

# Specification For Approval

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**Customer :****Part Name : M0804-GB**

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

High luminous intensity  
Lambertian emission  
Lighting and mobile alliances applications

## 2. Part Name

M0804-GB

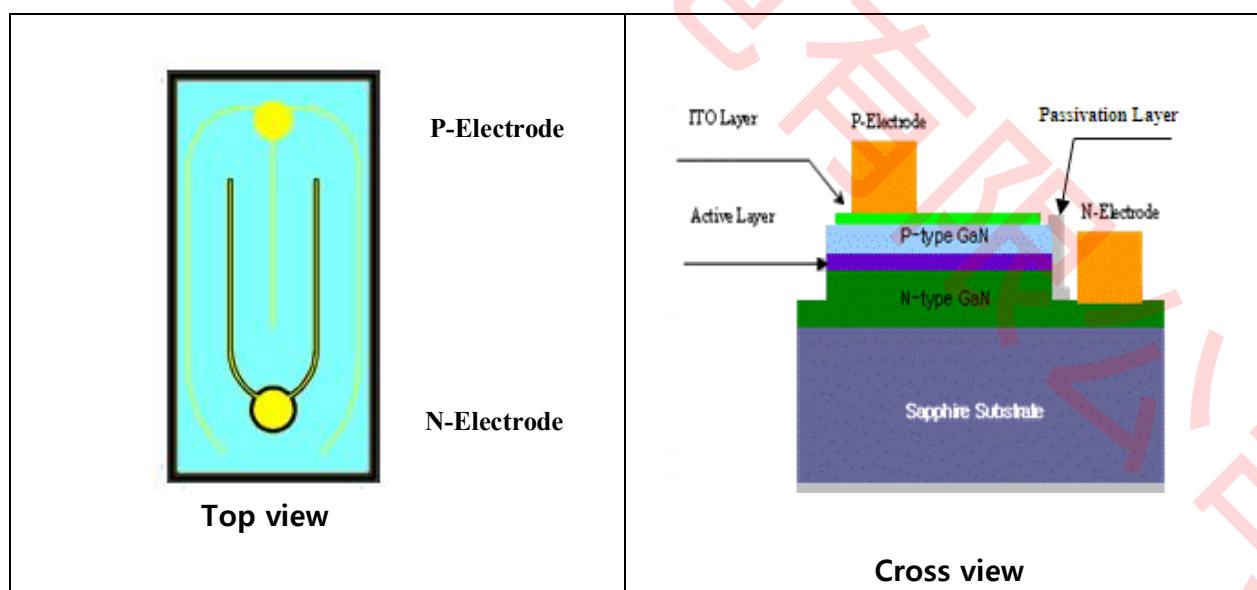
## 3. Main Material

InGaN/GaN on Sapphire

## 4. Electrodes

P electrode: Au alloy  
N electrode: Au alloy

## 5. Chip Diagram



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## 6. Maximum Ratings

item	symbol	value	unit
DC forward current	$I_f$	200	mA
Pulsed forward current <sup>a</sup>	$I_{fp}$	240	mA
Junction temperature	$T_j$	125	°C
Operating temperature	$T_{op}$	-30 ~ +85	°C
Assembly Process Temperature	$T_p$	250 (<10sec)	°C

<sup>a</sup> 1/10 Duty, f=1kHz

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
Turn-on voltage	$V_{F1}$	$I_f=1\mu A$	1.9	-	2.7	V
Forward voltage <sup>a</sup>	$V_{F2}$	$I_f=100mA$	2.80	-	3.15	V
Reverse current	$I_R$	$V_R=5V$	0	-	3	$\mu A$
Dominant wavelength <sup>b</sup>	$\lambda_D$	$I_f=50mA$	450	-	460	nm
Radiant power <sup>c</sup>	$P_o$	$I_f=50mA$	115	-	150	mW

Note

- All measurements are done with SEOUL VIOSYS' testing equipment.
- ESD protection is strongly recommended when handling chips.
- Reverse voltage is only applied for electrical characteristic measurement, any continuous reverse voltage applied to LED is not recommended and can cause metal migration.

 $I_f$ : Forward Current

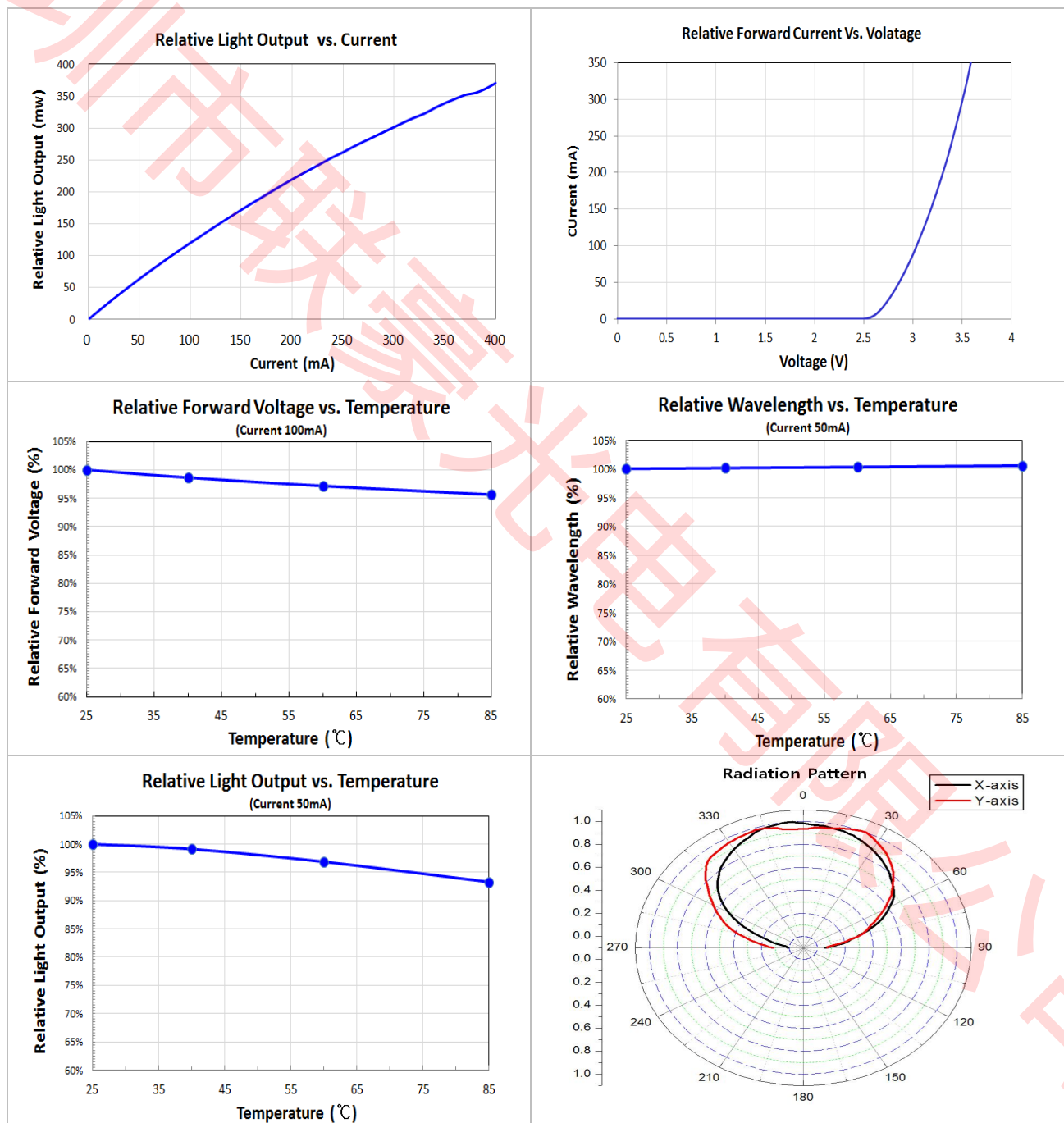
<sup>a</sup> Tolerance of measured Forward Voltage:  $\pm 1\%$ 
<sup>b</sup> Tolerance of measured Dominant Wavelength:  $\pm 1nm$ 
<sup>c</sup> Tolerance of measured Radiant Power:  $\pm 10\%$

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These following curves represent typical performance of the **M0804-GB** chip on Ag STEM, TO-18. Actual performance will vary slightly for different power and dominant wavelength bins.



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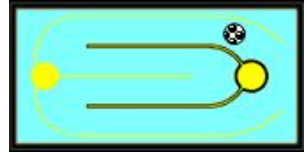

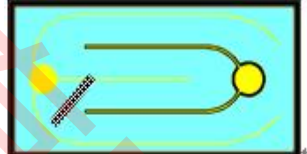

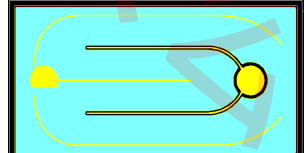
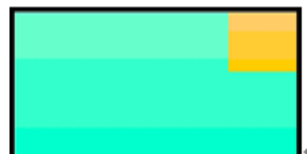
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## 8. Mechanical Specifications

Description	Dimension (um)	Tolerance
Chip size	415 x 845	±10%
Chip thickness	160	±10um
p-pad diameter	80	±10um
n-pad diameter	80	±10um

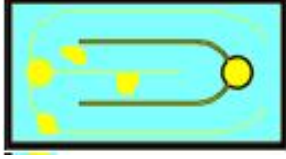
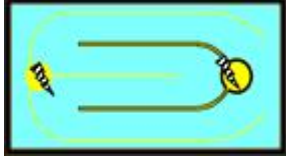

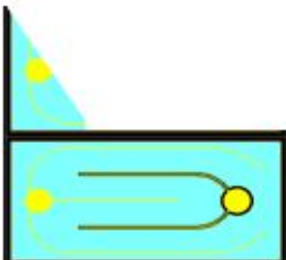
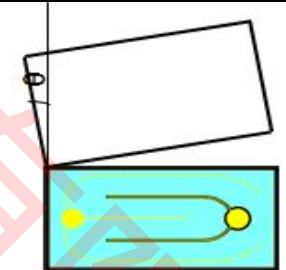
## 9. Visual inspection

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	
Surface scratches	larger than 10% of surface emitting area	
TCL film peeling	larger than 10% of surface emitting area	
Partially missing P/N Pad	larger than 10% of bond pad area larger than 2/3 of finger pad area	
Back metal Peeling	larger than 10% of chip area	

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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	
$\theta$ shift	$\theta > \pm 5^\circ$ (10°)	

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## 10. Sorting Bins and Product Name (Rev6)

$I_R$ ( $\mu A$ )	$V_{F1}$ (V)	$V_{F2}$ (V)	$\lambda_D$ (nm)	Po (mW)
0~3	1.9~2.7	2.80~2.95	450~452.5	115~117
		2.95~3.00	452.5~455	117~120
		3.00~3.15	455~457.5	120~123
			457.5~460	123~126
				126~129
				129~132
				132~150

(2) Product Name : M0804-GB- $*_1*_2*_3*_4$ 

$*_1*_2*_3$	450~ 452.5nm	452.5~ 455nm	455~ 457.5nm	457.5~ 460nm
115~117mW	Y15	Z15	A15	B15
117~120mW	Y17	Z17	A17	B17
120~123mW	Y20	Z20	A20	B20
123~126mW	Y23	Z23	A23	B23
126~129mW	Y26	Z26	A26	B26
129~132mW	Y29	Z29	A29	B29
132~150mW	Y32	Z32	A32	B32

$*_4$	2.80~2.95V	2.95V~3.00V	3.00V~3.15V
Grade	L	M	H

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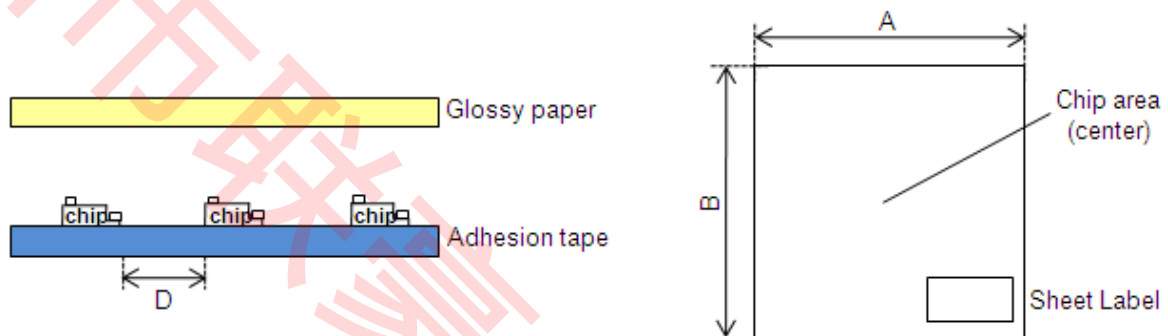
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## 11. Packing

### (1) Chips on tape

- (a) Electro-Optical measurement data should be labeled and tacked on the backside of the glossy paper. Chip area should be placed in the center of adhesion tape, and the wire-bonding pad should face towards the covered glossy paper.



- (b) Chip type, Lot No. and quantity etc. should be labeled and tacked to the corner of the glossy paper.

Item	Instruction
Adhesion tape	Semi- transparent blue
Glossy paper (A×B)	195mm × 208mm
Chip Qty tape	Max. 9000 ea
Chip separation (X,Y)	X : 0.20mm, Y : 0.20mm

### (2) Packing for shipment

- (a) The sheets (adhesion tape + glossy paper) are packed in an anti-static electricity bag. Each anti-static bag can contain up to 20 sheets.
- (b) The anti-static bags are packed in a box. The size of this box is 250mm×65mm×275mm (a × b × c). Each box can contain up to 5 anti-static electricity bags.
- (c) The boxes which contain anti-static electricity bags are packed in the other box. The size of this outer box is 260mm×340mm×290mm (a × b × c). Each outer box can contain up to 6 inner boxes.

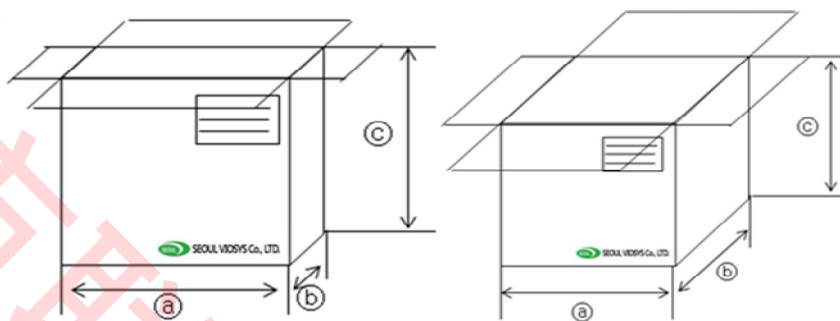


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(d) Each sheet/box is labeled with information describing its content. (Details please refer to section 12)



## 12. Labeling

Sheet	Inner Box	Outer Box
		

- (1) Sheet: The measurement data for each lot are also shown on the backside of the sheet.
- (2) Inner Box: The information about the products is also shown on the inner box.
- (3) Outer Box: The information about the products is also 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 with prior notice.*

Seoul VIOSYS Co., Ltd

SEP 20<sup>th</sup>, 2016