

## AAAF3529LSEEZGKQBKS

3.5 x 2.8 mm Surface Mount SMD Chip LED



### DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode
- The Green source color devices are made with InGaN on Sapphire Light Emitting Diode
- The Blue source color devices are made with InGaN on Sapphire 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

- Outstanding material efficiency
- Low power consumption
- Can produce any color in visible spectrum, including white light
- Suitable for all SMD assembly and solder process
- Available on tape and reel
- Package: 2000pcs / reel
- Moisture sensitivity level: 3
- RoHS compliant

### APPLICATIONS

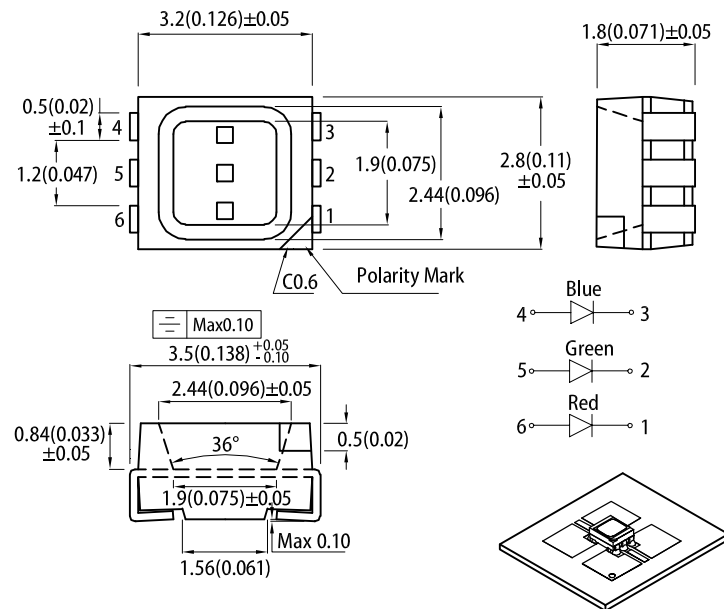
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

### ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

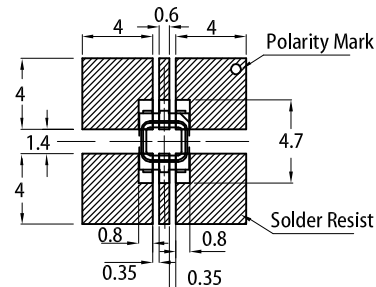


### PACKAGE DIMENSIONS



### RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

- All dimensions are in millimeters (inches).
- Tolerance is ±0.2(0.008") unless otherwise noted.
- The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
- 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 <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>
			Min.	Typ.	2θ1/2
AAAF3529LSEEZGKQBKS	Hyper Red (AlGaInP)	Water Clear	10	20	130°
	Green (InGaN)		80	180	130°
	Blue (InGaN)		12	30	130°

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.

**ELECTRICAL / OPTICAL CHARACTERISTICS at T<sub>A</sub>=25°C**

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I <sub>F</sub> = 2mA	$\lambda_{\text{peak}}$	Hyper Red Green Blue	630 515 460	-	nm
Dominant Wavelength I <sub>F</sub> = 2mA	$\lambda_{\text{dom}}^{[1]}$	Hyper Red Green Blue	621 525 465	-	nm
Spectral Bandwidth at 50% $\Phi$ REL MAX I <sub>F</sub> = 2mA	$\Delta\lambda$	Hyper Red Green Blue	20 35 25	-	nm
Capacitance	C	Hyper Red Green Blue	25 45 100	-	pF
Forward Voltage I <sub>F</sub> = 2mA	V <sub>F</sub> <sup>[2]</sup>	Hyper Red Green Blue	1.8 2.65 2.65	2.1 3.1 3.1	V
Reverse Current (V <sub>R</sub> = 5V)	I <sub>R</sub>	Hyper Red Green Blue	-	10 50 50	uA
Temperature Coefficient of $\lambda_{\text{peak}}$ I <sub>F</sub> = 2mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{\text{peak}}</math></sub>	Hyper Red Green Blue	0.13 0.05 0.04	-	nm/°C
Temperature Coefficient of $\lambda_{\text{dom}}$ I <sub>F</sub> = 2mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{\text{dom}}</math></sub>	Hyper Red Green Blue	0.06 0.03 0.03	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 2mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	Hyper Red Green Blue	-1.9 -2.9 -2.9	-	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 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<sub>A</sub>=25°C**

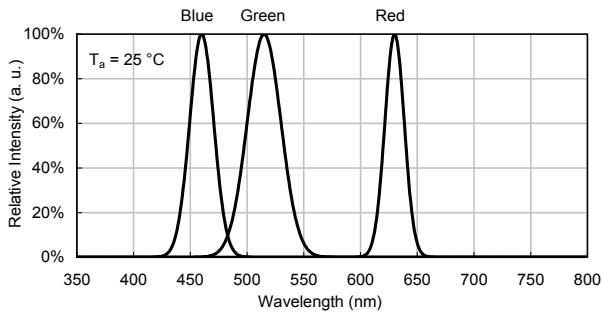
Parameter	Symbol	Value			Unit
		Hyper Red	Green	Blue	
Power Dissipation	P <sub>D</sub>	125	123	120	mW
Reverse Voltage	V <sub>R</sub>	5	5	5	V
Junction Temperature	T <sub>j</sub>	115	115	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +85			°C
Storage Temperature	T <sub>stg</sub>	-40 to +85			°C
DC Forward Current	I <sub>F</sub>	50	30	30	mA
Peak Forward Current	I <sub>FM</sub> <sup>[1]</sup>	195	150	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	450	250	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> <sup>[2]</sup>	335	280	400	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> <sup>[2]</sup>	220	170	290	°C/W

**Notes:**

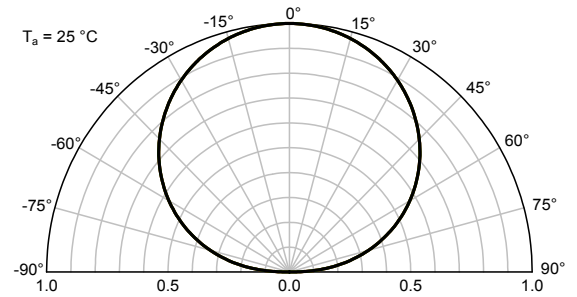
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref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

## TECHNICAL DATA

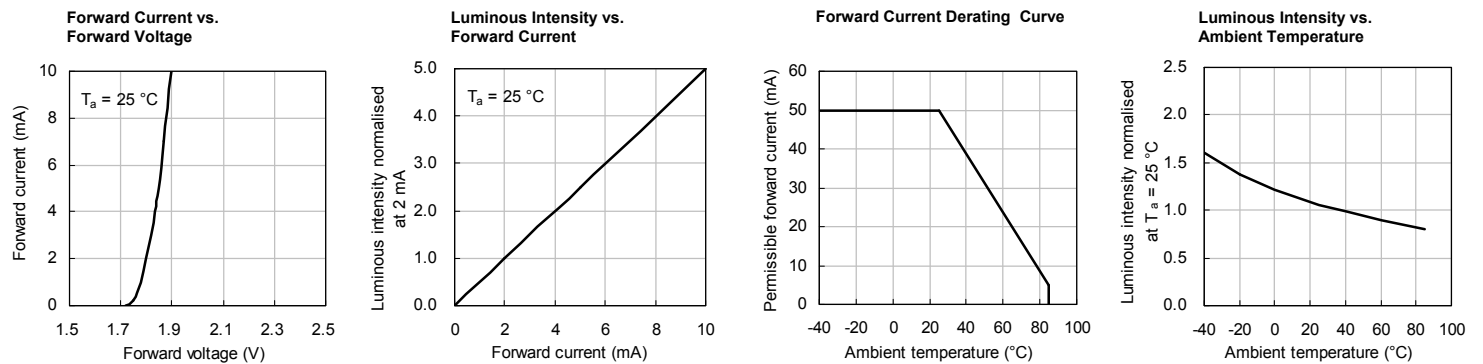
### RELATIVE INTENSITY vs. WAVELENGTH



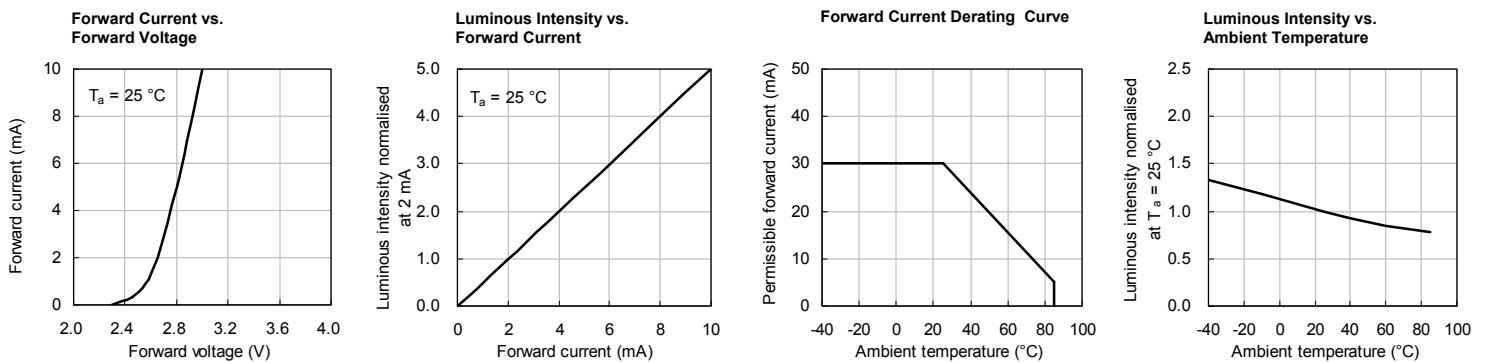
### SPATIAL DISTRIBUTION



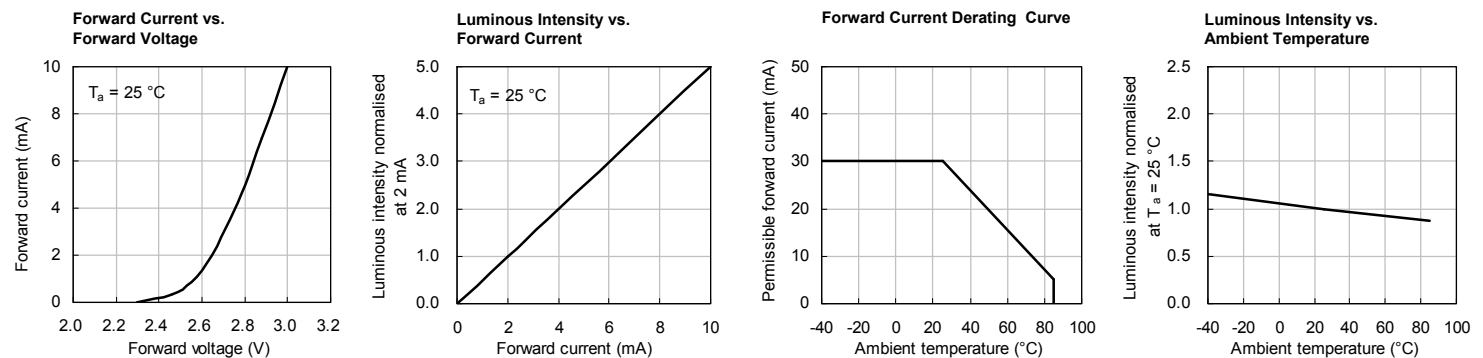
## HYPER RED



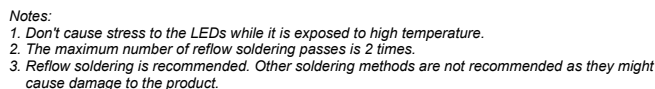
## GREEN



## BLUE



### REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



Technical drawing of a tape reel showing top, side, and detail views with dimensions in millimeters.

**Top View Dimensions:**

- Overall width:  $12 \pm 0.2$
- Overall length:  $5.5 \pm 0.1$
- Distance from top edge to first hole center:  $2 \pm 0.1$
- Distance between hole centers:  $4 \pm 0.1$
- Hole diameter:  $\phi 1.5 \pm 0.1$
- Distance from bottom edge to hole center:  $3.2 \pm 0.1$
- Distance from left edge to hole center:  $1.75 \pm 0.1$
- Section line A-A is indicated.

**Side View Dimensions:**

- Overall height:  $3.8 \pm 0.1$
- Distance from top edge to hole center:  $2.15 \pm 0.1$
- Distance from bottom edge to hole center:  $0.25 \pm 0.1$

**Detail View Dimensions:**

- Distance from bottom edge to hole center:  $3.1 \pm 0.1$
- Hole diameter:  $\phi 1.5 \text{ Typ.}$

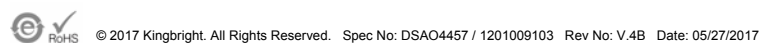
**Section A-A:** A-A Section

**Legend:**

Symbol	Material
$\triangle$	3
$\square$	2
$\circ$	1
$\square$	4
$\square$	5
$\square$	6

The diagram illustrates the packaging process for Kingbright LEDs, showing the progression from individual components to bulk packaging and finally to shipping boxes.

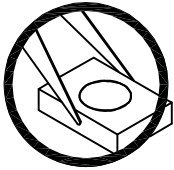
- Individual Components:** Two small square LEDs are shown on the left.
- Reel Packaging:** An arrow points to a reel of LEDs. A label is shown being applied to the reel. The text "User Direction of Feed" is written above the reel. Below the reel, it says "2,000pcs / Reel".
- Bag Packaging:** An arrow points to a bag of LEDs. A label is shown being applied to the bag. Below the bag, it says "1 Reel / Bag".
- Box Packaging:** An arrow points to a box labeled "Kingbright". A label is shown being applied to the box. Below the box, it says "20K / 55# Box".
- Shipping Box:** An arrow points to a larger shipping box labeled "Kingbright". A label is shown being applied to the box. Below the box, it says "40K / 56# Box".



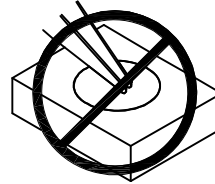
## HANDLING PRECAUTIONS

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.

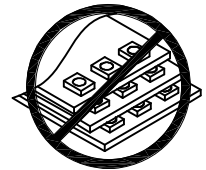
1. Handle the component along the side surfaces by using forceps or appropriate tools.



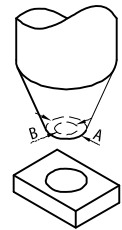
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



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.



## 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.
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