Part Number: XZRUW46X143SNA

5.6mm x 3.0mm SURFACE MOUNT LED LAMP

Features

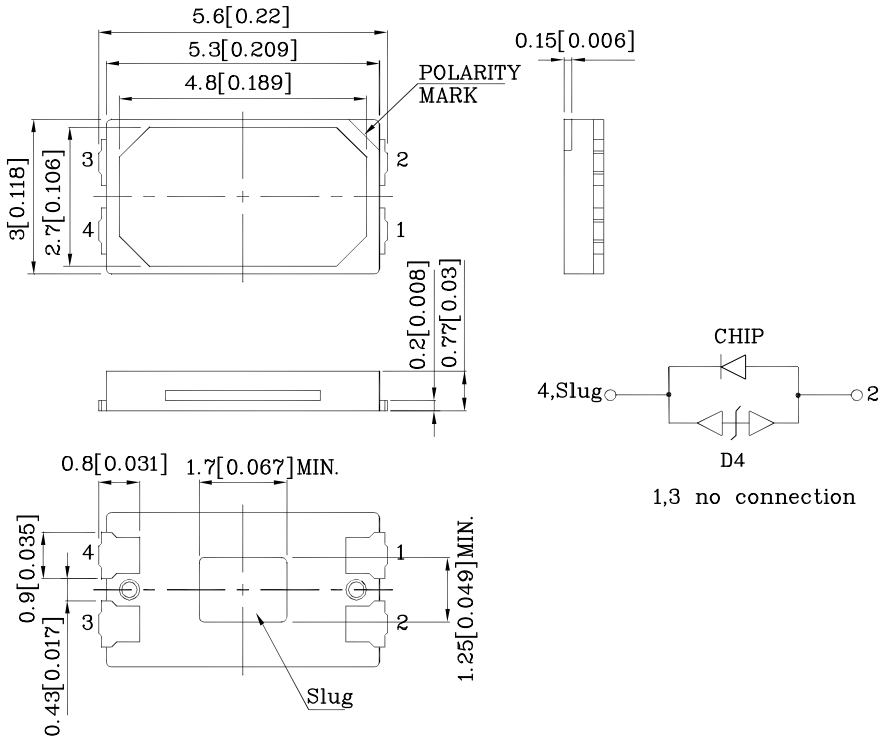
- 5.6mm x 3.0mm x 0.77mm SMD LED
- IR-reflow compatible
- Standard Package: 2,000pcs / Reel
- White SMD package with silicone resin
- MSL (Moisture Sensitivity Level): 2a
- Medium CRI: 83
- RoHS compliant

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Typical Applications

- Entertainment and accent lighting
- Architectural lighting
- Ideal substitute for halogen and florescent lighting
- Automotive interior and exterior lighting
- Specialty lighting (Markers, Beacon, Pathway)

Package Schematics

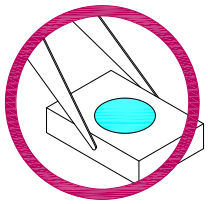


Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

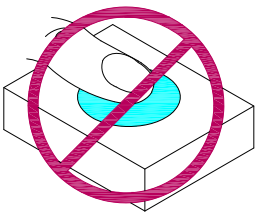
Handling Precautions

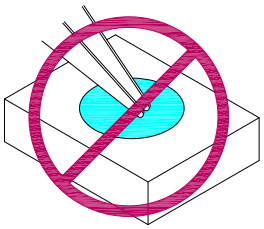
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.
As a result, special handling precautions need to be observed during assembly using 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.

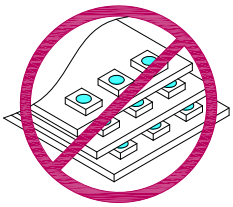


2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

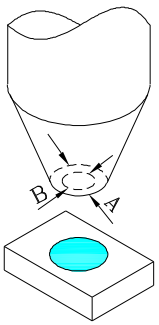




3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



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.

Part Number	Dice	Lens-color	Φv (lm) [2] CIE127-2007* @ 120mA				Viewing Angle 2 θ 1/2 [1]
			Code.	Min.	Max.	typ.	
XZRUW46X143SNA	Neutral White (InGaN)	Water Clear	B8*	35*	42*	41.7*	120°
			B9*	42*	50*		

Notes:
1. θ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity / luminous flux: +/-15%.
*Luminous Flux value is in accordance with CIE127-2007 standards.

Absolute Maximum Ratings at T_A=25°C

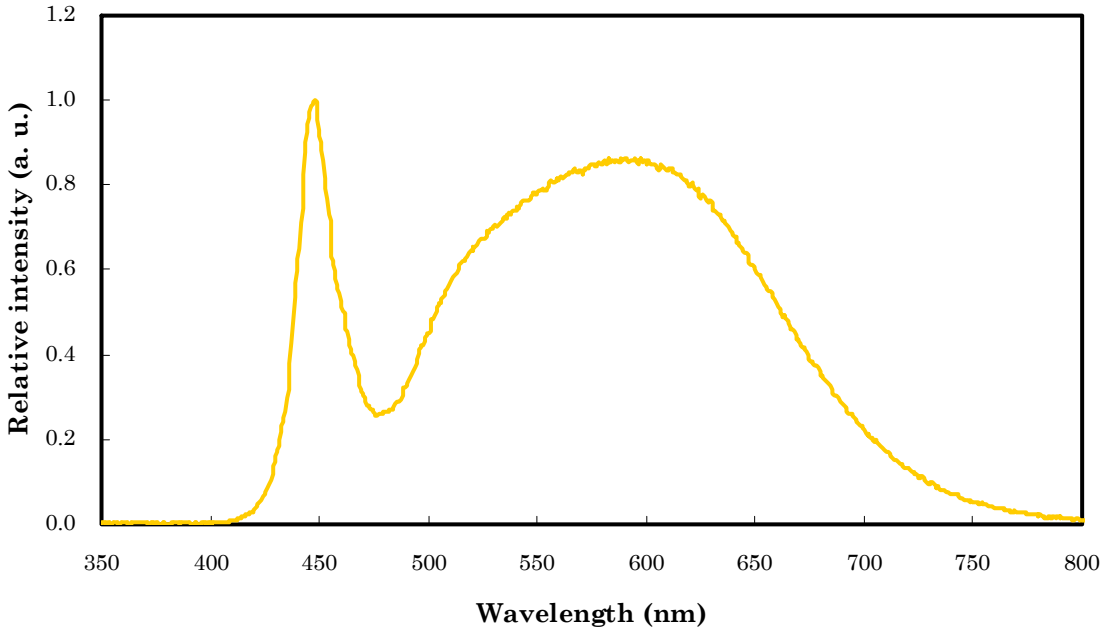
Parameter	Symbol	Value	Unit
Power dissipation	P_D	840	mW
Junction temperature[1]	T_J	110	°C
Reverse Voltage	V_R	5	V
Operating Temperature	Top	-40 To +85	°C
Storage Temperature	Tstg	-40 To +85	°C
DC Forward Current [1]	I_F	240	mA
Peak Forward Current [2]	I_{FM}	350	mA
Electrostatic Discharge Threshold (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

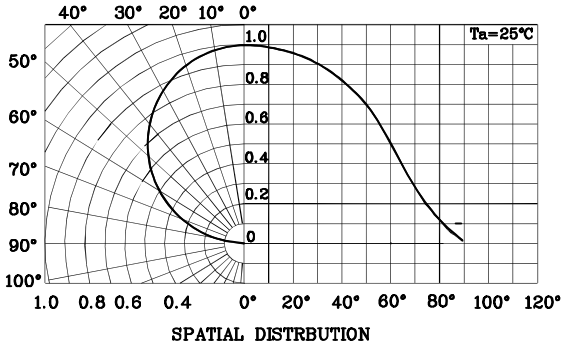
Notes:
1.Results from mounting on metal core PCB
2.1/10 Duty Cycle, 0.1ms Pulse Width.

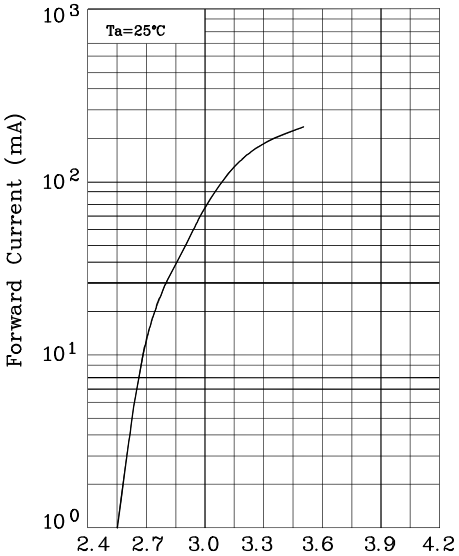
Electrical / Optical Characteristics at T_A=25°C

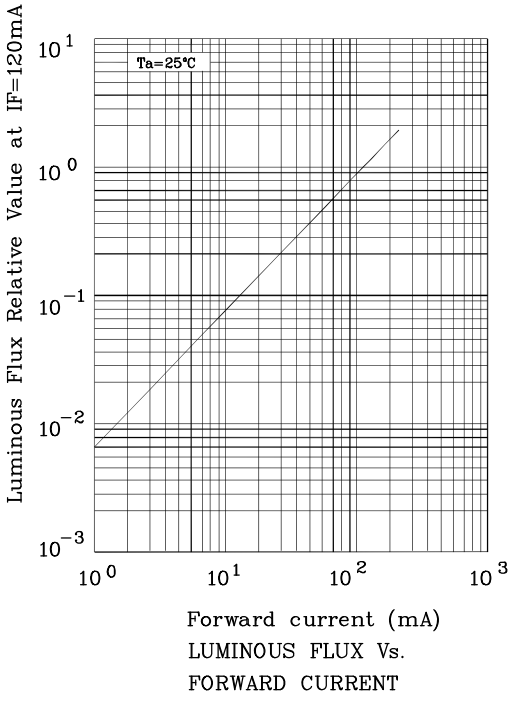
Parameter	Symbol	Value	Unit
Forward Voltage I_F = 120mA [Min.]	V_F [1]	2.8	V
Forward Voltage I_F = 120mA [Typ.]		3.1	
Forward Voltage I_F = 120mA [Max.]		3.4	
Color Temperature I_F=120mA [Min.]	CCT	3710	K
Color Temperature I_F=120mA [Typ.]		4000	
Color Temperature I_F=120mA [Max.]		4260	
Allowable Reverse Current [Max.]	I_R	85	mA
Temperature coefficient of x I_F = 120mA, -10°C ≤ T≤ 85°C [Typ.]	TC x	-0.14	10^{-3}/°C
Temperature coefficient of y I_F = 120mA, -10°C ≤ T≤ 85°C [Typ.]	TCy	-0.16	10^{-3}/°C
Temperature coefficient of V_F I_F = 120mA, - 10°C ≤ T≤ 85°C [Typ.]	TC_V	-2.7	mV/°C

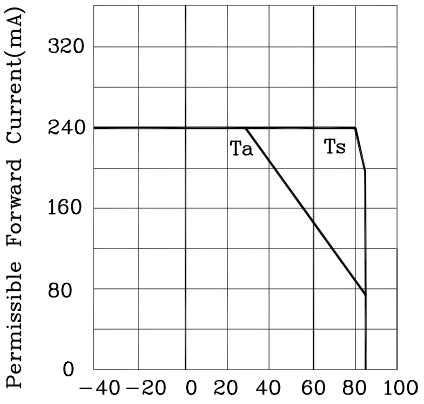
Note:
1.Forward Voltage: + / -0.1V.


Relative intensity (a. u.)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
350
400
450
500
550
600
650
700
750
800
Wavelength (nm)

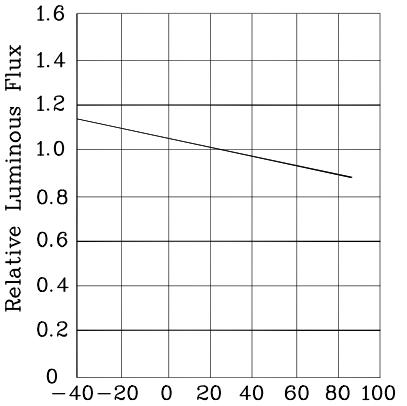

40° 30° 20° 10° 0°
Ta=25℃
50°
60°
70°
80°
90°
100°
1.0
0.8
0.6
0.4
0.2
0
1.0 0.8 0.6 0.4 0° 20° 40° 60° 80° 100° 120°
SPATIAL DISTRBUTION


Ta=25℃
Forward Current (mA)
10^3
10^2
10^1
10^0
2.4 2.7 3.0 3.3 3.6 3.9 4.2
Forward voltage (V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE

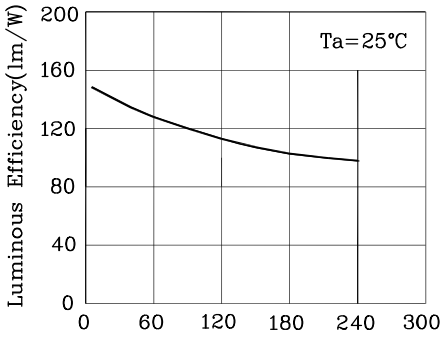

Ta=25℃
Luminous Flux Relative Value at IF=120mA
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
10^0 10^1 10^2 10^3
Forward current (mA)
LUMINOUS FLUX Vs.
FORWARD CURRENT



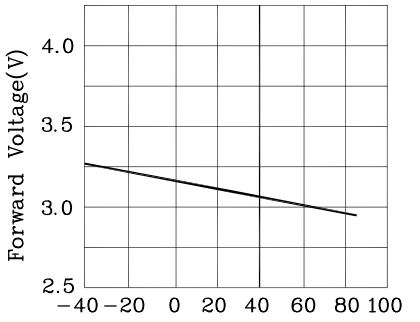
FORWARD CURRENT
DERATING CURVE



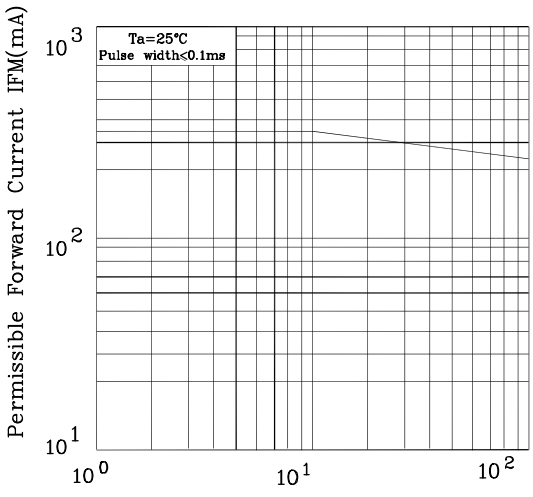
LUMINOUS FLUX VS.
AMBIENT TEMPERATURE



LUMINOUS EFFICIENCY Vs.
FORWARD CURRENT

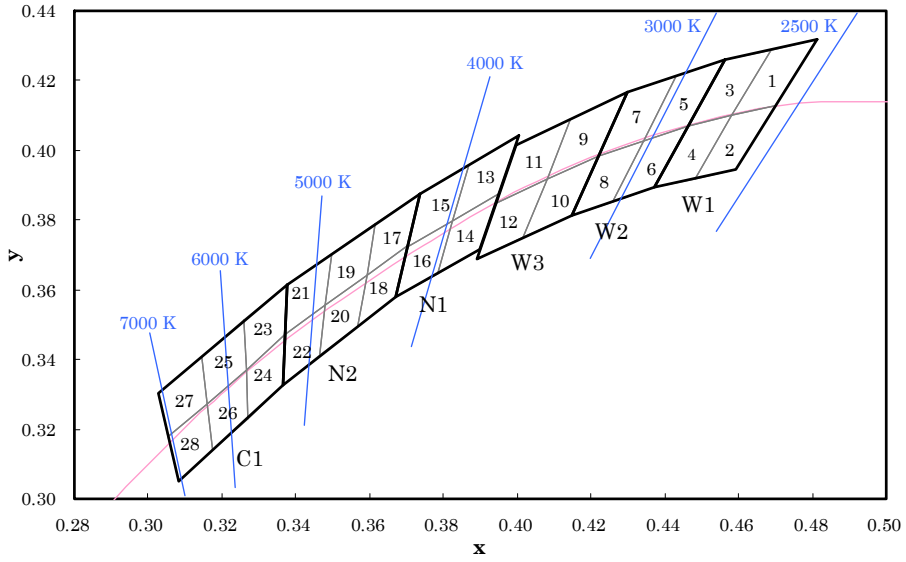


FORWARD VOLTAGE Vs.
AMBIENT TEMPERATURE



Permissible Forward Current VS Duty Cycle

CCT 2500-7000 K Bin Code



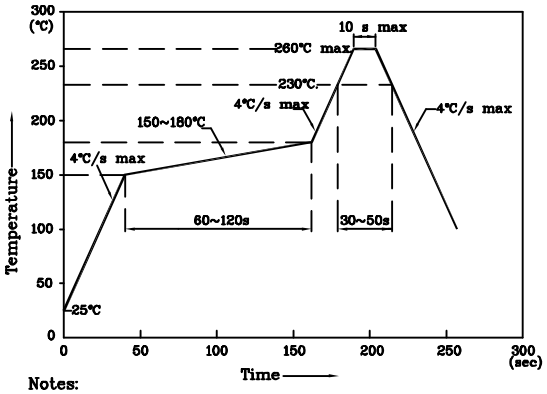
Color	Group	Chromaticity Regions	CCT (K)		
			Min.	Typ.	Max.
Warm White	W1	1, 2, 3, 4	2580	2700	2870
	W2	5, 6, 7, 8	2870	3000	3220
	W3	9, 10, 11, 12	3220	3500	3710
Neutral White	N1	13, 14, 15, 16	3710	4000	4260
	N2	17, 18, 19, 20, 21, 22	4260	4700	5310
Cool White	C1	23, 24, 25, 26, 27, 28	5310	6000	7040

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

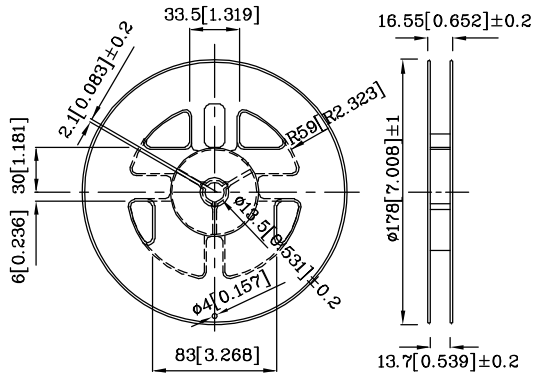
❖ LED is recommended for reflow soldering and soldering profile is shown below.

Reflow Soldering Profile for SMD Products (Pb−Free Components)

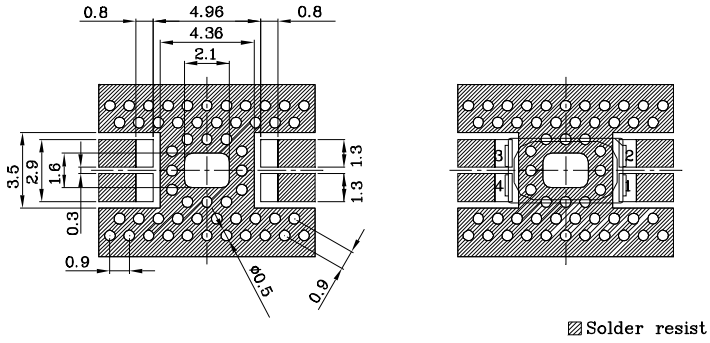


Notes:
1. Maximum soldering temperature should not exceed 260°C
2. Recommended reflow temperature: 145°C−260°C
3. Do not put stress to the epoxy resin during high temperatures conditions

❖ Reel Dimension

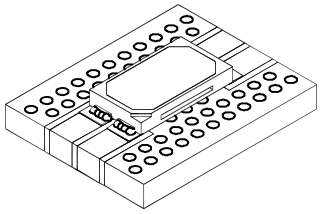


❖ Recommended Soldering Pattern (Units : mm; Tolerance: ±0.1)

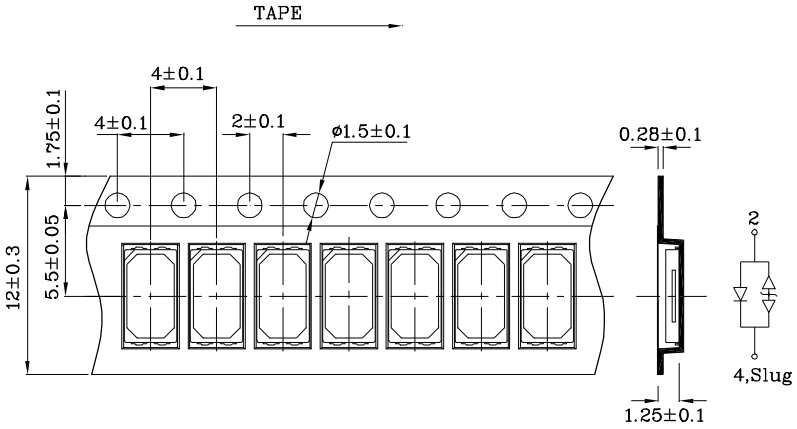


0.8mm FR4−Based Boards
For both the open via PTH and filled and capped via design, the finished hole diameter is 0.5mm. A smaller diameter will lead to an increase of thermal resistance. The recommended distance between two holes is 0.4 mm.This results in a minimal pitch of 0.9mm between the vias.

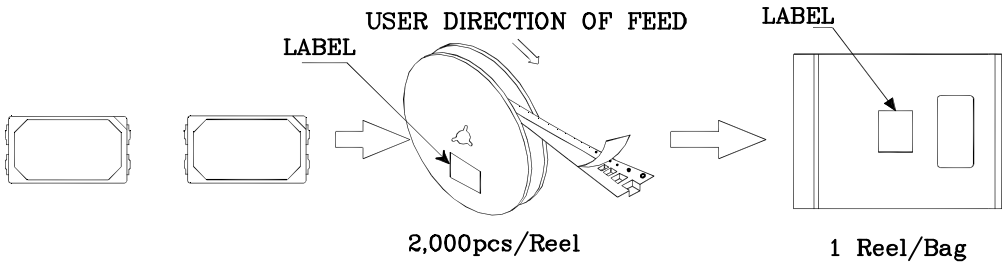
❖ The device has a single mounting surface. The device must be mounted according to the specifications.

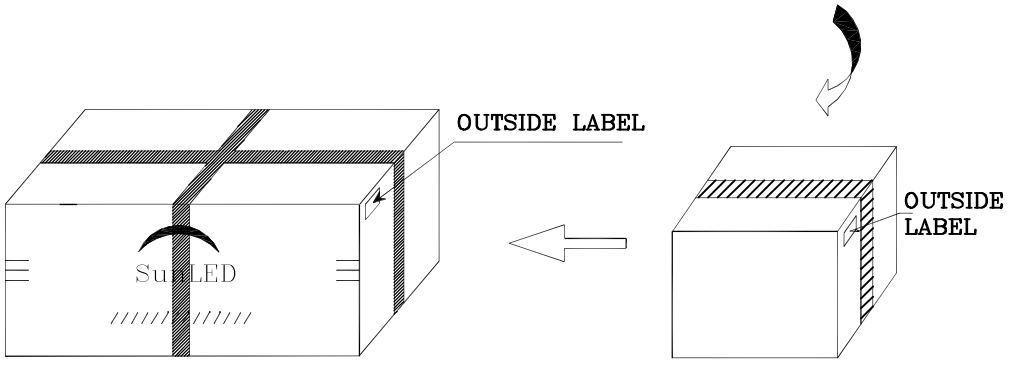


❖ Tape Specification (Units : mm)



PACKING & LABEL SPECIFICATIONS





40K / BOX

20K / BOX