Technical Data Sheet

SEOUL OPTODEVICE

Preliminary specification

RoHS

Specification

CUN

SOC		Customer
Drawn	Approval	Approval

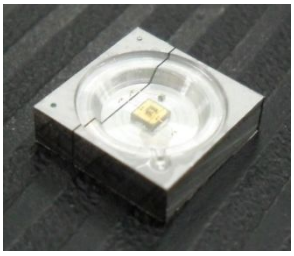
[Contents]

SEOUL OPTODEVICE

CUN

Description

High power UV LED series are designed for high current operation and high power output applications.
It incorporates state of the art SMD design and low thermal resistant material.
Z5 NUV LED is ideal UV light source for curing, printing, and detecting applications.



CUN

Features

- Super high power output
- Designed for high current operation
- Low thermal resistance
- SMT solderable
- Lead Free product
- RoHS compliant

Applications

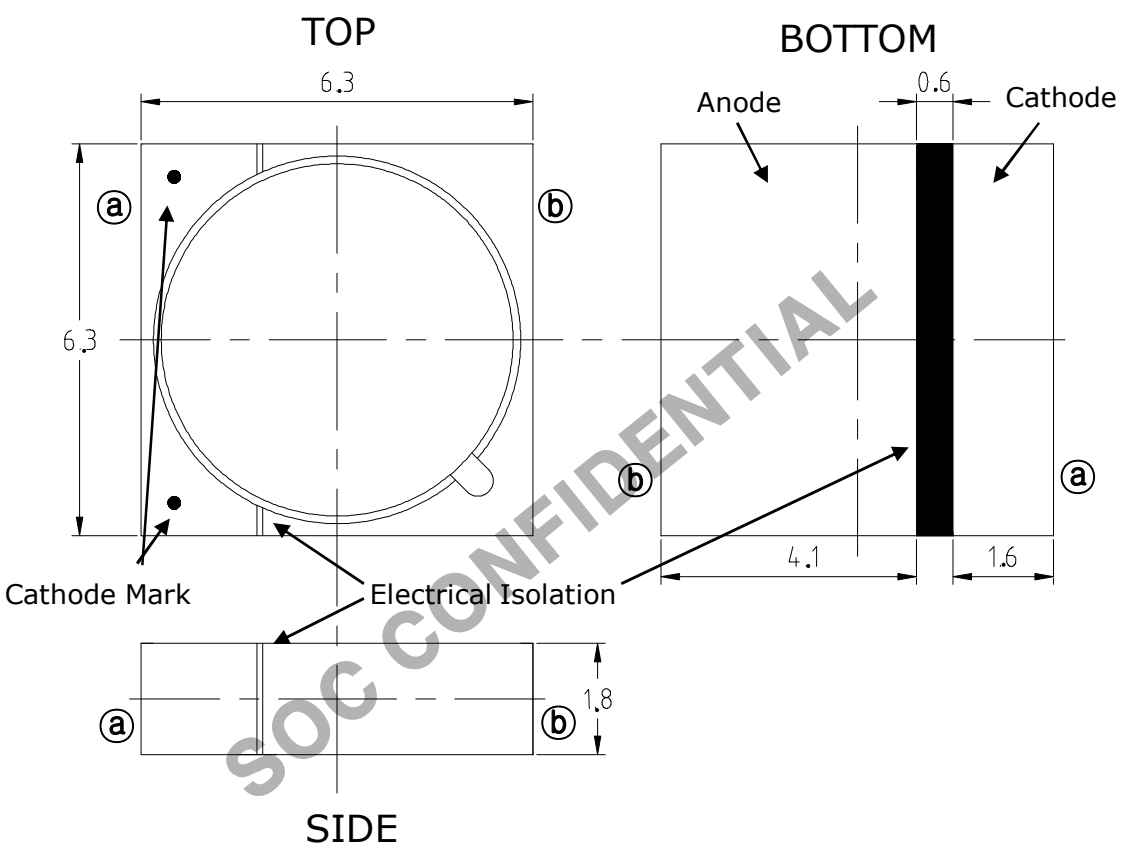
- UV Curing
- Printing
- Coating
- Adhesive
- Counterfeit Detection/ Security
- UV Torch
- Fluorescence Photography
- Dental Curing
- Crime Inspection
- Oil leak Detection

SEOUL OPTODEVICE

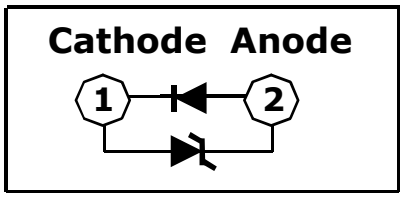
Outline dimensions

< Package Outline>

(Tolerance : ±0.2, Unit : mm)



< Circuit Diagram>



Notes :

[1] All dimensions are in millimeters.
[2] Scale : none
[3] Undefined tolerance is ±0.2mm

Characteristics of CUN

1. CUN

1-1 Electro-Optical characteristics at 500mA

(T_a=25℃, RH=30%)

Parameter	Symbol	Value	Unit
Peak wavelength [1]	λ_p	365	nm
Radiant Flux @ 500mA[2]	Φ_e[3]	300	mW
Forward Voltage [4]	V_F	4.2	V
Spectrum Half Width	$\Delta\lambda$	12	nm
View Angle	$2\Theta_{1/2}$	105	deg.
Thermal resistance	$R\theta_{J-s}$[5]	8.5	ºC /W

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	700	mA
Power Dissipation	P_D	3.5	W
Junction Temperature	T_j	125	ºC
Operating Temperature	T_{opr}	-10 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC

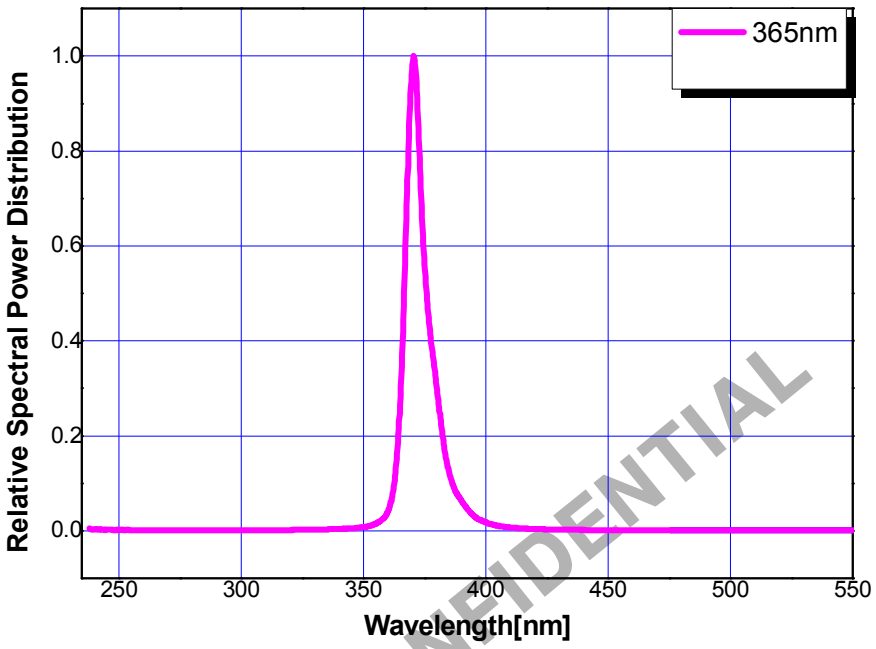
Notes :

1. Peak Wavelength Measurement tolerance : ±3nm
2. Radiant Flux Measurement tolerance : ± 10%
3. Φ_e is the Total Radiant Flux as measured with an integrated sphere.
4. Forward Voltage Measurement tolerance : ±3%
5. $R\theta_{J-s}$ is the thermal resistance between chip junction to package bottom.

Characteristic Diagrams

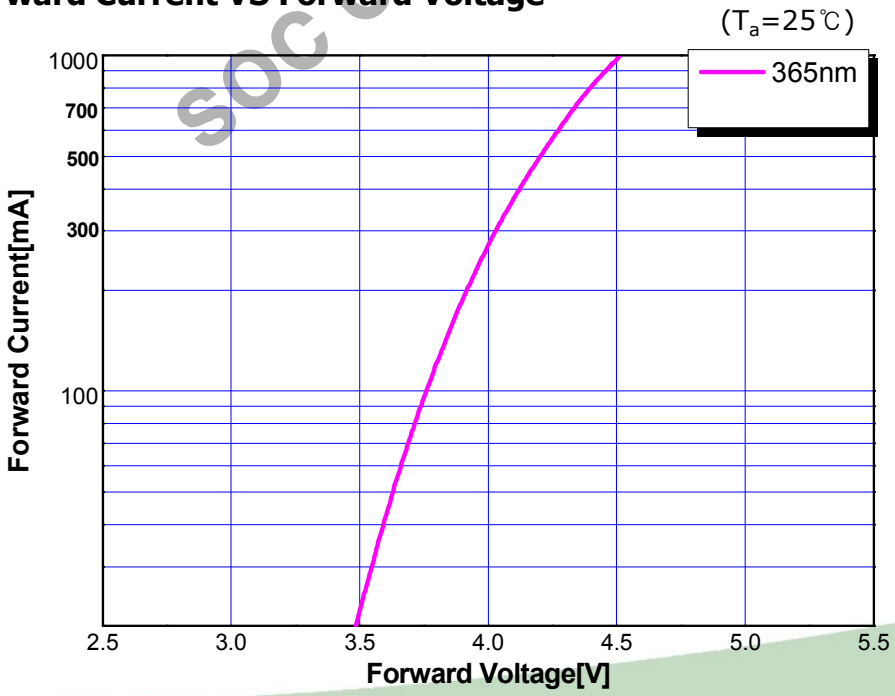
1. Relative Spectral Power Distribution

(I_F=500mA, T_a=25℃, RH=30%)



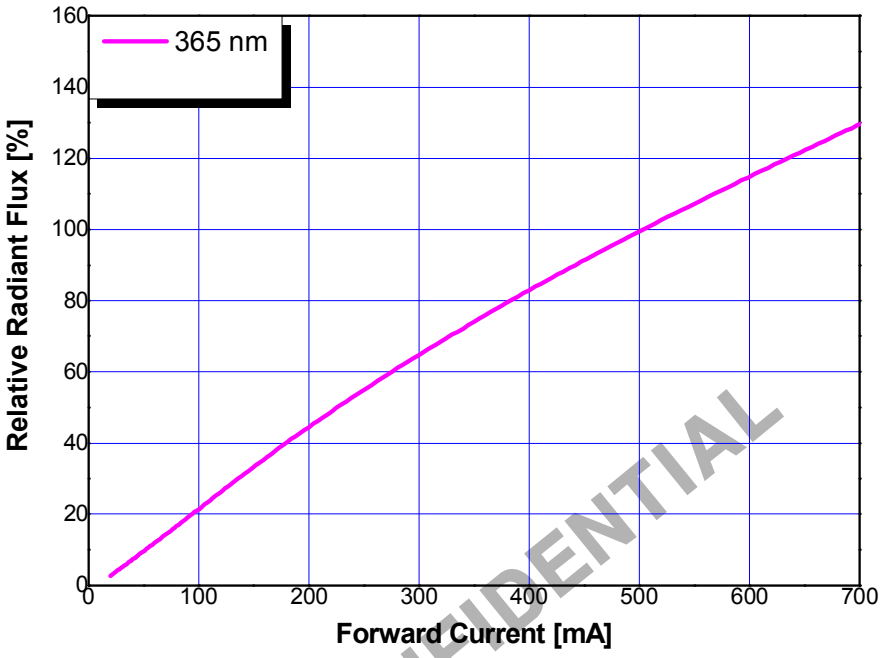
2. Forward Current VS Forward Voltage

(T_a=25℃)



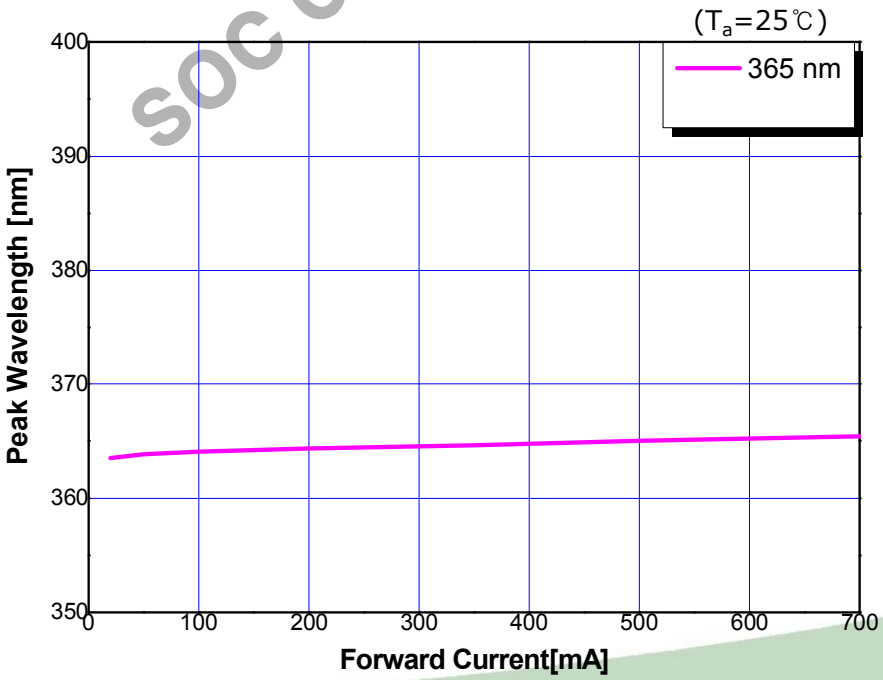
3. Relative Radiant Flux VS Forward Current

(T_a=25℃)

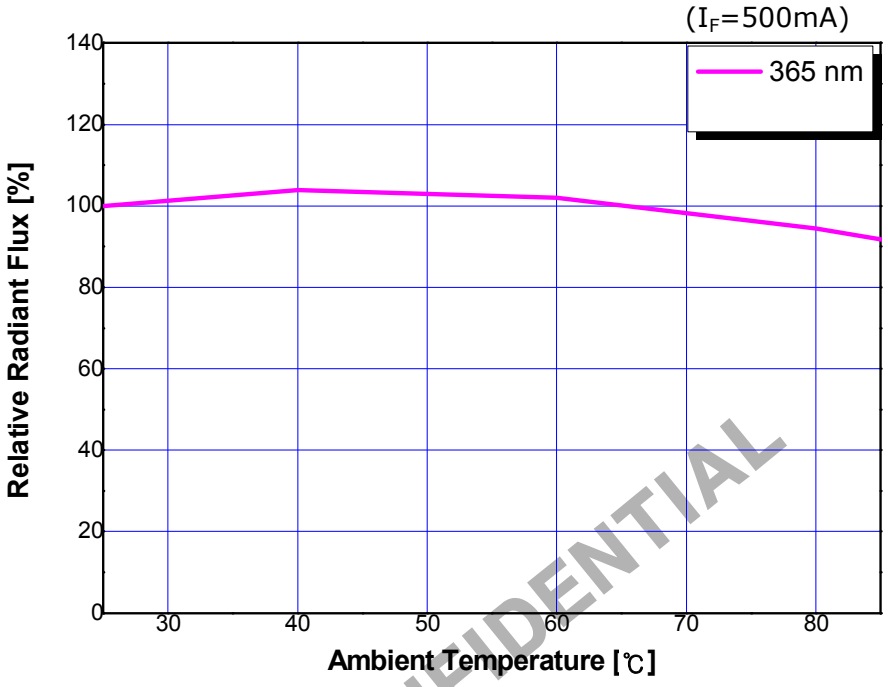


4. Peak Wavelength VS Forward Current

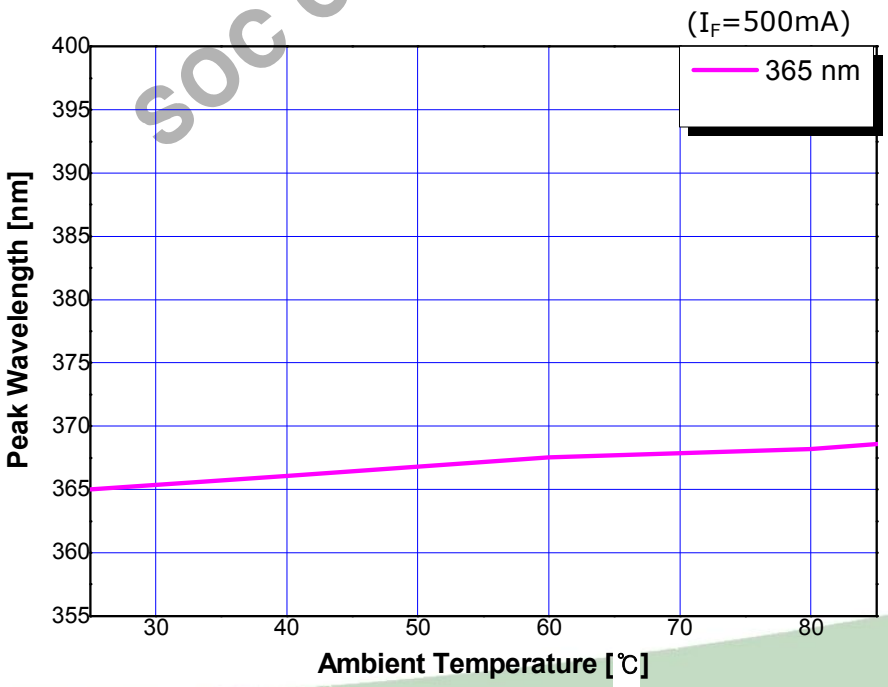
(T_a=25℃)



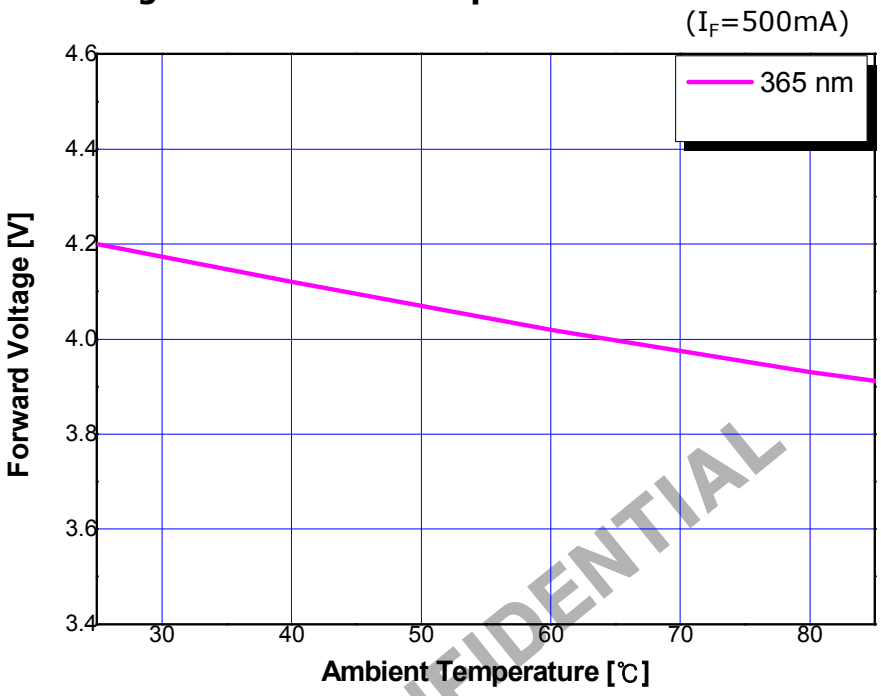
5. Relative Radiant Flux VS Ambient Temperature



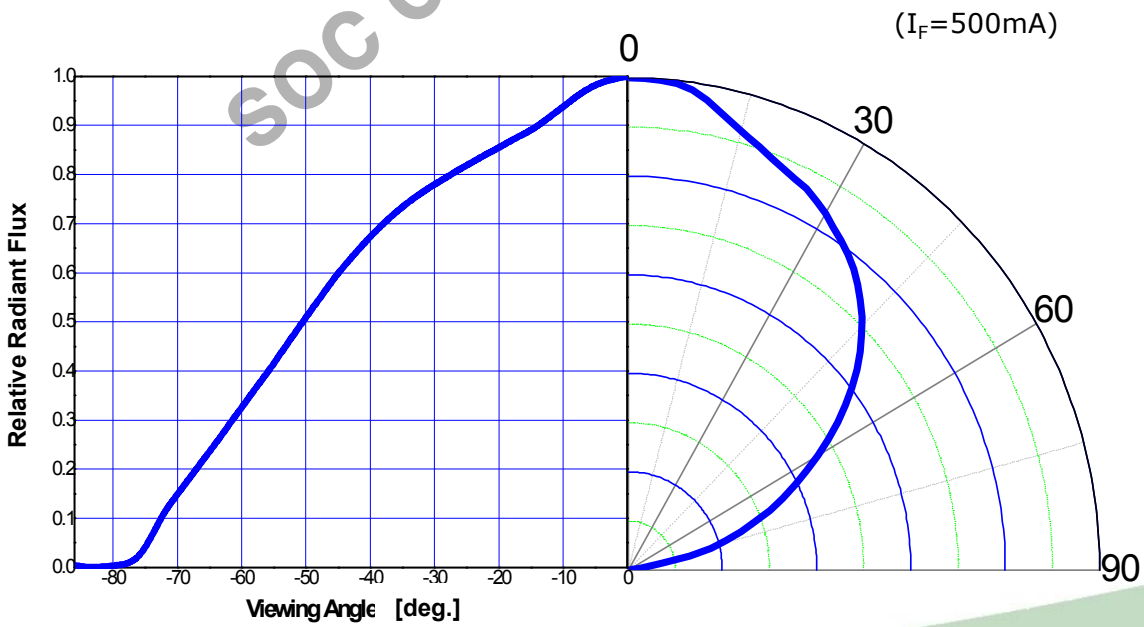
6. Peak Wavelength VS Ambient Temperature



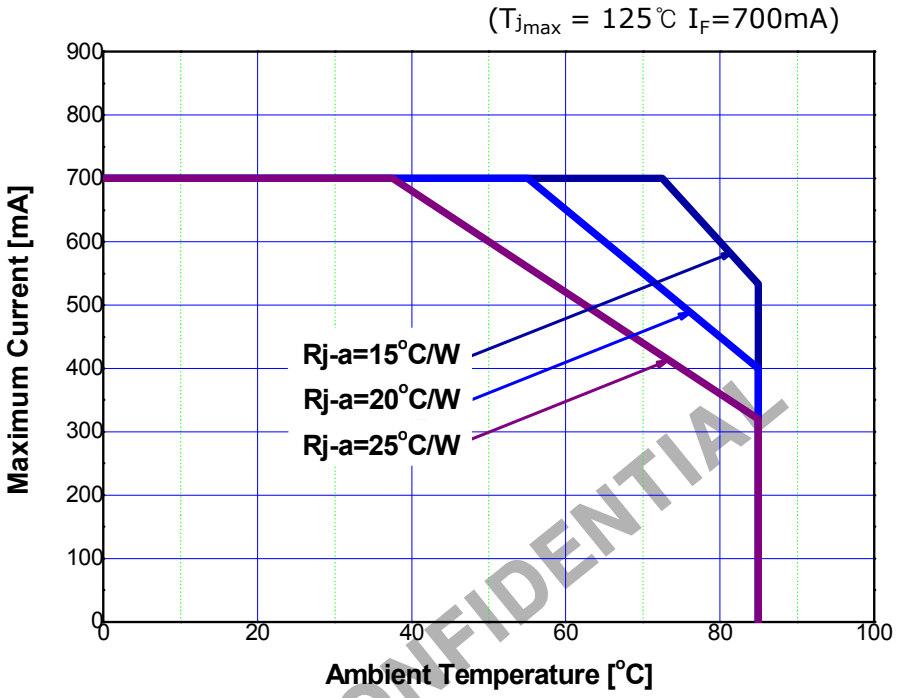
7. Forward Voltage VS Ambient Temperature

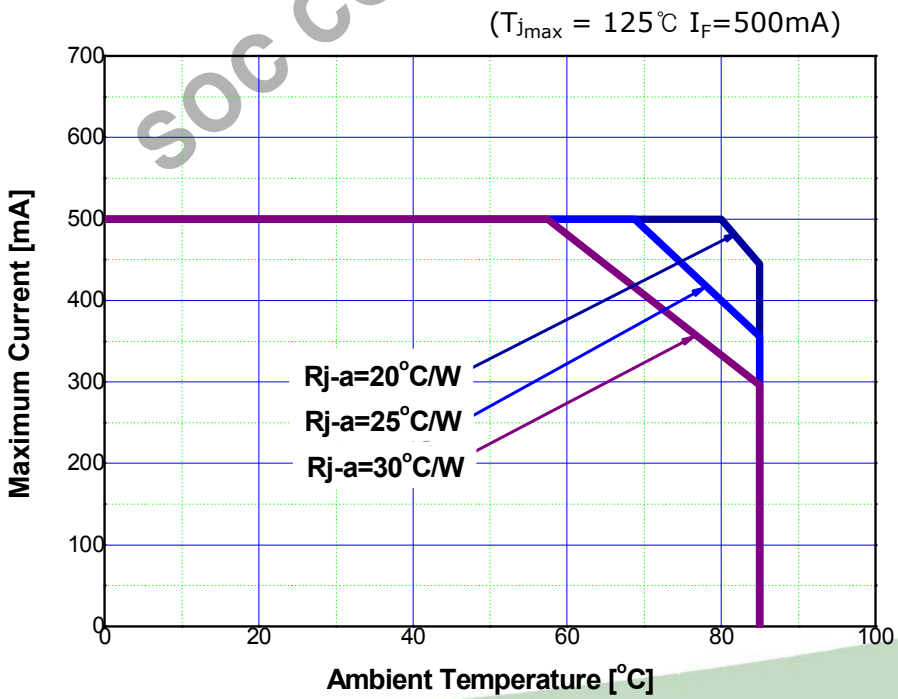


8. Radiation pattern



9. Allowable Forward Current VS Ambient Temperature





Binning & Labeling

1. Binning Structure

$$\underline{Y_1Y_2Y_3Y_4}$$

1-1. CUN6AF1A, T_a=25℃, I_F=500mA

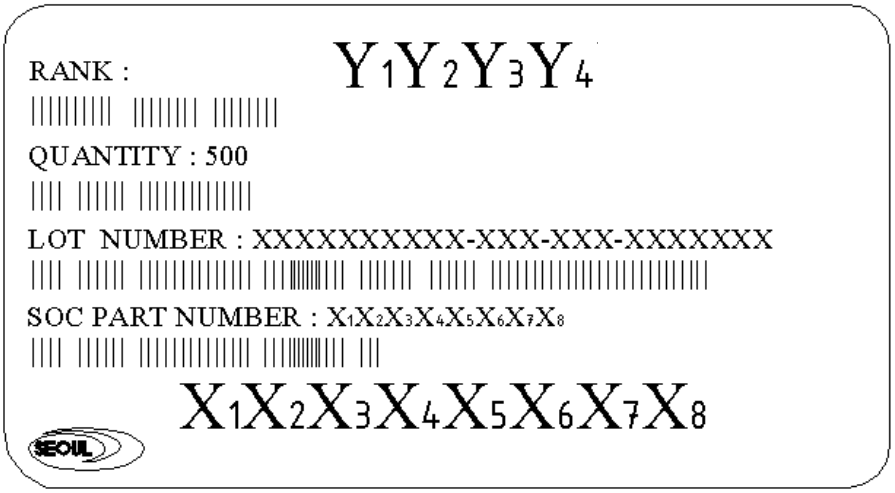
Y_1			Y_2Y_3			Y_4		
Peak Wavelength [nm]			Radiant Flux [mW]			Forward Voltage [V]		
	MIN	MAX		MIN	MAX		MIN	MAX
j	360	370	H2	230	260	a	3.0	3.4
			H3	260	290	b	3.4	3.8
			H4	290	320	c	3.8	4.2
			H5	320	350	d	4.2	4.6
			I1	350	390	e	4.6	5.0

1-2. CUN8AF1A, T_a=25℃, I_F=500mA

Y_1			Y_2Y_3			Y_4		
Peak Wavelength [nm]			Radiant Flux [mW]			Forward Voltage [V]		
	MIN	MAX		MIN	MAX		MIN	MAX
m	380	390	J1	570	630	a	3.0	3.4
			J2	630	690	b	3.4	3.8
			J3	690	760	c	3.8	4.2
			J4	760	840	d	4.2	4.6

Notes :
1. Peak Wavelength Measurement tolerance : ±3nm
2. Radiant Flux Measurement tolerance : ± 10%
3. Forward Voltage Measurement tolerance : ±3%

2. Label



3. SOC PART NUMBER : X1X2X3X4X5X6X7X8

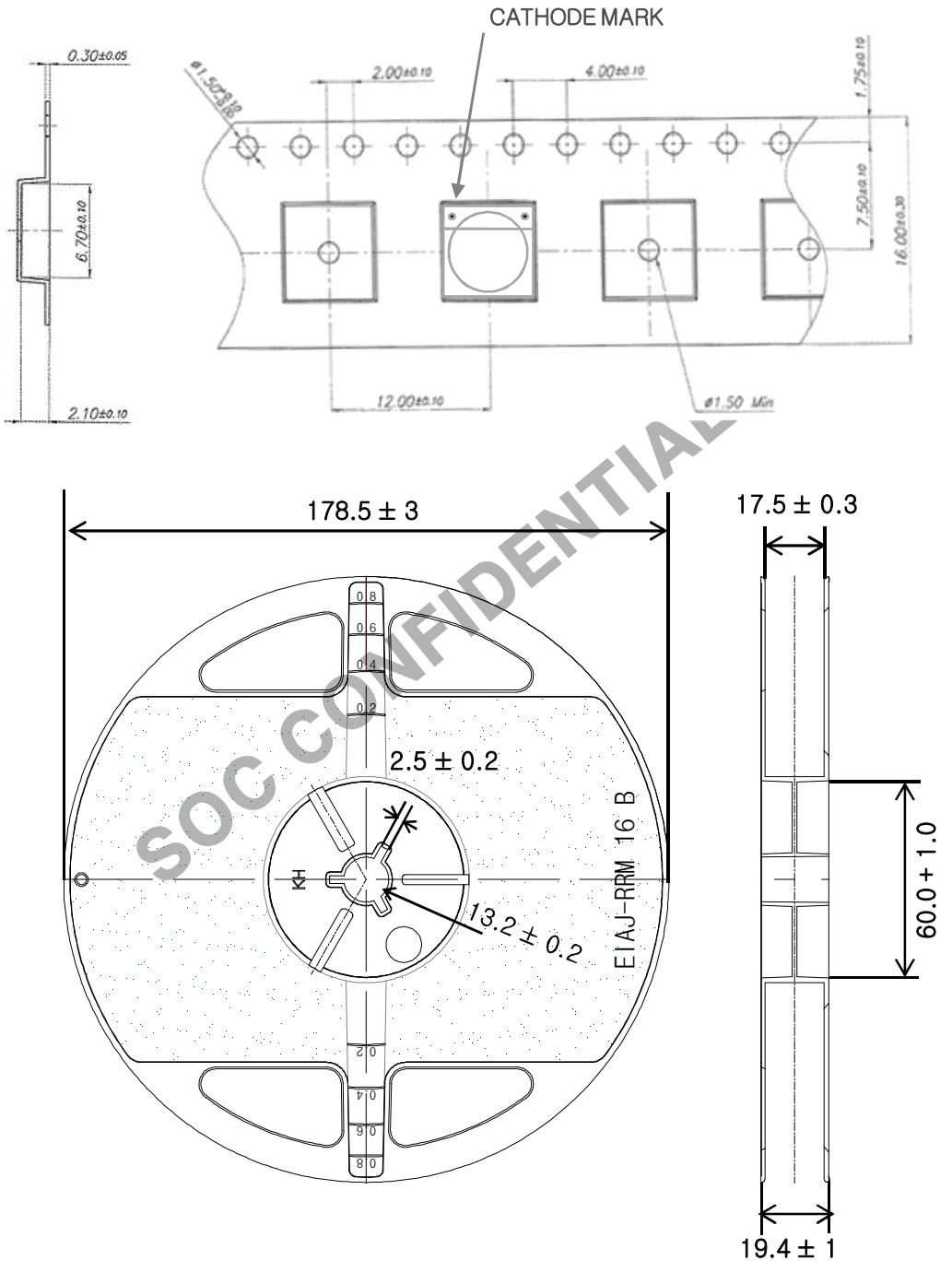
X_1		X_2		X_3X_4		X_5		X_6		X_7		X_8	
Company		Product Line		Wavelength		PKG Series		Lens Type		Chip 수		Ver	
SOC	**C**	UV	**U**	Near 365	**N6**	AAP63	**A**	Flat	**F**	1	**1**	ver0	**A**
				Near 385	**N8**								

4. Rank

$Y_1Y_2Y_3Y_4$

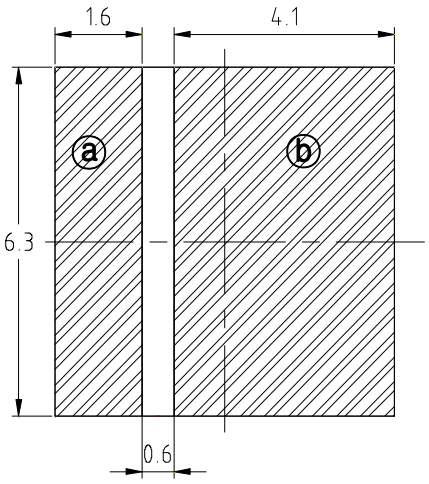
- **Y_1 : Peak Wavelength [nm]**
- **Y_2Y_3 : Radiant Flux [mW]**
- **Y_4 : Forward Voltage [V]**

Reel Packaging

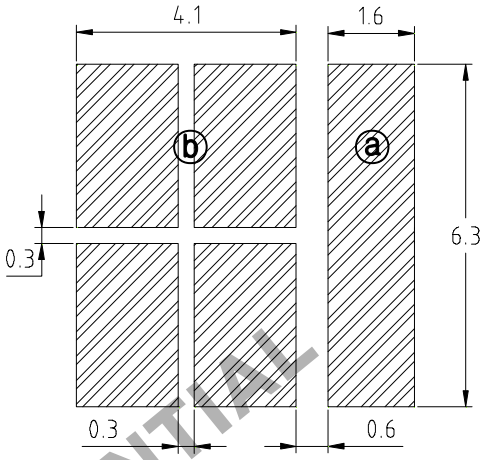


Recommended solder pad

(Unit : mm)



Recommended PCB solder pad



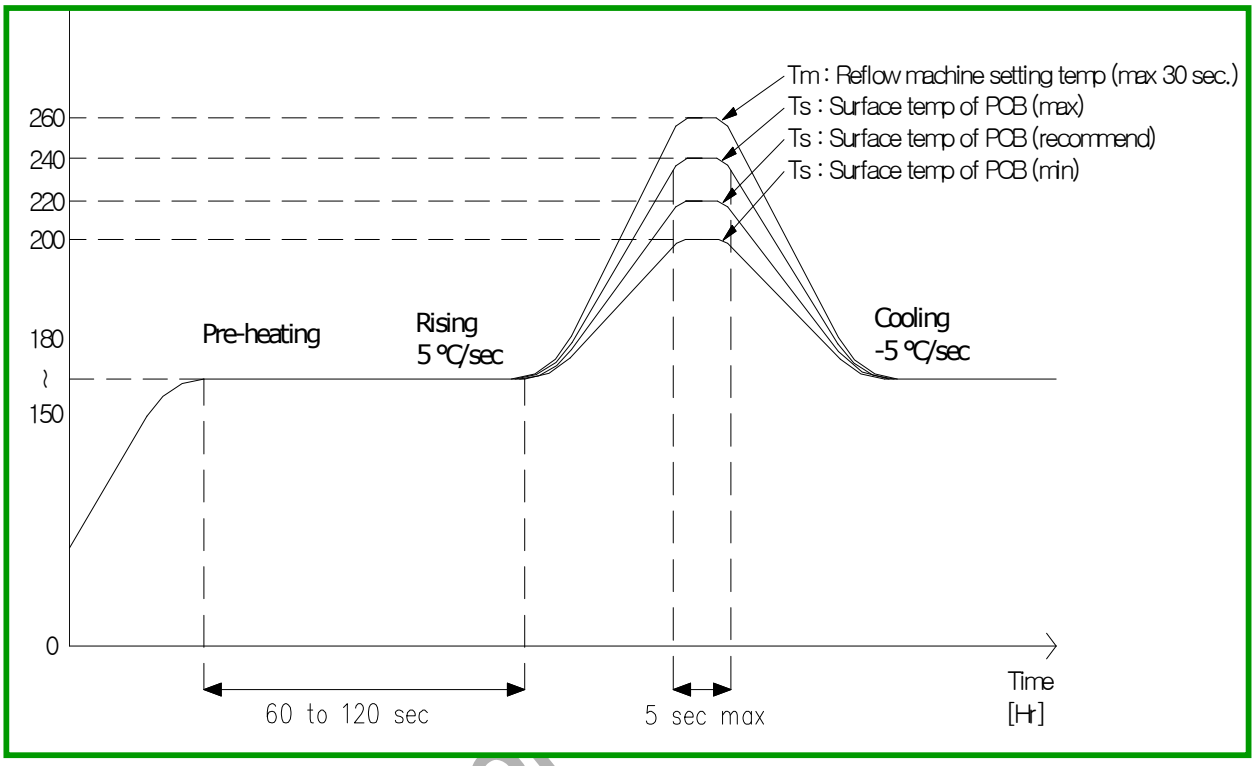
Recommended Stencil Pattern

Notes :

[1] Scale : none

[2] This drawing without tolerances are for reference only

Reflow Soldering Profile



*** Caution**

1. **Reflow soldering should not be done more than one time.**
2. **Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.**
3. **Die slug is to be soldered.**
4. **When soldering, do not put stress on the LEDs during heating.**
5. **After soldering, do not warp the circuit board.**
6. **Recommend to use a convection type reflow machine with 7 ~ 8 zones.**

Reliability

1. Relative Spectral Power Distribution

Test Item	Test Condition	Note	# Failed /Tested
High Temp. Operational Life	Ta=85℃, IF=500mA	1000hrs	TBD
Low Temp. Operational Life	Ta=-40℃, IF=500mA	1000hrs	TBD
Room Temp. Operational Life	Ta=25℃, IF=500mA	1000hrs	TBD
High Temp. Storage	Ta = 100℃	1000hrs	TBD
Thermal shock	Ta max=120℃, Ta min=-40℃ 30min dwell/transfer time : 10sec, 1 cycle=1hr	200 cycles	TBD
Resistance to Soldering	Temp=260±5℃, Time : 10±1 sec	1 time	0/10
Solderability	Temp=260±5℃, 95% Coverage	1 time	0/10
Vibration Variable Frequency	100~1000~100Hz, 20G, Sweep 4 min, 3 directions, 4 cycles	48min.	TBD
ESD	R=1.5kΩ, C=100pF Voltage level=2kV	3 times Negative /positive	TBD

2. Failure Criteria

Parameter	Symbol	Test Conditions	Max. or Min. allowable shift value
Forward Voltage	V_F	IF=350mA	Max. Initial measurement x 1.2
Radiant Flux	Φ_e	IF=350mA	Min. Initial measurement x 0.7

Notes :

1. The value is measured after the test sample is cooled down to the room temperature.

Precaution for use

• Storage

To avoid moisture penetration, we recommend storing UV LEDs in a dry box with a desiccant.

The recommended storage temperature range is 5℃ to 30℃ and a maximum humidity of 50%.

• Use Precaution after opening the Packaging

Use proper SMD techniques when the LED is to be soldered dipped as separation of the lens may affect the light output efficiency.

Pay attention to the following:

a. Soldering should be done as soon as possible after opening the package.

b. Required conditions after opening the package

- Sealing
- Temperature : 5 ~ 30℃ Humidity : less than 30%

c. Please replace the remained LEDs into the moisture proof bag and reseal the bag after work to avoid those LEDs being exposed to moisture. Prolonged exposure to moisture can adversely affect the proper functioning of the LEDs.

• Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering.

• Do not rapidly cool device after soldering.

• Components should not be mounted on warped (non coplanar) portion of PCB.

• Radioactive exposure is not considered for the products listed here in.

• This device should not be used in any type of fluid such as water, oil, organic solvent and etc.

When washing is required, IPA (Isopropyl Alcohol) should be used.

• When the LEDs are in operation the maximum current should be decided after measuring the package temperature.

• LEDs must be stored properly to maintain the device. If the LEDs are stored for 3 months or more after being shipped from SSC, a sealed container with a nitrogen atmosphere should be used for storage.

• The appearance and specifications of the product may be modified for improvement without notice.

• The slug is isolated from anode electrically.

Therefore, we recommend that you don't isolate the heat sink.

• Attaching LEDs, do not use adhesives that outgas organic vapor.

• Handling of Silicone resin LEDs

The UV LED is encapsulated with a silicone resin for the highest flux efficiency.

Notes for handling:

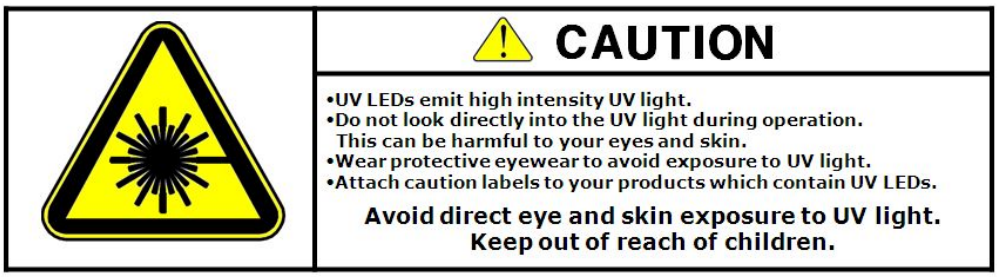
a. Avoid touching silicone resin parts especially with sharp tools such as Pincettes (Tweezers)

b. Avoid leaving fingerprints on silicone resin parts.

c. Silicone resin will attract dust so use covered containers for storage.

d. When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that excessive mechanical pressure on the surface of the resin must be prevented.

e. It is not recommend to cover the silicone resin of the LEDs with other resin (epoxy, urethane, etc)



Revision history

REV	Change Date	Brief summary of change
00	December 12, 2012	Preliminary specification