

### Features

- Single color.
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- Ideal for backlighting.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 4.
- RoHS compliant.

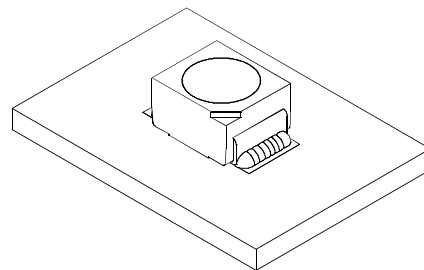
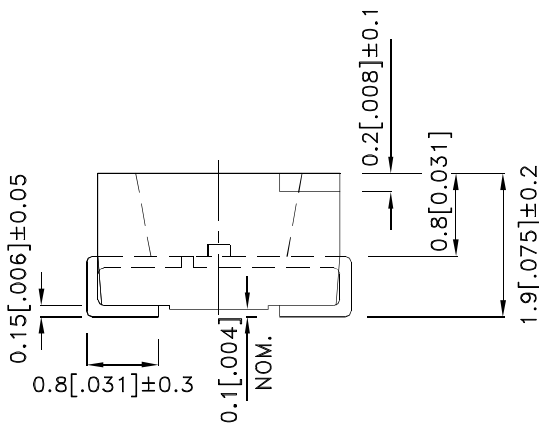
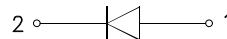
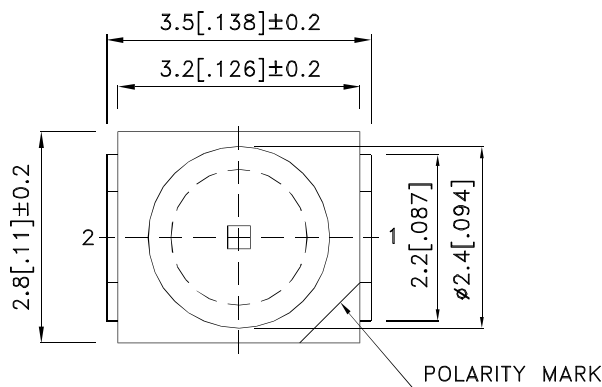
### Description

The Hyper Red device is based on light emitting diode chip made from AlGaInP.

### Applications

- Traffic signaling.
- Backlighting (illuminated advertising , general lighting).
- Interior and exterior automotive lighting.
- Substitution of micro incandescent lamps.
- Reading lamps.
- Signal and symbol luminaire for orientation.
- Marker lights (e.g. Steps, exit ways, etc).
- Decorative and entertainment lighting.
- Indoor and outdoor commercial and residential architectural lighting.

### Package Dimensions



#### Notes:

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

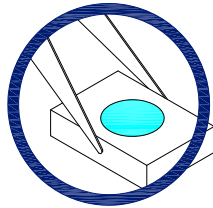


## Handling Precautions

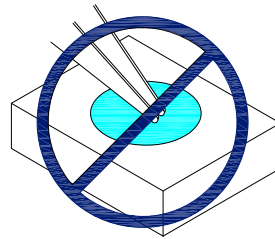
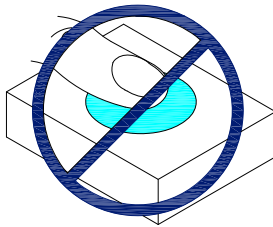
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

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.

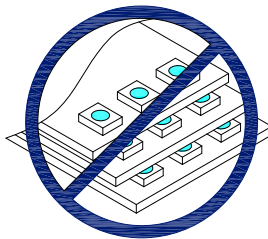
1. Handle the component along the side surfaces by using forceps or appropriate tools.



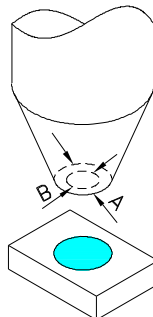
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



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<sub>2</sub>S 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	Lens Type	Iv (mcd) [2] @ 20mA			Viewing Angle [1]
			Code.	Min.	Max.	2θ1/2
AA3528SES/J3-AMT	Hyper Red (AlGaInP)	Water Clear	V	1300	1600	120°
			W	1600	1900	
			X	1900	2300	
			Y	2300	2700	
			*Q	*300	*400	
			*R	*400	*500	
			*S	*500	*700	
			*T	*700	*1000	

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%.
- \* Luminous intensity value is traceable to the CIE127-2007 compliant national standards.

## Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Value	Unit
Power dissipation	P <sub>D</sub>	196	mW
Reverse Voltage	V <sub>R</sub>	5	V
Junction temperature	T <sub>J</sub>	115	°C
Operating Temperature	Top	-40 To +100	°C
Storage Temperature	T <sub>stg</sub>	-40 To +115	°C
DC Forward Current[1]	I <sub>F</sub>	70	mA
Peak Forward Current [2]	I <sub>FM</sub>	150	mA
Electrostatic Discharge Threshold (HBM)		3000	V
Thermal Resistance (Junction/ambient) [1]	R <sub>th(j-a)</sub>	240	°C/W

Notes:

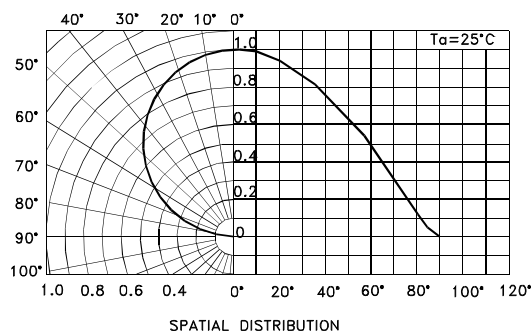
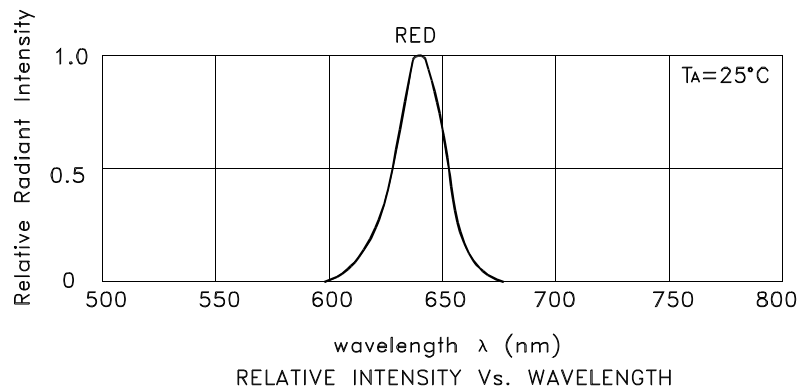
1. R<sub>th(j-a)</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad),
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

## Electrical / Optical Characteristics at Ta=25°C

Parameter	Symbol	Value	Unit
Wavelength at peak emission If=20mA [Typ.]	$\lambda$ peak	640	nm
Dominant Wavelength If=20mA [Min.]	$\lambda$ dom [1]	610	nm
Dominant Wavelength If=20mA [Max.]	$\lambda$ dom [1]	635	nm
Spectral bandwidth at 50%Φ REL MAX If=20mA [Typ.]	$\Delta\lambda$	25	nm
Forward Voltage If=20mA [Min.]	$V_F$ [2]	-	V
Forward Voltage If=20mA [Typ.]		2.2	
Forward Voltage If=20mA [Max.]		2.8	
Reverse Current (VR = 5V) [Max.]	IR	10	uA
Temperature coefficient of $\lambda$ peak If=20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TC $\lambda$ peak	0.14	nm/° C
Temperature coefficient of $\lambda$ dom If=20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TC $\lambda$ dom	0.06	nm/° C
Temperature coefficient of VF If=20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TCV	-1.8	mV/° C

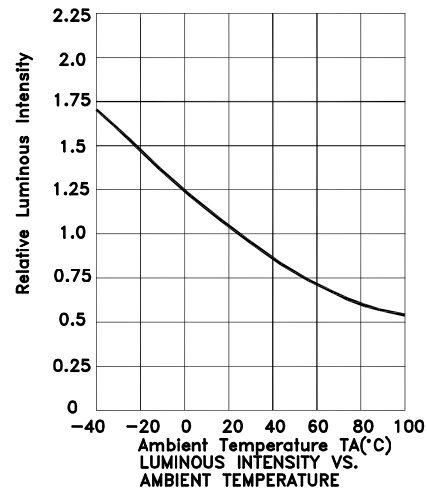
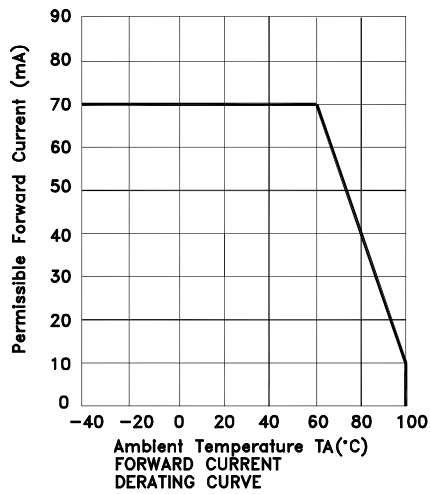
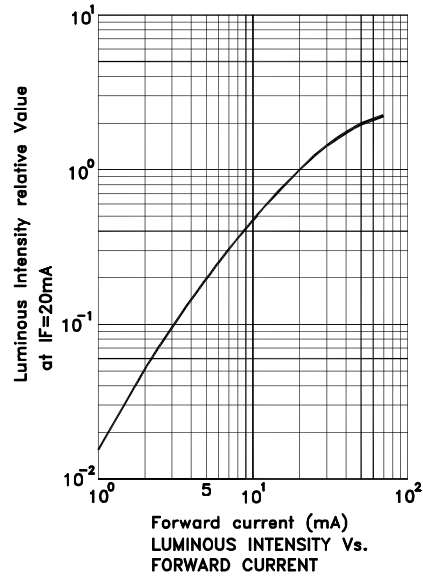
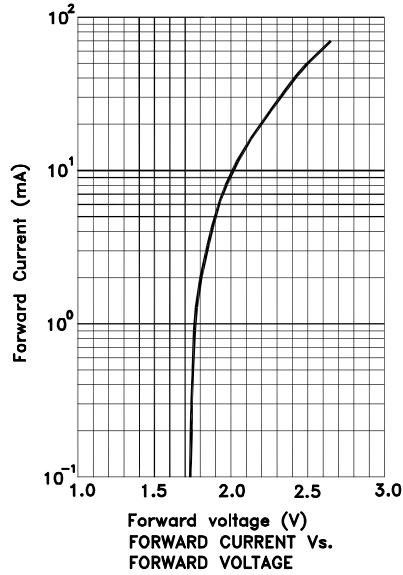
Notes:

- 1.The dominant Wavelength ( $\lambda$  d) above is the setup value of the sorting machine. (Tolerance  $\lambda$  d : ±1nm. )
- 2.Forward Voltage: +/-0.1V.
3. Wavelength value is traceable to the CIE127-2007 compliant national standards.
- 4.Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.



Hyper Red

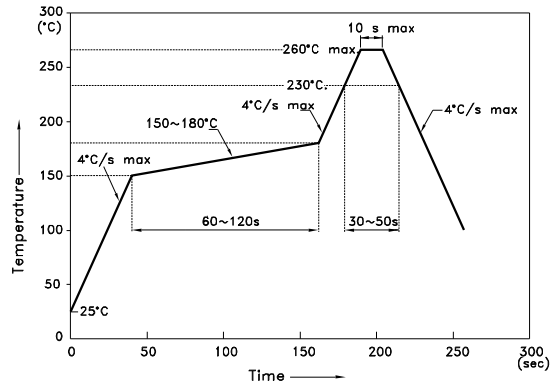
AA3528SES/J3-AMT



## AA3528SES/J3-AMT

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.



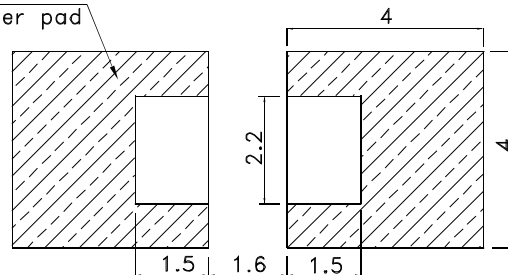
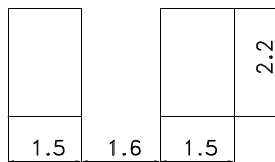
NOTES:

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)

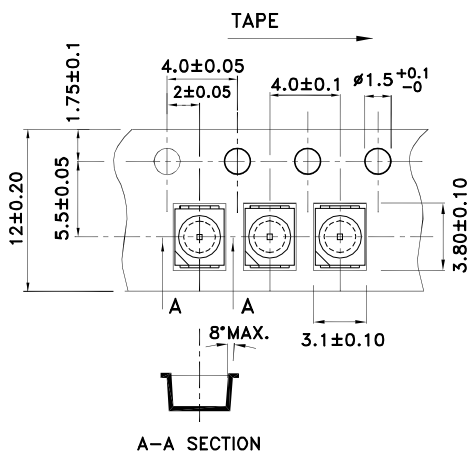
Pad design for improved heat dissipation

Cu-area ≥ 16mm<sup>2</sup>  
per pad

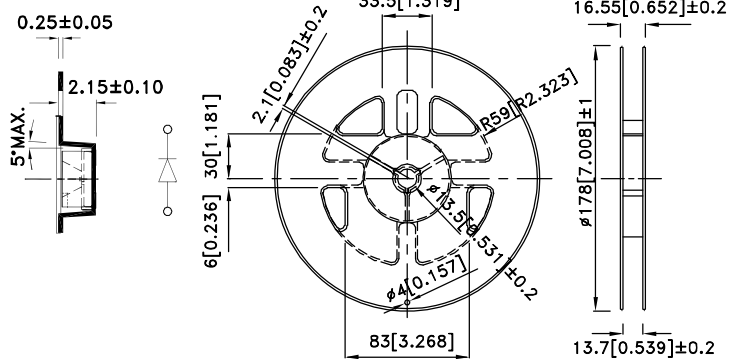


▨ Solder resist

### Tape Specifications (Units : mm)

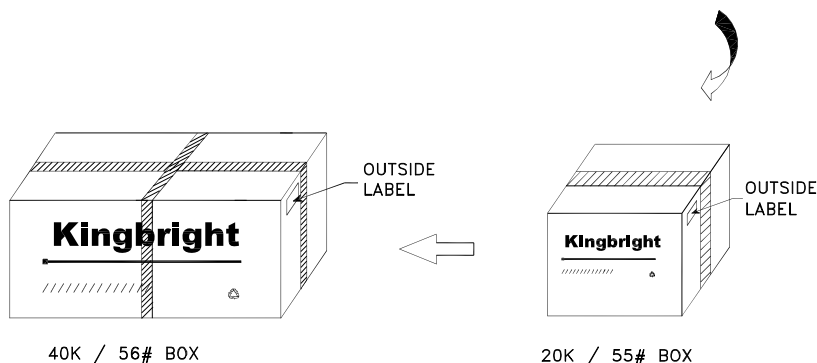
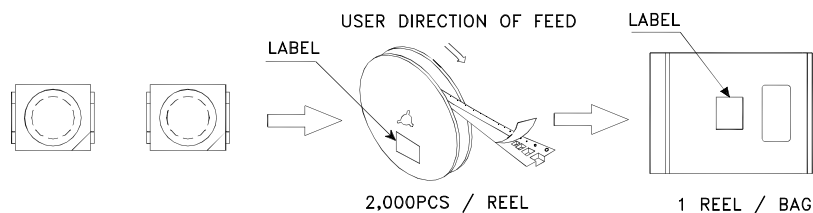



### Reel Dimension



## PACKING & LABEL SPECIFICATIONS

## AA3528SES/J3-AMT



<b>Kingbright</b>	
P/NO: AA3528xxx	
QTY: 2,000 pcs	Q.C. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Q C XX XX XXXX PASSED</span>
S/N: XXXX	
CODE: XXX	
LOT NO:	
 xxxxxxxxxxxxxxxxxxxxxxxx	
RoHS Compliant	

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## Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below

**Lot Tolerance Percent Defective (LTPD) : 10%**

No.	Test Item	Standards	Test Condition	Test Times / Cycles	Number of Damaged
1	Continuous operating test	-	Ta =25°C ,IF = maximum rated current*	1,000 h	0 / 22
2	High Temp. operating test	EIAJ ED-4701/100(101)	Ta = 100°C IF = derated current at 100°C	1,000 h	0 / 22
3	Low Temp. operating test	-	Ta = -40°C, IF = maximum rated current*	1,000 h	0 / 22
4	High temp. storage test	EIAJ ED-4701/100(201)	Ta = maximum rated storage temperature	1,000 h	0 / 22
5	Low temp. storage test	EIAJ ED-4701/100(202)	Ta = -40°C	1,000 h	0 / 22
6	High temp. & humidity storage test	-	Ta = 60°C, RH = 90%	500 h	0 / 22
7	High temp. & humidity operating test	-	Ta = 60°C, RH = 90% IF = derated current at 60°C	500 h	0 / 22
8	Soldering reliability test	EIAJ ED-4701/100(301)	Moisture soak : 30°C,70% RH, 72h Preheat : 150~180°C(120s max.) Soldering temp : 260°C(10s)	2 times	0 / 18
9	Thermal shock operating test	-	Ta = -40°C(15min) ~ 100°C(15min) IF = derated current at 100°C	1,000 cycles	0 / 22
10	Thermal shock test	-	Ta = -40°C(15min) ~ 100°C(15min)	1,000 cycles	0 / 22
11	Electric Static Discharge (ESD)	EIAJ ED-4701/100(304)	C = 100pF , R2 = 1.5KΩ V = 3000V	Once each Polarity	0 / 22
12	Vibration test	-	a = 196m/s <sup>2</sup> , f = 100~2KHz , t = 48min for all xyz axes	4 times	0 / 22

\* : Refer to forward current vs. derating curve diagram

## Failure Criteria

Items	Symbols	Conditions	Failure Criteria
luminous Intensity	Iv	IF = 20mA	Testing Min. Value <Spec.Min.Value x 0.5
Forward Voltage	Vf	IF = 20mA	Testing Max. Value ≥Spec.Max.Value x 1.2
Reverse Current	IR	VR = Maximum Rated Reverse Voltage	Testing Max. Value ≥Spec.Max.Value x 2.5
High temp. storage test	-	-	Occurrence of notable decoloration, deformation and cracking