APPROVAL SHEET

AOT MODEL NAME	HI-POWER LED
AOT PART NUMBER	5050UV27D-Z0
CUSTOMER NAME	General
DATE	2009 / August
Version	3

MAKER			CUSTOMER			
Prepared	Checked	Approved				

AOT HEAD QUARTER
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Revision note

Date	Revision	Page	Version
2007-06-25	Initiate Document		1
2009-03-03	Dimension & Recommended Soldering Pattern		2
2009-08-28	VF & IV Rank		3

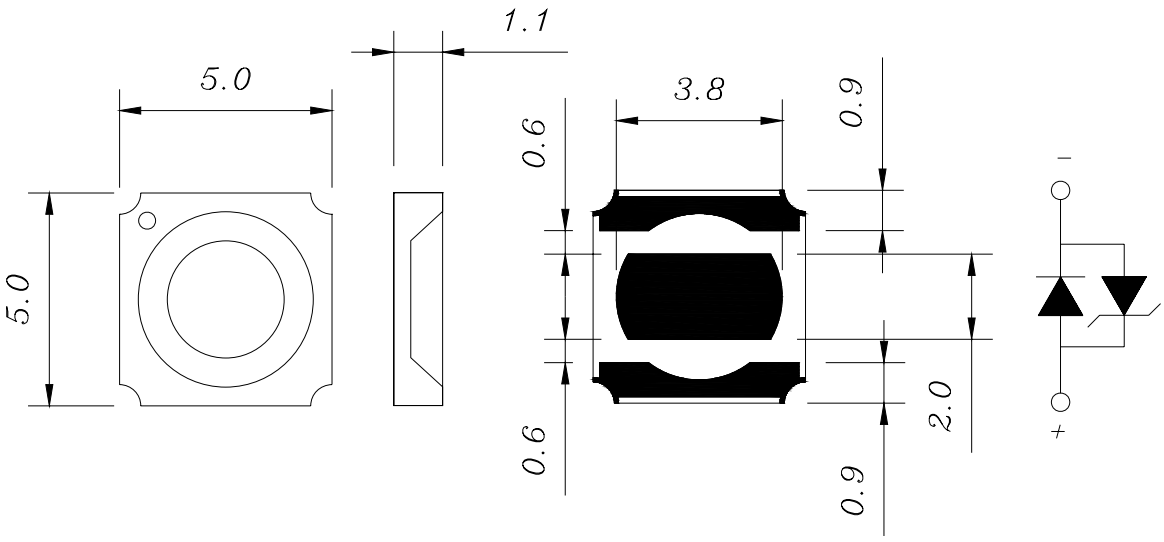
5050UV27D-Z0

Dimension

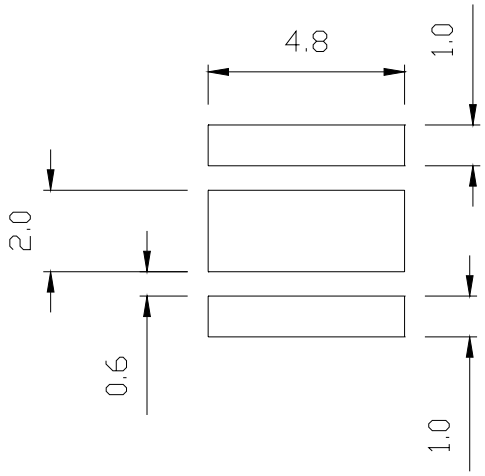
Type : 5050 UV Ceramic

Unit : mm

General Tolerance: ±0.2mm



Recommended Soldering Pattern



Unit : mm

- Highest Flux
- long operating life
- Low voltage DC operated
- Cool beam, safe to the touch
- Instant light (less than 100ns)
- Superior ESD protection

Optoelectronic Characteristics at Ta=25°C.

Rank (380nm)

Parameter	Symbol	Condition	Maximum Value	Unit
Forward Voltage	V_F	I_F = 350 mA	3.6~4.4 max	V
Peak Emission Wavelength	λP	I_F = 350 mA	380±5	nm
Output Power	Po(BinB-1)	I_F = 350 mA	40~60	mW
	Po(BinB-2)		60~80	
	Po(BinB-3)		80~100	
	Po(BinB-4)		100~120	
	Po(BinB-5)		120~140	
Viewing Angle	2θ1/2	I_F = 350 mA	120	deg
Leakage current	Ir	-5V	Max 100	uA

Electrical Characteristics at Ta = 25°C

	Forward Voltage @ If=350mA (V)	
Vf Ranking	Min	Max
1	3.6	3.8
2	3.8	4.0
3	4.0	4.2
4	4.2	4.4

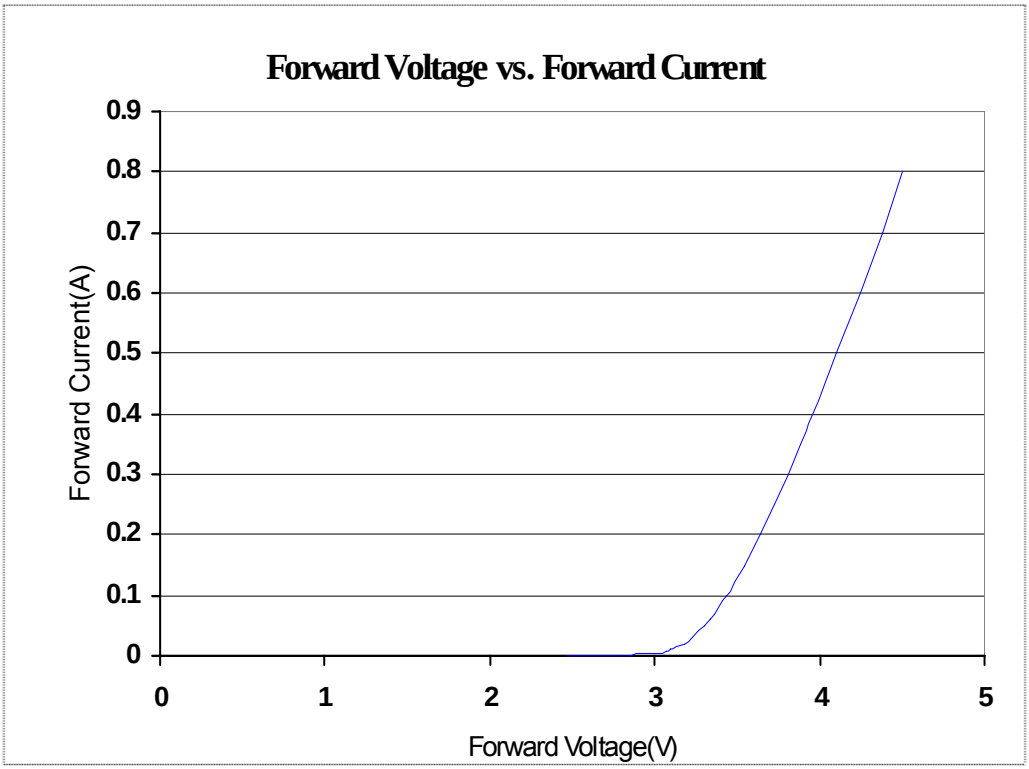
*1The value is based on the one LED die. The accuracy is ± 0.1 V.

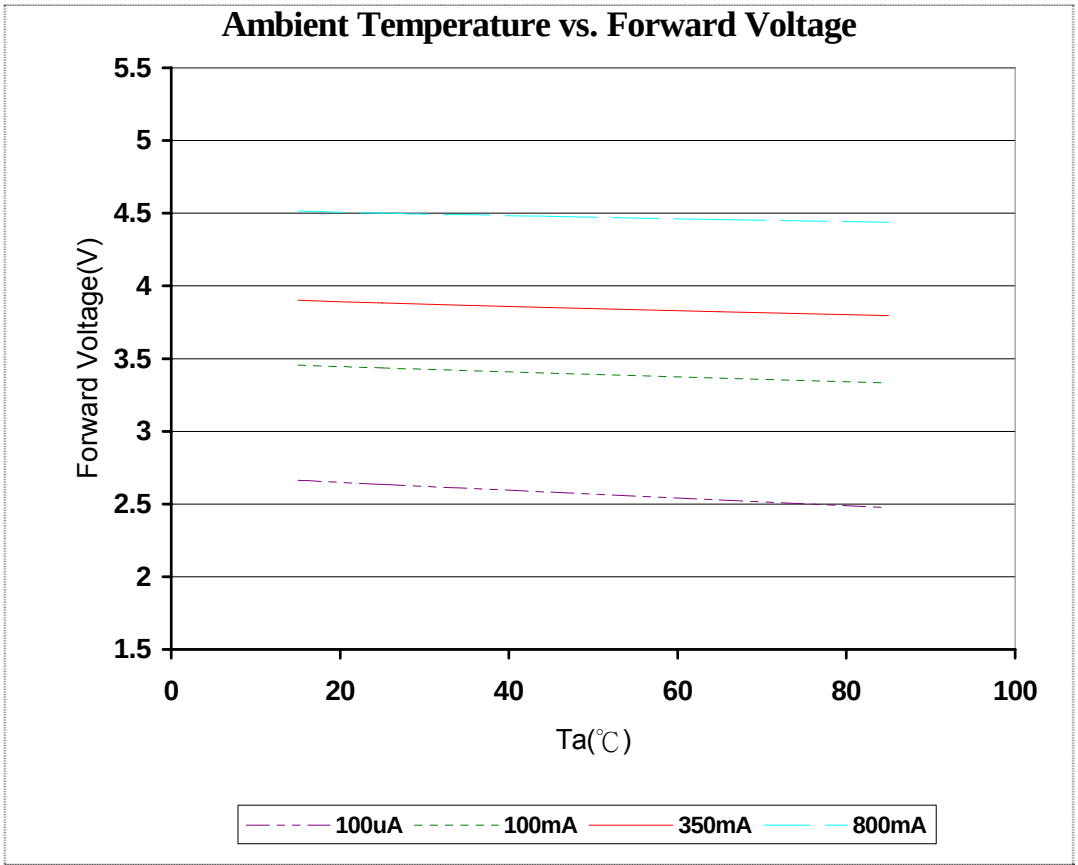
Absolute Maximum Ratings.

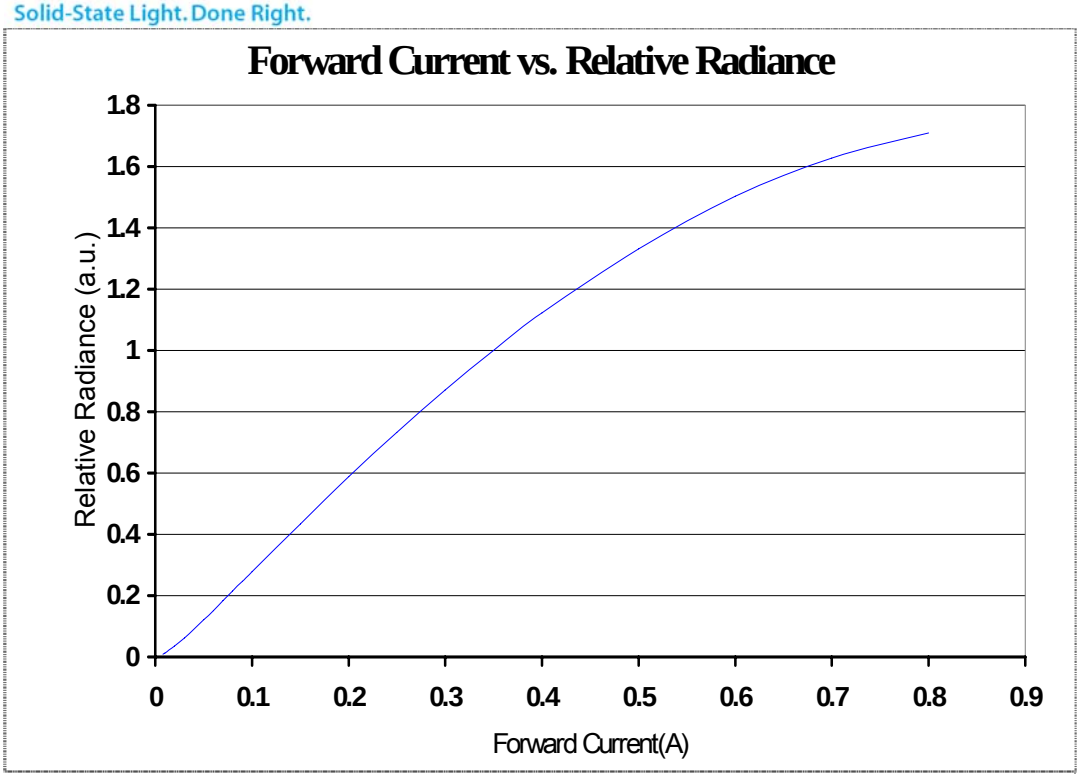
	Maximum Value	Unit
DC forward current per chip	350	mA
Peak pulse current; (tp ≤ 10 μs, Duty cycle = 0.005)	420	mA
Reverse voltage.	5	V
Operating temperature.	-40 … +85	°C
Storage temperature.	-40 … +100	°C
Soldering temperature(T=5 sec)	260±5	°C
Power dissipation (at room temperature)	1000	mW

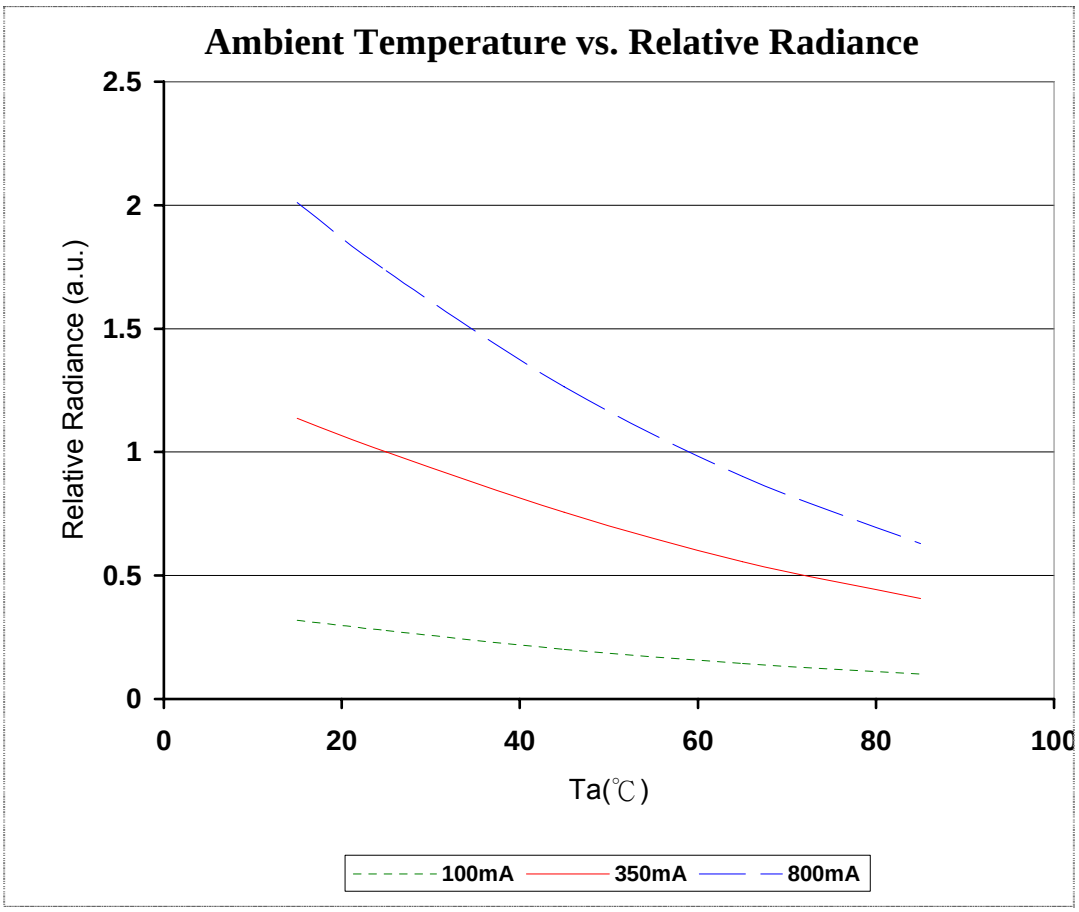
NOTES:
Measurement Uncertainty of the Output Power ± 15%
Tolerance of measurement of forward voltage is ±0.1V

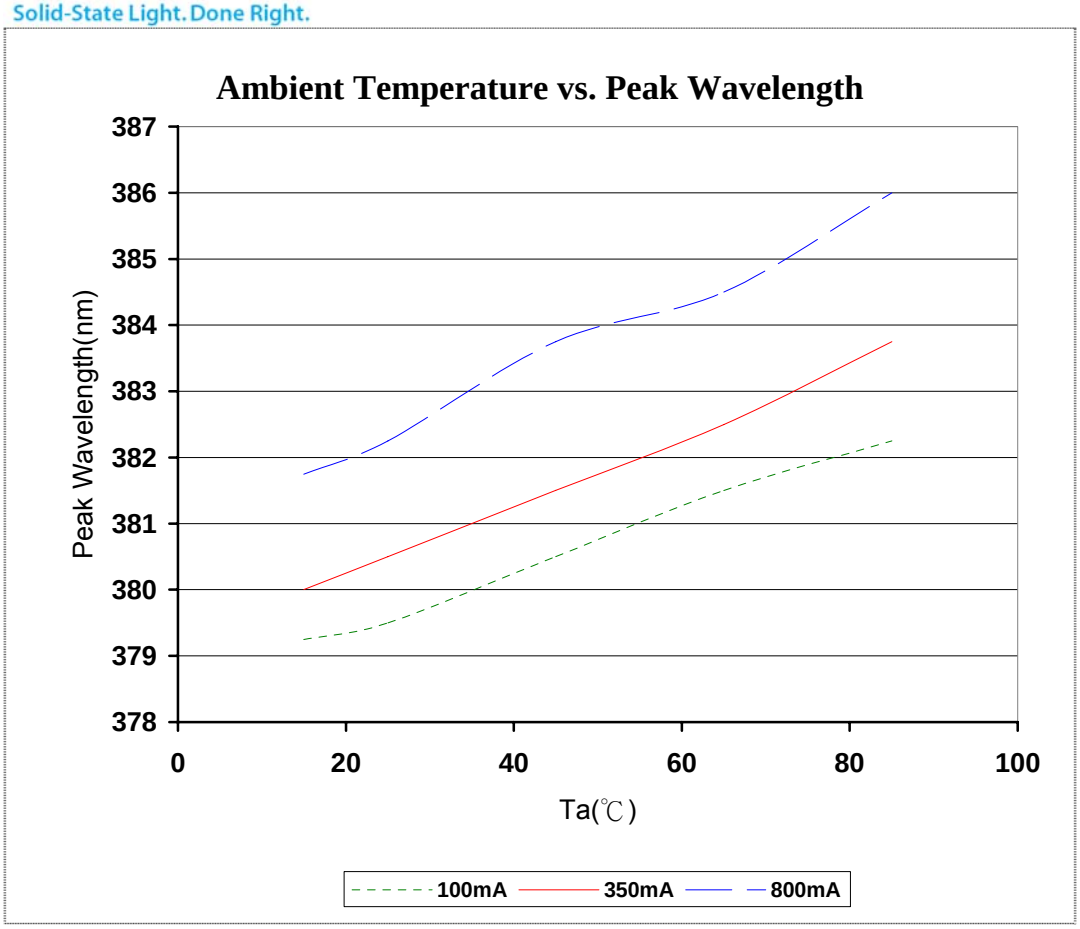
Characteristics

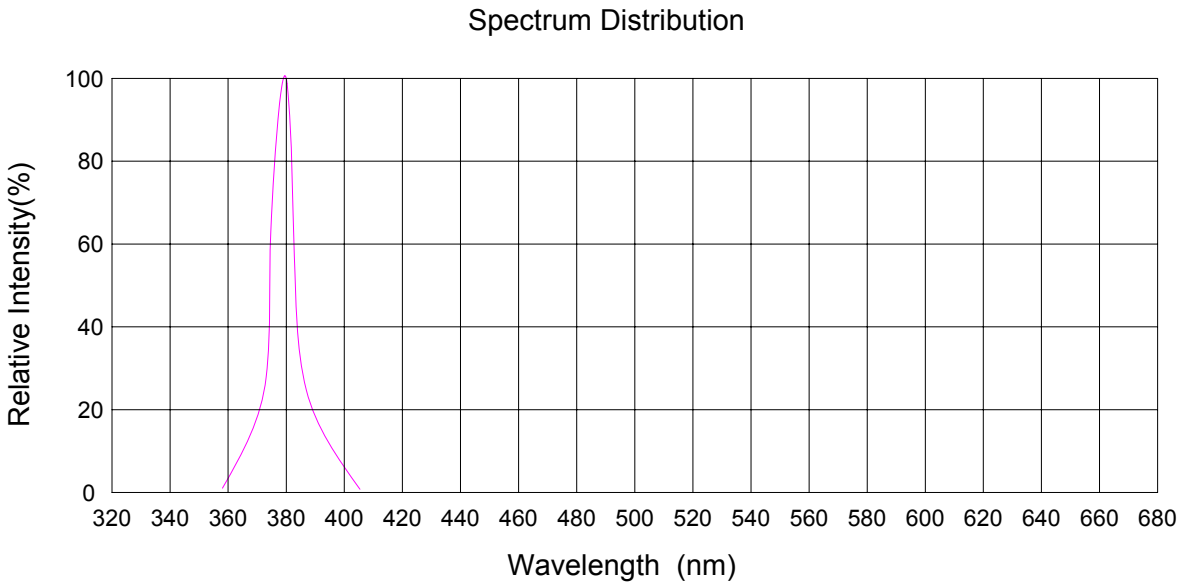












Surface Mounting Condition

In automatic mounting of the SMD LEDs on printed circuit boards, any bending, expanding and pulling forces or shock against the SMD LEDs should be kept min. to prevent them from electrical failures and mechanical damages of the devices.

Soldering Reflow

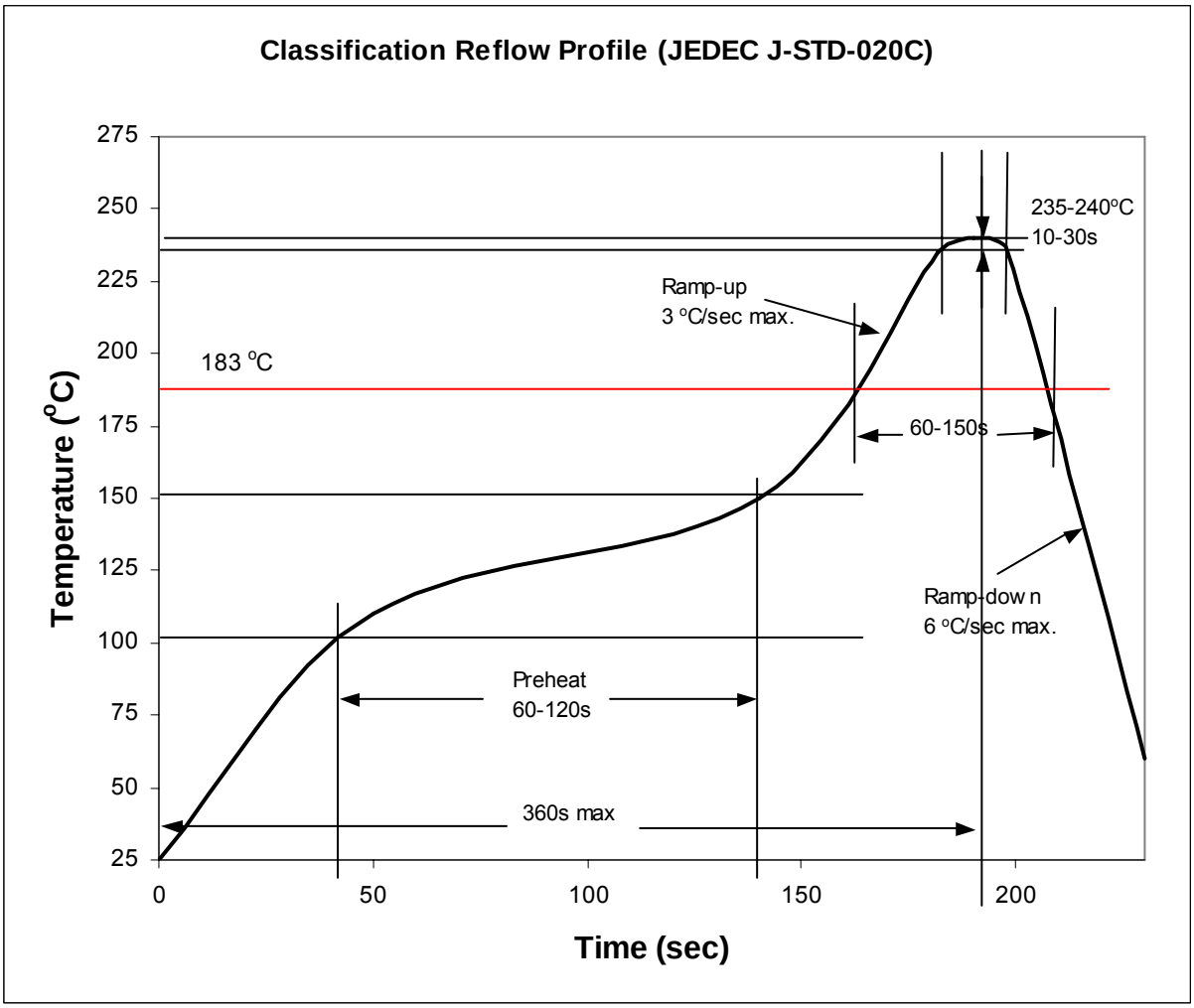
-Soldering of the SMD LEDs should conform to the soldering condition in the individual specifications.

-SMD LEDs are designed for Reflow Soldering.

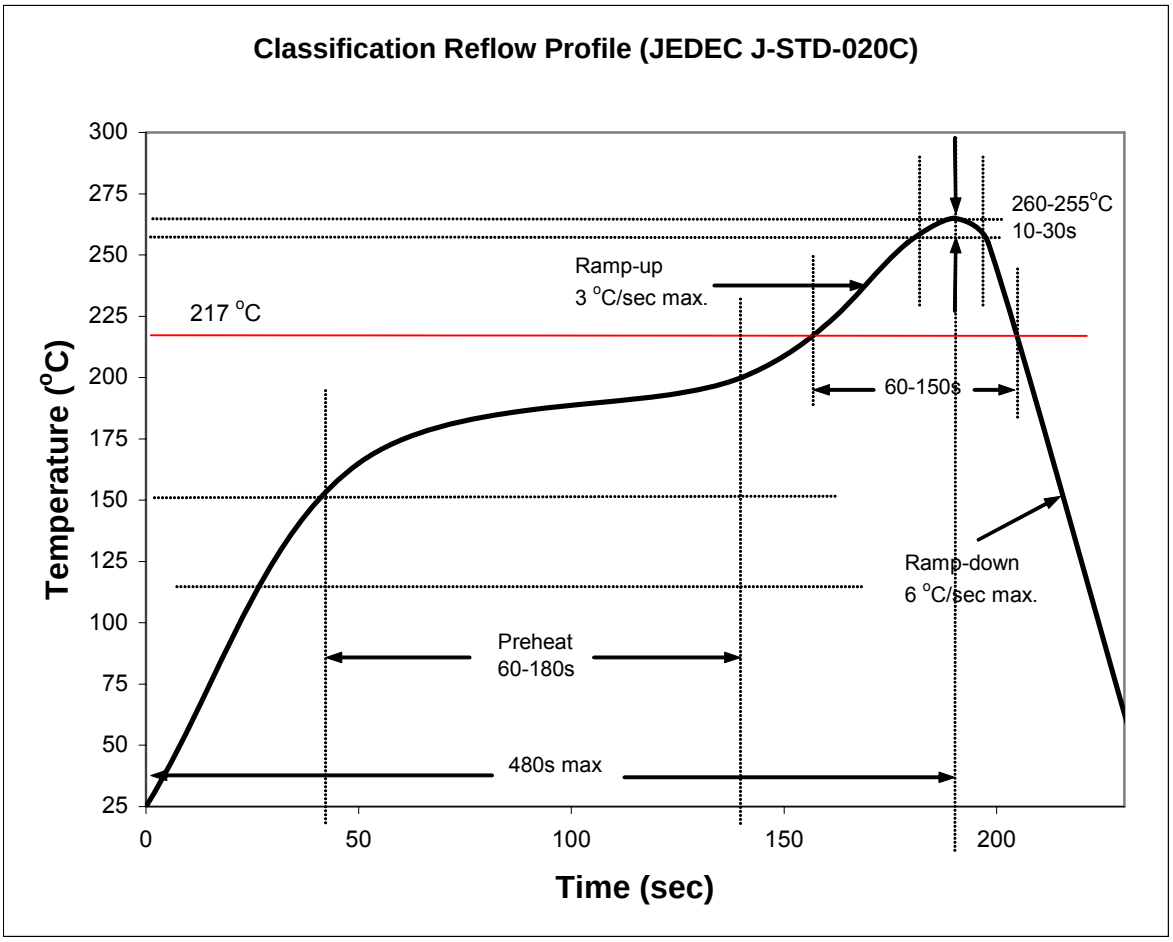
-In the reflow soldering, too high temperature and too large temperature gradient such as rapid heating/cooling may cause electrical & optical failures and damages of the devices.

-AOT cannot guarantee the LEDs after they have been assembled using the solder dipping method.

1) Lead Solder



2) Lead-Free Solder (JEDEC J-STD-020B).



3) Manual Soldering conditions.

- Lead Solder
  Max. 300℃ for Max. 3sec, and only one time.
- Lead-free Solder
  Max. 350℃ for Max. 3sec, and only one time.

- There is possibility that the brightness of LEDs is decreased, which is influenced by heat or ambient atmosphere during reflow. It is recommended to use the nitrogen reflow method .
- After LEDs have been soldered, repairs should not be done. As repair is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will be damaged by repairing or not.
- Reflow soldering should not be done more than two times.

Reliability Test

No.	Test Item	Standard Test Method	Test Conditions	Note	Sample Size	Pass
1	Steady State Operating Life	Internal Ref.	I_f = 350 mA	1000 Hr	20	OK
2	Thermal Shock	JESD22-A106-A	-40C ~ 85C	84 Cycles	20	OK
3	Temperature Cycle	JESD22-A104-A	-35C ~ 75C	168 Cycles	20	OK
4	High Temperature Storage	JESD22-A103-A	85C	1000 Hr	20	OK
5	Low Temperature Storage	Internal Ref.	-40C	1000 Hr	20	OK
6	High Temperature High Humidity	JESD22-A101-B	85C,85%RH	1000 Hr	20	OK
7	On-Off Test	Internal Ref.	2 sec ON - 2sec OFF	100,000 cycle	20	OK

Conclusions:

The reliability tests were designed to evaluate both package integrity as well as workability of product performance over time.

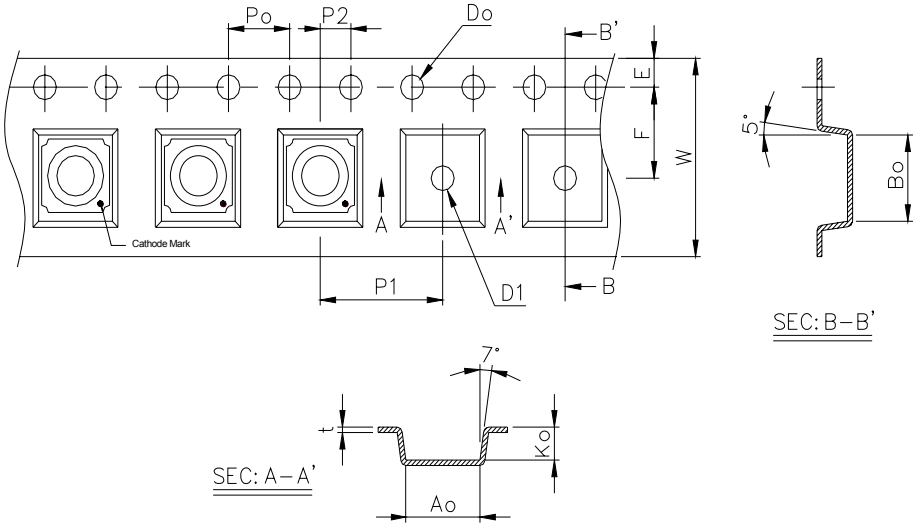
All samples have done well by completed test required and passed all the qualification criteria with ZERO failure. From design standpoint, the package is robust enough to meets its datasheet conditions.

Based on the good result shows on the above test, this product is qualified and released for market.

Taping And Orientation.

Quantity =1000 units/reel.

Diameters =178 mm.



Item	Spec	Tol.(+/-)	Item	Spec	Tol.(+/-)
W	12.00	±0.20	P2	2.00	±0.05
E	1.75	±0.10	P0 x 10	40.00	±0.10
F	5.50	±0.05	B0	5.3	±0.10
D0	1.50	+0.1,-0	K0	1.70	±0.10
D1	1.0	±0.05	A0	5.3	±0.10
P0	4.00	±0.1			

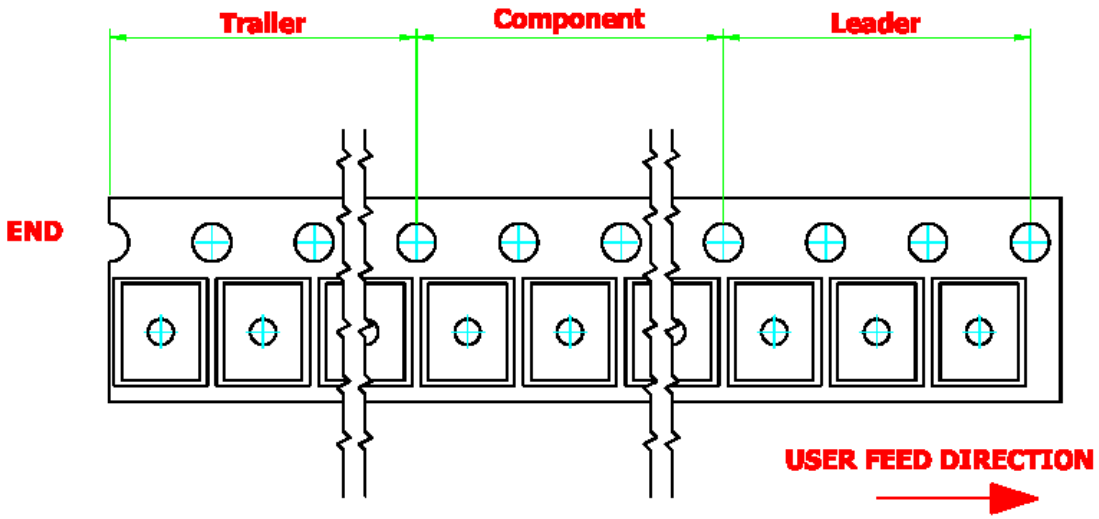
Unit : mm

200 mm min. for Ø180 reel.

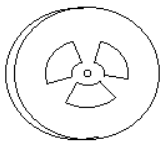
200 mm min. for Ø330 reel.

480 mm min. for Ø180 reel.

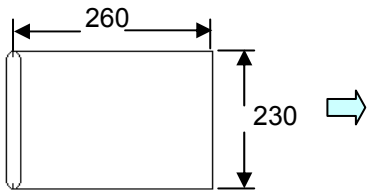
960 mm min. for Ø330 reel.



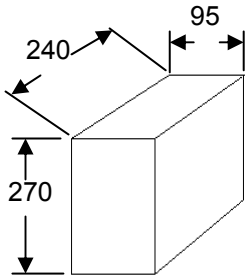
Packing Formation



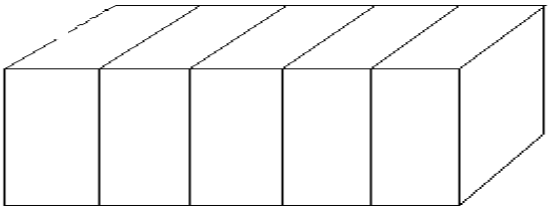
Diameter : 178 mm
Width : 17 mm
5050 ⇒ 1000 pcs/Reel
Anti-Static Shielding
Black Reel



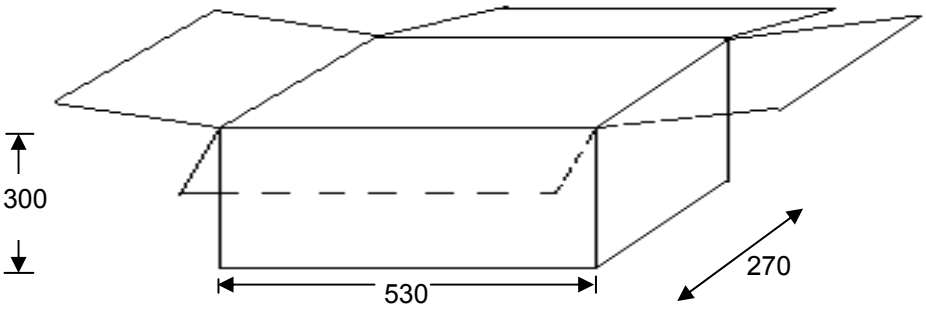
Anti-Static Shielding
1 Reel / Bag (T = 0.1 mm)



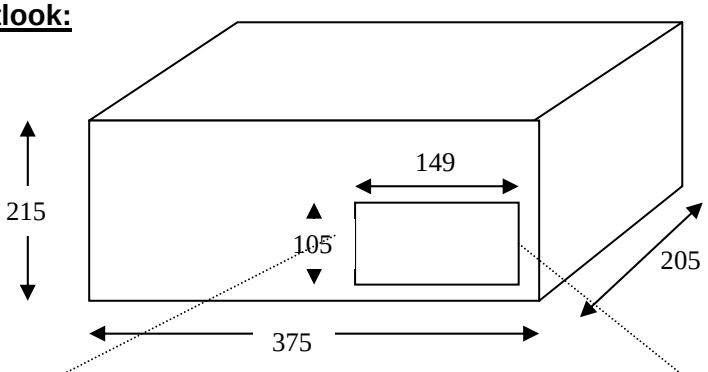
5 Bags / 1Inner Box
5050 ⇒ 5000 pcs/ 1 Inner Box



5 Inner Box/1 Carton
5050 ⇒ 25000 pcs/ 1Carton



Package Outlook:



AOT Advanced Optoelectronic Technology Inc	
Customer	
Part Number	
Quantity	
Date	
Remark	

Label Format and Serial Number

SMD LED, 5050UV	
Part Number	: AOT-5050UV27D-Z0
Brightness	: a
WP	: b
Vf	: c
Quantity	: nn ea
Serial No	: SHyymmddxxx

a : Brightness rank(Bin1,2,3,4,5,)
b : b mark WP rank
c : c mark Vf rank
nn : Quantity of LED
SHyymmddxxx : yy : year,mm : month, dd : day, xxx : reel no

Cautions:

1. After open the package, the LED should be kept at 30°C, 60%RH or less. The LED should be soldered within 168 hours (7 days) after opening the package.
2. Heat generation must be taken into design consideration when using the LED.
3. Power must be applied resistors for protection, over current would be caused the optic damage to the devices and wavelength shift.
4. Manual tip solder may cause the damage to Chip devices, so advised that heat of iron should be lower than 15W with temperature control under 5 seconds at 230-260 deg. C. (The device would be got damage in re working process, recommended under 5 seconds at 230-260 deg. C)
5. All equipment and machinery must be properly grounded. It is recommended to use a wristband or anti-electrostatic glove when handing the LED, or should be installed the ionizer if need the risk of generation area would be high.
6. Use IPA as a solvent for cleaning the LED. The other solvent may dissolve the LED package and the epoxy, Ultrasonic cleaning should not be done.
7. Damaged LED will show unusual characteristics such as leak current remarkably increase, turn-on voltage becomes lower and the LED get unlight at low current.

- This UV LED during operation radiates intense UV light.
- Do not look directly into the UV light during operation of device. This can be harmful to the eyes even for brief period due to the intense UV light.
- If viewing the UV light is necessary, please use UV filtered glasses to avoid damage by the UV light.
- Please affix a caution label to your product to that effect, if the UV LED in your product might be viewed directly,
- Avoid direct eye exposure to UV light.
- Keep out of reach of children.