Kingbright

5.6mm x 3.0mm SURFACE MOUNT LED

Part Number: AA5630UMW46-C1 Cool White

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

- Size (mm): 5.6 x 3.0 x 0.77
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- White SMD package, silicone resin.
- Moisture sensitivity level : level 2a.
- RoHS compliant.

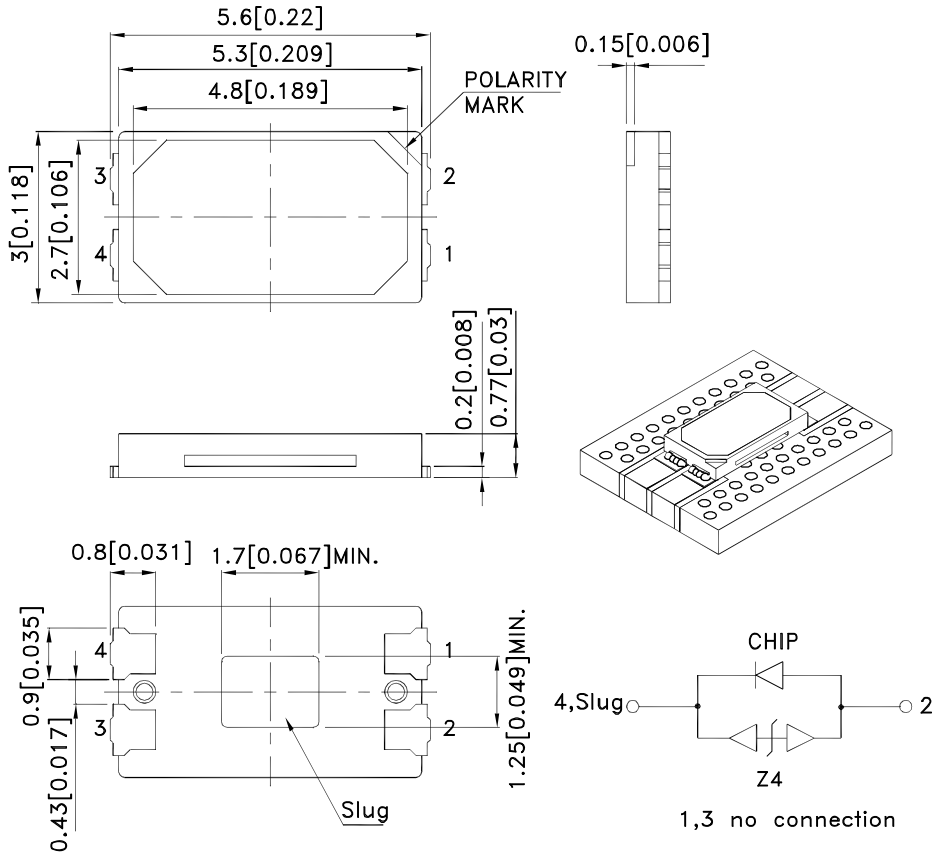
Description

The source color devices are made with InGaN on Sapphire-substrate Light Emitting Diode.
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.

Applications

- LCD TV / Monitor Backlight.
- Architectural lighting.
- Decorative lighting.

Package Dimensions

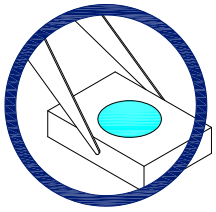


Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

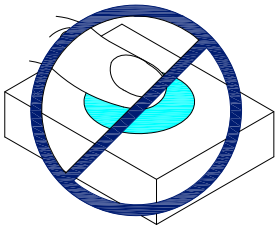
Handling Precautions

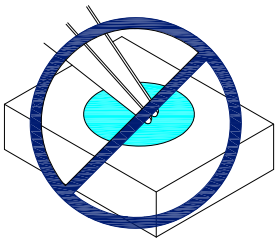
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.
As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.

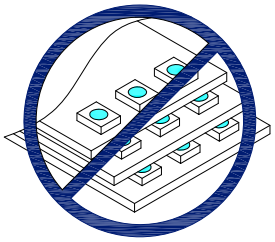


2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

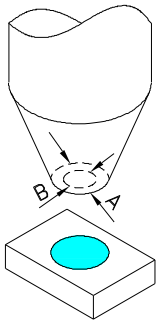




3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



4.1. The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.
4.2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
4.3. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



5. As silicone encapsulation is permeable to gases, some corrosive substances such as H_2S might corrode silver plating of leadframe. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.

Selection Guide

Part No.	Dice	CCT Range(K)			CRI	Φv (lm) [2] @ 120mA				Viewing Angle [1]
		Min.	Typ.	Max.	Typ.	Code.	Min.	Max.	Typ.	2θ1/2
AA5630UMW46-C1	Cool White (InGaN)	5310	6000	7040	83	B8	35	42	45	120°
						B9	42	50		

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity/ luminous Flux: +/-15%.
3. Luminous flux value is traceable to the CIE127-2007 compliant national standards.

Absolute Maximum Ratings at T_A=25°C

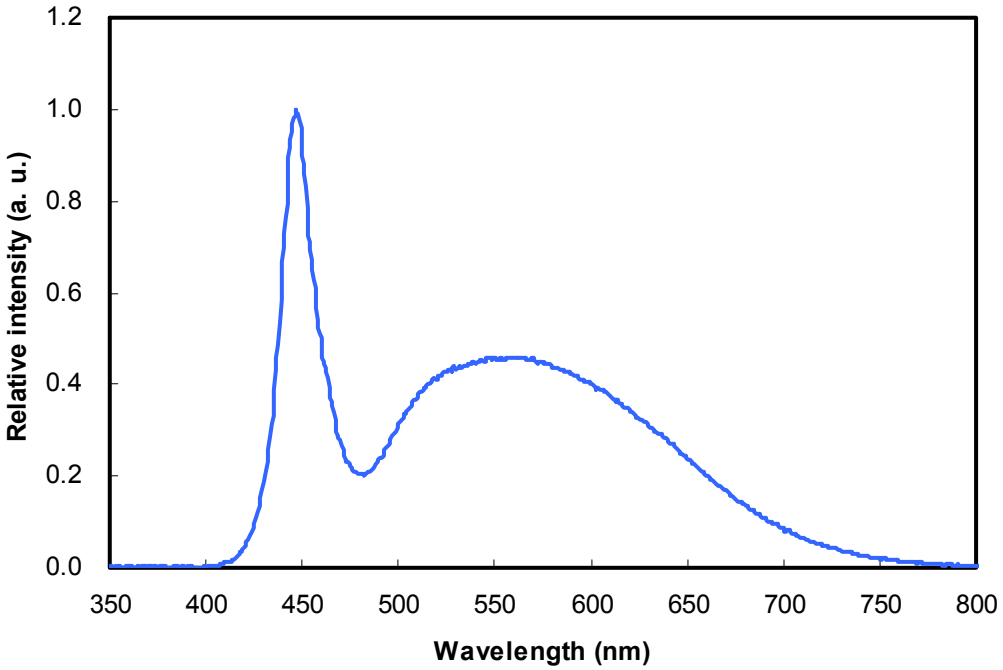
Parameter	Symbol	Value	Unit
Power dissipation	P_D	840	mW
Junction temperature[1]	T_J	110	°C
Reverse Voltage	V_R	5	V
Operating Temperature	Top	-40 To +85	°C
Storage Temperature	Tstg	-40 To +85	°C
DC Forward Current [1]	I_F	240	mA
Peak Forward Current [2]	I_{FM}	350	mA
Electrostatic Discharge Threshold (HBM)		8000	V
Thermal resistance [1](Junction/ambient)	$R_{th\ j\text{-}a}$	90	°C/W
Thermal resistance (Junction/solder point)	$R_{th\ j\text{-}s}$	30	°C/W

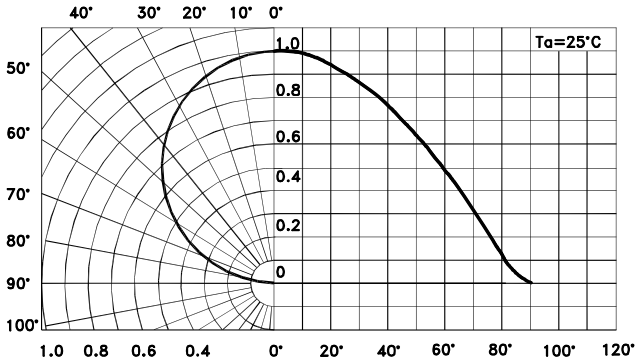
Notes:
1.Results from mounting on metal core PCB
2.1/10 Duty Cycle, 0.1ms Pulse Width.

Electrical / Optical Characteristics at T_A=25°C

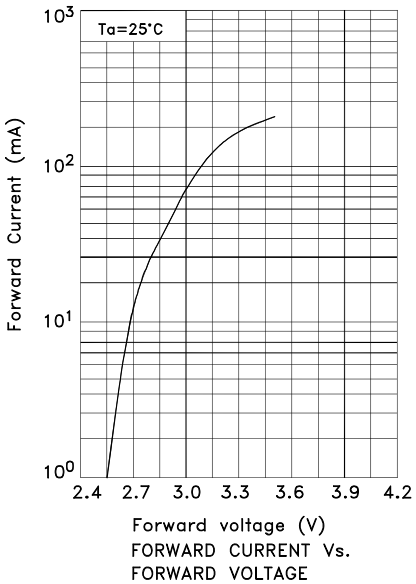
Parameter	Symbol	Value	Unit
Forward Voltage I_F = 120mA [Min.]	V_F [1]	2.8	V
Forward Voltage I_F = 120mA [Typ.]		3.1	
Forward Voltage I_F = 120mA [Max.]		3.4	
Allowable Reverse Current [Max.]	I_R	85	mA
Temperature coefficient of x I_F = 120mA, -10°C ≤ T≤ 85°C [Typ.]	TC x	-0.17	10^{-3}/°C
Temperature coefficient of y I_F = 120mA, -10°C ≤ T≤ 85°C [Typ.]	TCy	-0.19	10^{-3}/°C
Temperature coefficient of V_F I_F = 120mA, - 10°C ≤ T≤ 85°C [Typ.]	TC_V	-2.7	mV/°C

Note:
1.Forward Voltage: + / -0.1V.

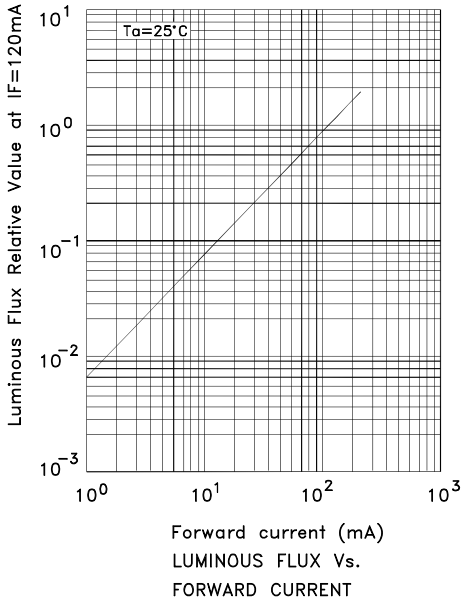




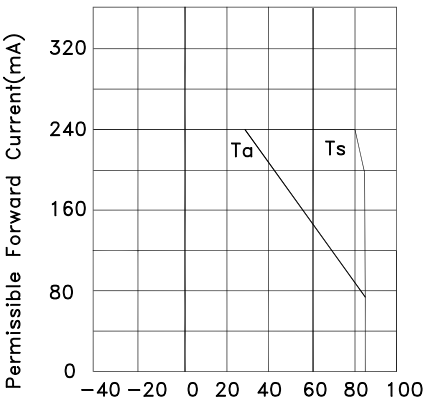
SPATIAL DISTRIBUTION



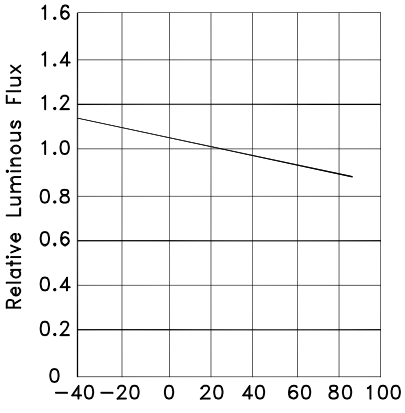
FORWARD CURRENT Vs.
FORWARD VOLTAGE



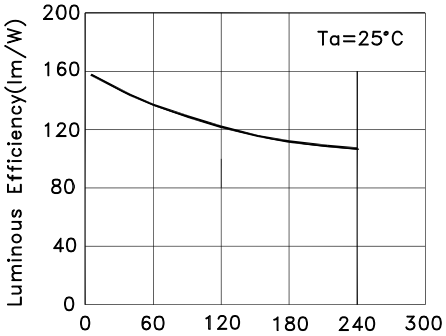
LUMINOUS FLUX Vs.
FORWARD CURRENT



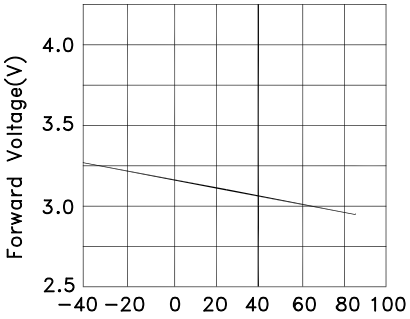
FORWARD CURRENT
DERATING CURVE



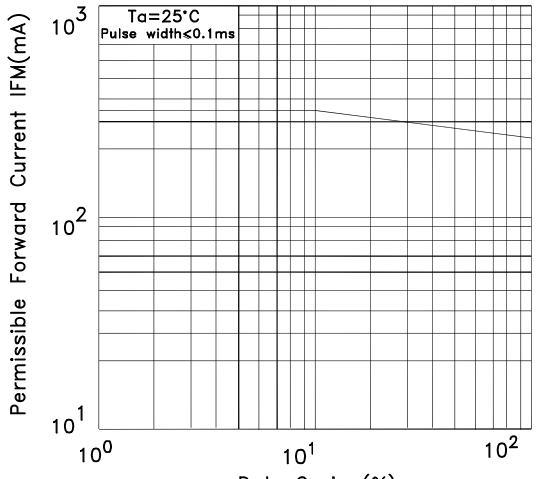
LUMINOUS FLUX VS.
AMBIENT TEMPERATURE



LUMINOUS EFFICIENCY Vs.
FORWARD CURRENT



FORWARD VOLTAGE Vs.
AMBIENT TEMPERATURE



Permissible Forward Current VS Duty Cycle

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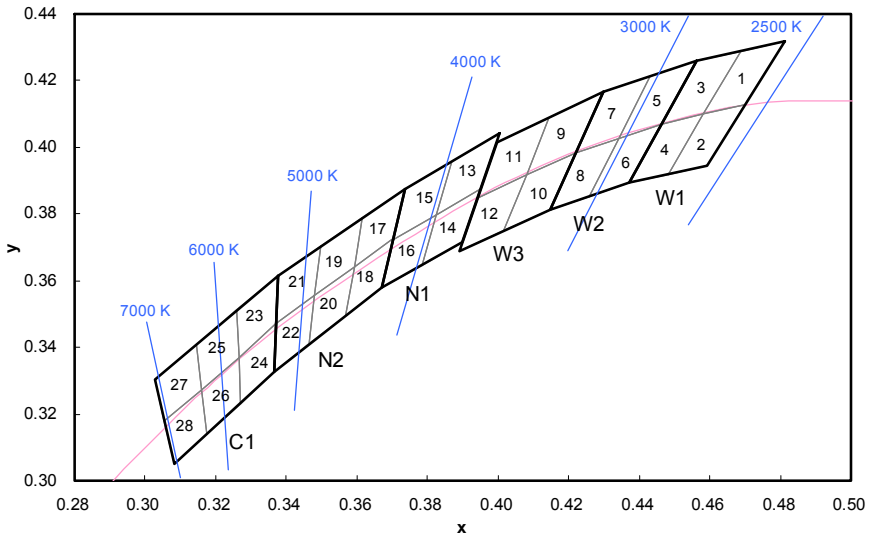
CCT 2500-7000 K Bin Code



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

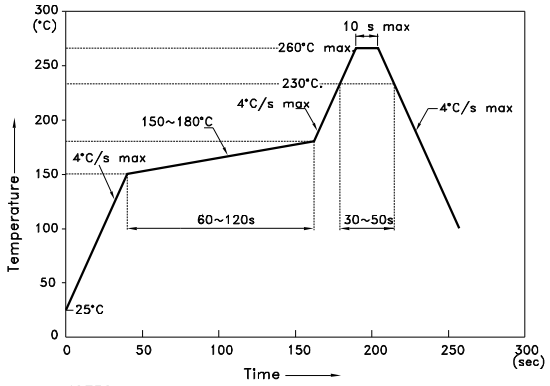
Notes:
Shipment may contain more than one chromaticity regions.Orders for single chromaticity region are generally not accepted.
Measurement tolerance of the chromaticity coordinates is ±0.01.

	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

AA5630UMW46-C1

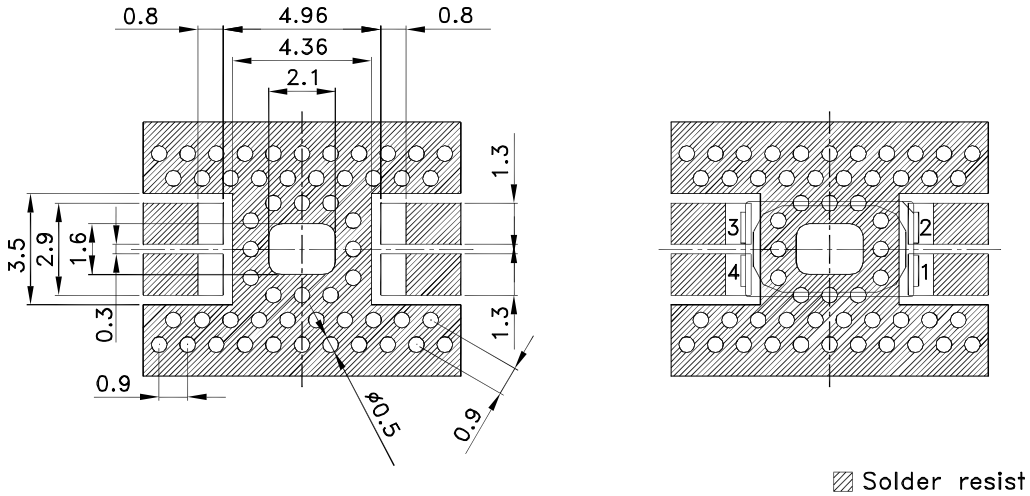
Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

Reflow Soldering Profile For Lead-free SMT Process.



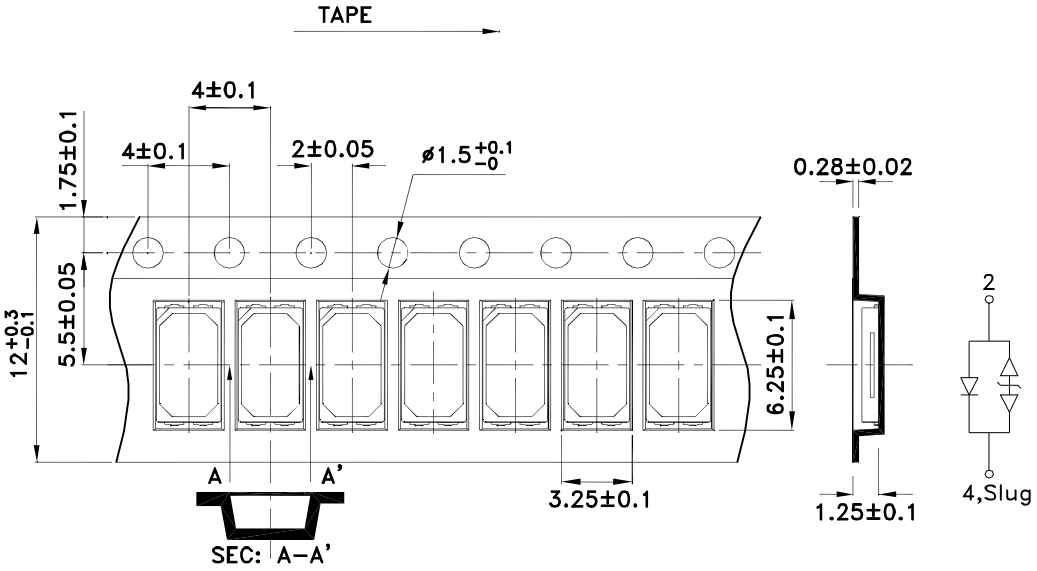
NOTES:
1.We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2.Don't cause stress to the epoxy resin while it is exposed to high temperature.
3.Number of reflow process shall be 2 times or less.

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

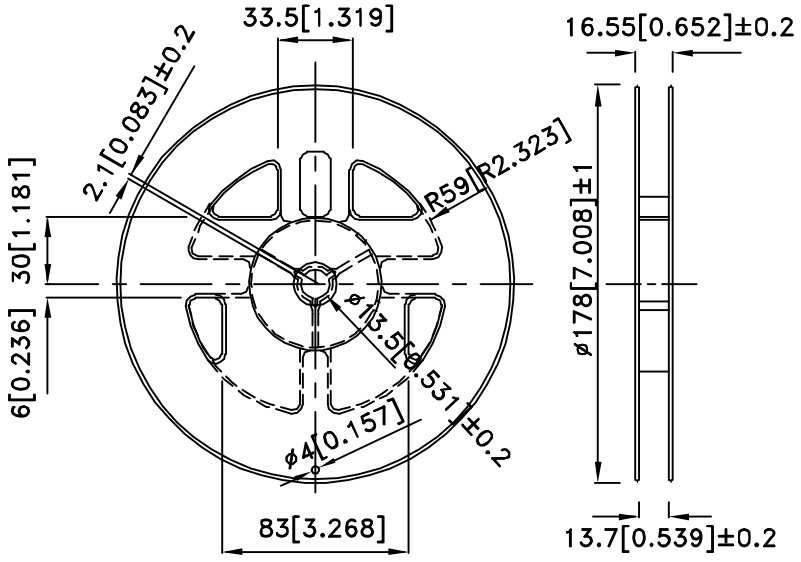


0.8mm FR4-Based Boards
For both the open via PTH and filled and capped via design, the finished hole diameter is 0.5mm. A smaller diameter will lead to an increase of thermal resistance. The recommended distance between two holes is 0.4 mm.This results in a minimal pitch of 0.9mm between the vias.

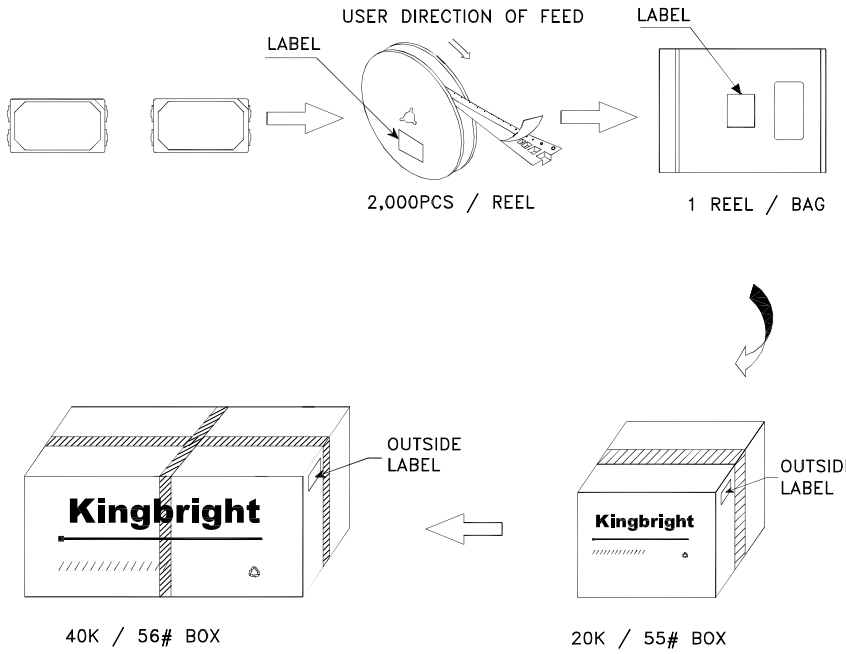
Tape Dimensions
(Units : mm)

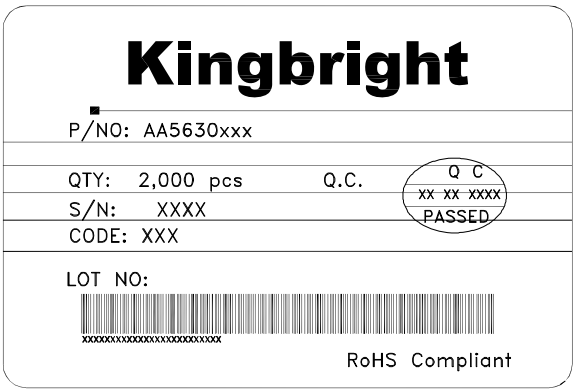


Reel Dimension



PACKING & LABEL SPECIFICATIONS **AA5630UMW46-C1**





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