Kingbright

5.6mm x 3.0mm SURFACE MOUNT LED

Part Number: KA-5630VB38Z4S Blue

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.

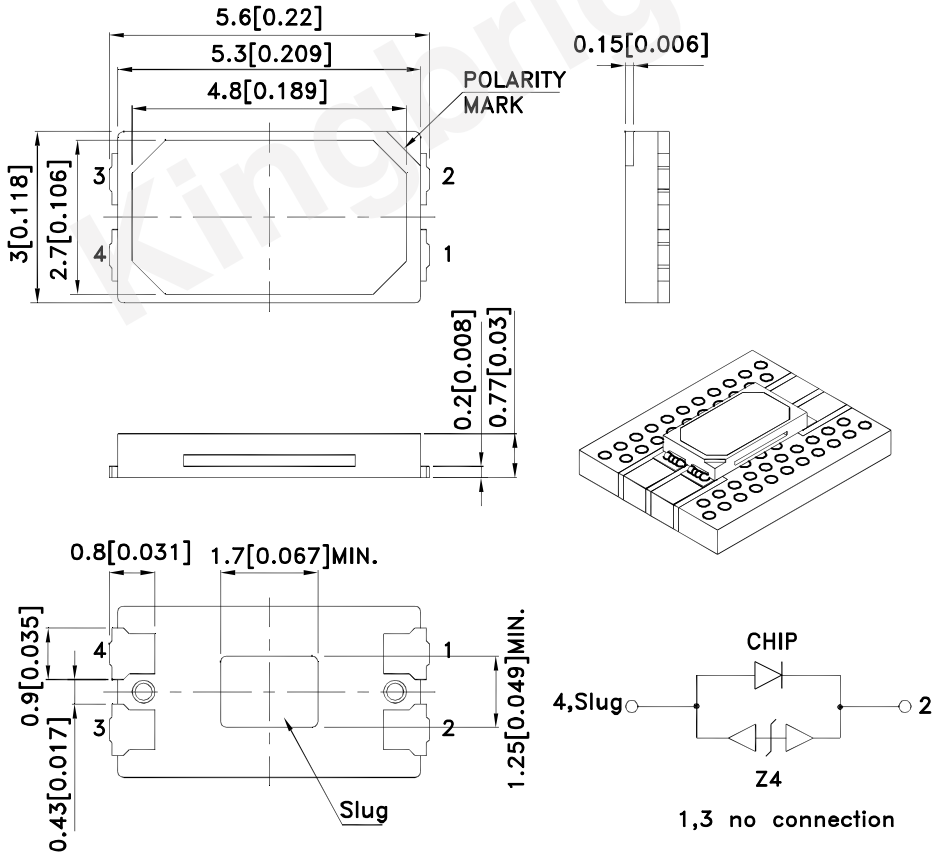
Description

The Blue 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

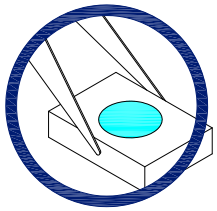


Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted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

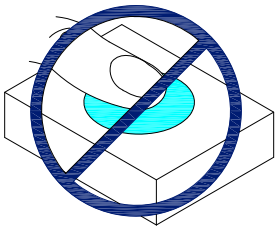
Handling Precautions

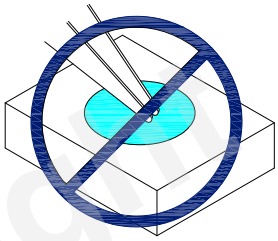
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.
As a result, special handling precautions need to be observed during assembly using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

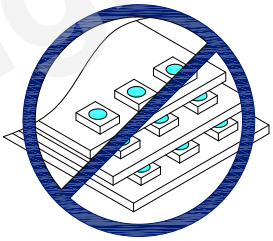


2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

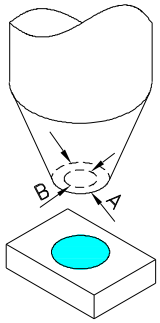




3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



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	Lens Type	Φv (lm) [2] @ 120mA				Viewing Angle [1]
			Code.	Min.	Max.	Typ.	2θ1/2
KA-5630VB38Z4S	Blue (InGaN)	Water Clear	A11	2.9	3.5	4	120°
			A12	3.5	4.2		
			A13	4.2	5		
			A14	5	6		

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. LEDs are binned according to their luminous flux.
4. Luminous flux value is traceable to the CIE127-2007 compliant national standards.

Absolute Maximum Ratings at T_A=25°C

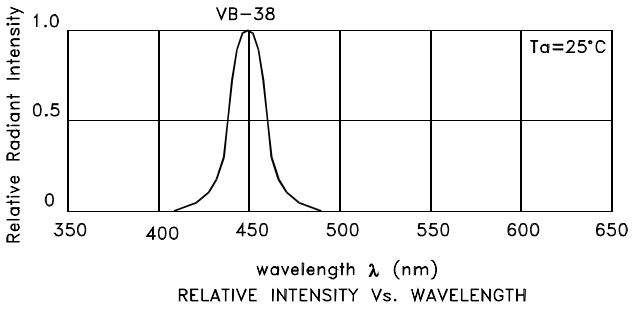
Parameter	Symbol	Value	Unit
Power Dissipation	P_D	570	mW
Junction Temperature [1]	T_J	110	°C
Operating Temperature	Top	-40 To +100	°C
Storage Temperature	Tstg	-40 To +110	°C
DC Forward Current [1]	I_F	150	mA
Reverse Voltage	V_R	5	V
Peak Forward Current [2]	I_{FM}	270	mA
Thermal Resistance [1] (Junction/ambient)	$R_{th\ j\text{-}a}$	140	°C/W
Thermal Resistance [1] (Junction/solder point)	$R_{th\ j\text{-}S}$	25	°C/W
Electrostatic Discharge Threshold (HBM)		8000	V

Notes:
1. Rth(j-a) Results from mounting on PC board FR4 (pad size≥16 mm^2 per pad),
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

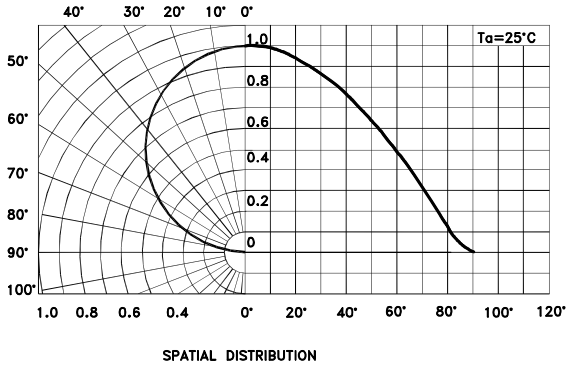
Electrical / Optical Characteristics at T_A=25°C

Parameter	Symbol	Value		Unit
		Typ.	Max.	
Wavelength at peak emission I_F=120mA	λpeak	445		nm
Dominant Wavelength I_F=120mA	λ dom [1]	450		nm
Spectral bandwidth at 50%$\Phi_{REL\ MAX}$ I_F=120mA	Δλ1/2	25		nm
Forward Voltage I_F=120mA	V_F [2]	3.3	3.8	V
Allowable Reverse Current	I_R		85	mA
Temperature coefficient of λpeak I_F=120mA, -10°C≤ T≤100°C	TCλpeak	0.12		nm/°C
Temperature coefficient of λdom I_F=120mA, -10°C≤ T≤100°C	TCλdom	0.1		nm/°C
Temperature coefficient of V_F I_F=120mA, -10°C≤ T≤100°C	TC_V	-3.2		mV/°C

Notes:
1.The dominant Wavelength (λ d) above is the setup value of the sorting machine. (Tolerance λ d : ±1nm.)
2.Forward Voltage: +/-0.1V.
3.Wavelength value is traceable to the CIE127-2007 compliant national standards.

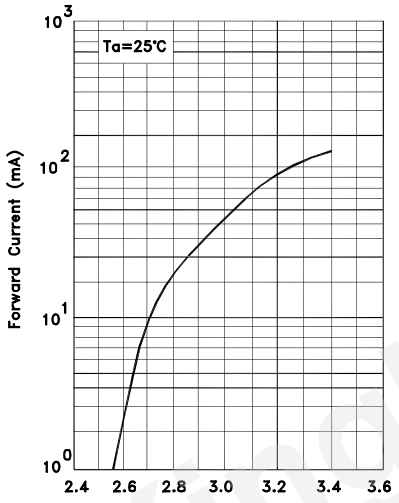


RELATIVE INTENSITY Vs. WAVELENGTH

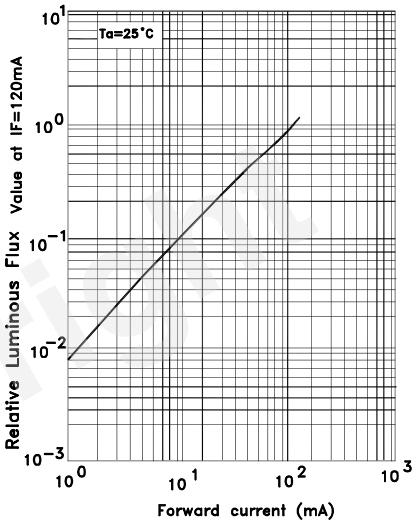


SPATIAL DISTRIBUTION

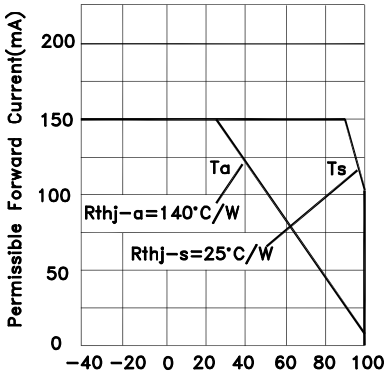
Blue **KA-5630VB38Z4S**



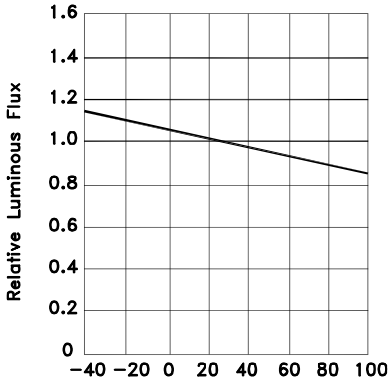
FORWARD CURRENT Vs.
FORWARD VOLTAGE



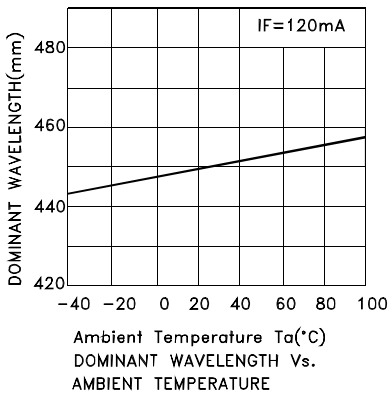
LUMINOUS FLUX Vs.
FORWARD CURRENT



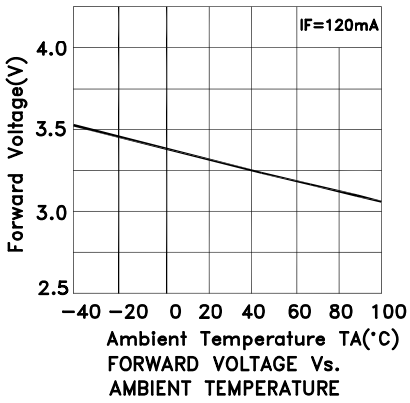
FORWARD CURRENT
DERATING CURVE



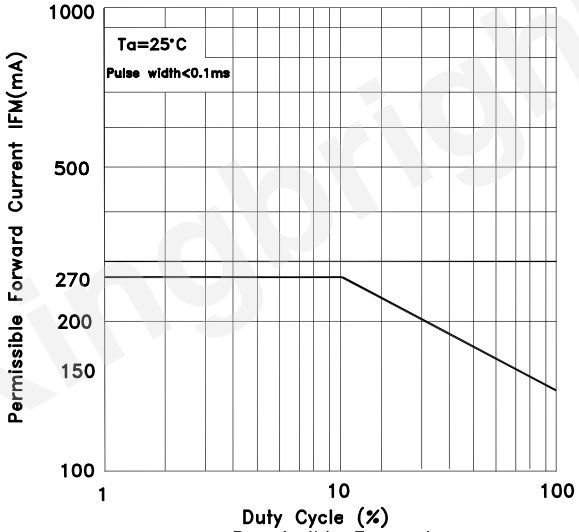
LUMINOUS FLUX Vs.
AMBIENT TEMPERATURE



DOMINANT WAVELENGTH Vs.
AMBIENT TEMPERATURE



FORWARD VOLTAGE Vs.
AMBIENT TEMPERATURE

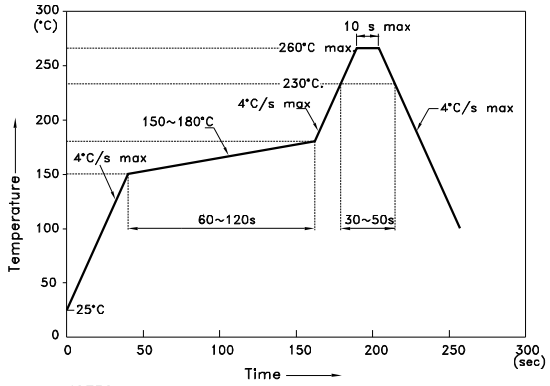


Permissible Forward
Current VS Duty Cycle

KA-5630VB38Z4S

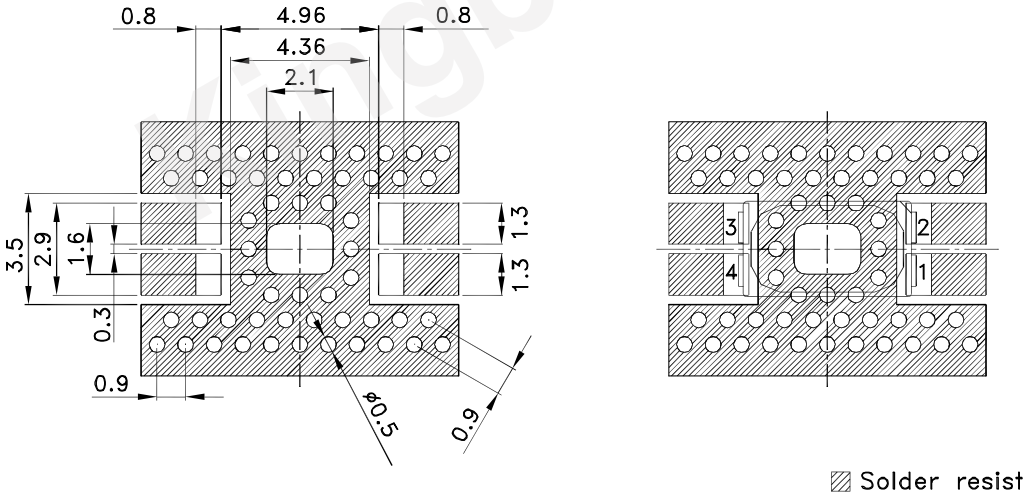
Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

Reflow Soldering Profile For Lead-free SMT Process.



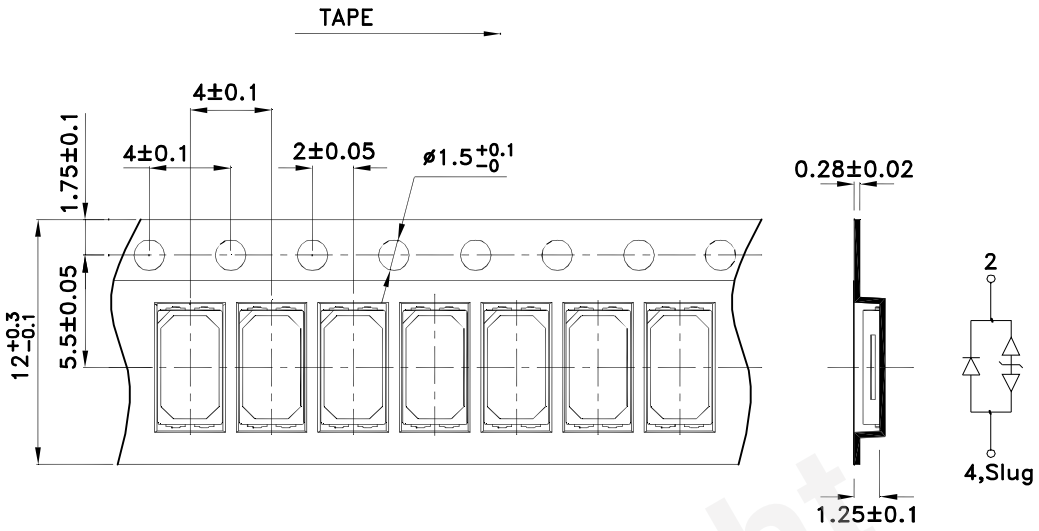
NOTES:
1.We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2.Don't cause stress to the epoxy resin while it is exposed to high temperature.
3.Number of reflow process shall be 2 times or less.

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

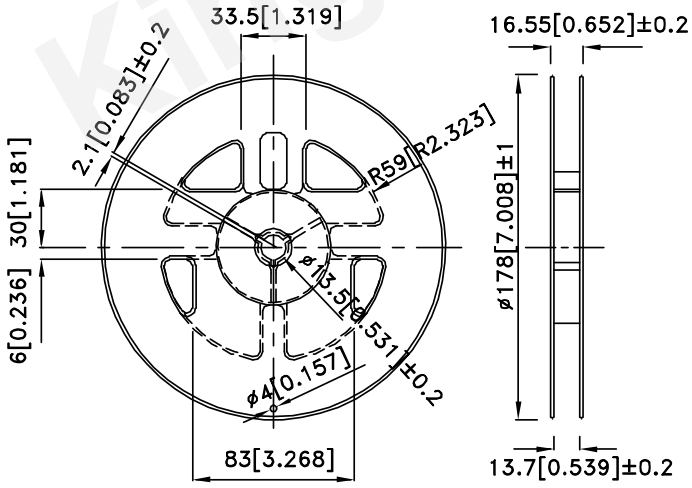


0.8mm FR4-Based Boards
For both the open via PTH and filled and capped via design, the finished hole diameter is 0.5mm. A smaller diameter will lead to an increase of thermal resistance. The recommended distance between two holes is 0.4 mm.This results in a minimal pitch of 0.9mm between the vias.

Tape Dimensions
(Units : mm)

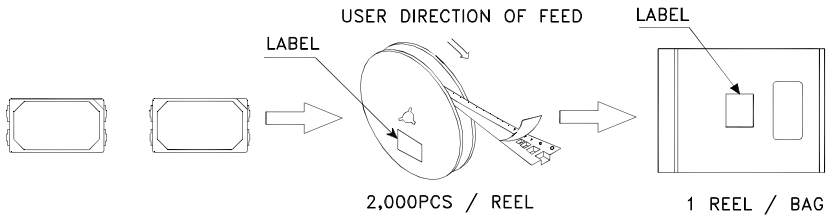


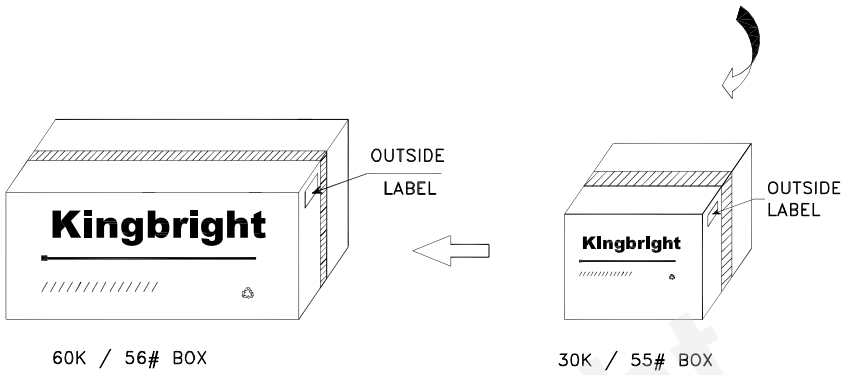
Reel Dimension

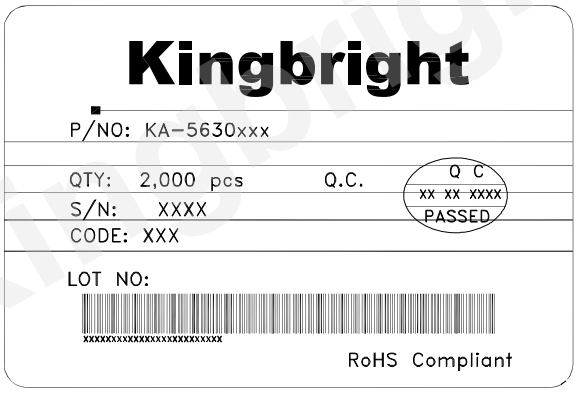


Kingbright

PACKING & LABEL SPECIFICATIONS **KA-5630VB38Z4S**







Terms and conditions for the usage of this document

1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
3. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
5. The contents and information of this document may not be reproduced or re-transmitted without permission by Kingbright.
6. All design applications should refer to Kingbright application notes available at http://www.kingbright.com/application_notes