



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

- Super high flux output and high luminance.
- Designed for high current operation.
- Low thermal resistance.
- Silicone resin with glass lens.
- Compatible with IR-reflow processes.
- ESD protection .
- Package : 500pcs / reel.
- RoHS compliant.

AADG18080QR412S/3

SERIES

Applications

- Substitution of micro incandescent lamps.
- Portable light source.
- Signal and symbol luminaire for orientation.
- Marker lights (e.g. steps, exit ways, etc).
- Decorative and entertainment lighting.
- Commercial and residential lighting.
- Emergency-vehicle lighting.

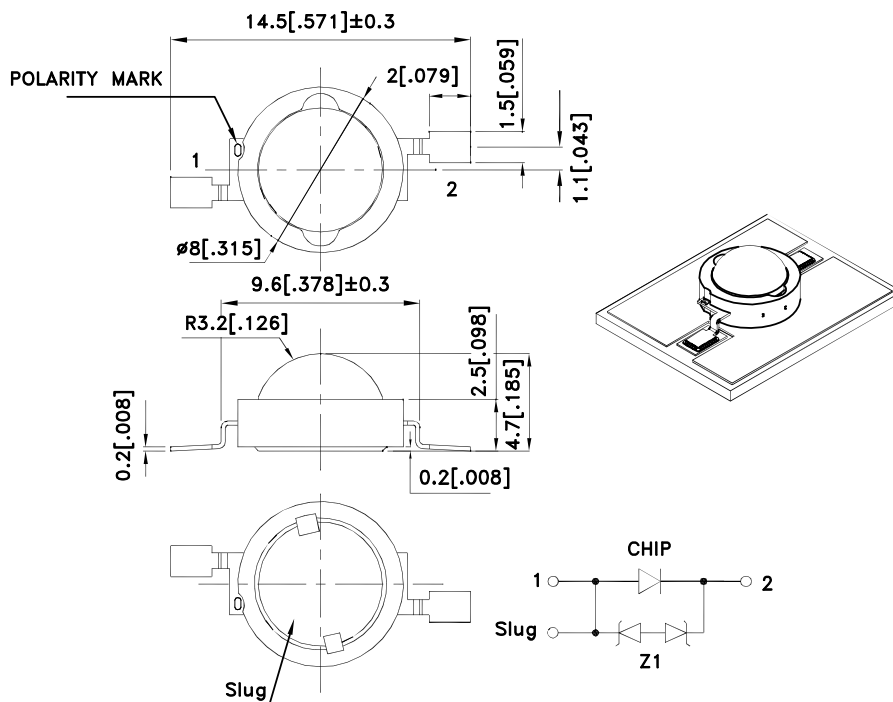
Application Note

Static electricity and surge damage the LEDS.

It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

All devices, equipment and machinery must be electrically grounded.

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25(0.01")$ unless otherwise noted.
3. Specifications are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.



Flux Characteristics at 700mA Ambient Temperature, $T_a = 25^{\circ}\text{C}$

Erp	Color	Part No.	Luminous Flux (lm) @ 700mA [1]			Typical Luminous Flux (lm) [1]
			Code.	Min.	Max.	Typ.
1201200318	Cool White (InGaN)	AADG18080QR412S/3-C1	C2	120	140	160
			C3	140	160	
			C4	160	180	
			C5	180	210	
1201200326	Neutral White (InGaN)	AADG18080QR412S/3-N1	C1	100	120	140
			C2	120	140	
			C3	140	160	
			C4	160	180	
1201200328	Warm White (InGaN)	AADG18080QR412S/3-W2	C1	100	120	140
			C2	120	140	
			C3	140	160	
			C4	160	180	

Note:

1. Minimum luminous flux performance guaranteed within published operating conditions. Kingbright maintains tolerance of +/-15% on flux.

Optical Characteristics at 700mA Ambient Temperature, $T_a = 25^{\circ}\text{C}$

Color	Correlated Color Temperature CCT			Typical Viewing Angle [1] (degrees) 2θ1/2
	Min.	Typ.	Max.	
Cool White	5310K	6000K	7040K	100°
Neutral White	3710K	4500K	5310K	100°
Warm White	2580K	3000K	3710K	100°

Note:

1. Viewing angle is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.

Electrical Characteristics at 700mA Ambient Temperature, $T_a = 25^{\circ}\text{C}$

Part No.	Forward Voltage V_f [1] (V)			Typical Temperature Coefficient of Forward Voltage [2] (mV/ $^{\circ}\text{C}$) $\Delta V_f / \Delta T$	Typical Thermal Resistance ($^{\circ}\text{C}/\text{W}$) $R_{th \text{ j-slug}}$
	Min.	Typ.	Max.		
AADG18080QR412S/3-C1	-	4.6	5.2	-4.3	7
AADG18080QR412S/3-N1	-	4.6	5.2	-4.3	7
AADG18080QR412S/3-W2	-	4.6	5.2	-4.3	7

Notes:

- Kingbright maintains a tolerance of $\pm 0.1\text{V}$ on forward voltage measurements.
- Measured between $25^{\circ}\text{C} < T_J < 130^{\circ}\text{C}$ at $I_F = 700 \text{ mA}$.

Absolute Maximum Ratings

Parameter	Cool White / Neutral White / Warm White
DC Forward Current (mA) [1]	700
Peak Pulsed Forward Current (mA)	1000
Average Forward Current (mA)	700
Reverse Voltage (V)	5
ESD Sensitivity	8000V HBM
LED Junction Temperature ($^{\circ}\text{C}$)	130
Operation Temperature ($^{\circ}\text{C}$)	-40 to +100
Storage Temperature ($^{\circ}\text{C}$)	-40 to +110
Soldering Temperature ($^{\circ}\text{C}$)	260 For 5 Seconds

Notes:

- Proper current derating must be observed to maintain junction temperature below the maximum.

Moisture Sensitivity

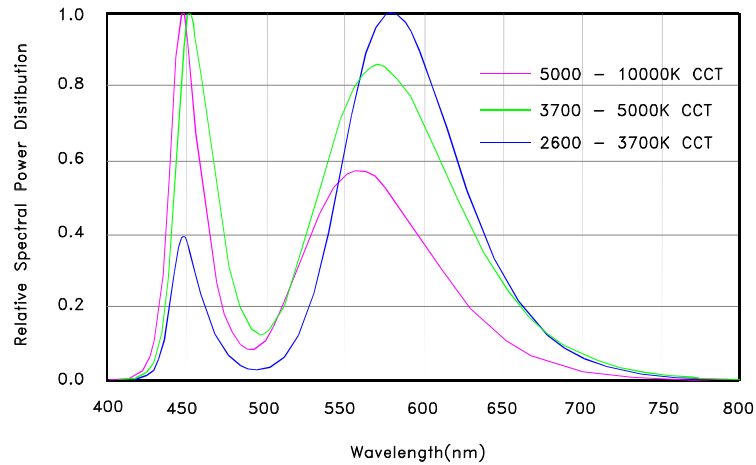
AADG18080 LEDs are packaged in airtight and moisture-resistant bags to prevent moisture absorption which may lead to catastrophic failure in reflow soldering process. Kingbright recommends that the devices must be baked before soldering if they are removed from the original package, and are exposed to environmental conditions for longer than the durations (unit: days) defined in the table below. Recommended baking conditions are 24 hours at 80°C .

Temperature	Maximum Percent Relative Humidity						
	30%	40%	50%	60%	70%	80%	90%
30°C	9	5	4	3	1	1	1
25°C	12	7	5	4	2	1	1
20°C	17	9	7	6	2	2	1

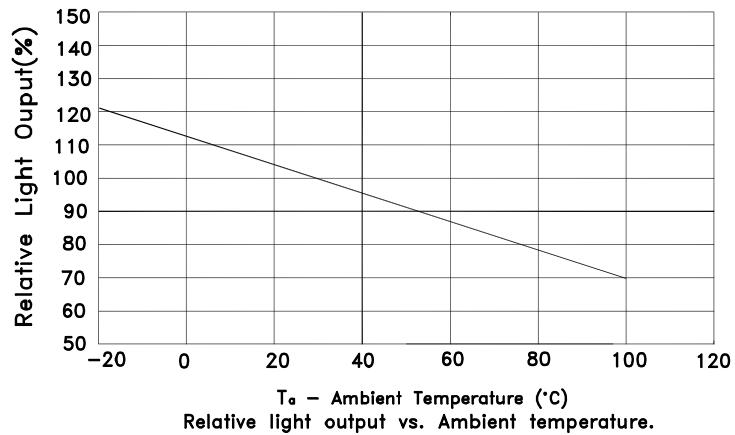
Storage Conditions

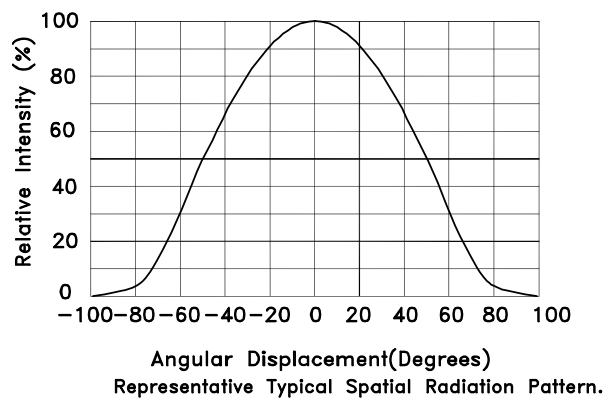
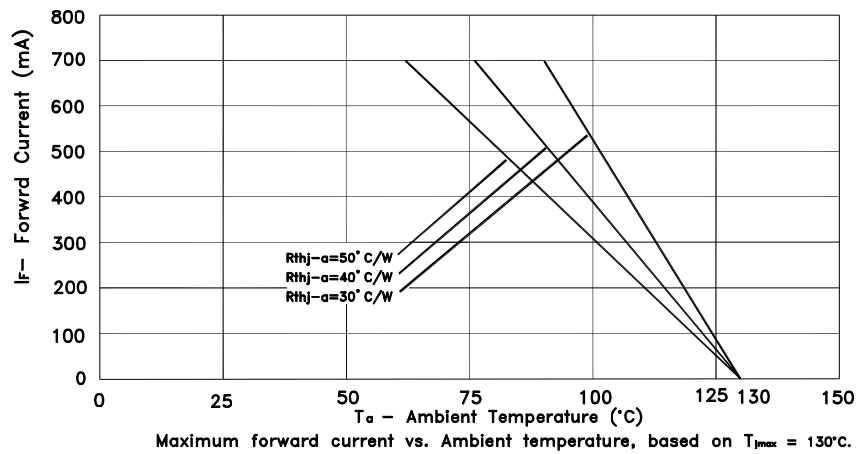
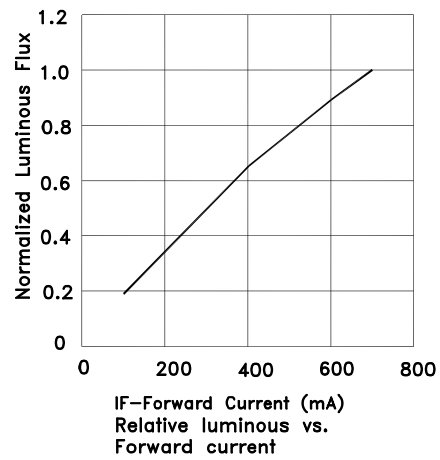
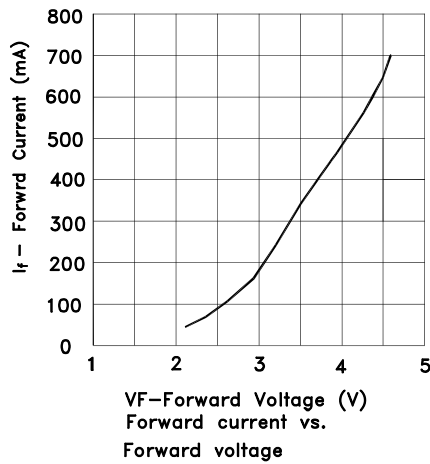
After being removed from the original sealed package, AADG18080 LEDs should be stored at a temperature of 25°C with a relative humidity lower than 10%. Under such conditions, storage duration is excluded from the exposure duration as defined in the Moisture Sensitivity section.

Wavelength Characteristics $T_a = 25^\circ\text{C}$

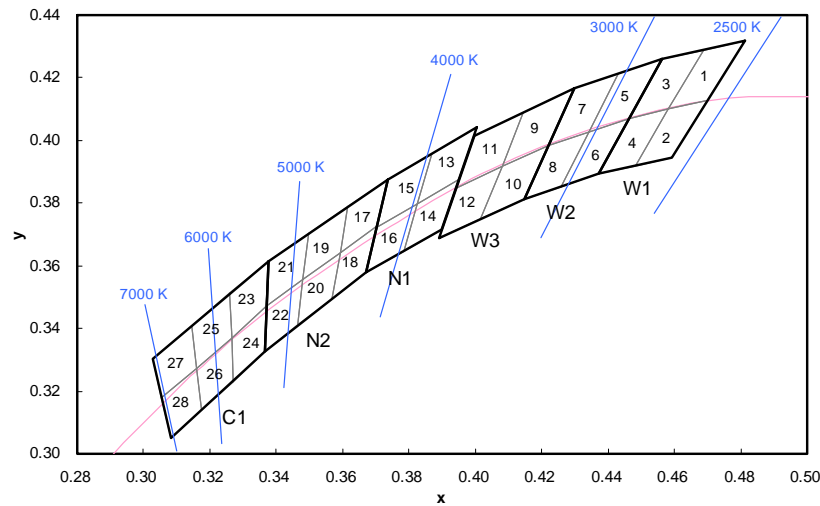


Light Output Characteristics





CCT 2500-7000 K Bin Code



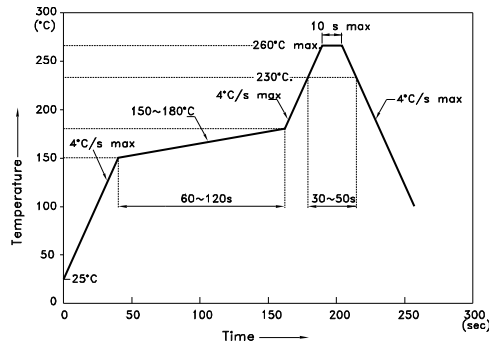
Color	Group	Chromaticity Regions	CCT (K)		
			Min.	Typ.	Max.
Warm White	W1	1, 2, 3, 4	2580	2700	2870
	W2	5, 6, 7, 8	2870	3000	3220
	W3	9, 10, 11, 12	3220	3500	3710
Neutral White	N1	13, 14, 15, 16	3710	4000	4260
	N2	17, 18, 19, 20, 21, 22	4260	4700	5310
Cool White	C1	23, 24, 25, 26, 27, 28	5310	6000	7040

Notes:
 Shipment may contain more than one chromaticity regions.
 Orders for single chromaticity region are generally not accepted.
 Measurement tolerance of the chromaticity coordinates is ± 0.02 .

x		y	x		y	x		y	x		y
1	0.4582	0.4099	8	0.4147	0.3814	15	0.3702	0.3722	22	0.3481	0.3557
	0.4687	0.4289		0.4221	0.3984		0.3736	0.3874		0.3370	0.3472
	0.4813	0.4319		0.4342	0.4028		0.3869	0.3958		0.3364	0.3328
	0.4700	0.4126		0.4259	0.3853		0.3825	0.3798		0.3466	0.3411
2	0.4483	0.3919	9	0.4080	0.3916	16	0.3670	0.3578	23	0.3376	0.3616
	0.4582	0.4099		0.4146	0.4089		0.3702	0.3722		0.3260	0.3512
	0.4700	0.4126		0.4299	0.4165		0.3825	0.3798		0.3265	0.3371
	0.4593	0.3944		0.4221	0.3984		0.3783	0.3646		0.3370	0.3472
3	0.4465	0.4071	10	0.4017	0.3751	17	0.3736	0.3874	24	0.3370	0.3472
	0.4562	0.4260		0.4080	0.3916		0.3616	0.3788		0.3265	0.3371
	0.4687	0.4289		0.4221	0.3984		0.3592	0.3641		0.3270	0.3230
	0.4582	0.4099		0.4147	0.3814		0.3703	0.3726		0.3364	0.3328
4	0.4373	0.3893	11	0.3941	0.3848	18	0.3703	0.3726	25	0.3260	0.3512
	0.4465	0.4071		0.3996	0.4015		0.3592	0.3641		0.3144	0.3408
	0.4582	0.4099		0.4146	0.4089		0.3568	0.3495		0.3160	0.3274
	0.4483	0.3919		0.4080	0.3916		0.3670	0.3578		0.3265	0.3371
5	0.4342	0.4028	12	0.3889	0.3690	19	0.3616	0.3788	26	0.3265	0.3371
	0.4430	0.4212		0.3941	0.3848		0.3496	0.3702		0.3160	0.3274
	0.4562	0.4260		0.4080	0.3916		0.3481	0.3557		0.3175	0.3139
	0.4465	0.4071		0.4017	0.3751		0.3592	0.3641		0.3270	0.3230
6	0.4259	0.3853	13	0.3825	0.3798	20	0.3592	0.3641	27	0.3144	0.3408
	0.4342	0.4028		0.3869	0.3958		0.3481	0.3557		0.3028	0.3304
	0.4465	0.4071		0.4006	0.4044		0.3466	0.3411		0.3055	0.3177
	0.4373	0.3893		0.3950	0.3875		0.3568	0.3495		0.3160	0.3274
7	0.4221	0.3984	14	0.3783	0.3646	21	0.3496	0.3702	28	0.3160	0.3274
	0.4299	0.4165		0.3825	0.3798		0.3376	0.3616		0.3055	0.3177
	0.4430	0.4212		0.3950	0.3875		0.3370	0.3472		0.3081	0.3049
	0.4342	0.4028		0.3898	0.3716		0.3481	0.3557		0.3175	0.3139

Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

Reflow Soldering Profile For Lead-free SMT Process.



NOTES:

1. We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

Heat Generation:

1. Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.

2. Please determine the operating current with consideration of the ambient temperature local to the LED and refer to the plot of Permissible Forward current vs. Ambient temperature on CHARACTERISTICS in this specification. Please also take measures to remove heat from the area near the LED to improve the operational characteristics on the LED.

3. The equation ① indicates correlation between T_j and T_a , and the equation ② indicates correlation between T_j and T_s

$$T_j = T_a + R_{thj-a} * W \quad \text{.....} \quad \text{①}$$

$$T_j = T_s + R_{thj-s} * W \quad \text{.....} \quad \text{②}$$

T_j = dice junction temperature: °C

T_a = ambient temperature: °C

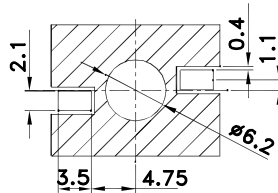
T_s = solder point temperature: °C

R_{thj-a} = heat resistance from dice junction temperature to ambient temperature : °C /W

R_{thj-s} = heat resistance from dice junction temperature to T_s measuring point : °C /W

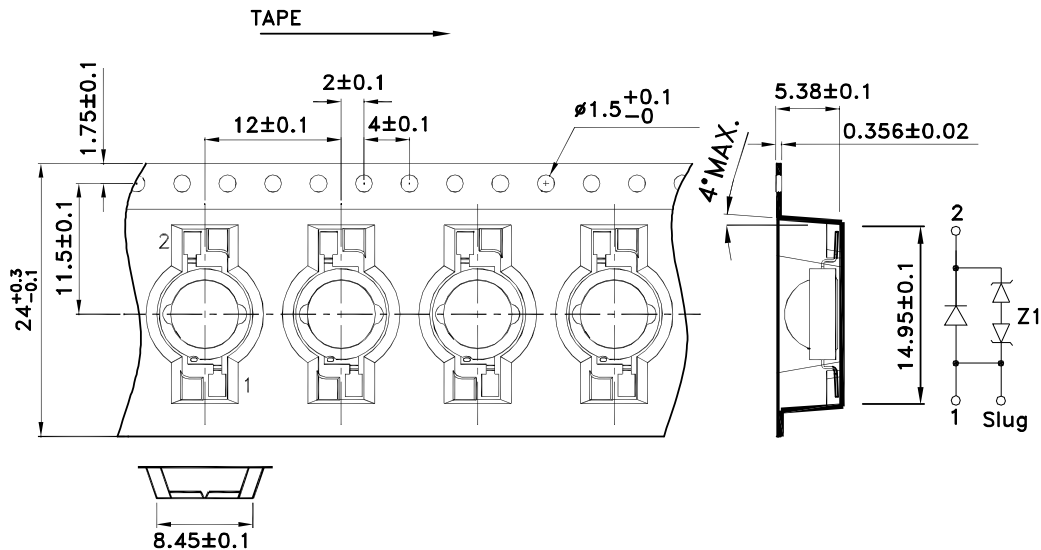
W = inputting power (IFx VF) : W

Recommended Soldering Pattern (Units : mm ; Tolerance: ± 0.1)

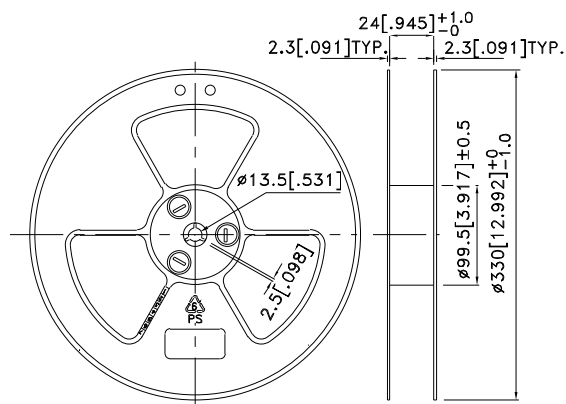


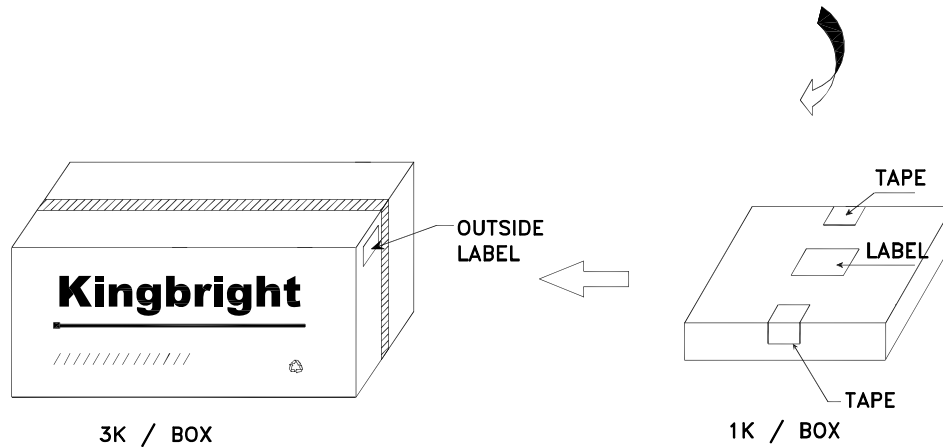
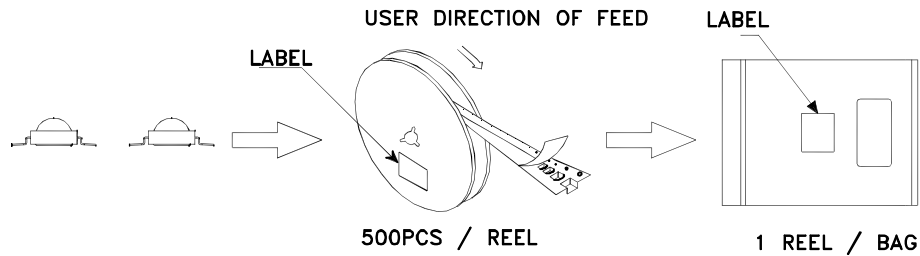
 Solder resist


Tape Dimensions (Units : mm)



Reel Dimension





<h1>Kingbright</h1>	
P/NO: AADG18080xxx	
QTY: 500 pcs	Q.C. Q C XX XX XXXX PASSED
S/N: XXXX	
CODE: XXX	
LOT NO:	
XXXXXXXXXX 	
XXXXXXXXXX	
RoHS Compliant	