

APFA3010SURKCGKQBDC

3.0 x 1.0 mm Right Angle SMD Chip LED Lamp



DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaNp on GaAs substrate Light Emitting Diode
- The Green source color devices are made with AlGaNp on GaAs substrate 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

- 3.0 x 1.5 x 1.0 mm right angle SMD LED, 1.0 mm thickness
- Low power consumption
- Wide viewing angle
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Tinned pads for improved solderability
- 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



SELECTION GUIDE

| Part Number | Emitting Color (Material) | Lens Type | Iv (mcd) @ 20mA ^[2] | | Viewing Angle ^[1] |
|---------------------|---------------------------|-------------|--------------------------------|------|------------------------------|
| | | | Min. | Typ. | |
| APFA3010SURKCGKQBDC | Hyper Red (AlGaNp) | Water Clear | 120 | 220 | 150° |
| | Green (AlGaNp) | | *55 | *80 | |
| | Blue (InGaN) | | 20 | 45 | |
| | | | *20 | *45 | |
| | | | 40 | 70 | |
| | | | *40 | *70 | |

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%.

* Luminous intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$

| Parameter | Symbol | Emitting Color | Value | | Unit |
|---|-------------------------------------|----------------------------|----------------------|-------------------|----------------------------|
| | | | Typ. | Max. | |
| Wavelength at Peak Emission $I_F = 20\text{mA}$ | λ_{peak} | Hyper Red Green Blue | 645 574 460 | - | nm |
| Dominant Wavelength $I_F = 20\text{mA}$ | $\lambda_{\text{dom}}^{[1]}$ | Hyper Red Green Blue | 630 570 465 | - | nm |
| Spectral Bandwidth at 50% Φ REL MAX $I_F = 20\text{mA}$ | $\Delta\lambda$ | Hyper Red Green Blue | 28 20 25 | - | nm |
| Forward Voltage $I_F = 20\text{mA}$ | $V_F^{[2]}$ | Hyper Red Green Blue | 1.95 2.1 3.3 | 2.5 2.5 4.0 | V |
| Reverse Current ($V_R = 5\text{V}$) | I_R | Hyper Red Green Blue | - | 10 10 50 | μA |
| Temperature Coefficient of λ_{peak} $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$ | $\text{TC}_{\lambda_{\text{peak}}}$ | Hyper Red Green Blue | 0.14 0.12 0.04 | - | $\text{nm}/^\circ\text{C}$ |
| Temperature Coefficient of λ_{dom} $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$ | $\text{TC}_{\lambda_{\text{dom}}}$ | Hyper Red Green Blue | 0.05 0.08 0.03 | - | $\text{nm}/^\circ\text{C}$ |
| Temperature Coefficient of V_F $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$ | TC_V | Hyper Red Green Blue | -1.9 -1.9 -3.0 | - | $\text{mV}/^\circ\text{C}$ |

Notes:

1. The dominant wavelength (λ_{d}) above is the setup value of the sorting machine. (Tolerance $\lambda_{\text{d}}: \pm 1\text{nm}$.)
2. Forward voltage: $\pm 0.1\text{V}$.
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 $T_A=25^\circ\text{C}$

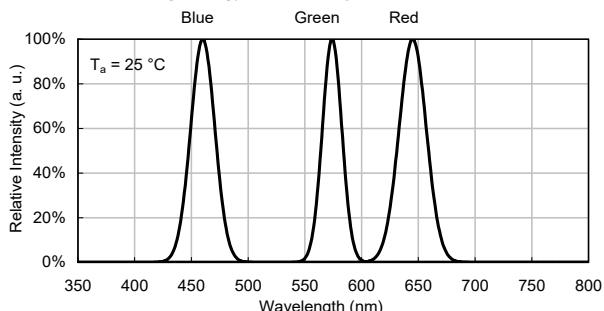
| Parameter | Symbol | Value | | | Unit |
|--|--------------------------|------------|-------|------|--------------------|
| | | Hyper Red | Green | Blue | |
| Power Dissipation | P_D | 75 | 75 | 120 | mW |
| Reverse Voltage | V_R | 5 | 5 | 5 | V |
| Junction Temperature | T_j | 115 | 115 | 115 | $^\circ\text{C}$ |
| Operating Temperature | T_{op} | -40 to +85 | | | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to +85 | | | $^\circ\text{C}$ |
| DC Forward Current | I_F | 30 | 30 | 30 | mA |
| Peak Forward Current | $I_{\text{FP}}^{[1]}$ | 185 | 150 | 150 | mA |
| Electrostatic Discharge Threshold (HBM) | - | 3000 | 3000 | 250 | V |
| Thermal Resistance (Junction / Ambient) | $R_{\text{th JA}}^{[2]}$ | 610 | 710 | 740 | $^\circ\text{C/W}$ |
| Thermal Resistance (Junction / Solder point) | $R_{\text{th JS}}^{[2]}$ | 500 | 600 | 650 | $^\circ\text{C/W}$ |

Notes:

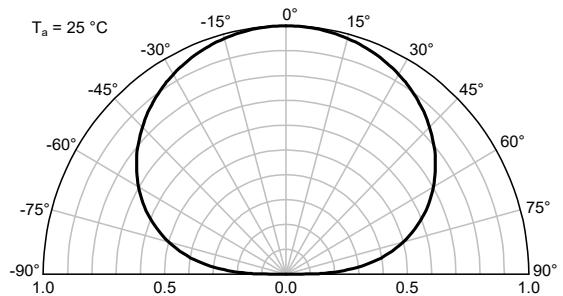
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{\text{th JA}}, R_{\text{th JS}}$ Results from mounting on PC board FR4 (pad size $\geq 16\text{ mm}^2$ per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref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

TECHNICAL DATA

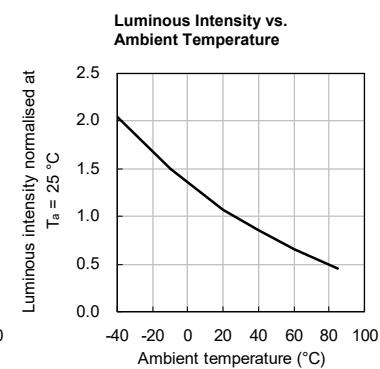
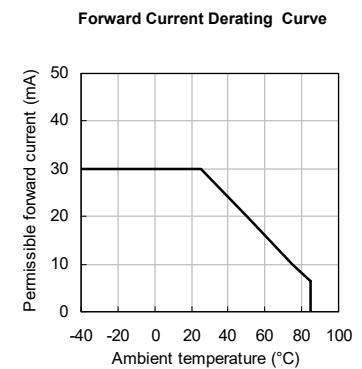
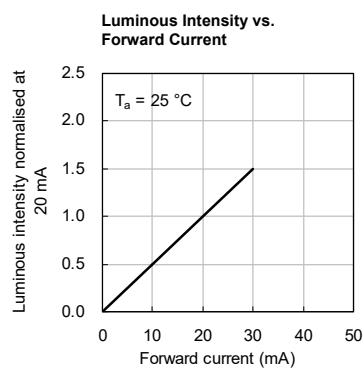
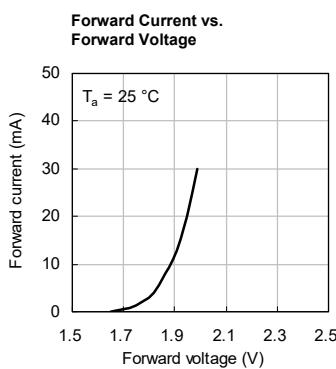
RELATIVE INTENSITY vs. WAVELENGTH



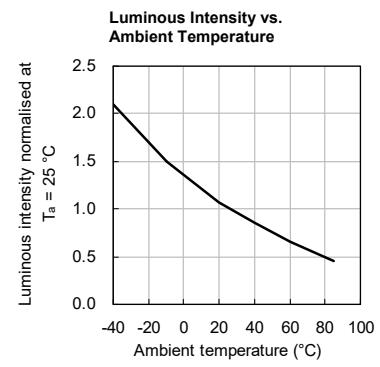
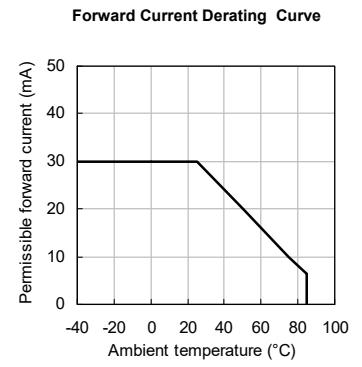
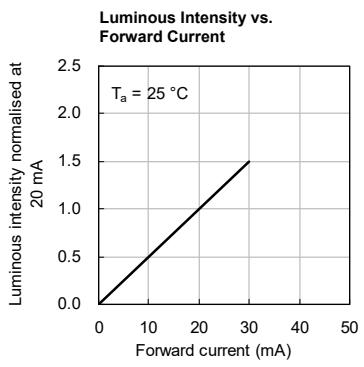
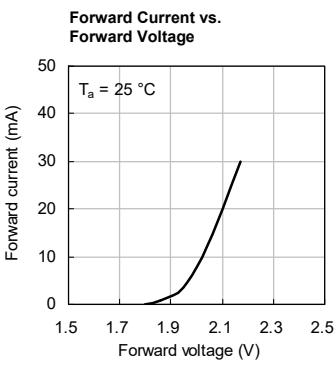
SPATIAL DISTRIBUTION



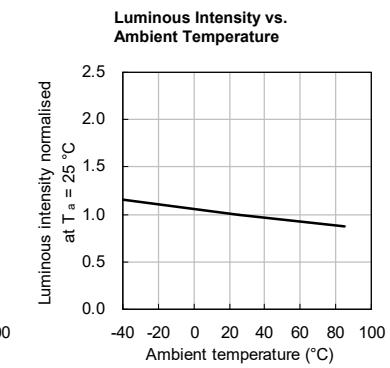
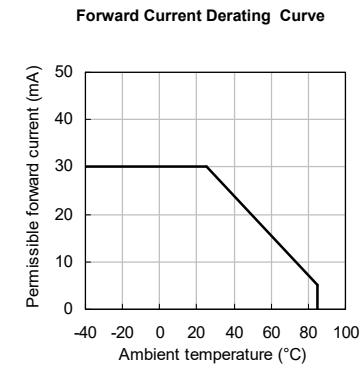
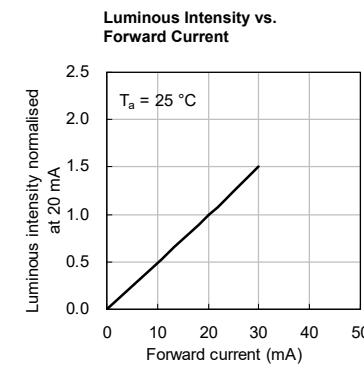
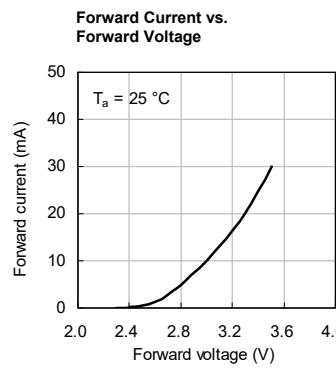
HYPER RED



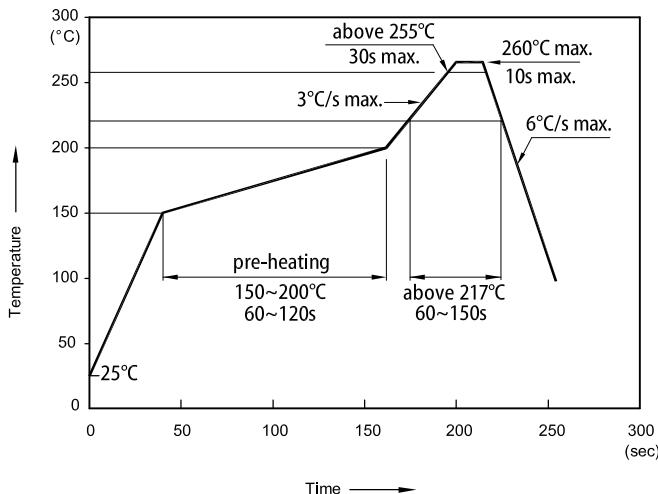
GREEN



BLUE



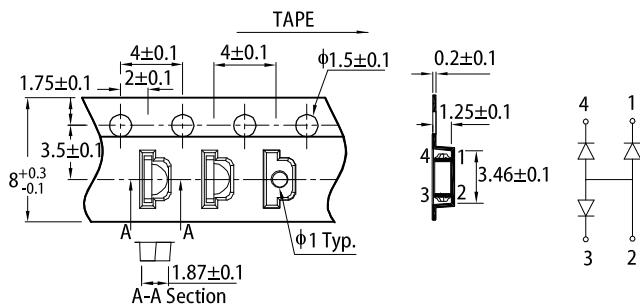
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



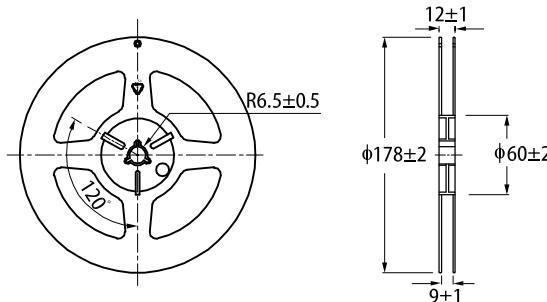
Notes:

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.

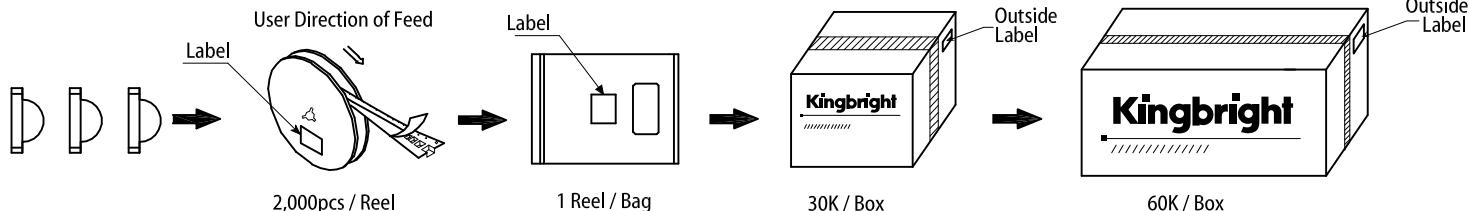
TAPE SPECIFICATIONS (units : mm)



REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

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