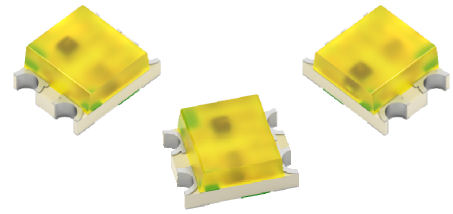


APTB1612SYKQWDF

1.6 x 1.25 mm Bi-Color SMD Chip LED Lamp



DESCRIPTIONS

- The Super Bright Yellow device is made with AlGaInP (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

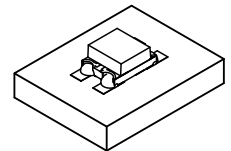
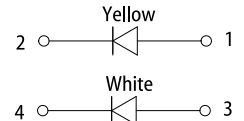
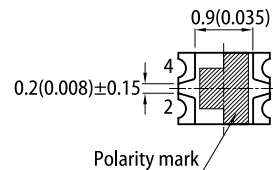
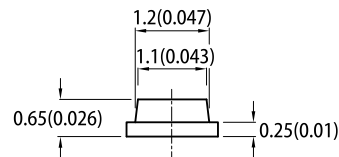
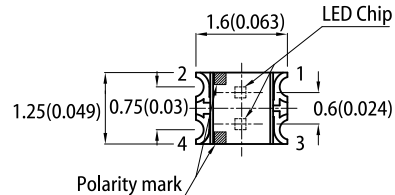
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

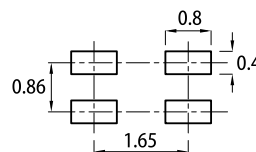


PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±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.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	2θ1/2
APTB1612SYKQWDF	Super Bright Yellow (AlGaInP)	Yellow Fluorescent	80	120	160°
	White (InGaN)		120	250	

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: ±1-15%.
 3. Luminous intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C (SUPER BRIGHT YELLOW)

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

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C (WHITE)

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Chromaticity Coordinates x I _F = 20mA	x ^[1]	White	0.31	-	-
Chromaticity Coordinates y I _F = 20mA	y ^[1]	White	0.31	-	-
Forward Voltage I _F = 20mA	V _F ^[2]	White	3.3	4.0	V
Reverse Current (V _R = 5V)	I _R	White	-	50	μA
Temperature Coefficient of x I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _x	White	-0.17	-	10 ⁻³ /°C
Temperature Coefficient of y I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _y	White	-0.18	-	10 ⁻³ /°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	White	-3.0	-	mV/°C

Notes:

1. Measurement tolerance of the chromaticity coordinates is ±0.01.
2. Forward voltage: ±0.1V.
3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

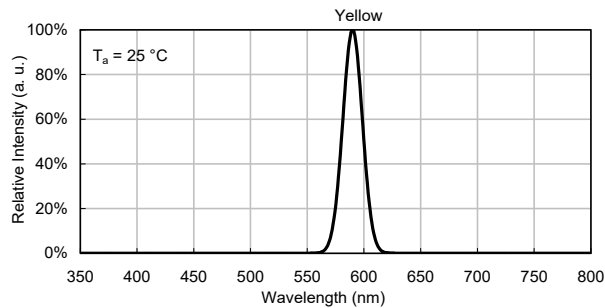
ABSOLUTE MAXIMUM RATINGS at T_A=25°C

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	°C
Operating Temperature	T _{op}	-40 To +85		°C
Storage Temperature	T _{stg}	-40 To +85		°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	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	520	700	°C/W

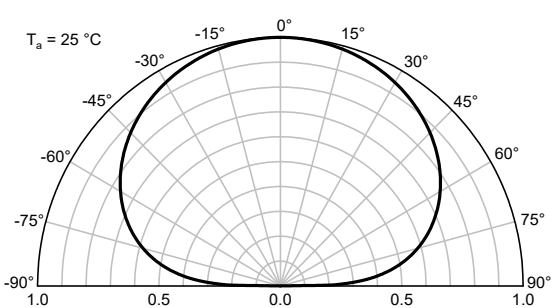
Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R_{th JA}, R_{th JS} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

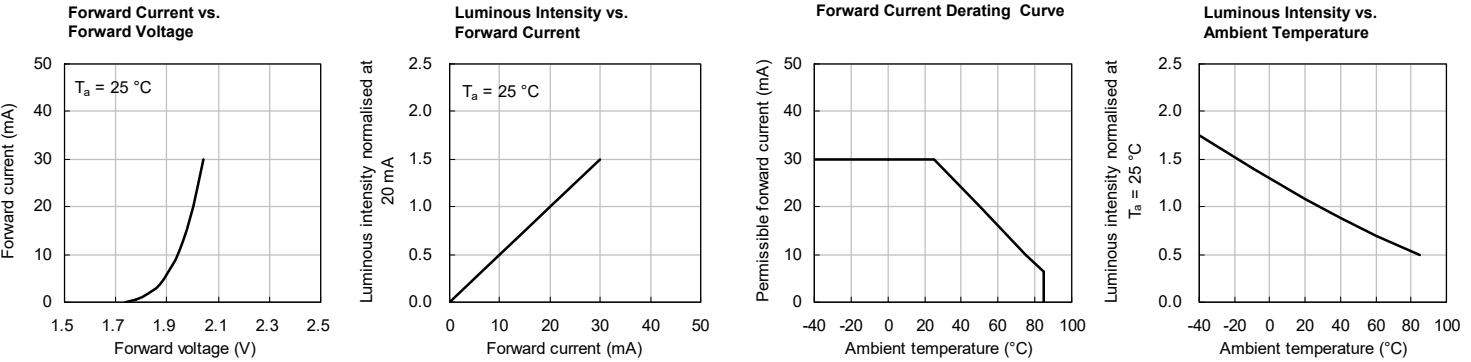
RELATIVE INTENSITY vs. WAVELENGTH



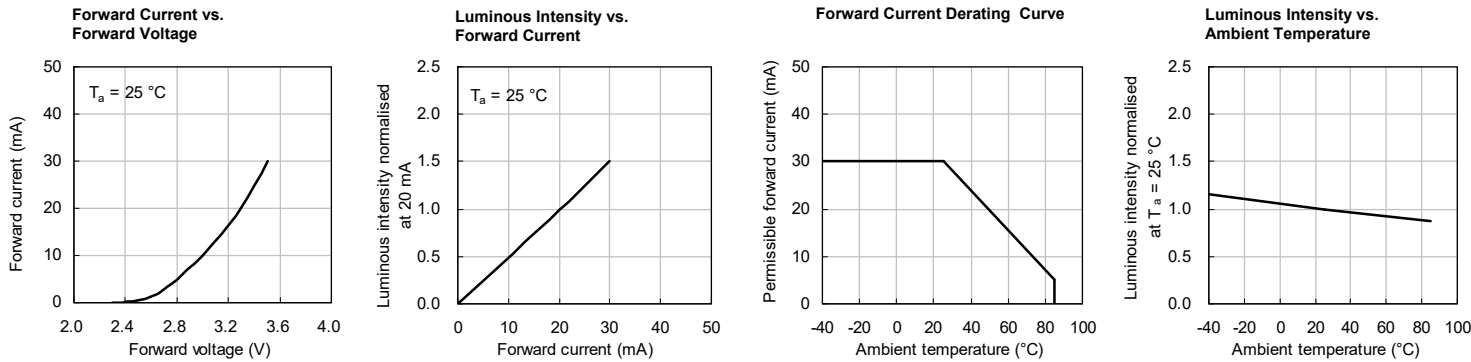
SPATIAL DISTRIBUTION



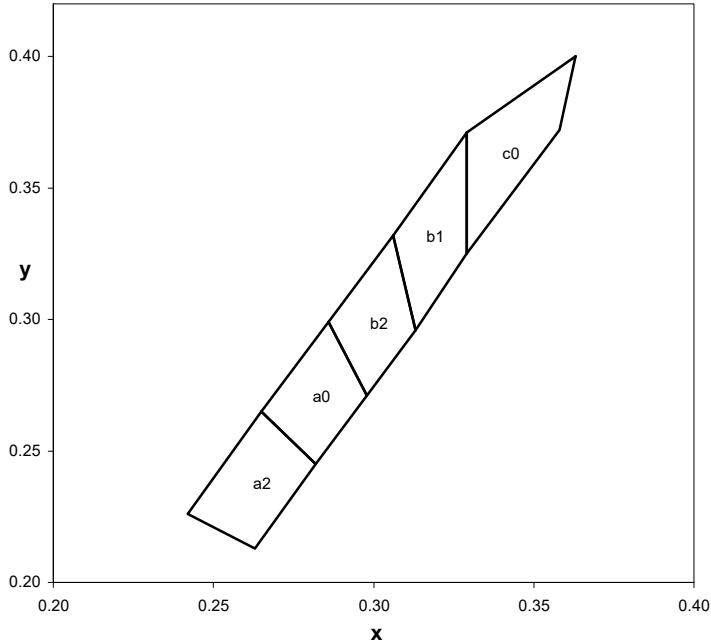
SUPER BRIGHT YELLOW



WHITE



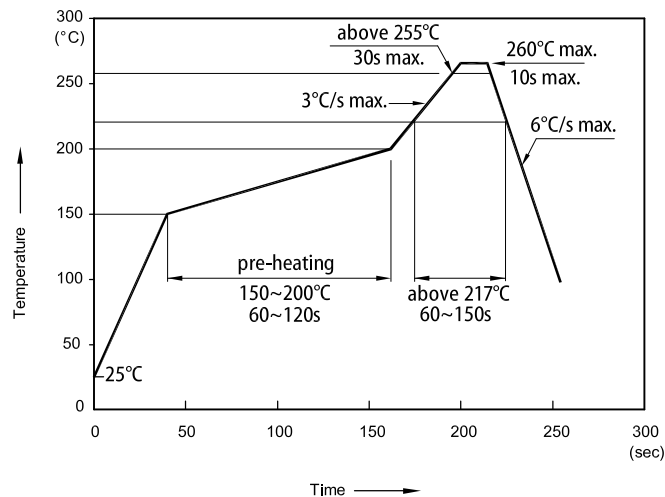
CIE CHROMATICITY DIAGRAM



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 .

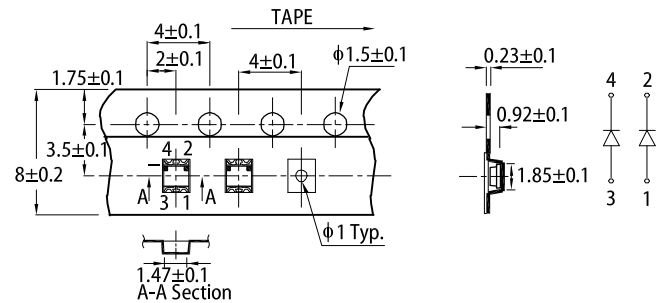
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



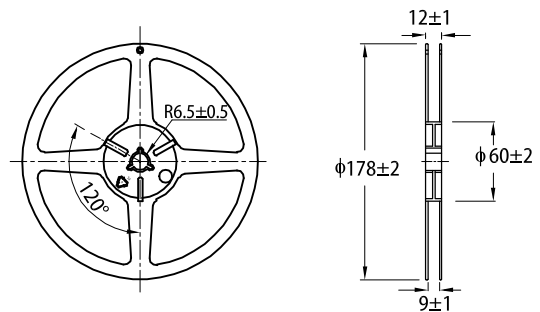
Notes:

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.

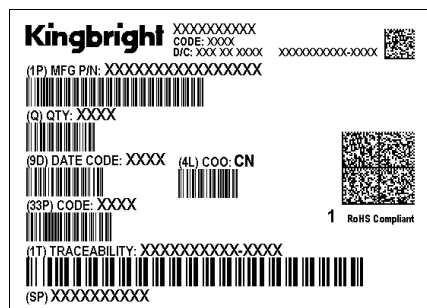
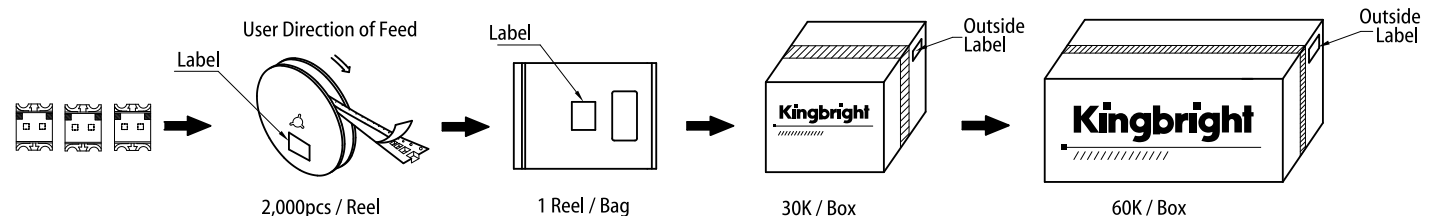
TAPE SPECIFICATIONS (units : mm)



REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

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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