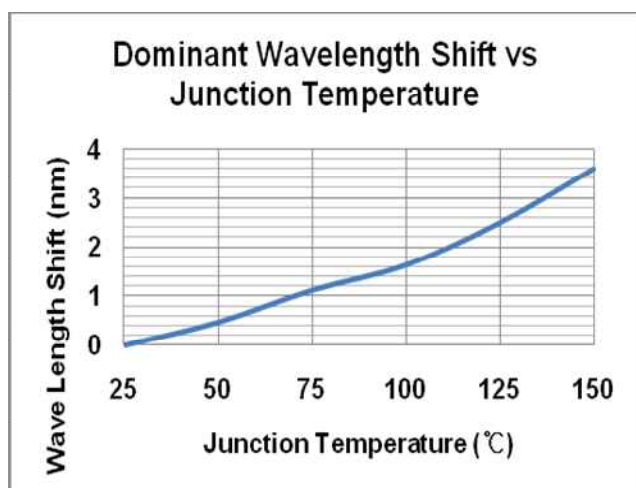
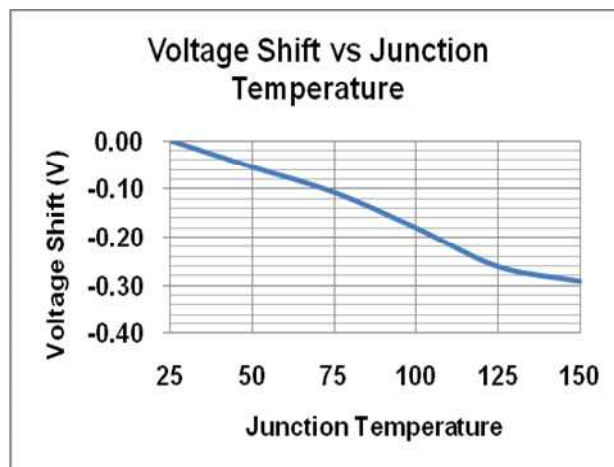
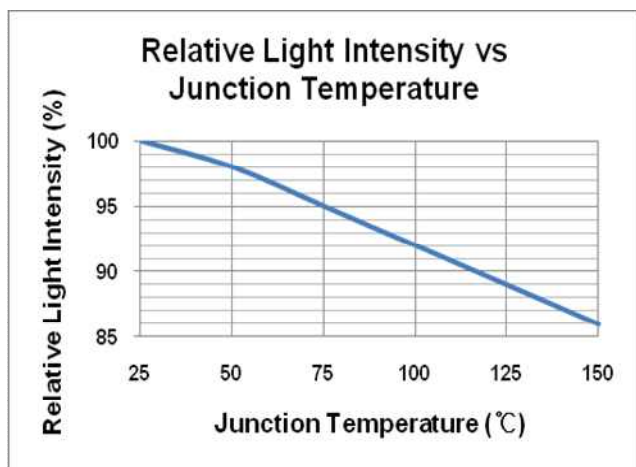
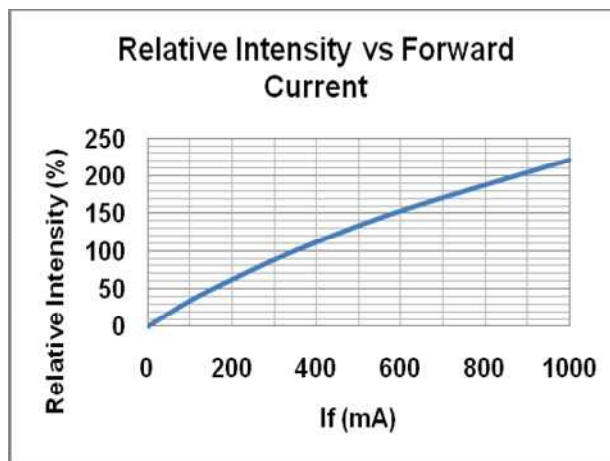
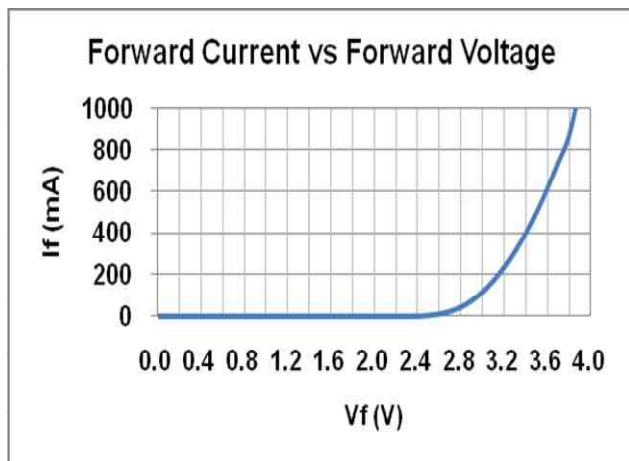
Maximum ratings are package-dependent.

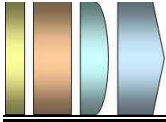
Typical values given are within the range of average values expected by the manufacturer in large quantities and are provided for information only.

Optical characteristics were measured by Verticle's Equipment using a Au-plated TO39 header without an encapsulant.



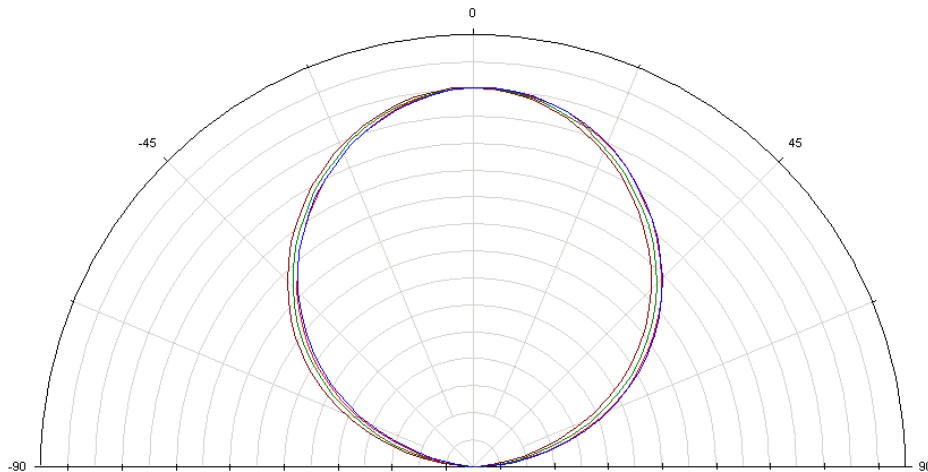
PERFORMANCE DIAGRAM





■ Radiation Pattern

This is a representative radiation. Actual patterns will vary slightly for each chip



■ Order Information

BIN Table

Output Power (mW) at 350mA

λ (nm) \ *Po	360~380	380~400	400~420	420~
442.5 ~ 447.5	6CV1000-CL05	6CV1000-BL05	6CV1000-AL05	6CV1000-SL05
447.5 ~ 452.5	6CV1000-CL06	6CV1000-BL06	6CV1000-AL06	6CV1000-SL06
452.5 ~ 457.5	6CV1000-CL07	6CV1000-BL07	6CV1000-AL07	6CV1000-SL07
457.5 ~ 462.5	6CV1000-CL08	6CV1000-BL08	6CV1000-AL08	6CV1000-SL08
462.5 ~ 467.5	6CV1000-CL09	6CV1000-BL09	6CV1000-AL09	6CV1000-SL09

* Po: Radiant Power

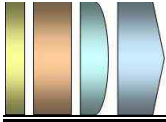
** All date are measured on TO-39 package with bare chip.

6CV1000- XY-mm

mm (Wavelength):05(445.0 ~ 447.5), 06(447.5 ~ 452.5), 07(452.5 ~ 457.5),
08(457.5 ~ 462.5), 09(462.5 ~ 467.5)

Y (Forward Voltage): L(~3.4V), H(3.4V~)

X (Optical Power): C(360~380), B(380~400), A(400~420), S(420~)



■ About Verticle

Verticle Inc. is a LED chip manufacturing company head quartered in Silicon Valley in US. Verticle inc. has production facilities and R&D center in Korea. Verticle Inc. specializes in design and manufacturing of vertical type LEDs for BLU and various Lighting Applications, such as View light, Road light, Outdoor light, Automotive Instrument Panel, LED Fishing Lamp etc, using a patented Cu substrate and Chemical Chip Separation Technology.

Vertically designed Verticle's Power LED will be the most suitable and efficient LED for your application.

For any additional information about product, please contact at jkang@verticle.co.kr (Tel: +82 70 8656 0713)

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