

### PRELIMINARY SPEC



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

### Features

- 2.8mmx1.0mm right angle SMT LED, 1.2mm thickness.
- Low power consumption.
- Ideal for backlight and indicator.
- Various colors and lens types available.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 4.
- Electrostatic discharge threshold (HBM):1000V.
- Typ. color temperature:6500K
- Color coordinates:x=0.31,y=0.31 acc. to CIE1931(white).
- Optical efficiency:10.9 lm/W(typ.)
- Color reproduction index:80
- RoHS compliant.

Part Number: APKA2810RWC/A-F01 WHITE

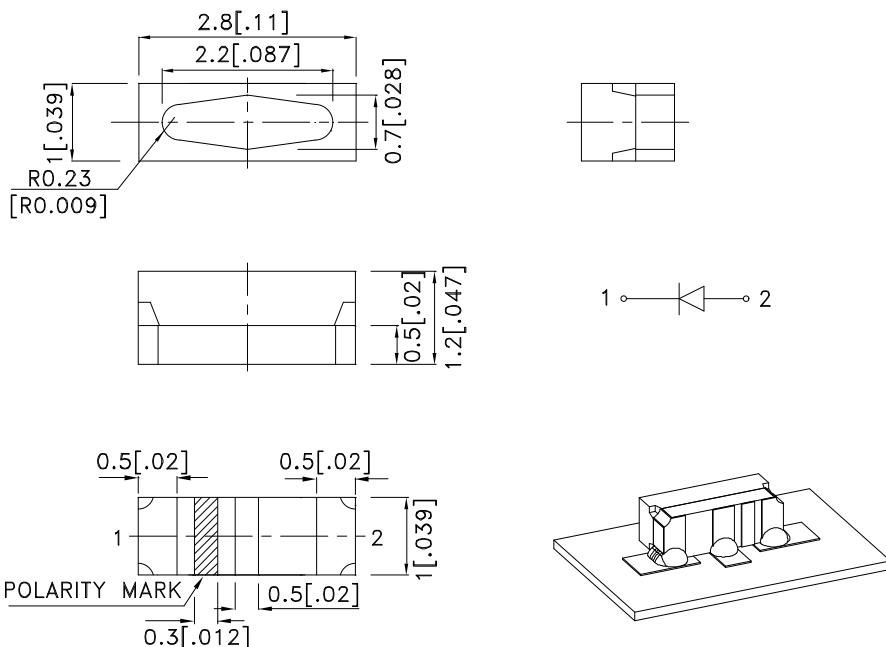
### Description

The source color devices are made with InGaN on SiC Light Emitting Diode. Static electricity and surge damage the LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. All devices, equipment and machinery must be electrically grounded.

### Applications

- traffic signaling.
- backlighting (illuminated advertising , general lighting).
- interior and exterior automotive lighting.
- substitution of micro incandescent lamps.
- reading lamps.
- signal and symbol luminaire for orientation.
- marker lights (e.g. steps, exit ways, etc).
- decorative and entertainment lighting.
- indoor and outdoor commercial and residential architectural lighting.

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25 (\pm 0.01")$  unless otherwise noted.
3. Specifications are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.



## Selection Guide

Part No.	Dice	Lens Type	luminous Intensity <sup>Note2</sup> I <sub>v</sub> (mcd) @ 20 mA		Φ <sub>v</sub> (mlm) <sup>Note3</sup> @ 20 mA	Viewing Angle <sup>Note1</sup> 2θ1/2
			Min.	Typ.		
APKA2810RWC/A-F01	WHITE (InGaN)	WATER CLEAR	70	200	700	90°

## Absolute Maximum Ratings at TA=25°C

Parameter	Symbol	Value	Unit
Power dissipation	P <sub>t</sub>	120	mW
Reverse Voltage	V <sub>R</sub>	5	V
Junction temperature	T <sub>J</sub>	110	°C
Operating Temperature	T <sub>Op</sub>	-40 To +85	°C
Storage Temperature	T <sub>Stg</sub>	-40 To +100	°C
DC Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current <sup>Note4</sup>	I <sub>FM</sub>	100	mA
Thermal resistance <sup>Note5</sup> Junction/ambient	R <sub>th JA</sub>	400	°C/W
Junction/solder point	R <sub>th JS</sub>	140	°C/W

Notes:

- 1.θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
- 2.Luminous intensity is measured by a current pulse of 10ms at a tolerance of ±15%.
- 3.The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data. For the purpose of product enhancement, the typical data is subject to change without prior notice.
- 4.1/10 Duty Cycle, 0.1ms Pulse Width.
- 5.R<sub>th</sub>(J-A) Results from mounting on PC board FR4 (pad size≥16 mm<sup>2</sup> per pad),

## Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Value	Unit
Chromaticity coordinate x acc.to CIE1931 I <sub>F</sub> =20mA [Typ.]	X <sup>Note1</sup>	0.31	-
Chromaticity coordinate y acc.to CIE1931 I <sub>F</sub> =20mA [Typ.]	Y <sup>Note1</sup>	0.31	-
Forward Voltage I <sub>F</sub> =20mA [Min.]	V <sub>F</sub> <sup>Note2</sup>	2.7	V
Forward Voltage I <sub>F</sub> =20mA [Typ.]		3.2	
Forward Voltage I <sub>F</sub> =20mA [Max.]		4.0	
Reverse Current (V <sub>R</sub> =5V) [Typ.]	I <sub>R</sub>	0.01	μA
Reverse Current (V <sub>R</sub> =5V) [Max.]		10	
Temperature coefficient of x I <sub>F</sub> =20mA, -10°C≤T≤100°C [Typ.]	TC <sub>x</sub>	-0.1	10 <sup>-3</sup> /°C
Temperature coefficient of y I <sub>F</sub> =20mA, -10°C≤T≤100°C [Typ.]	TC <sub>y</sub>	-0.2	10 <sup>-3</sup> /°C
Temperature coefficient of V <sub>F</sub> I <sub>F</sub> =20mA, -10°C≤T≤100°C [Typ.]	TC <sub>V</sub>	-2.5	mV/°C

Notes:

- 1.Chromaticity coordinates are measured by a current pulse of 20ms with a tolerance of ±0.01 in X and Y color coordinates.
- 2.Forward voltage is measured with a current pulse of 10ms at a tolerance of ±0.1V.

## Brightness codes

luminous Intensity <sup>Note1</sup> I <sub>v</sub> (mcd) @ 20 mA			Φ <sub>v</sub> (mIm) <sup>Note2</sup> @ 20 mA
Code.	Min.	Max.	Typ.
M	70	130	300
N	110	220	480
P	180	320	710
Q	280	420	960

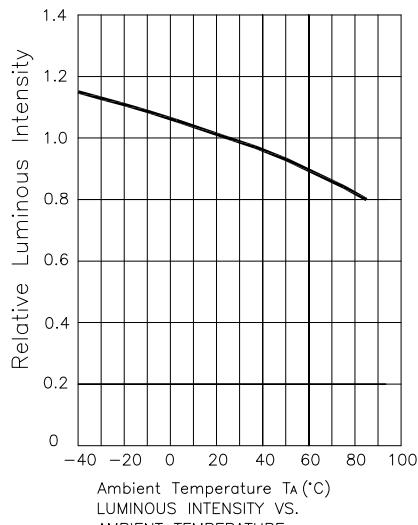
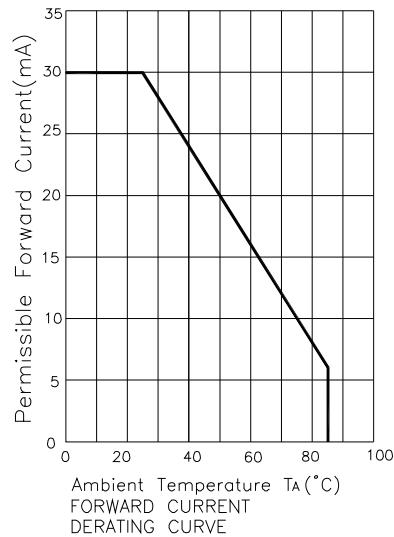
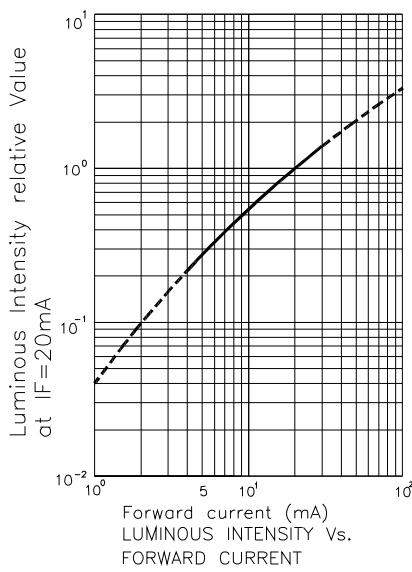
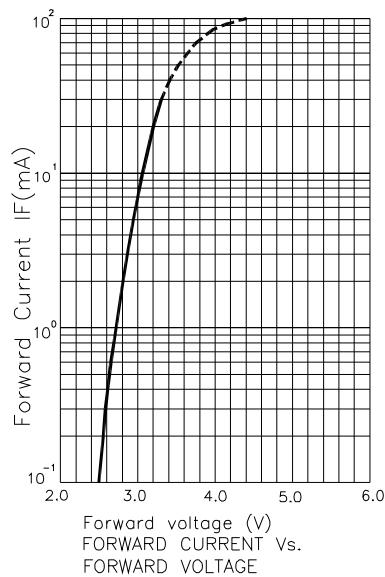
Notes:

1. Luminous intensity is measured by a current pulse of 10ms at a tolerance of  $\pm 15\%$ .

2. The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data. For the purpose of product enhancement, the typical data is subject to change without prior notice.

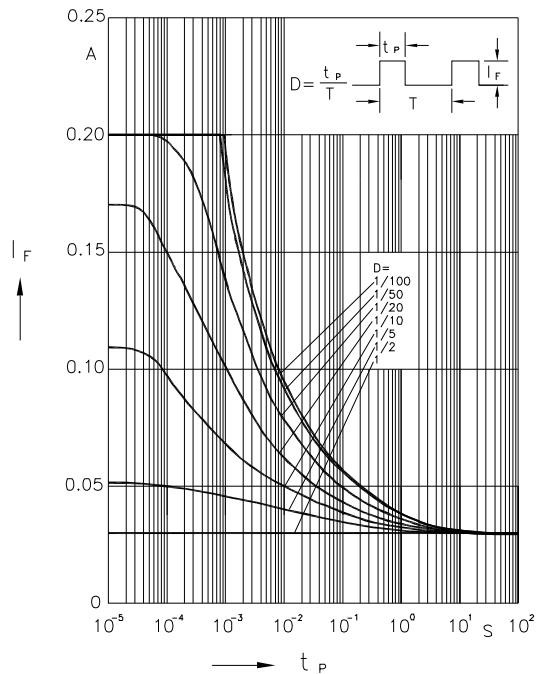
White

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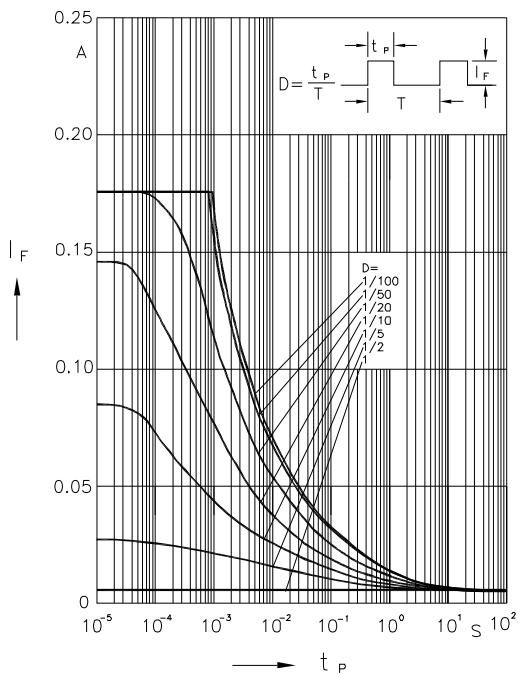


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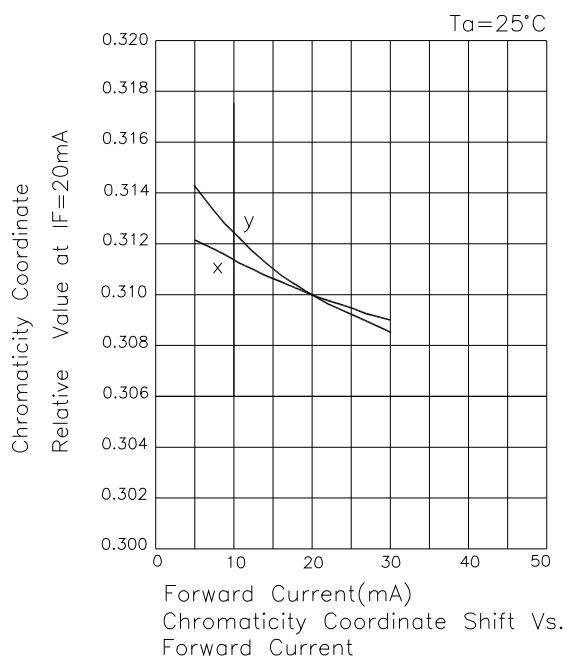
APKA2810RWC/A-F01



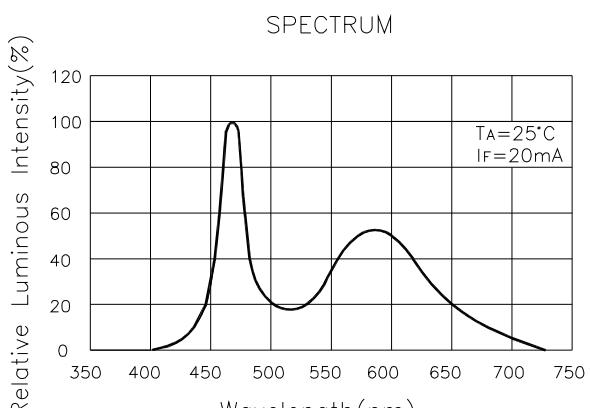
Permissible Pulse Handling Capability  
Duty cycle D=parameter, TA=25°C



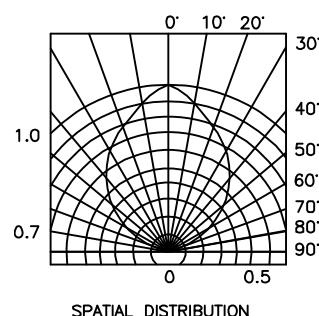
Permissible Pulse Handling Capability  
Duty cycle D=parameter, TA=85°C



Forward Current(mA)  
Chromaticity Coordinate Shift Vs.  
Forward Current



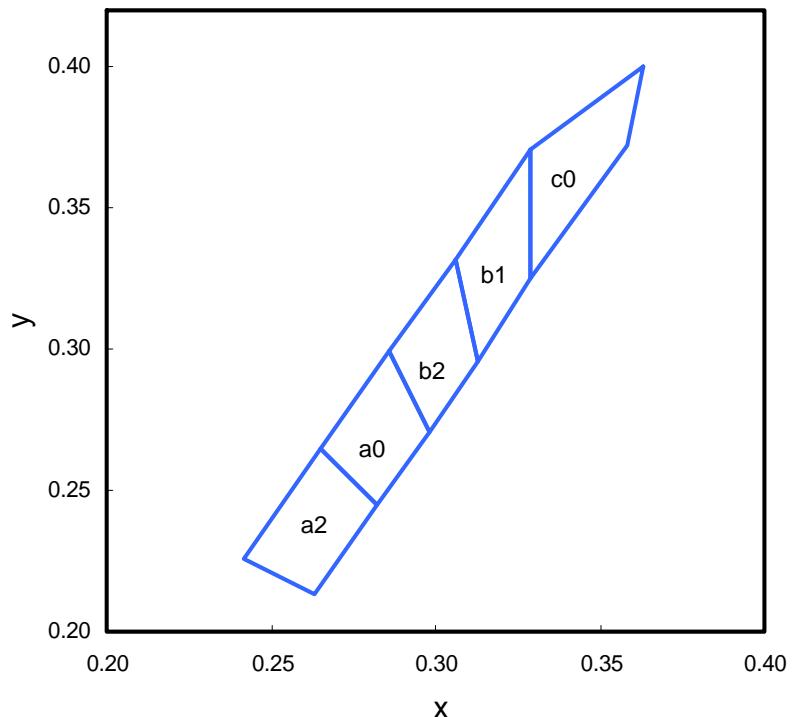
TA=25°C  
IF=20mA



SPATIAL DISTRIBUTION

APKA2810RWC/A-F01

## White CIE



Rank a2				
X	0.263	0.282	0.265	0.242
Y	0.213	0.245	0.265	0.226

Rank a0				
X	0.282	0.298	0.286	0.265
Y	0.245	0.271	0.299	0.265

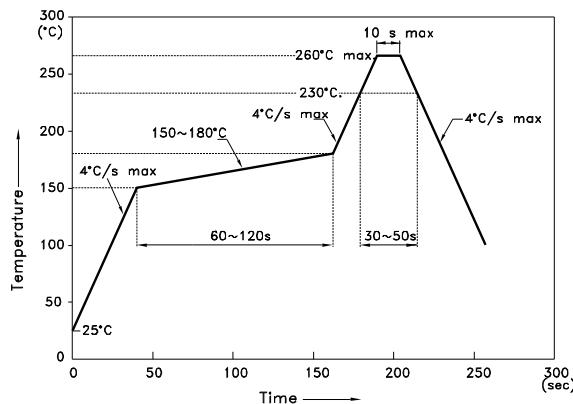
Rank b2				
X	0.298	0.313	0.306	0.286
Y	0.271	0.296	0.332	0.299

Rank b1				
X	0.313	0.329	0.329	0.306
Y	0.296	0.325	0.371	0.332

Rank c0				
X	0.329	0.358	0.363	0.329
Y	0.325	0.372	0.400	0.371

APKA2810RWC/A-F01

## Reflow Soldering Profile For Lead-free SMT Process.



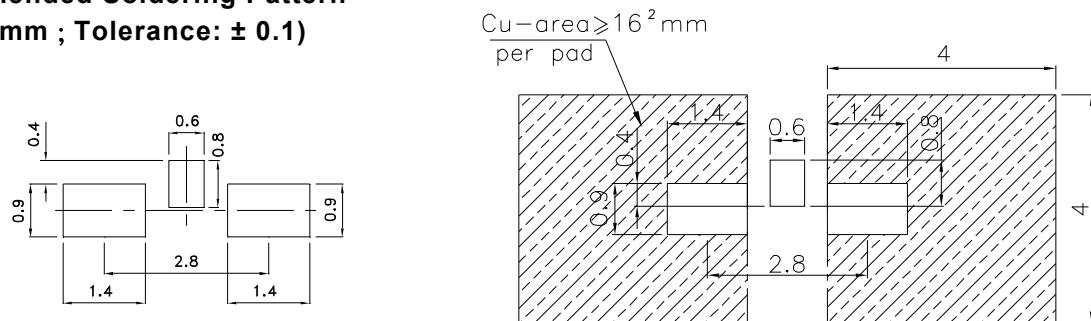
## NOTES:

NOTES:

1. We recommend the reflow temperature  $245^{\circ}\text{C} (+/- 5^{\circ}\text{C})$ . The maximum soldering temperature should be limited to  $260^{\circ}\text{C}$ .
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:  $\pm 0.1$ )

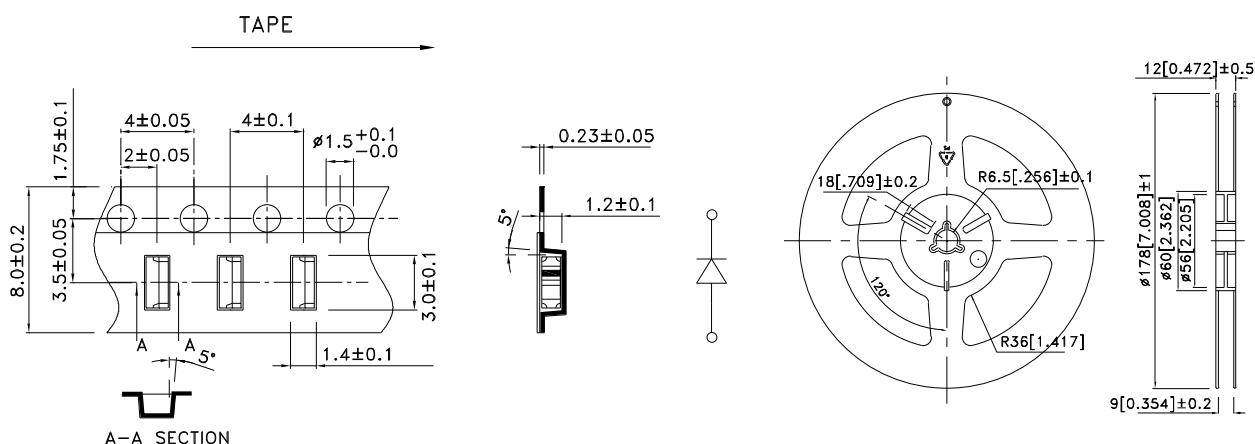


 Solder resist

## **Tape Specifications**

**Specimen**  
**(Units : mm)**

## Reel Dimension



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## PACKING & LABEL SPECIFICATIONS

APKA2810RWC/A-F01

