

APHB1608SGEC

1.6 x 0.8 x 0.5 mm Bi-Color Surface Mount LED

DESCRIPTIONS

- The Super Bright Green source color devices are made with Gallium Phosphide Green Light Emitting Diode
- The High Efficiency Red source color devices are Made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode

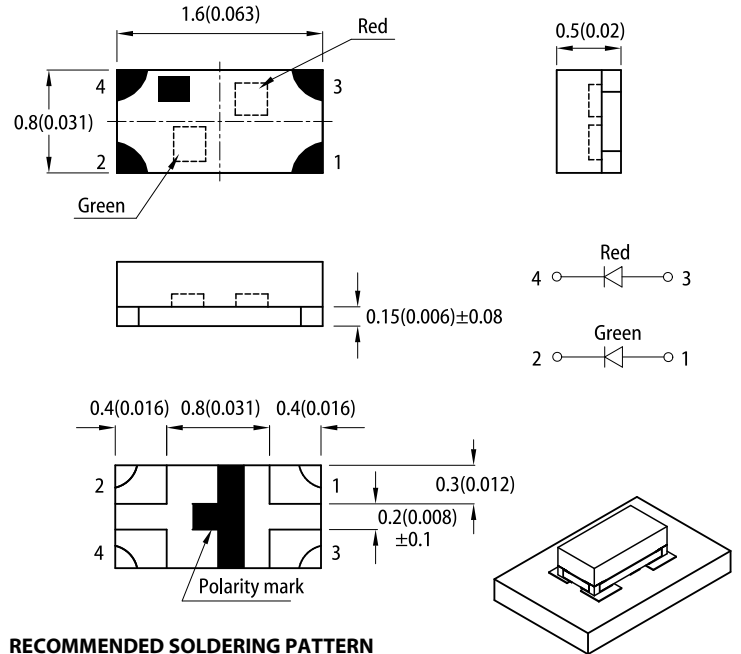
FEATURES

- 1.6 x 0.8 mm SMD LED, 0.5 mm thickness
- Compatible with reflow soldering
- Available in various color combination
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Tinned pads for improved solderability
- Halogen-free
- RoHS compliant

APPLICATIONS

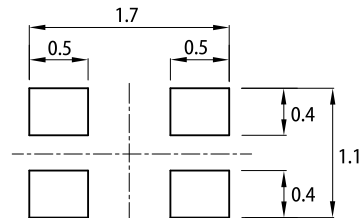
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



- Notes:
1. $\theta_{1/2}$ is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
 2. Tolerance is $\pm 0.15(0.006)$ 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
APHB1608SGEC	<div>■</div> Super Bright Green (GaP)	Water Clear	5	15	130°
			*5	*15	
	<div>■</div> High Efficiency Red (GaAsP/GaP)		7	15	
			*5	*12	

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 Green High Efficiency Red	565 627	-	nm
Dominant Wavelength I _F = 20mA	$\lambda_{\text{dom}}^{[1]}$	Super Bright Green High Efficiency Red	568 617	-	nm
Spectral Bandwidth at 50% Φ REL MAX I _F = 20mA	$\Delta\lambda$	Super Bright Green High Efficiency Red	30 45	-	nm
Forward Voltage I _F = 20mA	V _F ^[2]	Super Bright Green High Efficiency Red	2.2 2.0	2.5 2.5	V
Reverse Current (V _R = 5V)	I _R	Super Bright Green High Efficiency Red	-	10 10	μA
Temperature Coefficient of λ_{peak} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{peak}}	Super Bright Green High Efficiency Red	0.12 0.13	-	nm/°C
Temperature Coefficient of λ_{dom} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{dom}}	Super Bright Green High Efficiency Red	0.08 0.06	-	nm/°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	Super Bright Green High Efficiency Red	-2.0 -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.

ABSOLUTE MAXIMUM RATINGS at T_A=25°C

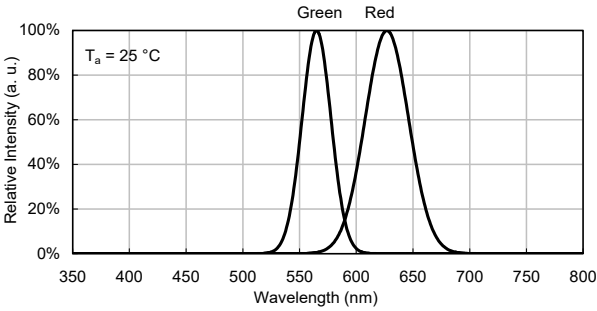
Parameter	Symbol	Value		Unit
		Super Bright Green	High Efficiency Red	
Power Dissipation	P _D	62.5	75	mW
Reverse Voltage	V _R	5	5	V
Junction Temperature	T _j	110	125	°C
Operating Temperature	T _{op}	-40 to +85		°C
Storage Temperature	T _{stg}	-40 to +85		°C
DC Forward Current	I _F	25	30	mA
Peak Forward Current	I _{FP} ^[1]	140	160	mA
Electrostatic Discharge Threshold (HBM)	-	8000	8000	V
Thermal Resistance (Junction / Ambient)	R _{th JA} ^[2]	550	560	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	420	420	°C/W

Notes:

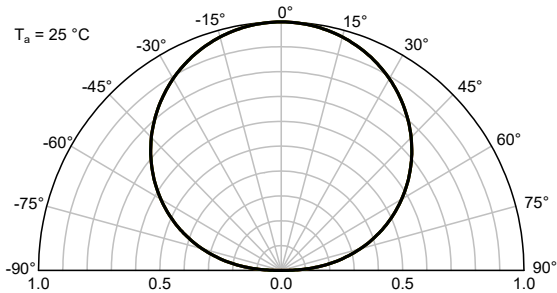
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R_{th JA}, R_{th JS} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

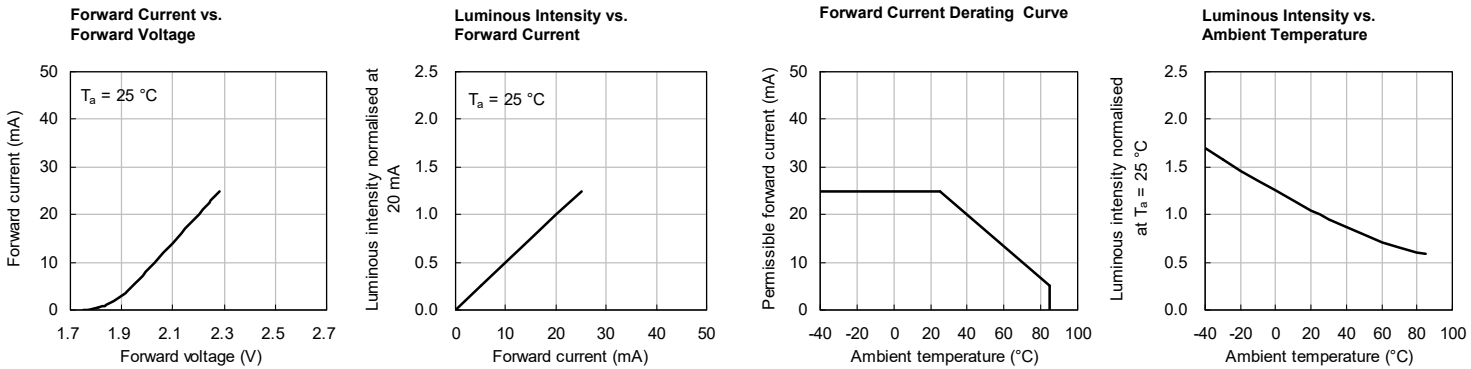
RELATIVE INTENSITY vs. WAVELENGTH



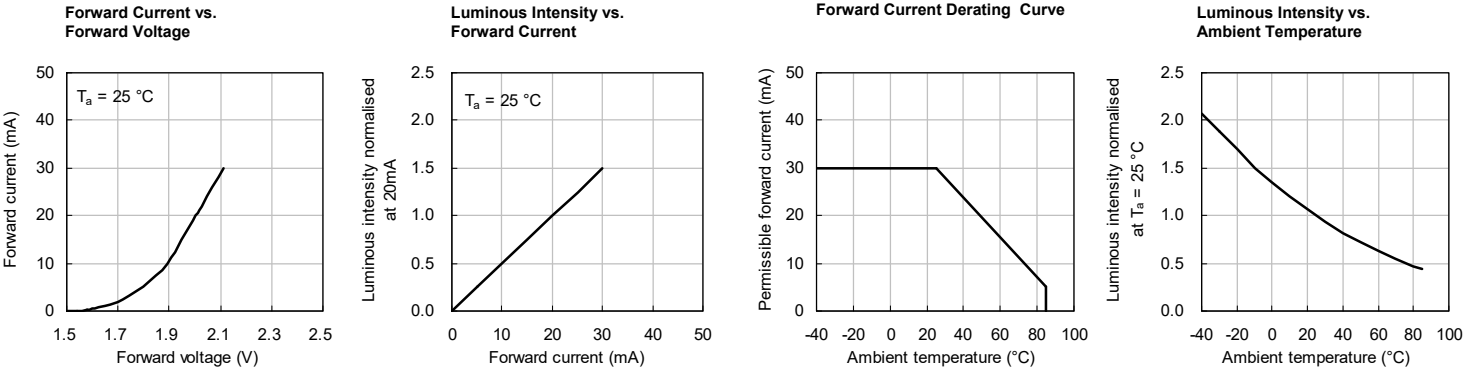
SPATIAL DISTRIBUTION



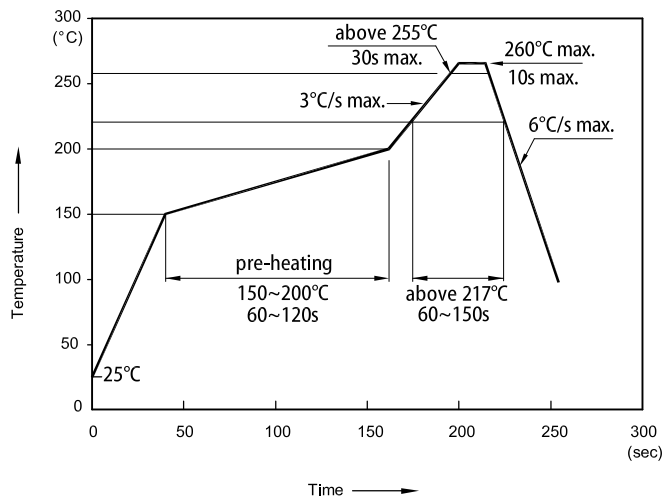
SUPER BRIGHT GREEN



HIGH EFFICIENCY RED

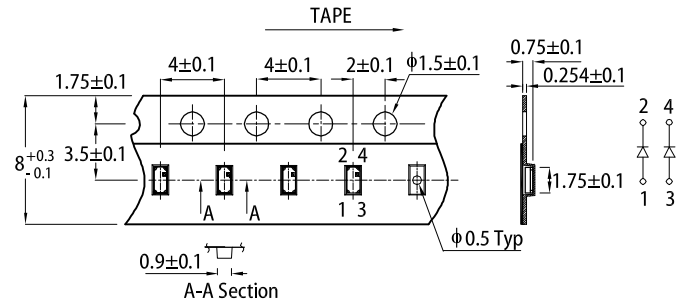


REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

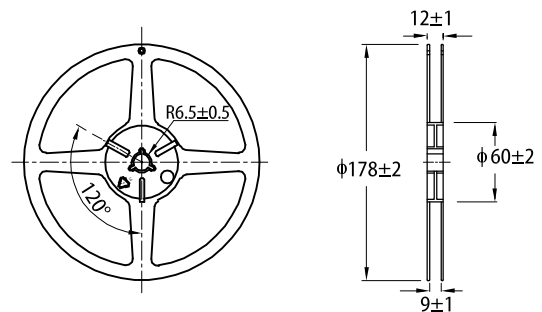


- Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
 2. The maximum number of reflow soldering passes is 2 times.
 3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

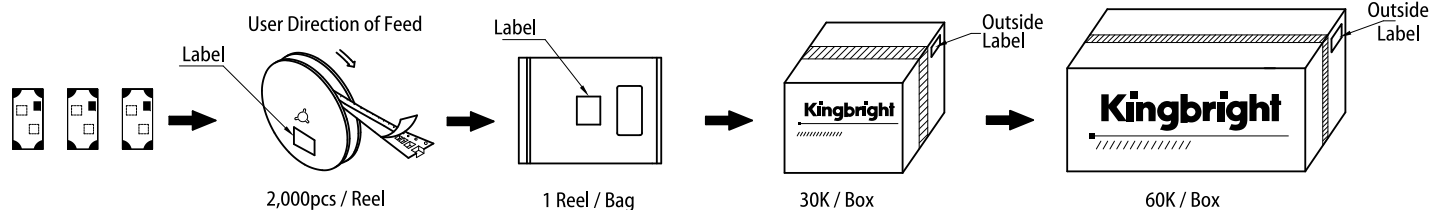
TAPE SPECIFICATIONS (units : mm)



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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