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Specification For Approval	Date: 2016/07/21	Page : 1/14

Customer :

Part Name: Y1550-EB

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16/07/21	16/07/21	16/07/21

1. Features and Application

- High Luminous Intensity, Long Operation Life
- Package-less module

2. Part Name:

- Y1550-EB

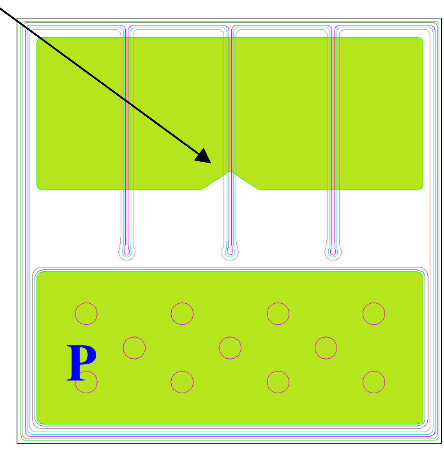
3. Main Material

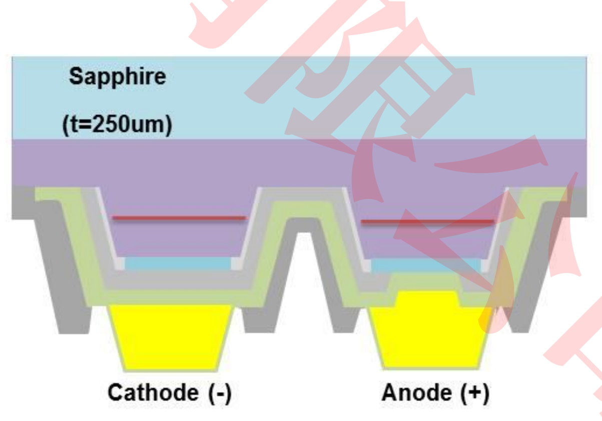
- Substrate: Al_2O_3 (Sapphire)
- Epitaxial Layer: GaN Based LED Structure

4. Electrodes

- P-Electrode: Au alloy
- N-Electrode: Au alloy

5. Chip Diagram





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N

<Fig. 1 >Plane View <Fig. 2> Cross Sectional View

Item	Symbol	Value	Unit
DC forward current (Ta=25℃)	I_f	1200	mA
Pulsed forward current [a] (Ta=25℃)	I_{fp}	1500	mA
Junction temperature [b]	T_j	125	˚C
Operating Temperature Range	T_{op}	-30 to + 85	˚C
Storage Temperature Range	Tst	-40 to +100	˚C

6. Maximum Ratings

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.

[a] 1/10 Duty , f=1kHz

[b] Measurement condition ; Metal Core PCB

7. Typical Electro-Optical Characteristics at Ta=25℃

Item	Symbol	Condition	Characteristics (Ta=25℃)			Unit
			Min	Typ	Max	
Reverse Current	I_R	V_R=-5V	0	-	1.0	uA
Turn-on Voltage	V_{F1}	I_F=1 μA	1.8	-	2.7	V
Forward Voltage	VF	I_F=350mA	2.70	2.90	3.10	V
Dominant Wavelength 1)	λ_d	I_F=350mA	450.0	-	460.0	nm
Full Width Half Maximum	$\Delta\lambda$	I_F=350mA	-	30	-	nm
Radiant Power 2)	Po	I_F=350mA	490	525	570	mW

Note: Radiant and Dominant wavelength are measured by Seoul Viosys' equipment. (*1, *2)

Dominant Wavelength: ±1nm. (*1)

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Radiant Power : ±10%. (*2)

L-I Curve

Normalized Power (0–4) vs. Current(mA) (0, 500, 1000, 1500)

Forward Current vs. Light Output

I-V Curve

Current(mA) (0, 500, 1000, 1500) vs. Voltage(V) (0, 1, 2, 3, 4)

Forward Voltage vs. Forward Current

Current Vs. Wavelength

Wavelength(nm) (450–456) vs. Current(mA) (0, 500, 1000, 1500)

Forward Current vs. Wavelength

Temp. VS. Voltage

Voltage[%] (0–120) vs. Temp.[℃] (25, 40, 55, 70, 85, 100, 115)

Temperature vs. Relative Forward Voltage

Temp. VS. Power

Power[%] (0–120) vs. Temp.[℃] (25, 40, 55, 70, 85, 100, 115)

Temperature vs. Relative Light Output

Temp. VS. Wavelength

Wavelength[%] (0–120) vs. Temp.[℃] (25, 40, 55, 70, 85, 100, 115)

Temperature vs. Relative Wavelength

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8. Mechanical Specifications

(Unit: μm)

Description	Dimension	Tolerance
Top emitting area	1550um x 1550um	±50
Bottom substrate	1550um x 1550um	±50
Chip Thickness	250um	±15
P-Pad Diameter	1410um x 555um	±50
N-Pad Diameter	1410um x 555um	±50

9. Visual inspection

Done by microscope

Item	Accepted (OK)/defective (N.G.)	Example
Surface dirt	accepted : if surface dirt(metal) less than 20% of chip	
Passivation film peeling	accepted : if Passivation film peeling less than 30% of chip.	

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Partially missing pad	accepted : a < b/5 a: missing bond pad b: normal bond pad	
Metal peeling	rejected : if Metal peeling more than 20% of chip area.	
Bond pad scratch	accepted : if bond pad scratch (including probe mark) less than 20 % of chip area.	
θ shift	accepted : θ < ±5°	

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Twins or triples	Inseparable chips are rejected If extra-size is less than 10%, OK.	
Chipping	Pad electrode not chipped off	

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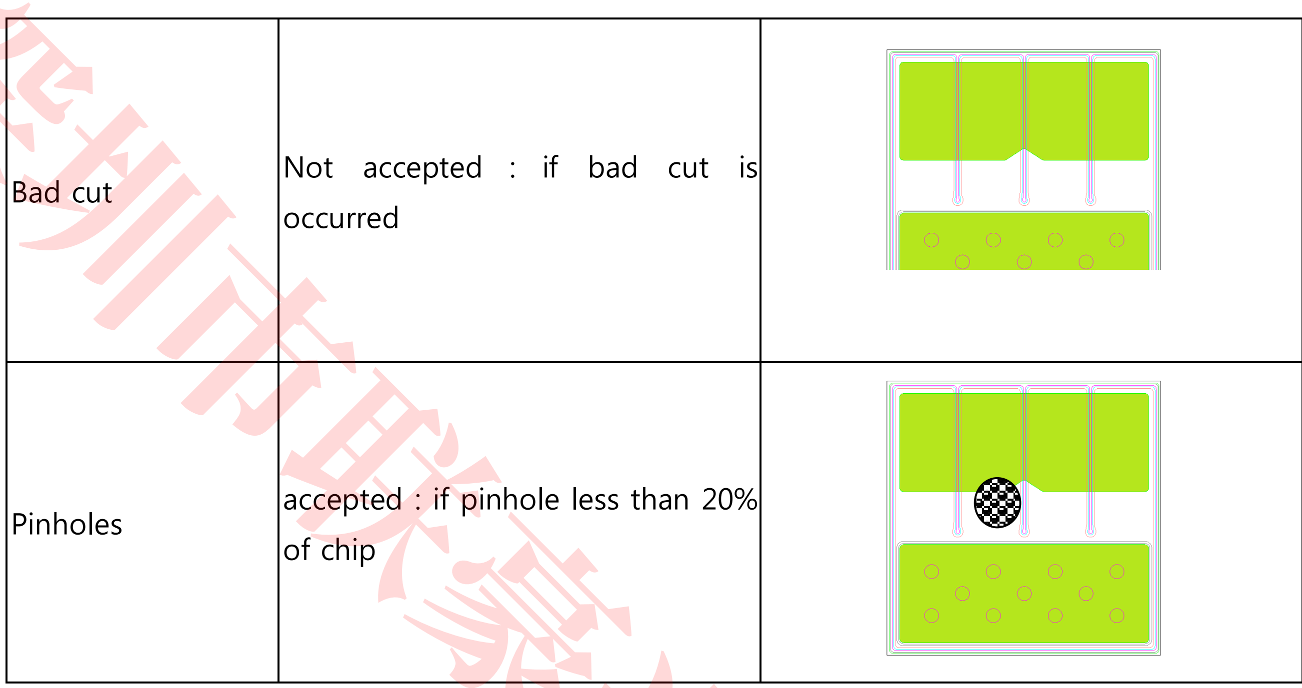

Bad cut	Not accepted : if bad cut is occurred	
Pinholes	accepted : if pinhole less than 20% of chip	

10. Sorting Bins and Product name

제품명	BIN	Reverse Leakage @-5V	Forward Voltage(V) @1uA	Forward Voltage(V) @ 350mA	Power(mW) @ 350mA	Wave Length(nm) @ 350mA
Y1550-EB-Y01	1	0~1	1.8~2.7	2.7~2.98	490~495	450~452.5
Y1550-EB-Y02	2	0~1	1.8~2.7	2.7~2.98	495~505	450~452.5
Y1550-EB-Y03	3	0~1	1.8~2.7	2.7~2.98	505~520	450~452.5
Y1550-EB-Y04	4	0~1	1.8~2.7	2.7~2.98	520~535	450~452.5
Y1550-EB-Y05	5	0~1	1.8~2.7	2.7~2.98	535~550	450~452.5
Y1550-EB-Y06	6	0~1	1.8~2.7	2.7~2.98	550~570	450~452.5
Y1550-EB-Y07	7	0~1	1.8~2.7	2.98~3.1	490~495	450~452.5
Y1550-EB-Y08	8	0~1	1.8~2.7	2.98~3.1	495~505	450~452.5
Y1550-EB-Y09	9	0~1	1.8~2.7	2.98~3.1	505~520	450~452.5
Y1550-EB-Y10	10	0~1	1.8~2.7	2.98~3.1	520~535	450~452.5
Y1550-EB-Y11	11	0~1	1.8~2.7	2.98~3.1	535~550	450~452.5

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Y1550-EB-Y12	12	0~1	1.8~2.7	2.98~3.1	550~570	450~452.5
Y1550-EB-Z01	13	0~1	1.8~2.7	2.7~2.98	490~495	452.5~455
Y1550-EB-Z02	14	0~1	1.8~2.7	2.7~2.98	495~505	452.5~455
Y1550-EB-Z03	15	0~1	1.8~2.7	2.7~2.98	505~520	452.5~455
Y1550-EB-Z04	16	0~1	1.8~2.7	2.7~2.98	520~535	452.5~455
Y1550-EB-Z05	17	0~1	1.8~2.7	2.7~2.98	535~550	452.5~455
Y1550-EB-Z06	18	0~1	1.8~2.7	2.7~2.98	550~570	452.5~455
Y1550-EB-Z07	19	0~1	1.8~2.7	2.98~3.1	490~495	452.5~455
Y1550-EB-Z08	20	0~1	1.8~2.7	2.98~3.1	495~505	452.5~455
Y1550-EB-Z09	21	0~1	1.8~2.7	2.98~3.1	505~520	452.5~455
Y1550-EB-Z10	22	0~1	1.8~2.7	2.98~3.1	520~535	452.5~455
Y1550-EB-Z11	23	0~1	1.8~2.7	2.98~3.1	535~550	452.5~455
Y1550-EB-Z12	24	0~1	1.8~2.7	2.98~3.1	550~570	452.5~455
Y1550-EB-A01	25	0~1	1.8~2.7	2.7~2.98	490~495	455~457.5
Y1550-EB-A02	26	0~1	1.8~2.7	2.7~2.98	495~505	455~457.5
Y1550-EB-A03	27	0~1	1.8~2.7	2.7~2.98	505~520	455~457.5
Y1550-EB-A04	28	0~1	1.8~2.7	2.7~2.98	520~535	455~457.5
Y1550-EB-A05	29	0~1	1.8~2.7	2.7~2.98	535~550	455~457.5
Y1550-EB-A06	30	0~1	1.8~2.7	2.7~2.98	550~570	455~457.5
Y1550-EB-A07	31	0~1	1.8~2.7	2.98~3.1	490~495	455~457.5
Y1550-EB-A08	32	0~1	1.8~2.7	2.98~3.1	495~505	455~457.5
Y1550-EB-A09	33	0~1	1.8~2.7	2.98~3.1	505~520	455~457.5
Y1550-EB-A10	34	0~1	1.8~2.7	2.98~3.1	520~535	455~457.5
Y1550-EB-A11	35	0~1	1.8~2.7	2.98~3.1	535~550	455~457.5
Y1550-EB-A12	36	0~1	1.8~2.7	2.98~3.1	550~570	455~457.5
Y1550-EB-B01	37	0~1	1.8~2.7	2.7~2.98	490~495	457.5~460
Y1550-EB-B02	38	0~1	1.8~2.7	2.7~2.98	495~505	457.5~460
Y1550-EB-B03	39	0~1	1.8~2.7	2.7~2.98	505~520	457.5~460
Y1550-EB-B04	40	0~1	1.8~2.7	2.7~2.98	520~535	457.5~460
Y1550-EB-B05	41	0~1	1.8~2.7	2.7~2.98	535~550	457.5~460
Y1550-EB-B06	42	0~1	1.8~2.7	2.7~2.98	550~570	457.5~460
Y1550-EB-B07	43	0~1	1.8~2.7	2.98~3.1	490~495	457.5~460

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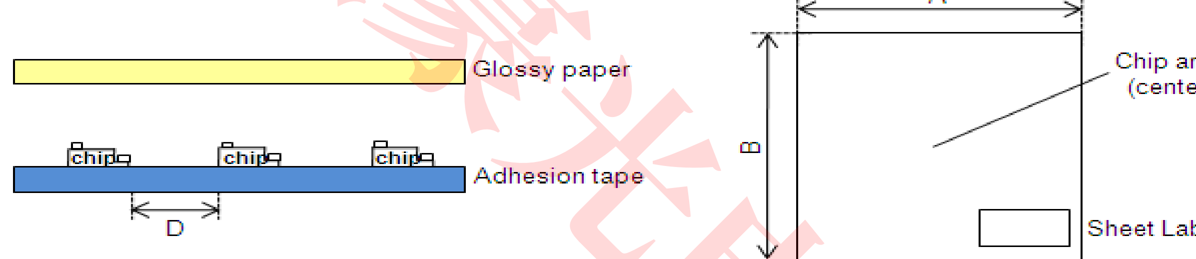
Y1550-EB-B08	44	0~1	1.8~2.7	2.98~3.1	495~505	457.5~460
Y1550-EB-B09	45	0~1	1.8~2.7	2.98~3.1	505~520	457.5~460
Y1550-EB-B10	46	0~1	1.8~2.7	2.98~3.1	520~535	457.5~460
Y1550-EB-B11	47	0~1	1.8~2.7	2.98~3.1	535~550	457.5~460
Y1550-EB-B12	48	0~1	1.8~2.7	2.98~3.1	550~570	457.5~460

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)	197mm × 220mm
Chip Qty tape	Typ. 1,190ea
Chip separation (D)	D : 0.40mm

(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 (ⓐ × ⓑ × ⓒ). 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 (ⓐ × ⓑ × ⓒ). Each outer box can

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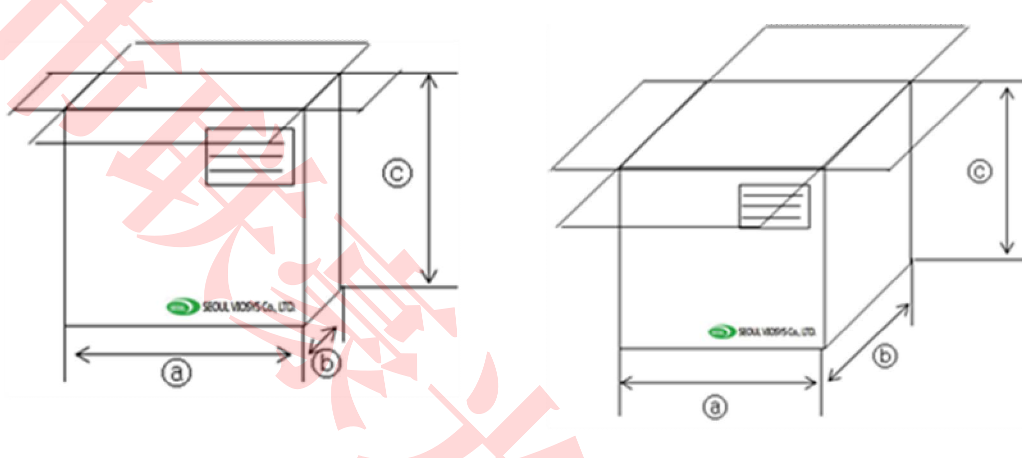
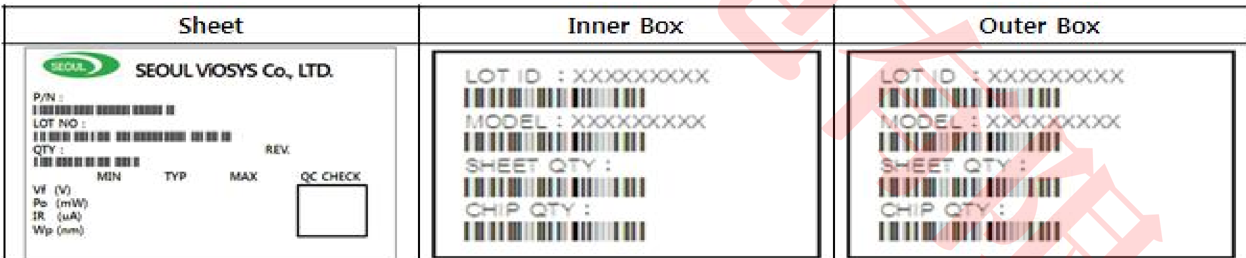
contain up to 5 inner boxes.

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



12. Labeling



(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.

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

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that to Seoul Viosys Co., Ltd. Preservation conditions (when the shipping package is unopened.)

· Temperature: 0 ~ 60 ˚C

· Atmosphere: Keep the chips in a desiccator with silica gel or with nitrogen substitution.

(2) General precautions 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.

(3) Precautions for Die Attach (Pick and Place)

· Unlike the top of chip, the bottom (The opposite side of sapphire substrate) is the

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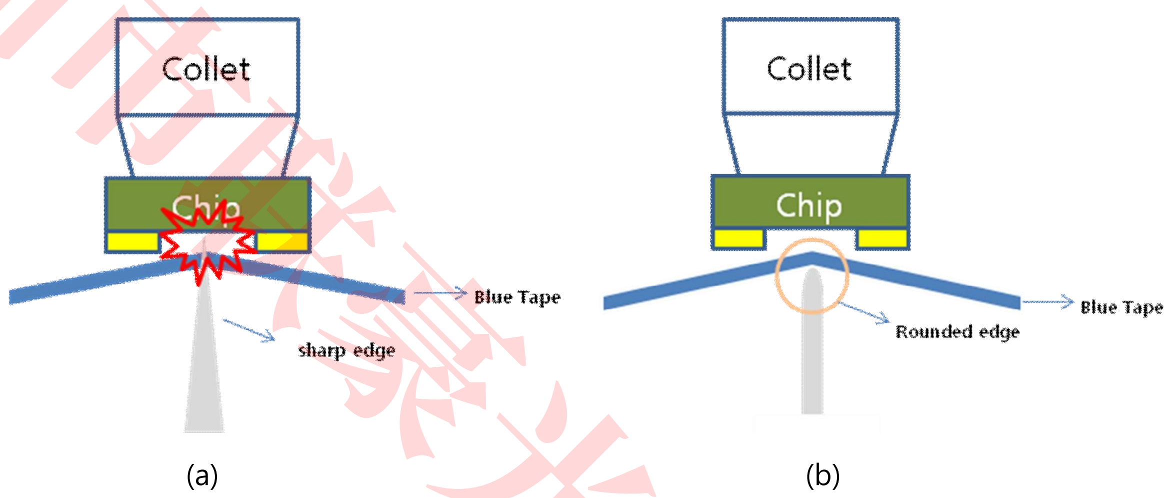
epitaxial Layer where the p-n junction is located. It is not mechanically protected and can be damaged if a sharp and hard ejector pin material is used.

- Seoul Viosys recommends an ejector pin with rounded edge to minimize the risk of mechanical damage.



(a) Sharp ejector pin tip may damage the Flip Chip (left). (b) A rounded tip minimizes the risk of damage caused by ejector pin (right).

The above specifications are subject to change with prior notice.

Seoul Viosys Co., Ltd

JUL 21th, 2016

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