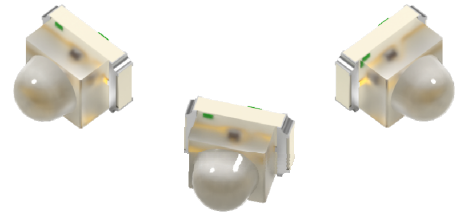


APDA3020SECK/J4-PF

3.0 x 2.0 mm Right Angle SMD LED



DESCRIPTIONS

- The Orange source color devices are made with AlGaInP 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 mm x 2.8 mm SMD LED, 2.0 mm thickness
- Low power consumption
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Tinned pads for improved solderability
- Halogen-free
- RoHS compliant

APPLICATIONS

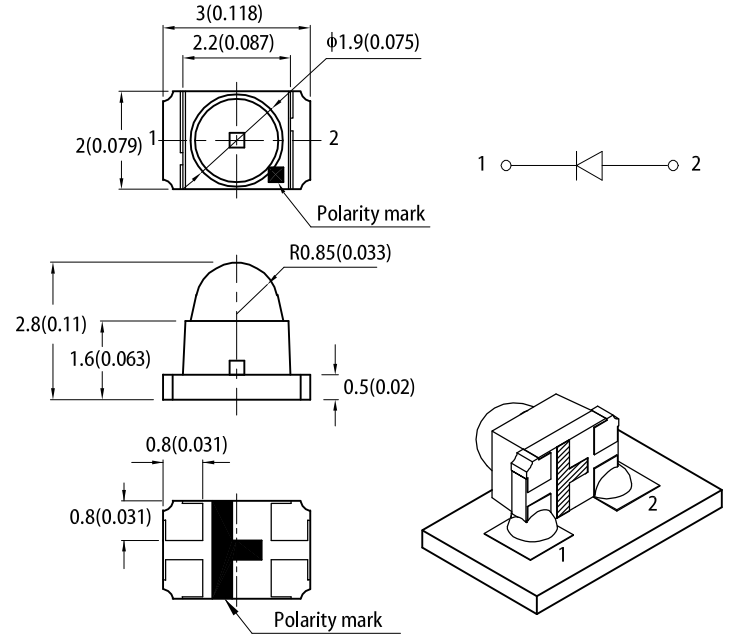
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

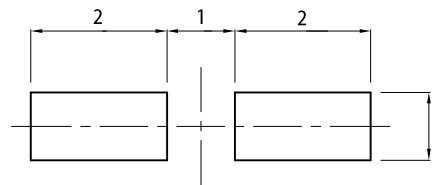


PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



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.
5. For right angle SMD LEDs, the solder stencil should be at least 5mil in thickness, to prevent poor solder wetting due to insufficient solder paste.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	2θ1/2
APDA3020SECK/J4-PF	 Super Bright Orange (AlGaInP)	Water Clear	22000	28000	10°
			*7000	*9000	

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: $\pm 15\%$.

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

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I _F = 20mA	λ_{peak}	Super Bright Orange	611	-	nm
Dominant Wavelength I _F = 20mA	λ_{dom} ^[1]	Super Bright Orange	605	-	nm
Spectral Bandwidth at 50% Φ REL MAX I _F = 20mA	$\Delta\lambda$	Super Bright Orange	17	-	nm
Forward Voltage I _F = 20mA	V _F ^[2]	Super Bright Orange	2.2	2.8	V
Reverse Current (V _R = 5V)	I _R	Super Bright Orange	-	10	μA
Temperature Coefficient of λ_{peak} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{peak}}	Super Bright Orange	0.13	-	nm/°C
Temperature Coefficient of λ_{dom} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{dom}}	Super Bright Orange	0.06	-	nm/°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	Super Bright Orange	-2.0	-	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 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
Power Dissipation	P _D	84	mW
Reverse Voltage	V _R	5	V
Junction Temperature	T _j	115	°C
Operating Temperature	T _{op}	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
DC Forward Current	I _F	30	mA
Peak Forward Current	I _{FP} ^[1]	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	V
Thermal Resistance (Junction / Ambient)	R _{th JA} ^[2]	580	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	480	°C/W

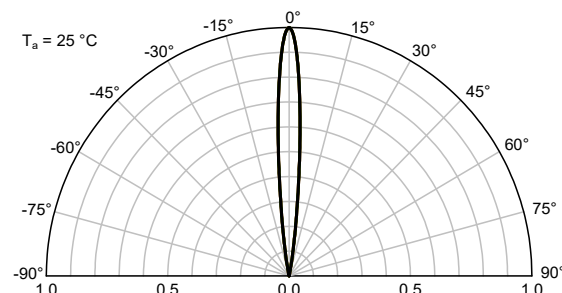
Notes:

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 mm² 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.

RELATIVE INTENSITY vs. WAVELENGTH



The four graphs illustrate the LED's characteristics:

- Forward Current vs. Forward Voltage:** Shows the forward current (mA) versus forward voltage (V) at $T_a = 25^\circ\text{C}$. The current starts to rise significantly around 1.9V and reaches 30mA at approximately 2.25V.
- Luminous Intensity vs. Forward Current:** Shows the luminous intensity (normalised at 20 mA) versus forward current (mA) at $T_a = 25^\circ\text{C}$. The intensity increases linearly from 0.0 at 0mA to 1.5 at 30mA.
- Forward Current Derating Curve:** Shows the permissible forward current (mA) versus ambient temperature ($^\circ\text{C}$). The current is constant at 30mA from -40°C to 25°C and then derates linearly to 0mA at 85°C .
- Luminous Intensity vs. Ambient Temperature:** Shows the luminous intensity (normalised at $T_a = 25^\circ\text{C}$) versus ambient temperature ($^\circ\text{C}$). The intensity decreases from approximately 1.55 at -40°C to about 0.8 at 85°C .

Figure 1 is a line graph showing the temperature profile of a polymer solution during the synthesis of polyacrylonitrile. The vertical axis represents Temperature in degrees Celsius (°C), ranging from 0 to 300. The horizontal axis represents Time in seconds (sec), ranging from 0 to 300. The profile starts at 25°C at time 0. It rises linearly to 150°C at approximately 40 seconds. From 150°C, it continues to rise at a slower rate, reaching 200°C at approximately 160 seconds. This segment is labeled 'pre-heating' and '150~200°C 60~120s'. Above 200°C, the heating rate is specified as '3°C/s max.'. The temperature reaches a plateau 'above 255°C' for a maximum of '30s'. It then rises to a peak of '260°C max.' for a maximum of '10s'. Finally, the temperature decreases at a rate of '6°C/s max.' to approximately 100°C at 250 seconds. A region 'above 217°C' is also indicated, spanning from approximately 160 to 220 seconds.

Technical drawing of a 4-core cable. The main view shows a cross-section with four cores. Dimensions include: overall width 4 ± 0.1 , core spacing 2 ± 0.1 , core diameter $\phi 1.5 \pm 0.1$, insulation thickness 1.75 ± 0.1 , and overall diameter 3.5 ± 0.1 . A section line A-A is indicated. The cross-section A-A shows the internal structure with dimensions: core diameter $\phi 1$ Typ., insulation thickness 0.7 ± 0.1 , and core spacing 2.98 ± 0.1 . A detail view of the core shows dimensions: insulation thickness 0.23 ± 0.1 , core diameter 2.1 ± 0.1 , and overall diameter 3.3 ± 0.1 . A label 'TAPE' with an arrow points to the top of the main view.

Technical drawing of a circular mechanical part, showing a top view (left) and a side view (right).

Top View (Left):

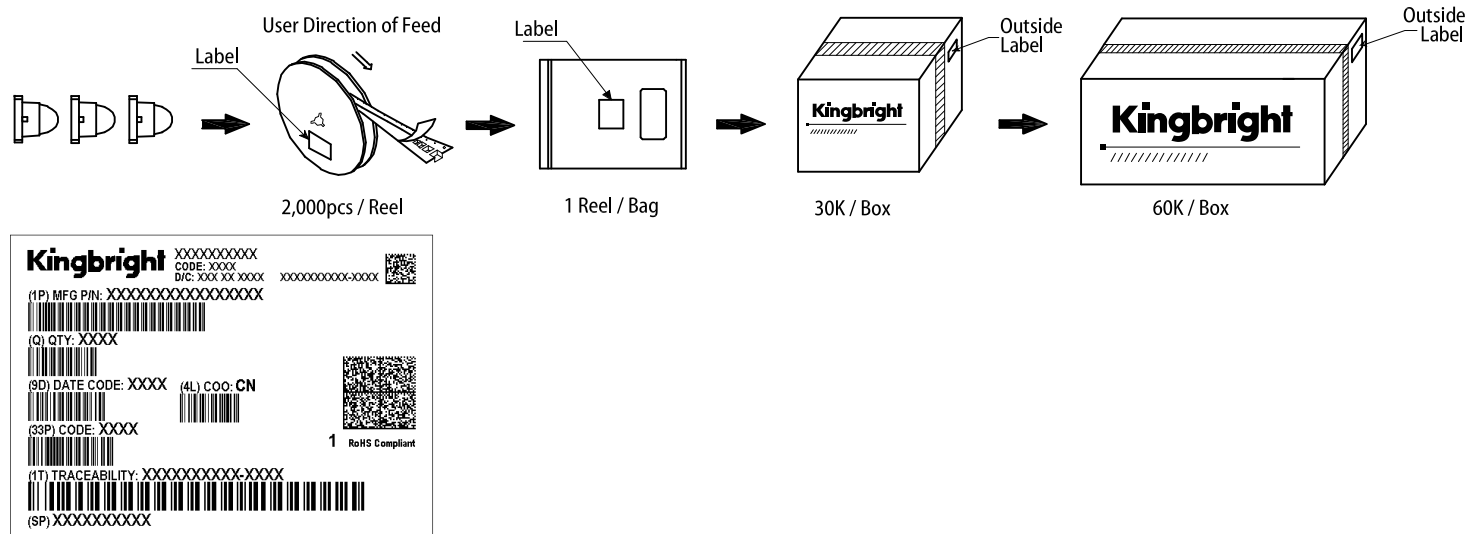
- Overall diameter: $\phi 178 \pm 2$
- Internal hole diameter: $\phi 60 \pm 2$
- Three lobes with a fillet radius: $R6.5 \pm 0.5$
- Angle between lobes: 120°

Side View (Right):

- Overall thickness: 12 ± 1
- Internal hole depth: $9 + 1$
- Internal hole diameter: $\phi 60 \pm 2$

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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.
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