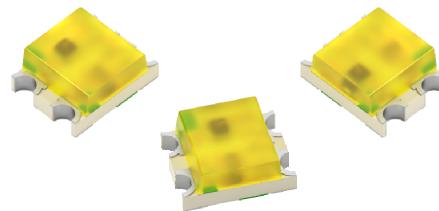


APTB1612SYKQWDF

1.6 x 1.25 mm Bi-Color SMD Chip LED Lamp



DESCRIPTIONS

- The Super Bright Yellow device is made with AlGaNp (on GaAs substrate) light emitting diode chip
- The 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

- 1.6 mm x 1.25 mm SMD LED, 0.65 mm thickness
- Bi-color, low power consumption
- Wide viewing angle
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

APPLICATIONS

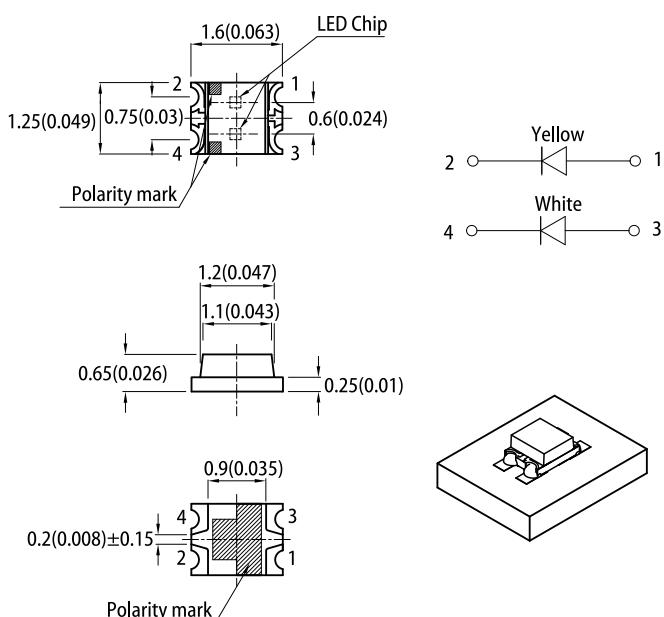
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

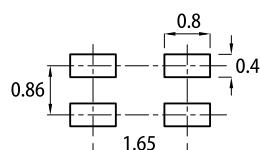


PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

- All dimensions are in millimeters (inches).
- Tolerance is $\pm 0.2(0.008")$ 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	I _v (mcd) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	
APTB1612SYKQWDF	Super Bright Yellow (AlGaNp)	Yellow Fluorescent	80	120	160°
	White (InGaN)		120	250	

Notes:

- $\theta/2$ is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
- Luminous intensity / luminous flux: $\pm 15\%$.
- Luminous intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$ (SUPER BRIGHT YELLOW)

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission $I_F = 20\text{mA}$	λ_{peak}	Super Bright Yellow	590	-	nm
Dominant Wavelength $I_F = 20\text{mA}$	$\lambda_{\text{dom}}^{[1]}$	Super Bright Yellow	590	-	nm
Spectral Bandwidth at 50% Φ REL MAX $I_F = 20\text{mA}$	$\Delta\lambda$	Super Bright Yellow	20	-	nm
Forward Voltage $I_F = 20\text{mA}$	$V_F^{[2]}$	Super Bright Yellow	2.0	2.5	V
Reverse Current ($V_R = 5\text{V}$)	I_R	Super Bright Yellow	-	10	μA
Temperature Coefficient of λ_{peak} $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	$\text{TC}_{\lambda_{\text{peak}}}$	Super Bright Yellow	0.12	-	$\text{nm}/^\circ\text{C}$
Temperature Coefficient of λ_{dom} $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	$\text{TC}_{\lambda_{\text{dom}}}$	Super Bright Yellow	0.07	-	$\text{nm}/^\circ\text{C}$
Temperature Coefficient of V_F $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_V	Super Bright Yellow	-1.9	-	$\text{mV}/^\circ\text{C}$

Notes:

1. The dominant wavelength (λ_d) above is the setup value of the sorting machine. (Tolerance $\lambda_d : \pm 1\text{nm}$.)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.

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

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Chromaticity Coordinates x $I_F = 20\text{mA}$	$x^{[1]}$	White	0.31	-	-
Chromaticity Coordinates y $I_F = 20\text{mA}$	$y^{[1]}$	White	0.31	-	-
Forward Voltage $I_F = 20\text{mA}$	$V_F^{[2]}$	White	3.3	4.0	V
Reverse Current ($V_R = 5\text{V}$)	I_R	White	-	50	μA
Temperature Coefficient of x $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_x	White	-0.17	-	$10^3/^\circ\text{C}$
Temperature Coefficient of y $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_y	White	-0.18	-	$10^3/^\circ\text{C}$
Temperature Coefficient of V_F $I_F = 20\text{mA}$, $-10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_V	White	-3.0	-	$\text{mV}/^\circ\text{C}$

Notes:

1. Measurement tolerance of the chromaticity coordinates is ± 0.01 .2. Forward voltage: $\pm 0.1\text{V}$.

3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

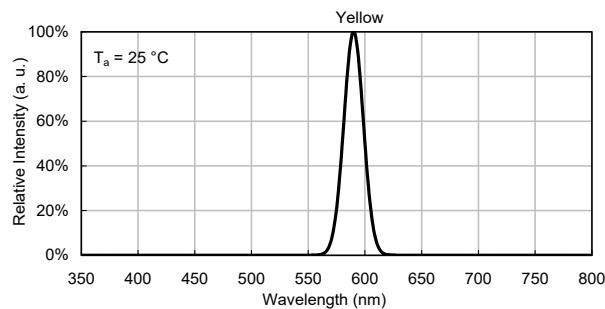
ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

Parameter	Symbol	Value		Unit
		Super Bright Yellow	White	
Power Dissipation	P_D	75	120	mW
Reverse Voltage	V_R	5	5	V
Junction Temperature	T_j	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	mA
Peak Forward Current	$I_{FP}^{[1]}$	175	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	250	V
Thermal Resistance (Junction / Ambient)	$R_{th JA}^{[2]}$	650	790	$^\circ\text{C}/\text{W}$
Thermal Resistance (Junction / Solder point)	$R_{th JS}^{[2]}$	520	700	$^\circ\text{C}/\text{W}$

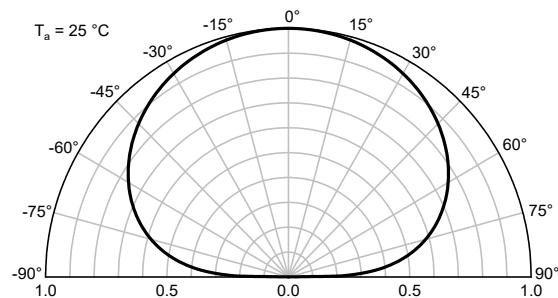
Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{th JA}$, $R_{th JS}$ Results from mounting on PC board FR4 (pad size $\geq 16 \text{ mm}^2$ per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A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

TECHNICAL DATA

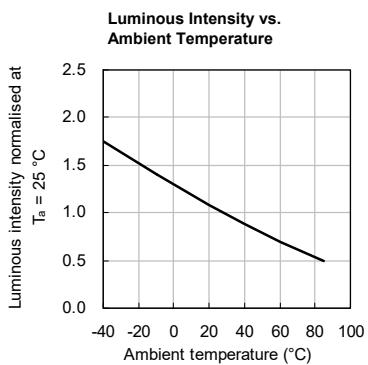
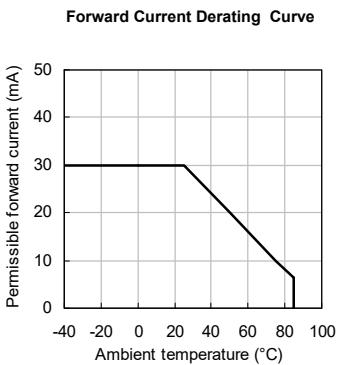
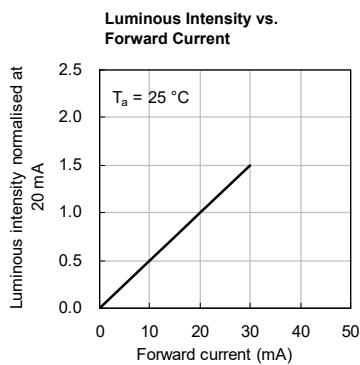
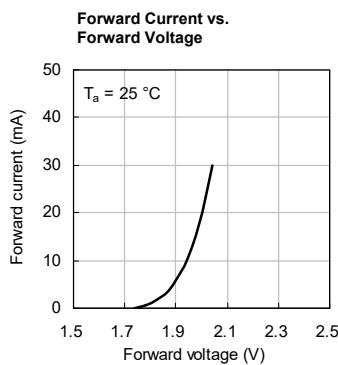
RELATIVE INTENSITY vs. WAVELENGTH



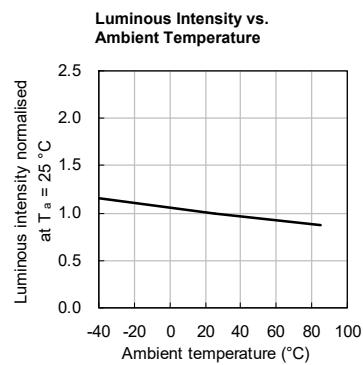
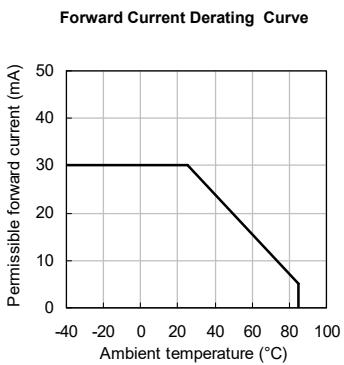
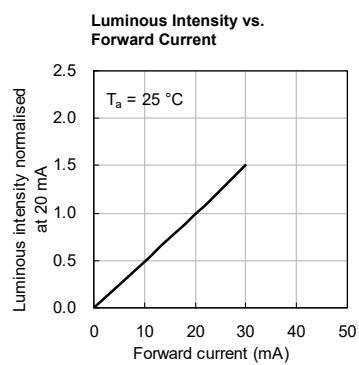
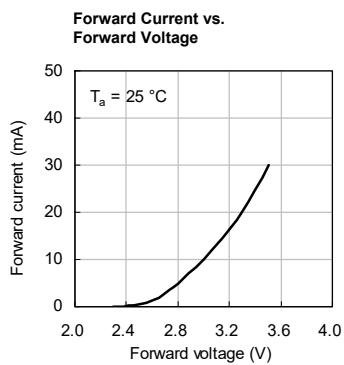
SPATIAL DISTRIBUTION



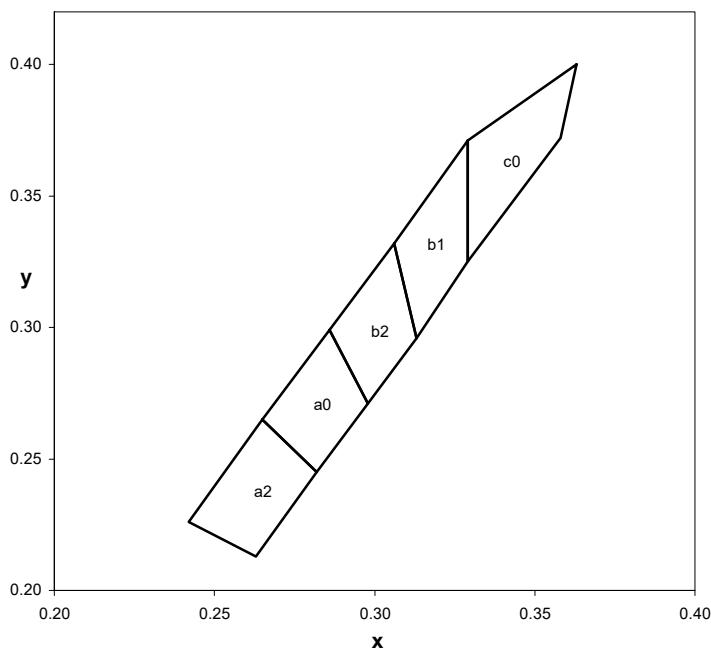
SUPER BRIGHT YELLOW



WHITE



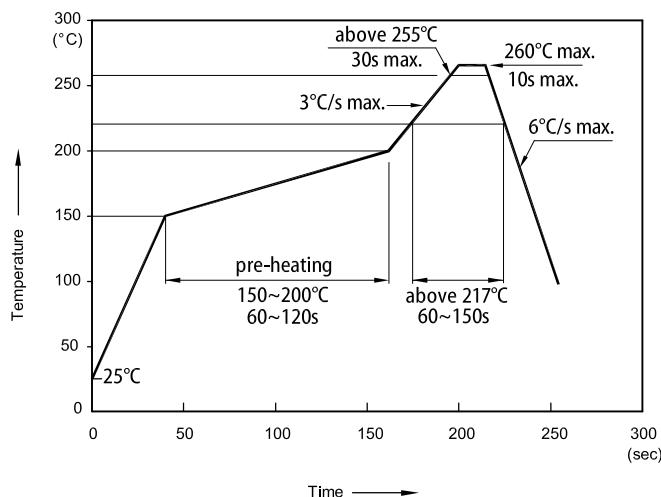
CIE CHROMATICITY DIAGRAM



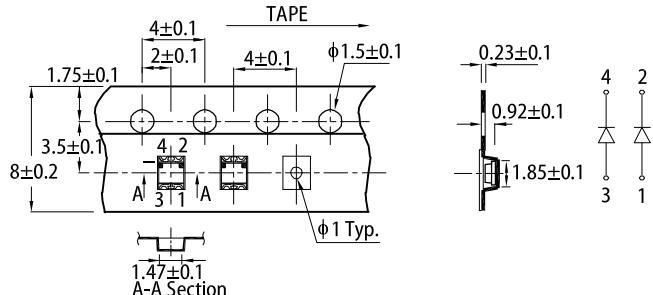
	x	y	x	y	
a2	0.263	0.213	a0	0.282	0.245
	0.282	0.245		0.298	0.271
	0.265	0.265		0.286	0.299
	0.242	0.226		0.265	0.265
b2	0.298	0.271	b1	0.313	0.296
	0.313	0.296		0.329	0.325
	0.306	0.332		0.329	0.371
	0.286	0.299		0.306	0.332
c0	0.329	0.325			
	0.358	0.372			
	0.363	0.400			
	0.329	0.371			

Notes:
Shipment may contain more than one chromaticity regions.
Orders for single chromaticity region are generally not accepted.
Measurement tolerance of the chromaticity coordinates is ± 0.01 .

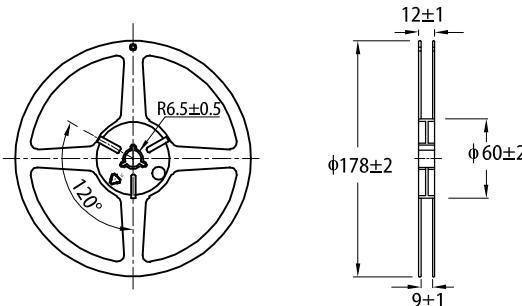
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



TAPE SPECIFICATIONS (units : mm)



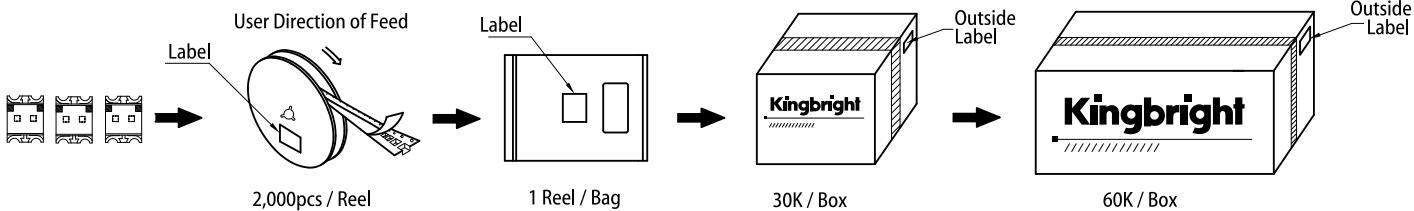
REEL DIMENSION (units : mm)



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.

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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