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Customer : Seoul Semiconductor Co., Ltd.

Part Name: G1313-GA

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Seoul VIOSYS Co., Ltd.		
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1. Features and Application

High luminous intensity with long life.

All Chips are 100% tested and sorted.

Small & Medium LCD Backlighting and Lighting applications

2. Part Name

G1313-GA

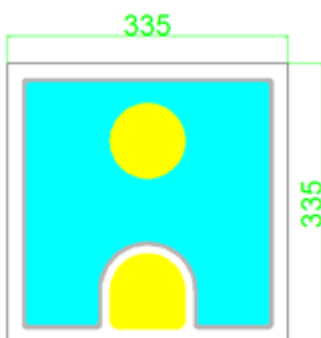
3. Main Material

InGaN/GaN on Sapphire

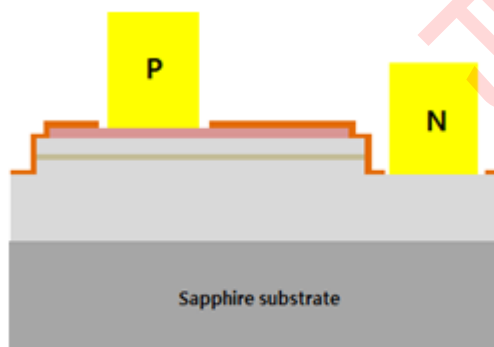
4. Electrodes

Anode - Au ; Cathode - Au ;

5. Chip Diagram



[Top View]



[Cross View]

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6. Maximum Ratings

item	symbol	value	unit
DC forward Current	I_f	45	mA
Junction Temperature	T_j	100	°C
Operating Temperature	T_{op}	-30 ~ +85	°C
Assembly Process Temperature	T_p	250(<10sec)	°C

Note. "Maximum Ratings" mean when it exceeds the chip has the possibility of breaking down when these conditions are exceeded momentarily. "Maximum ratings", the chip is not guaranteed to endure such conditions. "Maximum Ratings" concerning your LED device after the chip is built into your package shall be established by yourself since these greatly depend on the design of the device, the conditions of assembly, the environment used, and so forth.

7. Typical Electro-Optical Characteristics at Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse Current	I_R	$V_R=5V$	0	-	1.0	μA
Turn-on Voltage	V_{F1}	$I_f=1\mu A$	1.8	-	2.7	V
Forward Voltage ^a	V_{F2}	$I_f=30mA$	2.7	-	3.2	V
Dominant Wavelength ^b	λ_d	$I_f=30mA$	520	-	532	nm
Radiant Power ^c	P_o	$I_f=30mA$	16	-		mW

Note.

- All the data were measured by Seoul Viosys Co., Ltd. testing equipment.
- Reverse voltage is applied for the electrical characteristic measurement **only**. Applying the continuous reverse voltage to the chip is not recommended, it may cause metal migration.

I_f : Forward Current

^a Tolerance of measured Forward Voltage: ±1%

^b Tolerance of measured Dominant Wavelength: ±1nm

^c Tolerance of measured Radiant Power: ±10%

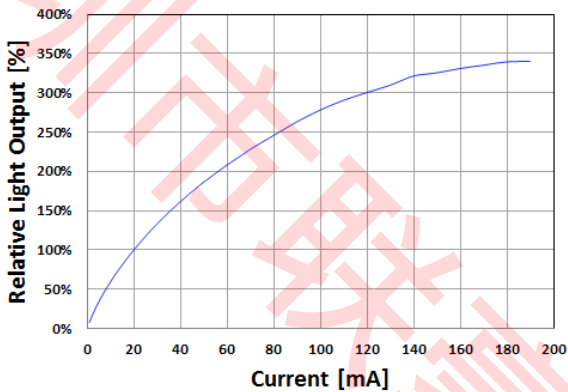
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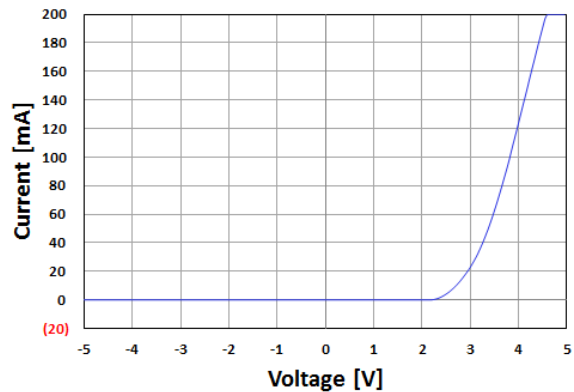
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These following graphs represent typical performance of the **G1313-GA** chip. Actual performance will vary slightly for different power and dominant wavelength bins.

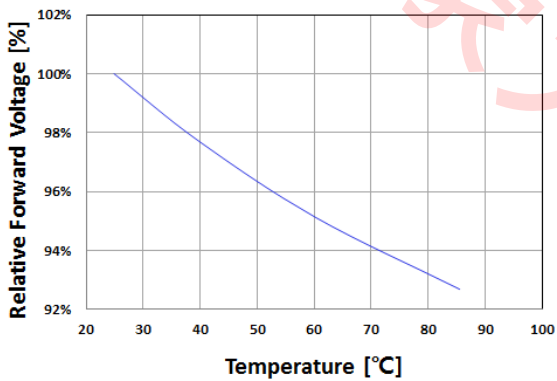
Relative Light Output vs. Current



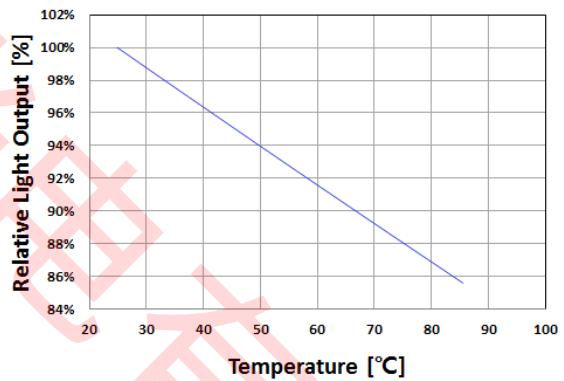
Current vs. Voltage



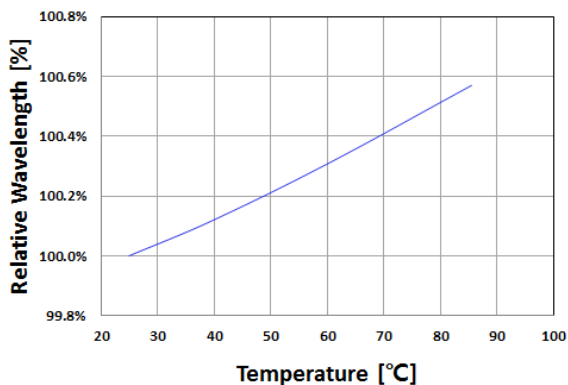
Relative Forward Voltage vs. Temp



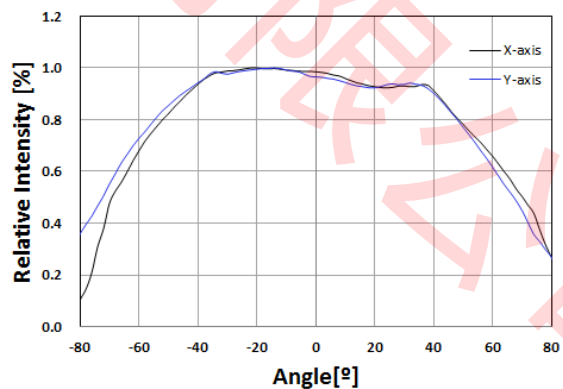
Relative Light Output vs. Temp



Relative Wavelength vs. Temp



Radiation Pattern in Cartesian Coordinate



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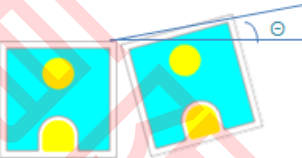

8. Mechanical Specifications

Description	Dimension (um)	Tolerance
Chip size	335x335	±40um
Chip thickness	100	±10um
p-pad diameter	90	±5um
n-pad diameter	90	±5um

9. Visual inspection

Item	NG criteria	NG Example
Pinhole	larger than 5% of surface emitting area	
Surface contamination	Surface & Pad contamination larger than 10% of surface emitting area	
Pad contamination	Pad contamination Larger than quarter of pad bonding area	
Surface scratches	larger than 10% of surface emitting area	
TCL film peeling	larger than 10% of surface emitting area	

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Partially missing P/N Pad	larger than 10% of bond pad area larger than 2/3 of finger pad area	
Pad metal Residue	larger than 10% of chip surface area	
Pad scratch	larger than 50% of pad area (including probing mark)	
Chipping	touching TCL	
Bad cut	extrusion √ Out of chip size tolerance √ Including the pad metal of other chips	
θ shift	$\theta > \pm 5^\circ (10^\circ)$	
Passivation Film Peeling	Passivation Film peeling larger than 10% Of surface emitting Area	

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10. Sorting Bins and Product Name (Rev.2)

(1) Sorting Bins

IR (μA)	VF1 (V)	VF2 (V)	λD (nm)	Po (mW)
0~1	1.8~2.7	2.8~2.9	520~524	16~17
		2.9~3.0	524~528	17~18
		3.0~3.1	528~532	18~20
		3.1~3.2		20~22
				22~24
				24~26
				26~28
				28~40

(2) Product Name: G1313-GA-*₁*₂*₃*₄

* ₁ * ₂ * ₃	520~524 nm	524~528 nm	528~532 nm
16~17 mW	-	B16	C16
17~18 mW	A17	B17	C17
18~20 mW	A18	B18	C18
20~22 mW	A20	B20	C20
22~24 mW	A22	B22	C22
24~26 mW	A24	B24	C24
26~28 mW	A26	B26	C26
28~30 mW	A28	B28	C28
30~40 mW	A30	B30	C30

*₄ : L 2.8~2.9, M 2.9~3.0, H1 3.0~3.1, H2 3.1~3.2

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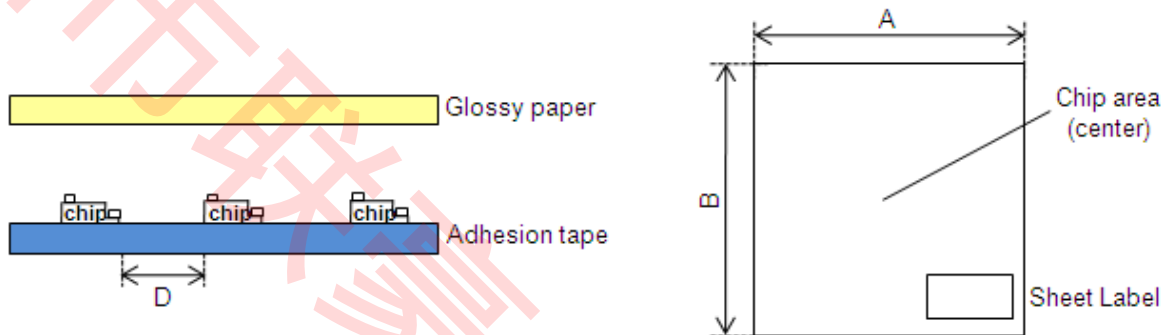
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11. Packing

(1) Chips on tape

- (a) A sheet label which contains electrical and optical measurement data is attached on the backside of yellow glossy paper. The area of chip array which is placed in the center of adhesive tape, and sorted up-right; the emission area is facing the glossy paper.



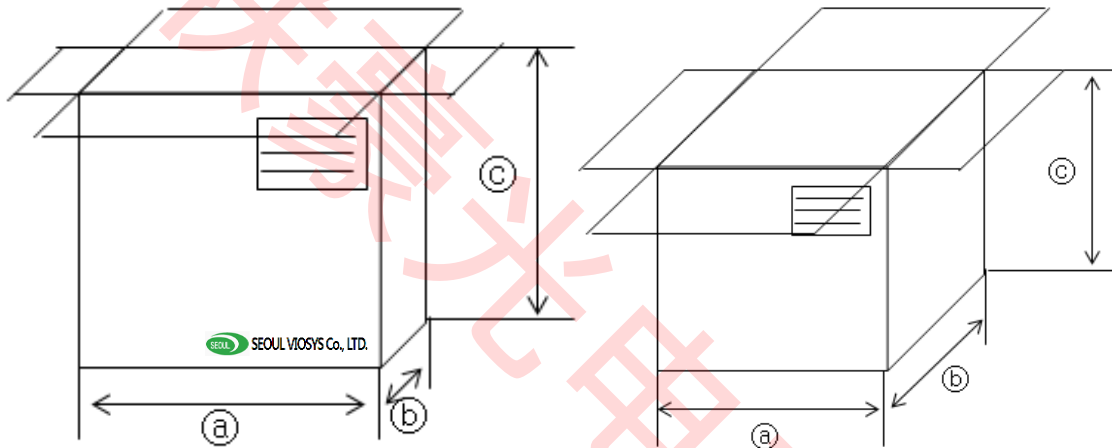
- (b) The sheet label includes Product name, Lot No., quantity, and electrical/optical characteristics. It is labeled on the right-bottom of the glossy paper.

Item	Instruction
Adhesion tape	Semi- transparent blue
Glossy paper (A×B)	195mm × 208mm
Chip Qty tape	Max. 19,600 ea
Chip separation (X,Y)	X : 0.20mm, Y : 0.20mm

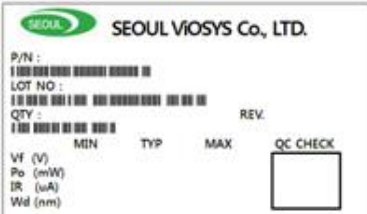


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(2) Packing for shipment

- (a) The sheets (adhesion tape + glossy paper) are packed in an anti-static bag. Each bag contains up to 20 sheets.
- (b) The anti-static bags are packed in a box that has dimension of 250mm×65mm×275mm (a × b × c). Each box contains up to 5 anti-static bags.
- (c) The boxes which contain anti-static bags are packed in an outer box that has size of 260mm×340mm×290mm (a × b × c). Each outer box contains up to 6 inner boxes.
- (d) Each sheet/box is labeled with information describing its content. (Details please refer to section 12)



12. Labeling

Sheet	Inner Box	Outer Box
		

- (1) Sheet: The measurement data for each bag are shown on the backside of the sheet.
- (2) Inner Box: The information about the products is shown on the inner box.
- (3) Outer Box: The information about the products is shown on the outer box.

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13. Precaution

(1) Quality Guarantee

The chip guarantee period is three months after the delivery under the following preservation conditions. If any defective is found, the customer shall immediately inform of that to Seoul VIOSYS Co., Ltd. Preservation conditions (when the shipping package is unopened.)

- Temperature: 0 ~ 60 °C
- Atmosphere: Keep the chips in a desiccators with silica gel or with nitrogen substitution.

(2) General precaution for use

· Chips should be stored in a clean environment. If the Chips are to be stored for 3 months or more after being shipped from Seoul VIOSYS, they should be packed by a sealed container with nitrogen gas injected.

(Shelf life of sealed bags: 1year, 0~40°C of temperature, 20~70% of RH)

· This chip should not be used directly in any type of fluid such as water, oil, organic solvent, etc. When washing is required, IPA is recommended to use.

· After storage bag is open, device subjected to soldering, solder flow, or other high temperature processes must be:

Mounted within 168 hours (7days) at an assembly line with a condition of no more than 30°C and 60% RH

· Chips require baking before mounting, if humidity card reading is >60% at, 23±5°C. Chips must be baked for 24Hrs. at 65±5°C, if baking required.

· When the chips are illuminating, the maximum ambient temperature should be first considered before operation. If voltage exceeding the absolute maximum rating is applied to chips, it may cause damage or even destruction to chips. Damaged LEDs will show some abnormal characteristics such as remarkable increase of leak current, lower turn-on voltage and getting unlit at low current.

· The appearance and specifications of the products may be modified for improvement without further notice.

· The chips are sensitive to the static electricity and surge. It is strongly recommended to use a grounded wrist band and anti-electrostatic glove when handling the LEDs.

The above specifications are subject to change without prior notice.

Seoul Viosys Co., Ltd.

March, 16th, 2017