

[Verticle]

InGaN Vertical Blue LED Chip

For Power LED Applications

Chip Information Sheet

2012-02-10



Verticle High Power LED

Data Sheet

5CV1000-xxxx

Vertically structured InGaN-based 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 wide range of applications that require thermal benefits with light color consistency and better life time and reliability.

The main advantage of using Verticle's Power LED is

- Excellent heat dissipation due to Cu Substrate,
- High Luminance,
- Low Leakage Current,
- Low Forward Voltage

Verticle's LED can deliver following benefits to customer:

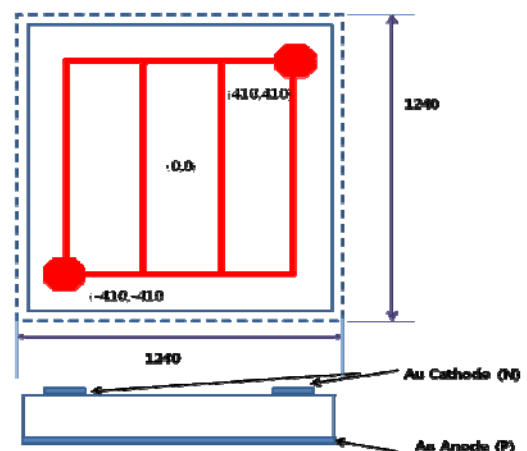
- Easy heat management
- Easy fit into tight space
- High brightness

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: 370 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
- BLU
 - LED TV, 3D-TV
 - PC Display (Notebook/Monitor)
- Industrial Lighting Applications
 - Automotive
 - Traffic sign board
 - Camera Flash Lighting





CHIP CHARACTERISTICS

Parameter	Value	Tolerance	Unit
Chip size(With Scribe Lane)	1240 x 1240	- 20	μm
Chip Thickness	110	± 15	μm
P-Metal size	1100 x 1100	± 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

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	370	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.

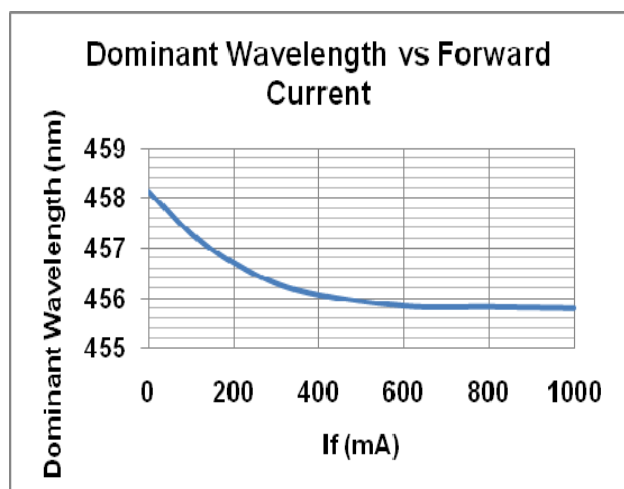
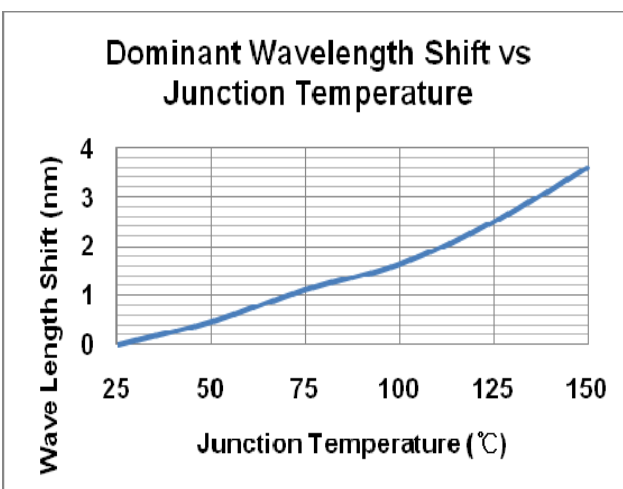
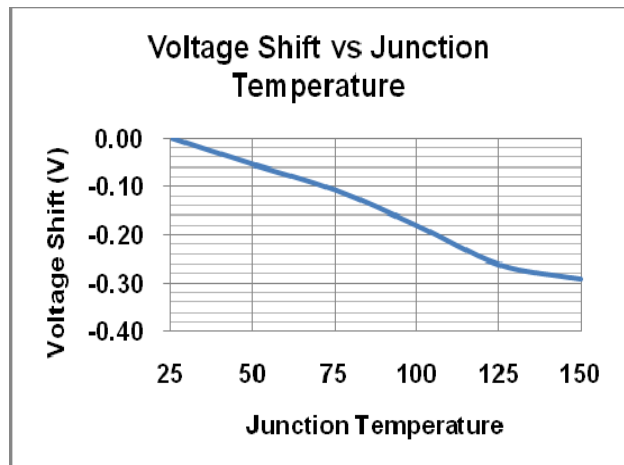
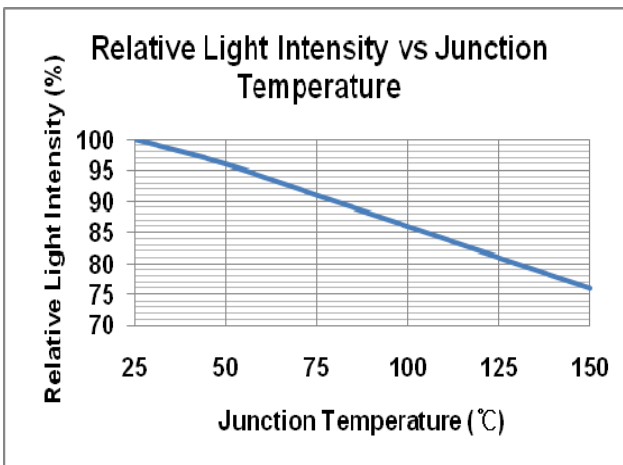
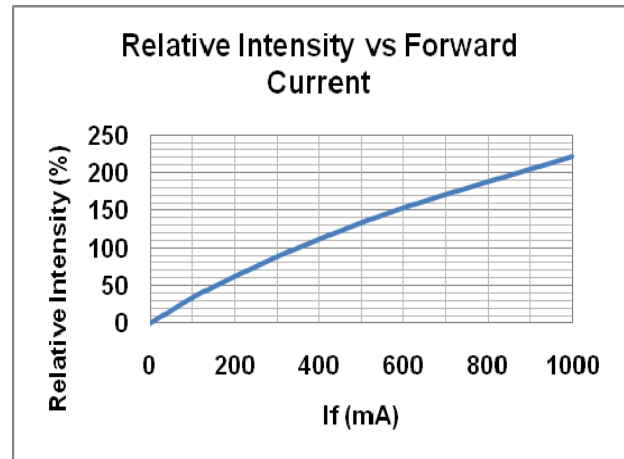
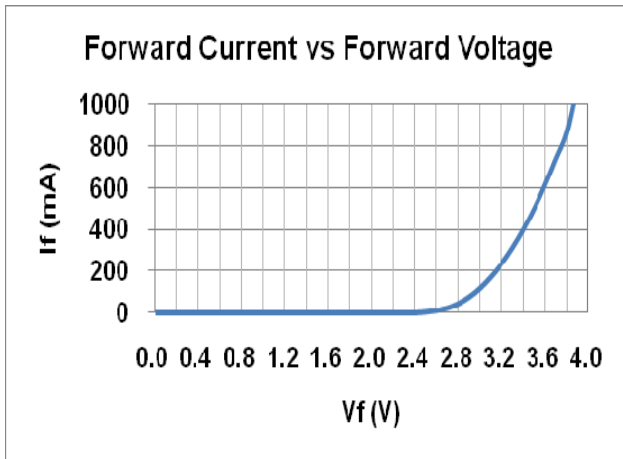
Maximum ratings are package-dependent.

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.



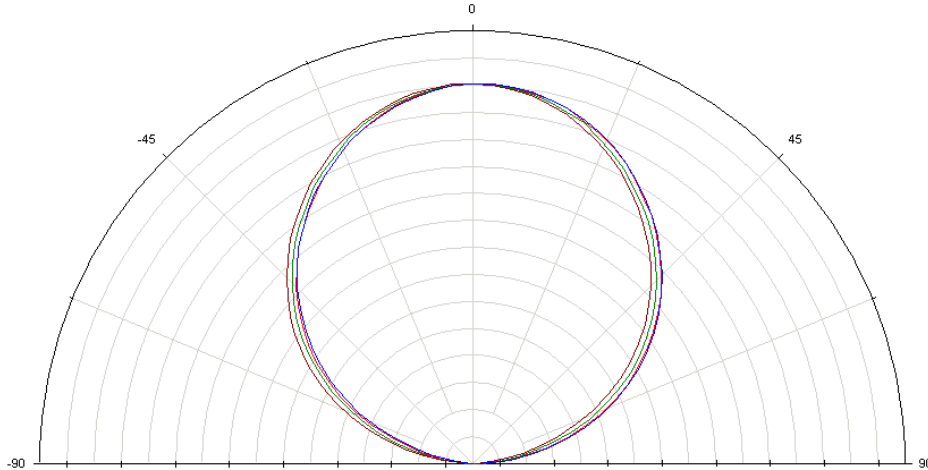
PERFORMANCE DIAGRAM





■ Radiation Pattern

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



■ Order Information

BIN Table	Output Power (mW) at 350mA		
Wave Length(nm)	370~400	400~420	420~
442.5 ~ 447.5	5CV1000-BL05	5CV1000-AL05	5CV1000-SL05
447.5 ~ 452.5	5CV1000-BL06	5CV1000-AL06	5CV1000-SL06
452.5 ~ 457.5	5CV1000-BL07	5CV1000-AL07	5CV1000-SL07
457.5 ~ 462.5	5CV1000-BL08	5CV1000-AL08	5CV1000-SL08
462.5 ~ 467.5	5CV1000-BL09	5CV1000-AL09	5CV1000-SL09

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

5CV1000- 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): B(370~400), 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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