



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Part Number: KAAF-5050RGBS-13

Hyper Red
Green
Blue

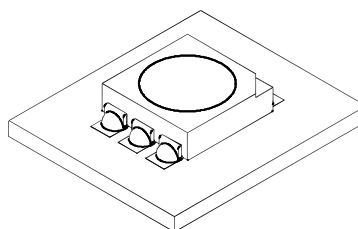
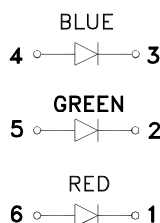
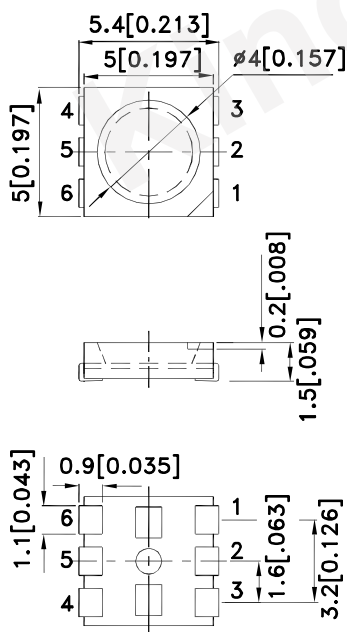
Features

- Chips can be controlled separately.
- Suitable for all SMD assembly and solder process.
- Available on tape and reel.
- White SMD package, silicone resin.
- Package: 500pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

Descriptions

- The Hyper Red device is based on light emitting diode chip made from AlGaInP.
- The Green source color devices are made with InGaN 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.

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.2(0.008)$ 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.

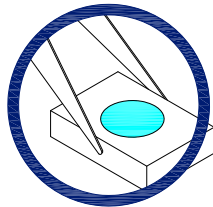


Handling Precautions

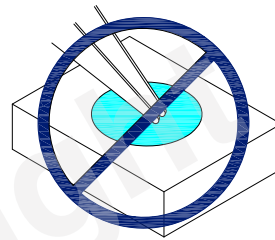
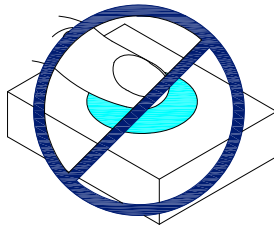
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

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.

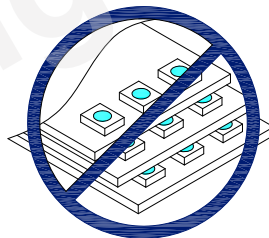
1. Handle the component along the side surfaces by using forceps or appropriate tools.



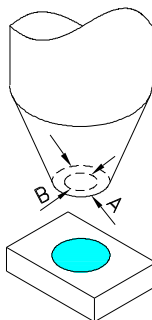
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



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_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. | Emitting Color (Material) | Lens Type | Iv (mcd) [2] @ 30mA | | Iv (mcd) [2] @ 50mA | | Viewing Angle [1] |
|------------------|------------------------------|-------------|------------------------|------|------------------------|------|----------------------|
| | | | Min. | Typ. | Min. | Typ. | 2θ1/2 |
| KAAF-5050RGB5-13 | Hyper Red (AlGaInP) | Water Clear | - | - | 1000 | 1400 | 120° |
| | Green (InGaN) | | 1000 | 1400 | - | - | |
| | Blue (InGaN) | | 300 | 420 | - | - | |

Notes:

1. $\theta_{1/2}$ 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 the CIE127-2007 compliant national standards.

Electrical / Optical Characteristics at TA=25°C

| Symbol | Parameter | Emitting Color | Typ. | Max. | Units | Test Conditions |
|-----------------------|--------------------------|----------------------------|-------------------|-------------------|-------|--|
| λ_{peak} | Peak Wavelength | Hyper Red Green Blue | 640 520 465 | | nm | I _F =50mA I _F =30mA I _F =30mA |
| λ_D [1] | Dominant Wavelength | Hyper Red Green Blue | 625 525 470 | | nm | I _F =50mA I _F =30mA I _F =30mA |
| $\Delta\lambda_{1/2}$ | Spectral Line Half-width | Hyper Red Green Blue | 25 35 22 | | nm | I _F =50mA I _F =30mA I _F =30mA |
| C | Capacitance | Hyper Red Green Blue | 27 100 100 | | pF | V _F =0V; f=1MHz |
| V _F [2] | Forward Voltage | Hyper Red Green Blue | 2.5 3.3 3.5 | 3.2 4.1 4.5 | V | I _F =50mA I _F =30mA I _F =30mA |
| I _R | Reverse Current | Hyper Red Green Blue | | 10 50 50 | uA | V _R =5V |

Notes:

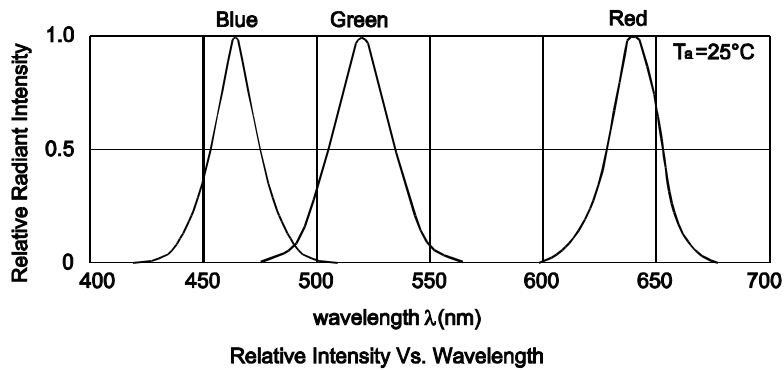
1. Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.
3. Wavelength value is traceable to the CIE127-2007 compliant national standards.
4. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

Absolute Maximum Ratings at TA=25°C

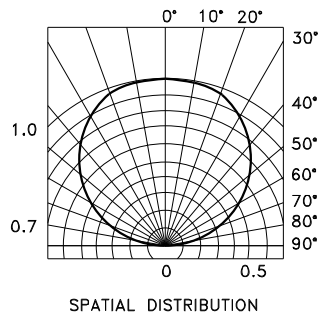
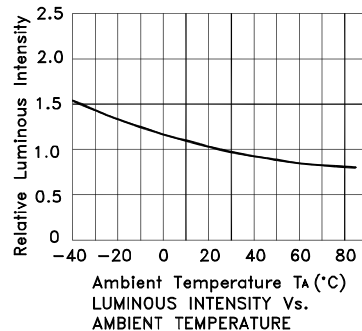
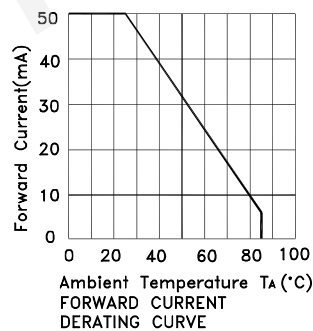
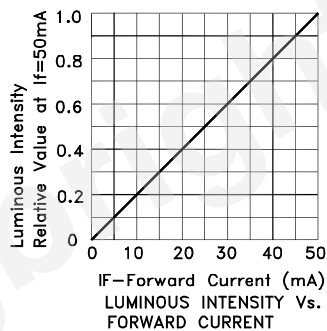
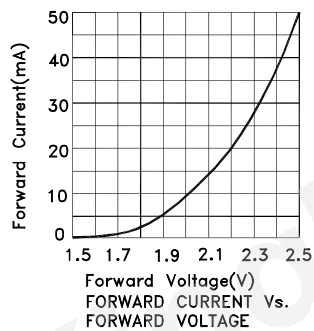
| Parameter | Hyper Red | Green | Blue | Units |
|---|----------------|-------|------|-------|
| Power dissipation [1] | 350 | | | mW |
| DC Forward Current | 50 | 30 | 30 | mA |
| Peak Forward Current [2] | 150 | 100 | 100 | mA |
| Electrostatic Discharge Threshold (HBM) | 3000 | 450 | 250 | V |
| Reverse Voltage | 5 | | | V |
| Operating Temperature | -40°C To +85°C | | | |
| Storage Temperature | -40°C To +85°C | | | |

Notes:

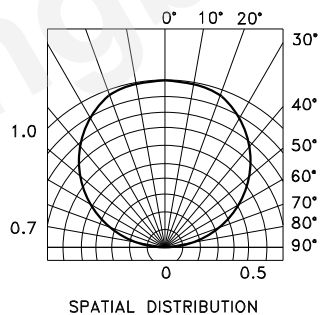
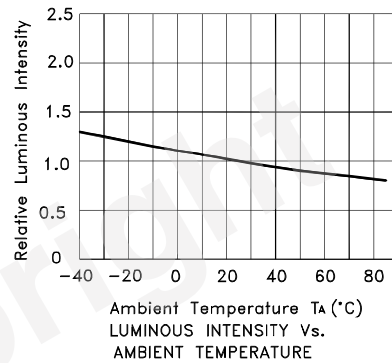
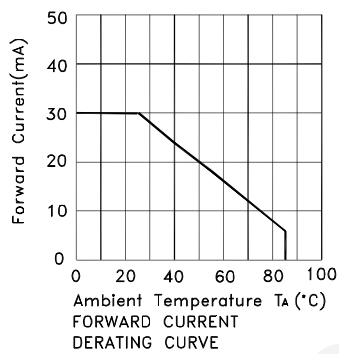
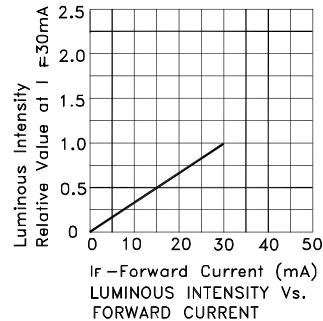
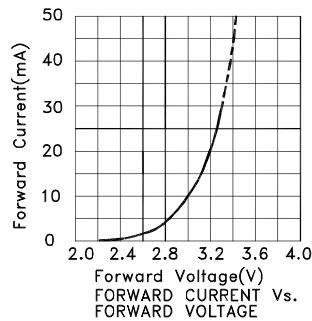
1. Within 350mW at all chips are lightened.
2. 1/10 Duty Cycle, 0.1ms Pulse Width.



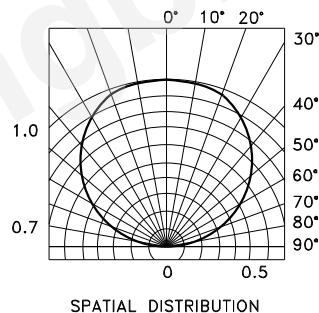
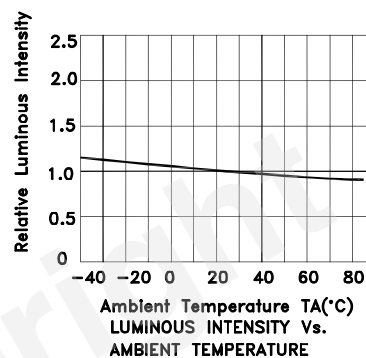
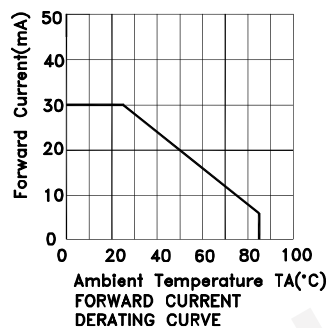
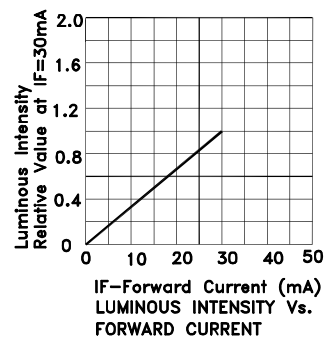
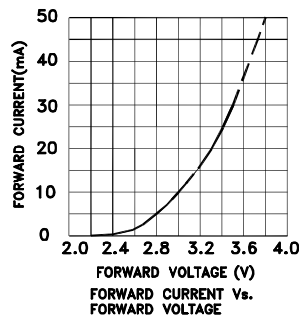
KAAF-5050RGBS-13 Hyper Red



Green



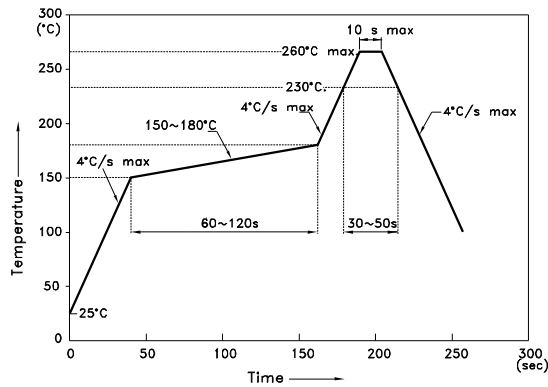
Blue



KAAF-5050RGBS-13

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.

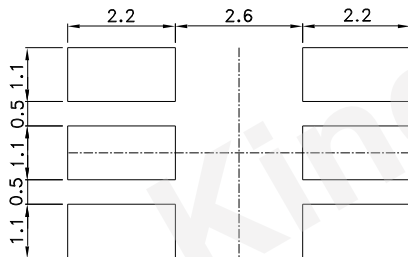
Reflow Soldering Profile For Lead-free SMT Process.



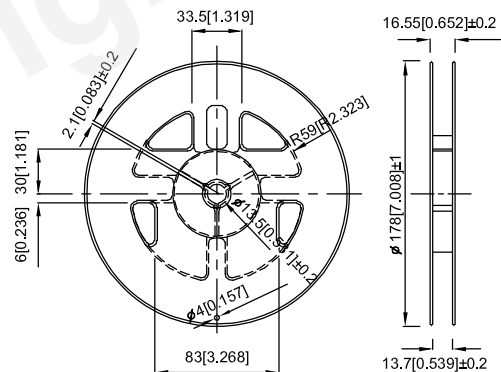
NOTES:

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.

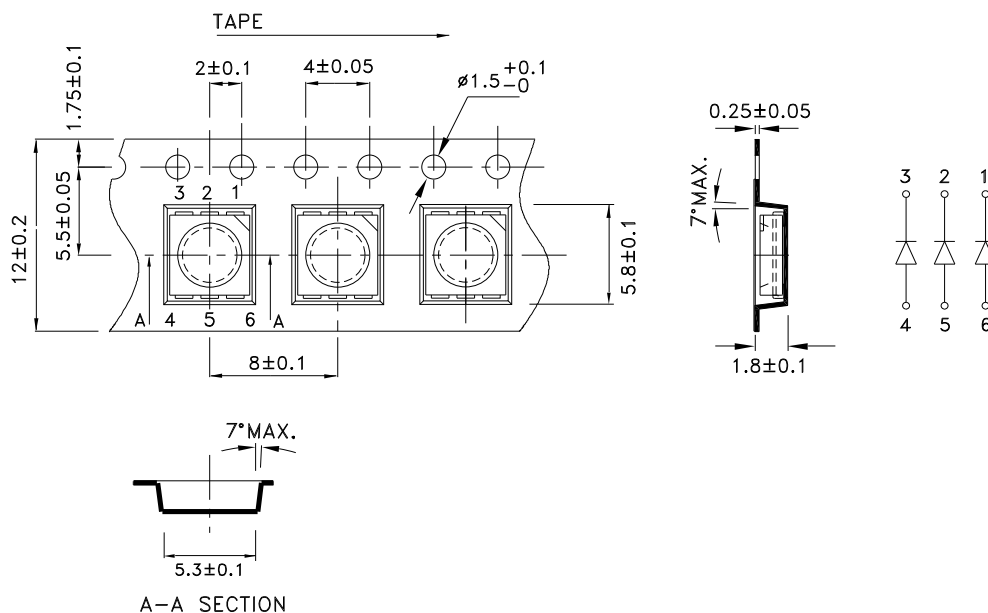
Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



Reel Dimension

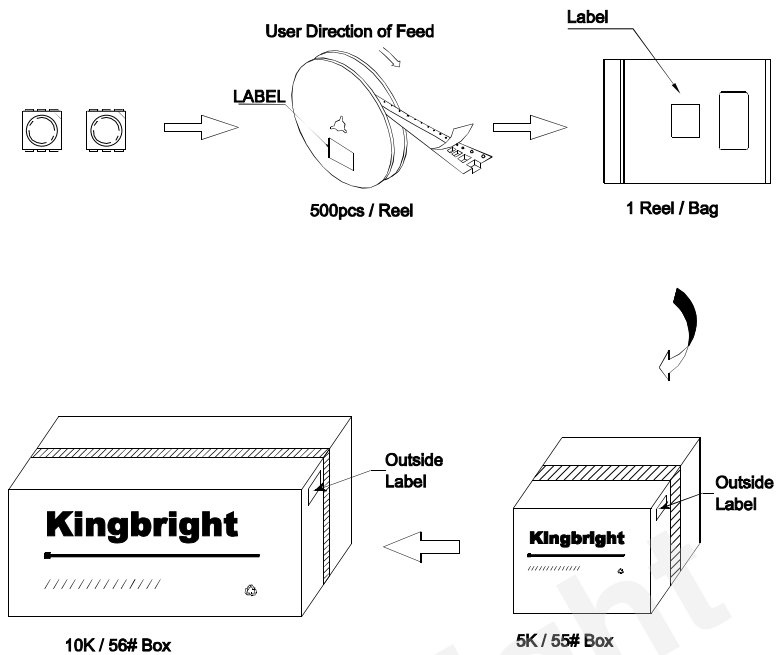



Tape Dimensions (Units : mm)



PACKING & LABEL SPECIFICATIONS

KAAF-5050RGB-13



| | |
|--|--------------------------|
| Kingbright | |
| P/NO: KAAF-5050xxx | |
| QTY: 500 pcs | Q.C. |
| S/N: XXXX | Q C XXXXXXX PASSED |
| CODE: XXX | |
| LOT NO: | |
|  | |
| XXXXXXXXXXXXXXXXXXXX | |
| RoHS Compliant | |

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