

Part Number: KAD1-9090SE28Z1S

Reddish-Orange



**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.
- Low voltage DC operated.
- Superior ESD protection.
- Package: 500pcs/reel.
- Not reflow compatible.
- The component is internally protected with silicone gel.
- RoHS compliant.

## 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.

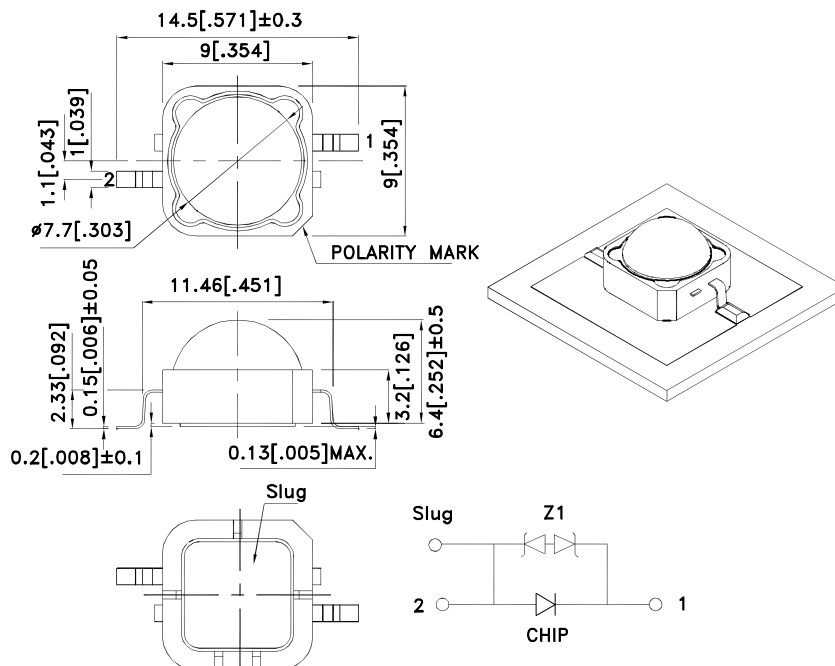
All devices, equipment and machinery must be electrically grounded.



## Applications

- traffic signaling.
- backlighting (illuminated advertising, general lighting).
- interior and exterior automotive lighting.
- substitution of micro incandescent lamps.
- portable light source (e.g. bicycle flashlight).
- 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 ±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.

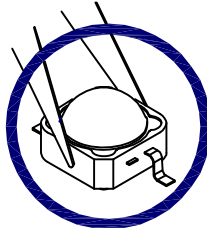


## Handling Precautions

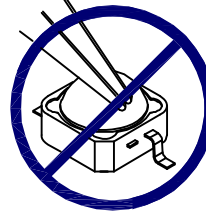
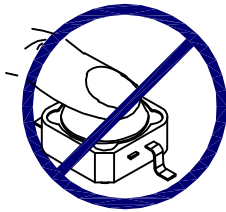
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

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.

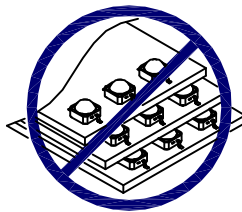
1. Handle the component along the side surfaces by using forceps or appropriate tools.



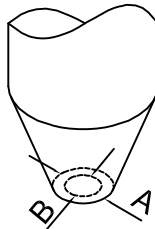
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



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



- 4.1. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.
- 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	Lens Type	luminous Intensity [2] Iv (cd)@ 350mA		Φv (lm) @ 350mA [2]		Viewing Angle [1]
			Min.	Typ.	Min.	Typ.	2θ1/2
KAD1-9090SE28Z1S	Reddish-Orange (AlGaInP)	Water Clear	8	12	24	35	100°

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%.

## Absolute Maximum Ratings at TA=25°C

Parameter	Symbol	Value	Unit
Power dissipation	P <sub>D</sub>	1.05	W
Junction temperature	T <sub>J</sub>	110	°C
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	T <sub>op</sub>	-40 To +100	°C
Storage Temperature	T <sub>stg</sub>	-40 To +100	°C
DC Forward Current [1]	I <sub>F</sub>	350	mA
Peak Forward Current [2]	I <sub>FM</sub>	500	mA
Thermal resistance [1]	R <sub>th j-slug</sub>	12	°C/W
Electrostatic Discharge Threshold (HBM)		8000	V
Iron Soldering [3]	350°C For 3 Seconds		

Notes:

1. Results from mounting on MCPCB.
2. 1/10 Duty Cycle, 0.1ms Pulse Width.
3. 1.29mm distance from solder joint to package.

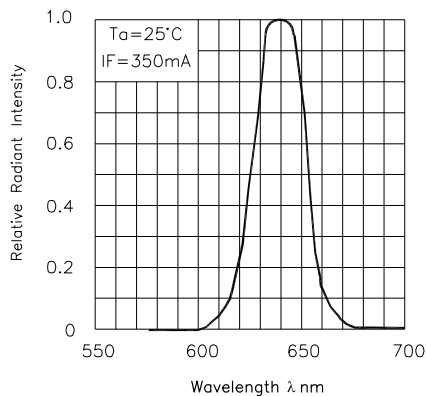
## Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Value	Unit
Wavelength at peak emission I <sub>F</sub> =350mA [Typ.]	λ <sub>peak</sub>	640	nm
Dominant Wavelength I <sub>F</sub> =350mA [Typ.]	λ <sub>dom</sub> [1]	625	nm
Spectral bandwidth at 50%Φ <sub>REL MAX</sub> I <sub>F</sub> =350mA [Typ.]	Δλ	30	nm
Allowable Reverse Current [Max.]	I <sub>R</sub>	85	mA
Forward Voltage I <sub>F</sub> =350mA [Min.]	V <sub>F</sub> [2]	2.0	V
Forward Voltage I <sub>F</sub> =350mA [Typ.]		2.5	
Forward Voltage I <sub>F</sub> =350mA [Max.]		3.0	
Temperature coefficient of λ <sub>peak</sub> I <sub>F</sub> =350mA, -10°C ≤ T ≤ 100°C [Typ.]	TC <sub>λpeak</sub>	0.12	nm/°C
Temperature coefficient of λ <sub>dom</sub> I <sub>F</sub> =350mA, -10°C ≤ T ≤ 100°C [Typ.]	TC <sub>λdom</sub>	0.05	nm/°C
Temperature coefficient of V <sub>F</sub> I <sub>F</sub> =350mA, -10°C ≤ T ≤ 100°C [Typ.]	TC <sub>V</sub>	-2.6	mV/°C

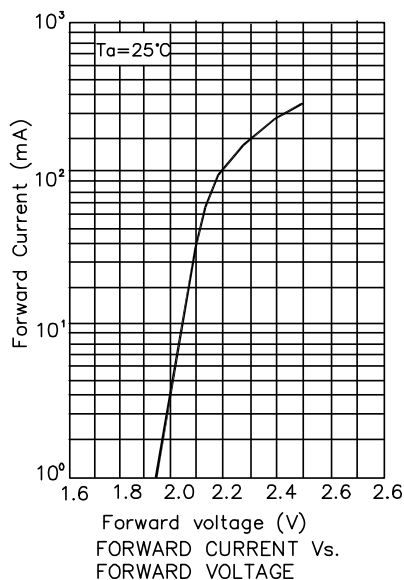
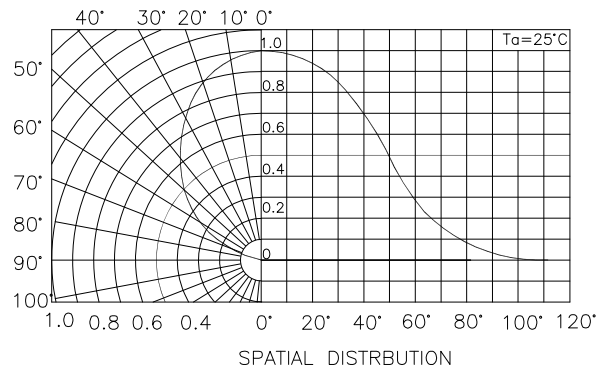
Notes:

1. Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.

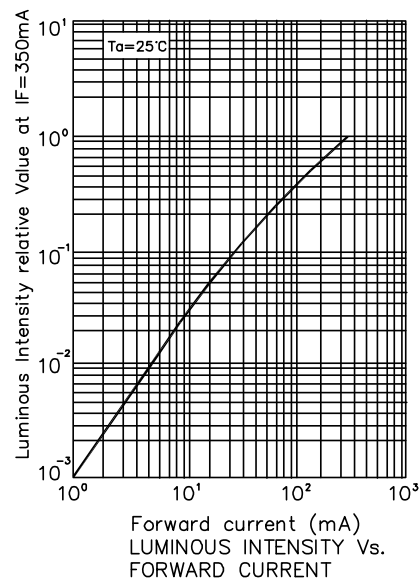
## KAD1-9090SE28Z1S



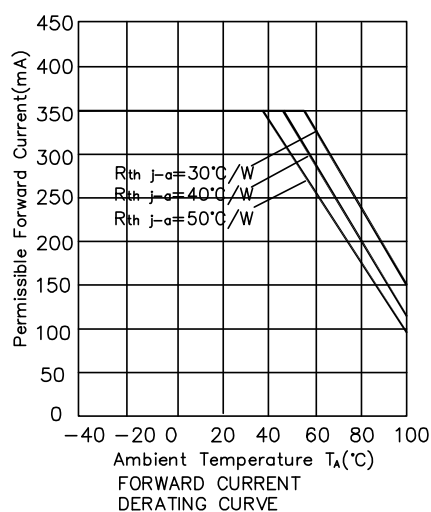
RELATIVE INTENSITY Vs. WAVELENGTH



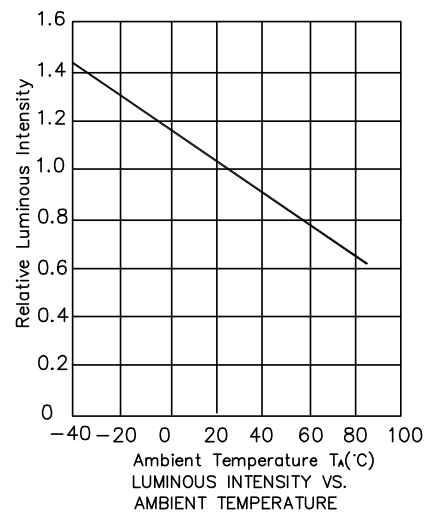
FORWARD CURRENT Vs. FORWARD VOLTAGE



LUMINOUS INTENSITY Vs. FORWARD CURRENT



FORWARD CURRENT DERATING CURVE

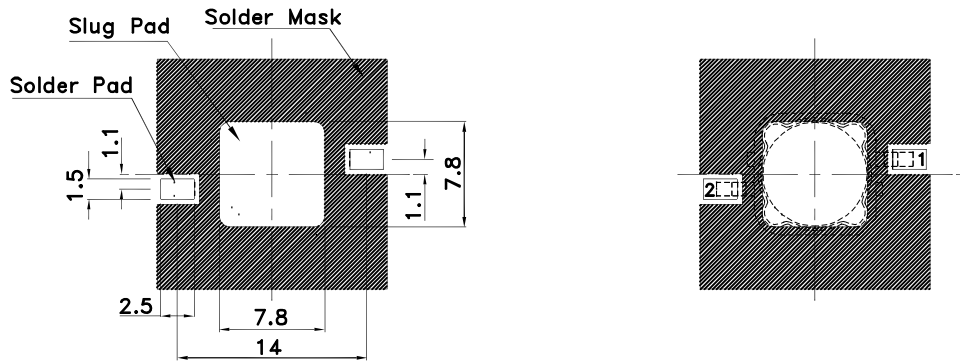


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

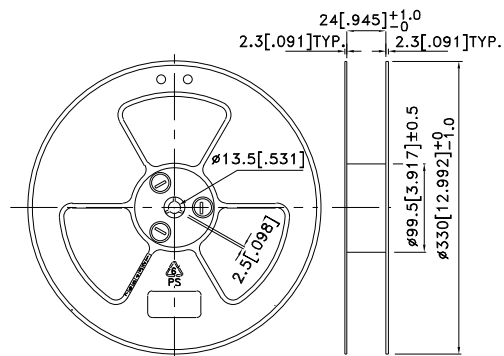
## KAD1-9090SE28Z1S

### Recommended Soldering Pattern

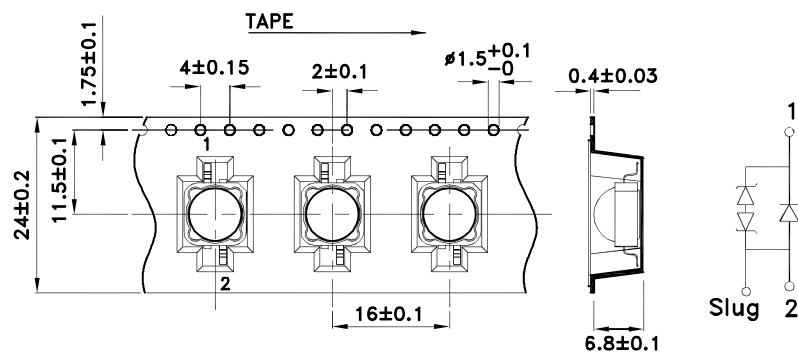
(Units : mm; Tolerance:  $\pm 0.1$ )



### Reel Dimension

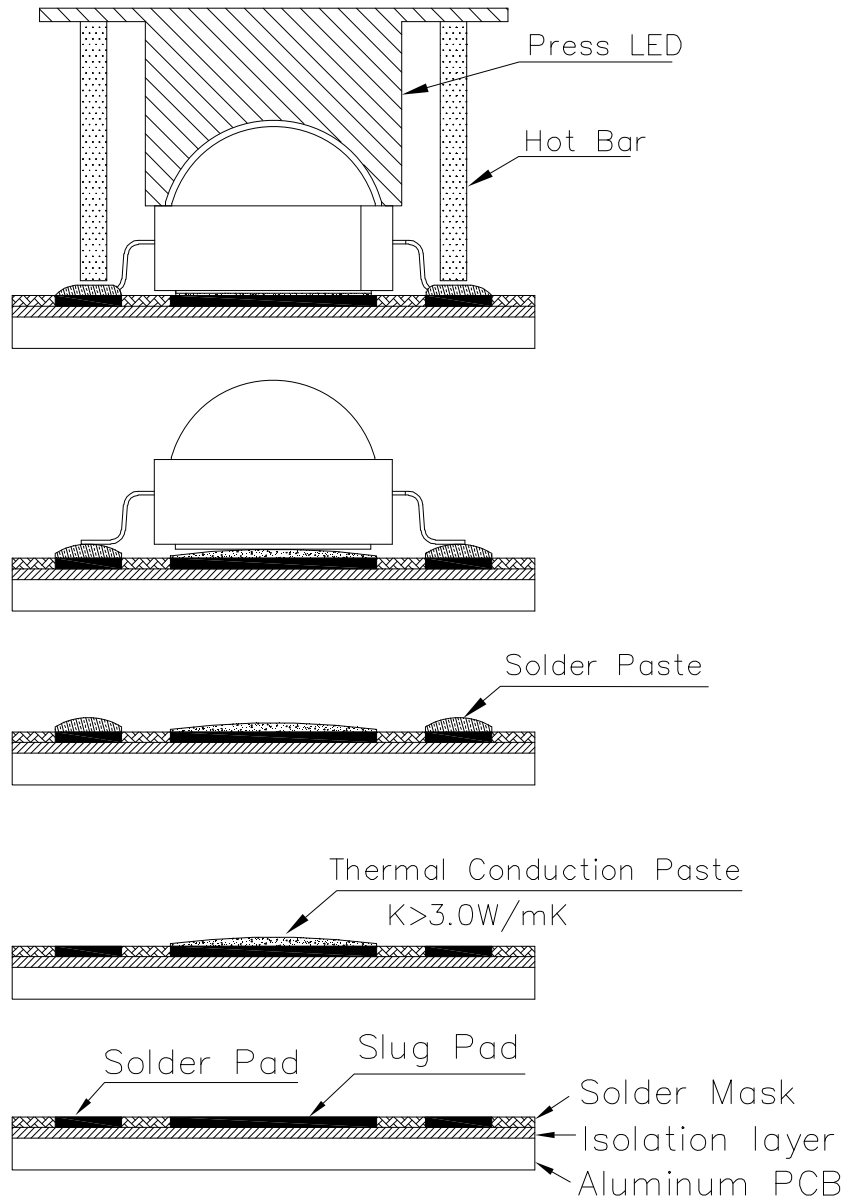


### Tape Specifications (Units : mm)



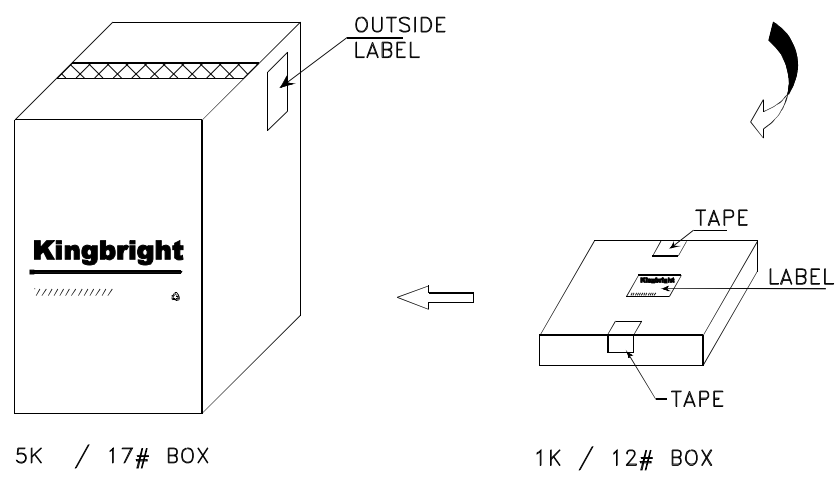
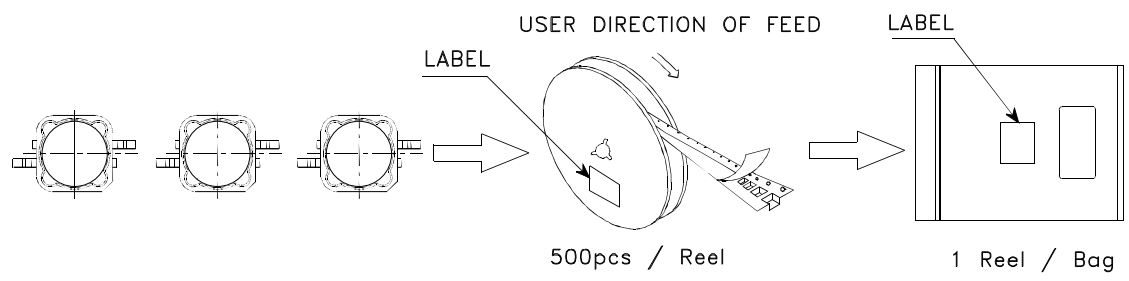
## KAD1-9090SE28Z1S


### Recommended Solder Steps



PACKING & LABEL SPECIFICATIONS

KAD1-9090SE28Z1S



<b>Kingbright</b>				
P/NO: KAD1-9090xxx				
QTY: 500 pcs	Q.C. <table border="1"><tr><td>Q C</td></tr><tr><td>XX XX XXXX</td></tr><tr><td>PASSED</td></tr></table>	Q C	XX XX XXXX	PASSED
Q C				
XX XX XXXX				
PASSED				
S/N: XXXX				
CODE: XXX				
LOT NO:				
				
RoHS Compliant				