Kingbright



AAA3528LSEKJ3ZGKQBKS

3.5 x 2.8 mm Surface Mount LED Lamp

DESCRIPTIONS

- The Hyper Red device is based on light emitting diode chip made from AlGaInP
- The Green source color devices are made with InGaN on Sapphire Light Emitting Diode
- The Blue source color devices are made with InGaN Light Emitting Diode
- Electrostatic discharge and power surge could damage the LEDs
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs
- All devices, equipments and machineries must be electrically grounded

FEATURES

- Suitable for all SMD assembly and solder process
- Available on tape and reel
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

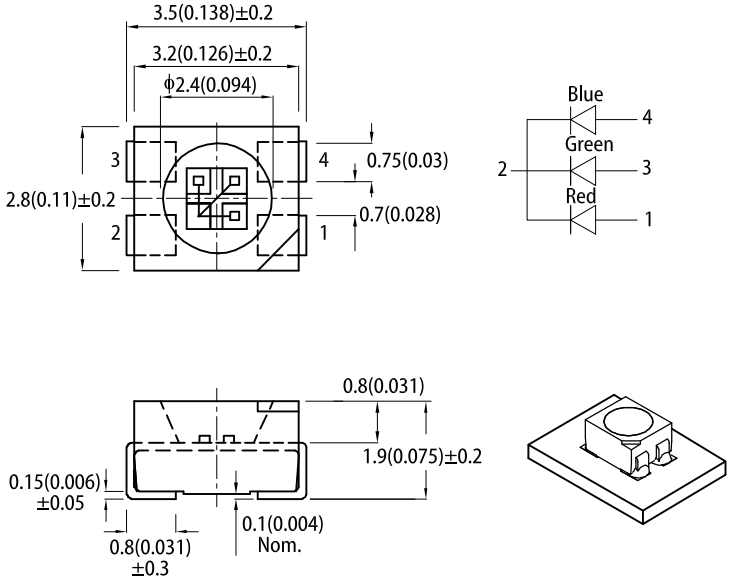
APPLICATIONS

- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

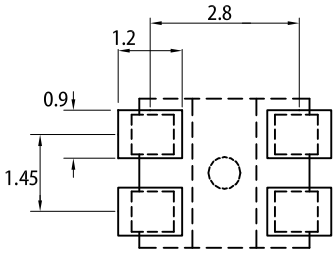
Observe precautions for handling electrostatic discharge sensitive devices

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



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.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 2mA [2]		Viewing Angle [1]
			Min.	Typ.	2θ1/2
AAA3528LSEKJ3ZGKQBKS	Hyper Red (AlGaInP)	Water Clear	30	60	120°
	Green (InGaN)		80	180	
	Blue (InGaN)		12	30	

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 intensity value is traceable to CIE127-2007 standards.

RoHS © 2020 Kingbright. All Rights Reserved.

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I_F = 2mA	λ_{peak}	Hyper Red Green Blue	640 515 460	-	nm
Dominant Wavelength I_F = 2mA	λ_{dom} [1]	Hyper Red Green Blue	625 525 465	-	nm
Spectral Bandwidth at 50% Φ REL MAX I_F = 2mA	Δλ	Hyper Red Green Blue	20 35 25	-	nm
Capacitance	C	Hyper Red Green Blue	27 45 100	-	pF
Forward Voltage I_F = 2mA	V_F [2]	Hyper Red Green Blue	1.8 2.65 2.65	2.1 3.1 3.1	V
Reverse Current (V_R = 5V)	I_R	Hyper Red Green Blue	-	10 50 50	μA
Temperature Coefficient of λ_{peak} I_F = 2mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda peak}$	Hyper Red Green Blue	0.13 0.05 0.04	-	nm/°C
Temperature Coefficient of λ_{dom} I_F = 2mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda dom}$	Hyper Red Green Blue	0.06 0.03 0.03	-	nm/°C
Temperature Coefficient of V_F I_F = 2mA, -10°C ≤ T ≤ 85°C	TC_V	Hyper Red Green Blue	-2.0 -2.9 -2.9	-	mV/°C

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

ABSOLUTE MAXIMUM RATINGS at T_A=25°C

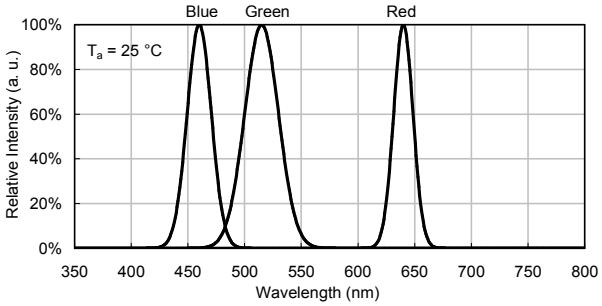
Parameter	Symbol	Value			Unit
		Hyper Red	Green	Blue	
Power Dissipation	P_D	140	123	120	mW
Reverse Voltage	V_R	5	5	5	V
Junction Temperature	T_j	115	115	115	°C
Operating Temperature	T_{op}	-40 to +85			°C
Storage Temperature	T_{stg}	-40 to +85			°C
DC Forward Current	I_F	50	30	30	mA
Peak Forward Current	I_{FM} [1]	150	150	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	450	250	V
Thermal Resistance (Junction / Ambient)	$R_{th\ JA}$ [2]	250	420	430	°C/W
Thermal Resistance (Junction / Solder point)	$R_{th\ JS}$ [2]	100	250	270	°C/W

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{th\ JA}$,$R_{th\ JS}$ Results from mounting on PC board FR4 (pad size ≥ 16 mm^2 per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

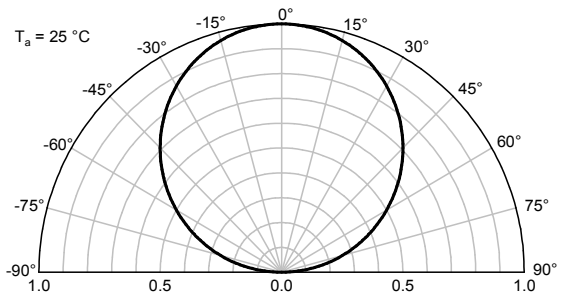
RoHS © 2020 Kingbright. All Rights Reserved.

TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

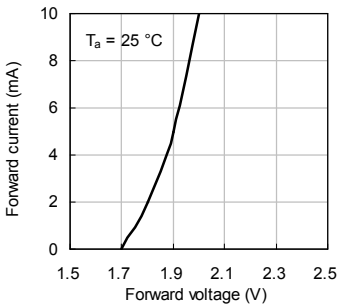


SPATIAL DISTRIBUTION

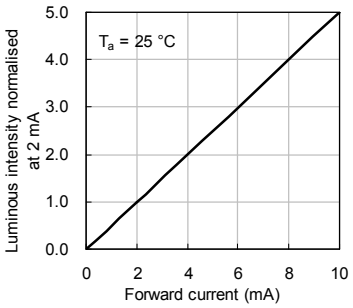


HYPER RED

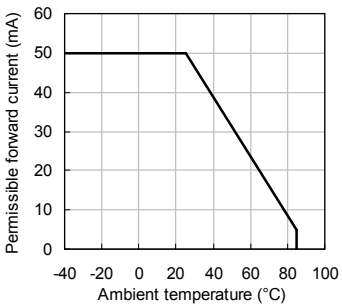
Forward Current vs. Forward Voltage



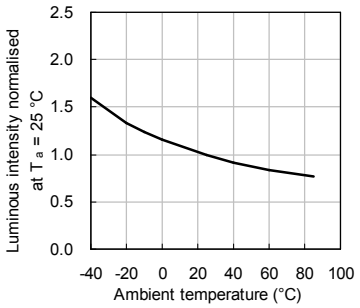
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

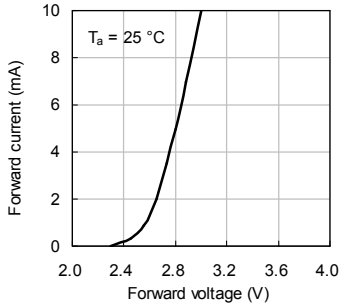


Luminous Intensity vs. Ambient Temperature

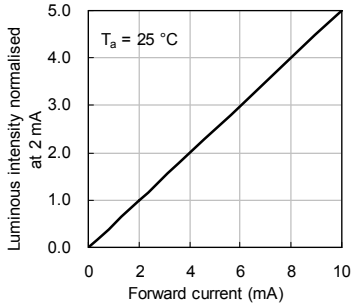


GREEN

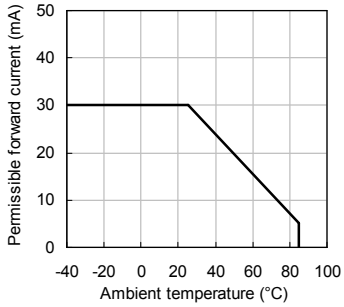
Forward Current vs. Forward Voltage



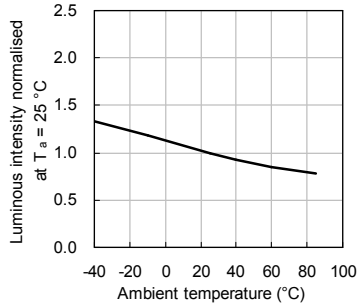
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

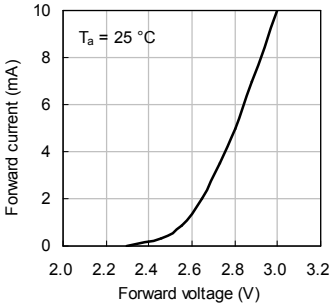


Luminous Intensity vs. Ambient Temperature

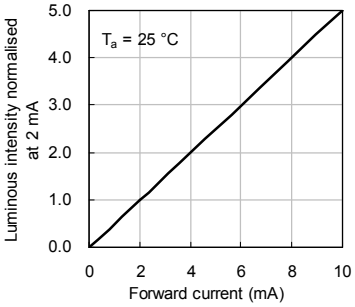


BLUE

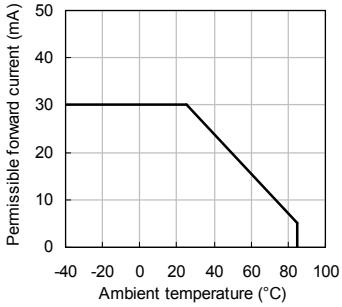
Forward Current vs. Forward Voltage



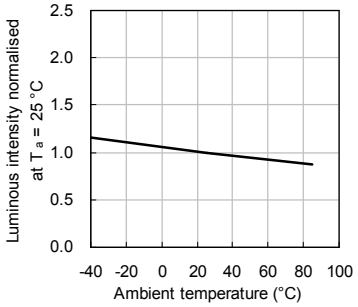
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

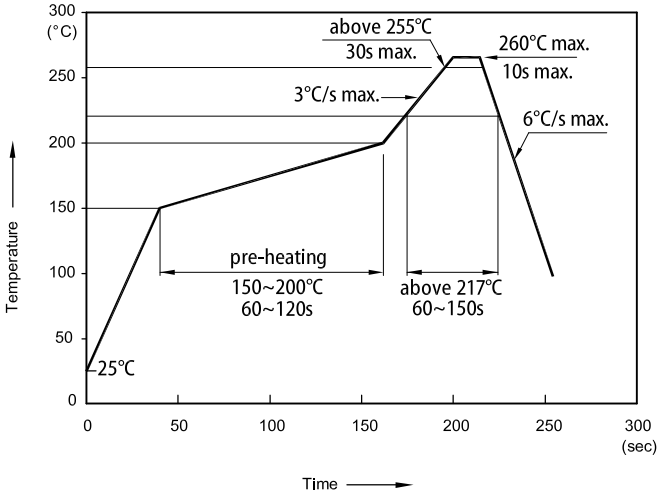


Luminous Intensity vs. Ambient Temperature



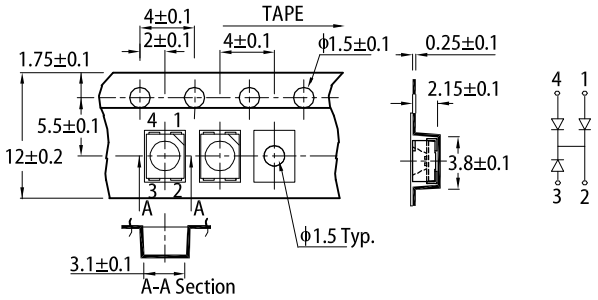
© 2020 Kingbright. All Rights Reserved.

REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

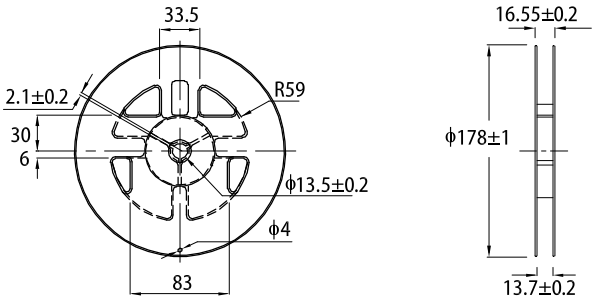


Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

TAPE SPECIFICATIONS (units : mm)



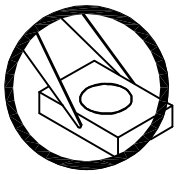
REEL DIMENSION (units : mm)



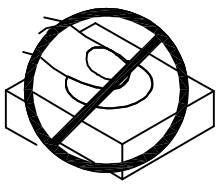
HANDLING PRECAUTIONS

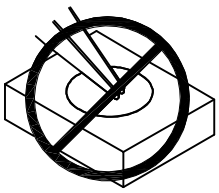
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using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

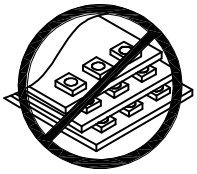


2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

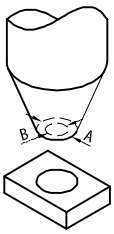




3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.

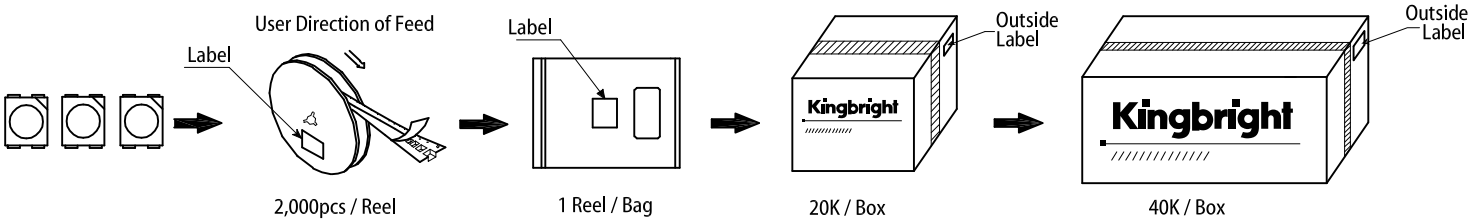


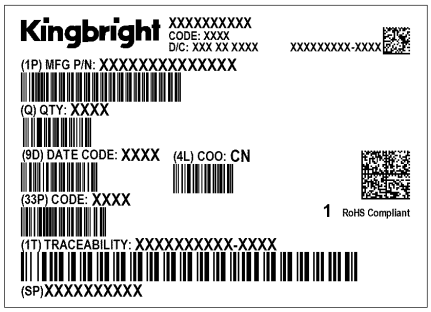
4-1. The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.
4-2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
4-3. The dimensions of the component must be accurately programmed in the 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 lead frame. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.



RoHS © 2020 Kingbright. All Rights Reserved.

PACKING & LABEL SPECIFICATIONS





PRECAUTIONARY NOTES

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 https://www.KingbrightUSA.com/ApplicationNotes

RoHS © 2020 Kingbright. All Rights Reserved.