

# SPECIFICATION FOR APPROVAL

## (PRELIMINARY)

**Customer Name :**

**Customer Item :**

**Part No. :** PU-S355BSZ-MA100AC-IP

**Product Description :**

**Draw Date :**

1. Accessory:  Samples  Samples Data  
 2. Customer's Proposal :  Agree  Disagree  
 Reason :



Rev.	Draw by :	Checked by :	Approved by :
1.2.1	Steven Chen	Gray Huang	Caren
Customer Approve			

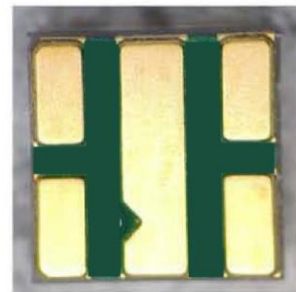
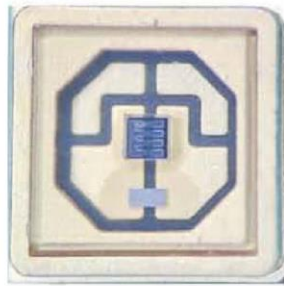
## 1 Product Features

**Product Features:** Deep UV, large light angle, high reliability, long life, environmental protection and energy saving.

**Applications:** sterilization, medical phototherapy, optical sensors, biological analysis/detection.

## 2 Device Structure

### 2.1 Product Photos

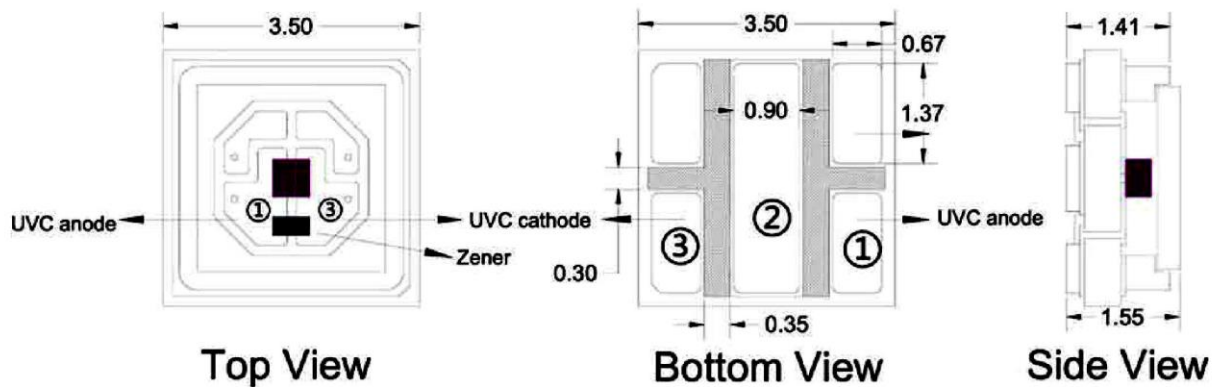


### 2.2 Limit Condition (Ta=25°C, RH=30%)

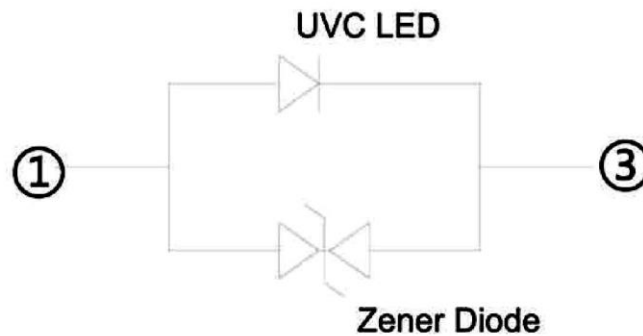
Parameters	Symbol	Value			Unit
		Min	Typ	Max	
Work Temperature	Topr	-30		60	°C
Storage Temperature	Tstg	-40		100	°C
Thermal Resistance	Rjs		15	/	K/W

Part No.	Emitted color	Dice	Lens color
PU-S355BSZ-MA100AC-IP	UVC/UVA	GaN	Water transparent

### 2.3 Device Size



### Circuit Connection



#### Note:

[1] A single device contains two different kinds of chips- UVC/Zener diode; Among them, Zener diode plays an ESD protection role on UVC LED.

[2] Outline Dimensions: 3.5×3.5×1.55 (L×W×H) [Unit: mm]. All dimensions are in millimeters.

[3] As shown in the figure above, ① is Anode; ③ is Cathode; ② is Die Heat Sink.

[4] Different lots of lead-frame might have slight different appearances, but they are compatible each other for use.

[5] Tolerances unless otherwise mentioned are ±0.20 mm.

### 3 Photoelectric Characteristic Parameters

#### 3.1 UVC Photoelectric Parameters & Specification Range @100mA (Ta=25°C, RH=30%)

Parameters	Symbol	Min	Max	Grade	Unit
UVC Peak Wavelength	$\lambda_p$	260	280	10	nm
UVC Radiant Flux	$P_0$	5	20	/	mW
UVC Forward Voltage	$V_f$	5	7	0.1	V

UVC Peak Wavelength Range:

Bin Code	W01	W02
Range (nm)	260~270	270~280

UVC Radiant Flux Range:

Bin Code	OP5	PP10	PP15
Range (mW)	5~10	10~15	15~20

UVC Forward Voltage Range:

Bin Code	V11	V12	V13	V14	V15	V16	V17
Range (V)	5.0~5.1	5.1~5.2	5.2~5.3	5.3~5.4	5.4~5.5	5.5~5.6	5.6~5.7
Bin Code	V18	V19	V1A	V1B	V1C	V1D	V1E
Range (V)	5.7~5.8	5.8~5.9	5.9~6.0	6.0~6.1	6.1~6.2	6.2~6.3	6.3~6.4
Bin Code	V1F	V1G	V1H	V1I	V1J	V1K	
Range (V)	6.4~6.5	6.5~6.6	6.6~6.7	6.7~6.8	6.8~6.9	6.9~7.0	

Note:

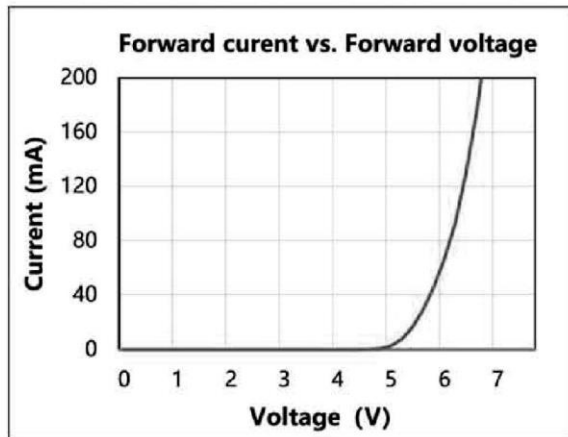
[1] Maximum Operating Current is 160mA.

### 3.2 Typical Characteristic Curves (UVC)

#### Typical I-V Characteristics

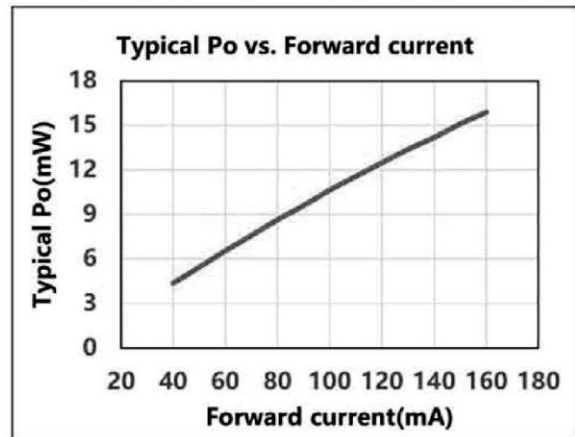
The max forward voltage is less than 7.0V at specified operating current.

Test Conditions: Ambient Temperature (Ta)=25°C.



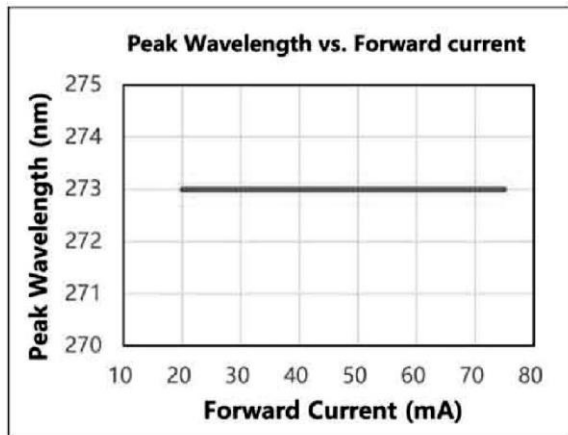
#### Typical Radiant Flux Over Current

The plot below shows the typical radiant flux with forward current.



#### Wavelength Shift Over Current

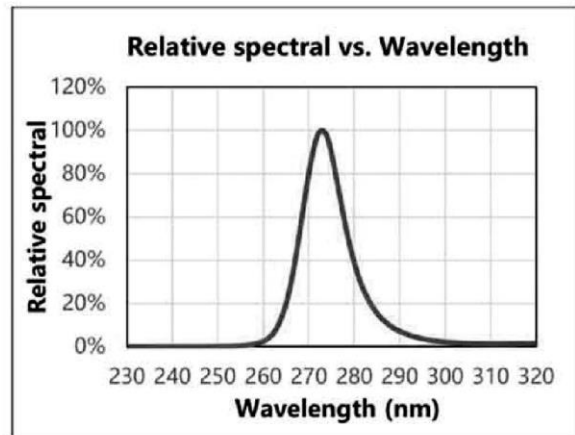
UV LEDs have stable wavelength performance over current variation.



#### Typical Spectral

The plot below shows the typical spectral.

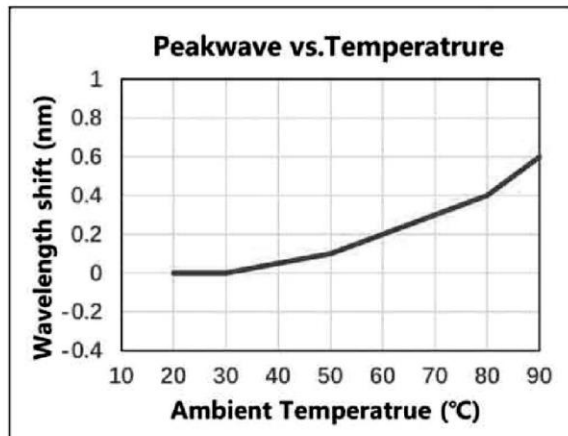
Test condition: Ta=25°C, Specified Forward Current.



### Wavelength Shift with Temperature

Stability of wavelength over temperature. Compared to the wavelength while  $T_a=25^{\circ}\text{C}$ .

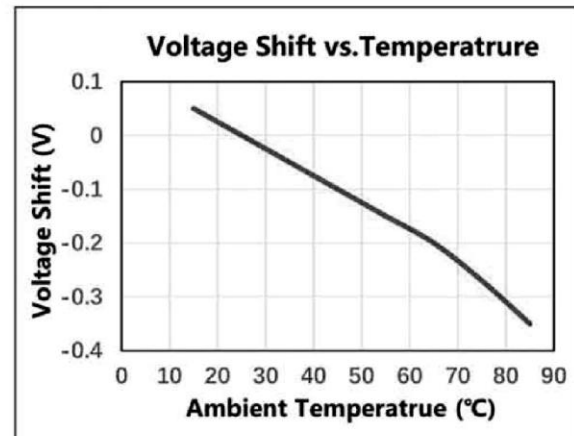
Test Conditions: Specified operating current.



### Voltage Shift with Temperature

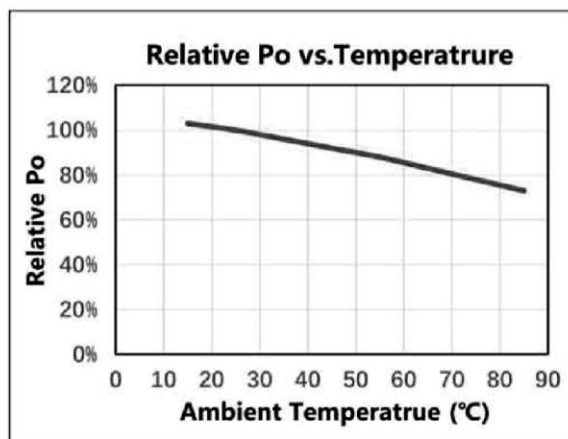
Stability of voltage characteristics over temperature. Compared to the voltage while  $T_a=25^{\circ}\text{C}$ .

Test Conditions: Specified operating current.



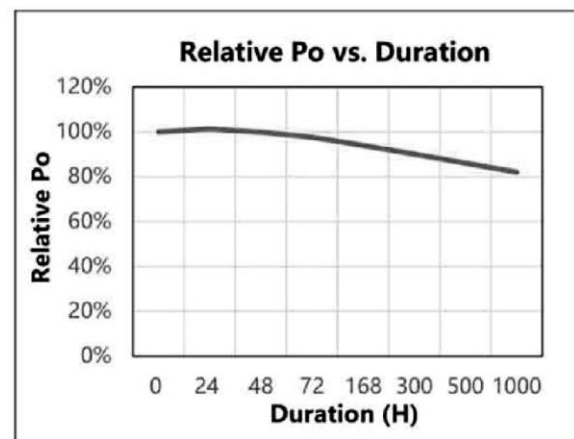
### Radiant Flux Shift with Temperature

Output power is sensitive to junction temperature. Lower ambient temperature and effective thermal management will ensure optical performance and lifetime of LEDs.  $T_a$  is not allowed over  $60^{\circ}\text{C}$ .

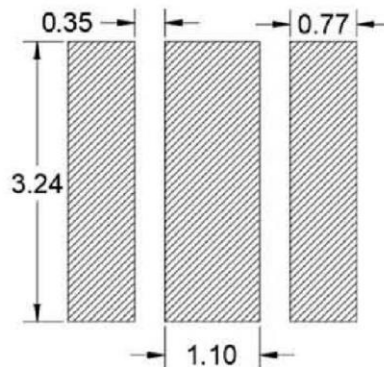


### Radiant Flux Drop with Duration

The plot below shows the drop of radiant flux over duration at specified operating current while employing effective thermal management, which is recommended strongly.



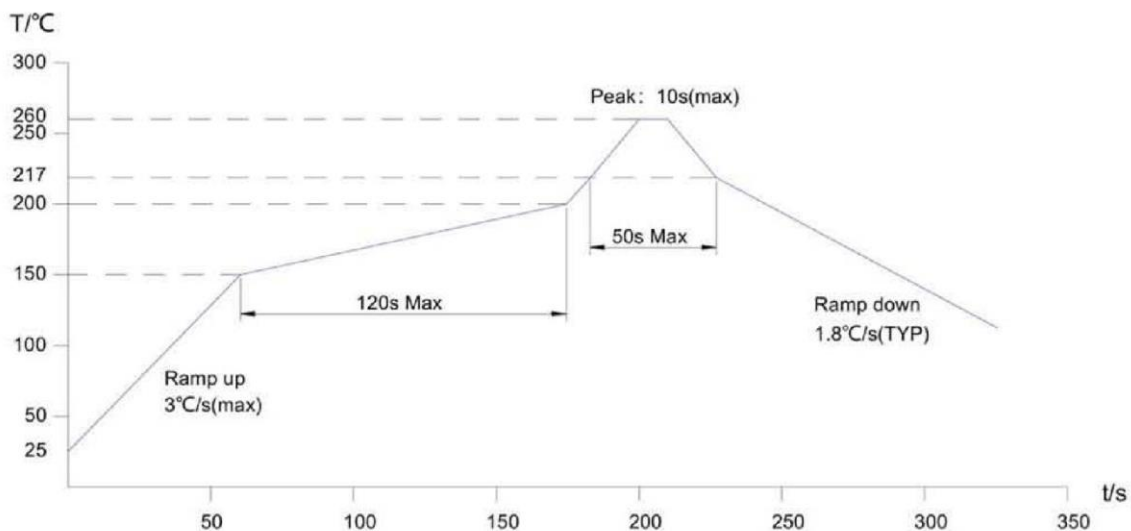
## 4 Recommended Soldering Pad Design



**Note:**

[1] The above design is for reference only.

## 5 Reflow Process



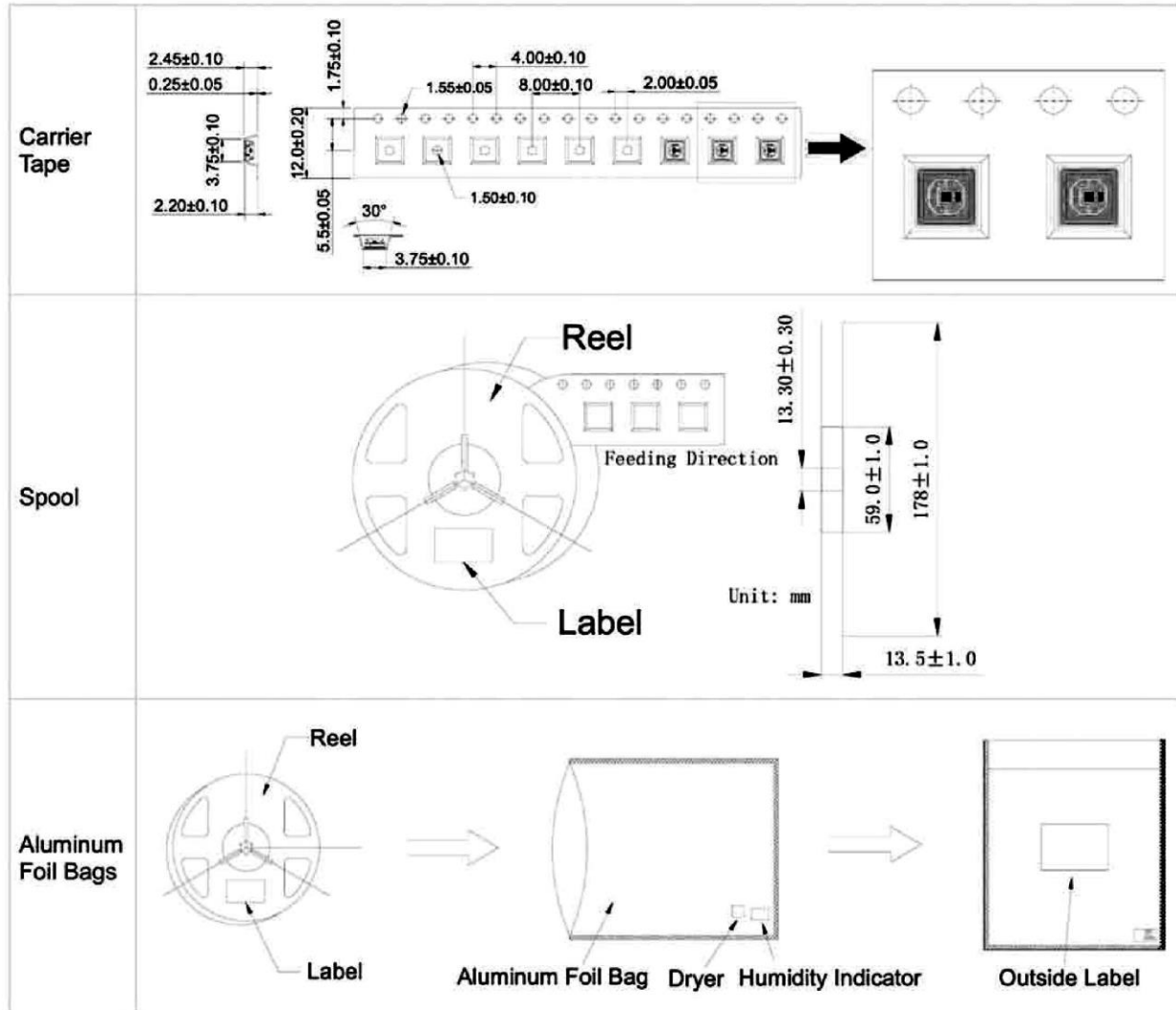
The patch shall be reflow welded with high temperature solder paste and the peak temperature **shall not be higher than 260°C**. The peak time is controlled at about 10 seconds. Reflow time should not exceed 5 minutes.

**Note:**

- [1] Reflow welding shall not be performed more than once;
- [2] It is not recommended to carry out maintenance after welding LEDs. When repair is inevitable, double-ended soldering irons must be used. Do not damage the product itself within careful operation.
- [3] During welding, do not press to the LED during heating.
- [4] It is recommended to use the convection reflow welding machine above the temperature range of 7.

## 6 Package Specification

### 6.1 Packing Instruction



**Note:**

- [1] The camber of the carrier shall not be more than 1mm/100mm, and the length shall be 250mm;
- [2] All dimensions meet EIA-481-B requirements;
- [3] Materials: conductive polyester polystyrene plastics.



## 6.2 Labeling Instruction

SPEC	WXXPXXVXXAX, please check the exactly meanings in 3.1 SPEC Range.
LOTS	Batch Number
QTY	Package Quantity: 1000pcs/roll
Date	Date

## 7 Reliability Testing

Test Item	Test Condition	Criterion	Failure Rates
Regular Driver	T=25°C, Calibrated Current, keep it lit for 1,000 hours	LED Damage	0/35
Hot and Cold Shocks	-40°C~+120°C Hot and cold shocks 500 cycles, 15min/cycle	LED Damage	0/35
Reflow Soldering	Peak Temperature ≤ 260°C, 10-temperature-zones reflow furnace, 1 time	LED Damage	0/100
Antistatic Property	R=1.5kΩ, C=100pF, Voltage level=2kV	LED Damage	0/10

## 8 Use of Risk



### Note:

- [1] All assemblers, observers and bystanders must have eye and skin protection.
- [2] Prohibit naked eye observation (including through microscope) and bare treatment of deep UV LED in operation.
- [3] Deep UV light is easy to be absorbed by pollutants. Do not touch the optical structure of deep ultraviolet lamp.
- [4] This product is moisture-sensitive. The recommended storage temperature is 18°C ~ 30°C, and the humidity is 30% ~ 60%. In order to ensure the quality of the product, if the outer package is not opened, it is recommended to use it within one year after leaving the factory. If the outer package is opened, it is recommended to use it within 24 hours. After 24 hours, it should be re-sealed and stored. It is recommended to take dehumidification measures before next use: Temperature: 65°C Time: 5H.