

APHBM2012SURKCGKC

2.0 x 1.25 mm SMD Chip LED Lamp

DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaN/P on GaAs substrate Light Emitting Diode
- The Green source color devices are made with AlGaN/P on GaAs substrate 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

- 2.0 mm x 1.25 mm SMD LED, 0.45 mm max. thickness
- Low power consumption
- Wide viewing angle
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

APPLICATIONS

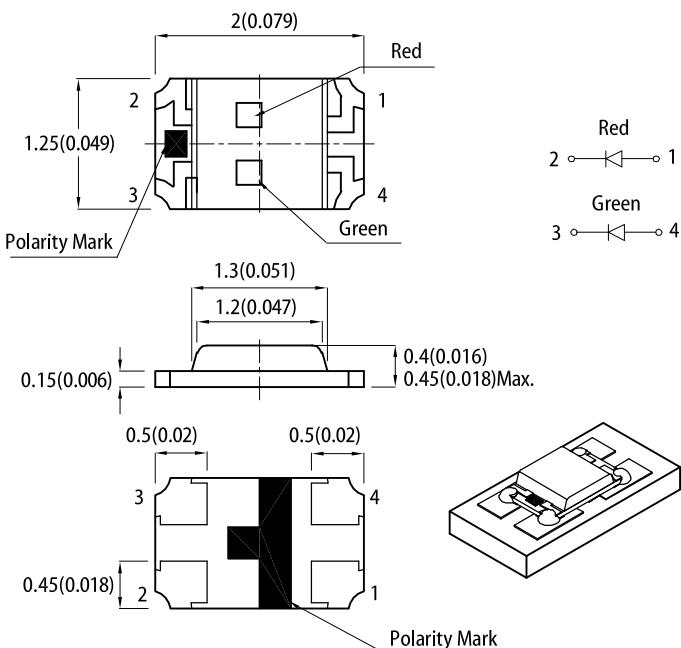
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

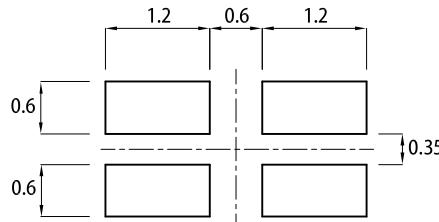


PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

- All dimensions are in millimeters (inches).
- Tolerance is $\pm 0.1(0.004")$ 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	Iv (mcd) @ 20mA ^[2]		Viewing Angle ^[1] 201/2
			Min.	Typ.	
APHBM2012SURKCGKC	Hyper Red (AlGaN/P)	Water Clear	120	250	120°
	Green (AlGaN/P)		*40	*80	
			20	50	
			*20	*50	

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: +/-15%.

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

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

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission $I_F = 20\text{mA}$	λ_{peak}	Hyper Red Green	645 574	-	nm
Dominant Wavelength $I_F = 20\text{mA}$	$\lambda_{\text{dom}}^{[1]}$	Hyper Red Green	630 570	-	nm
Spectral Bandwidth at 50% Φ REL MAX $I_F = 20\text{mA}$	$\Delta\lambda$	Hyper Red Green	28 20	-	nm
Forward Voltage $I_F = 20\text{mA}$	$V_F^{[2]}$	Hyper Red Green	1.95 2.1	2.5 2.5	V
Reverse Current ($V_R = 5\text{V}$)	I_R	Hyper Red Green	-	10 10	μA
Temperature Coefficient of λ_{peak} $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	$\text{TC}_{\lambda_{\text{peak}}}$	Hyper Red Green	0.14 0.12	-	$\text{nm}/^\circ\text{C}$
Temperature Coefficient of λ_{dom} $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	$\text{TC}_{\lambda_{\text{dom}}}$	Hyper Red Green	0.05 0.08	-	$\text{nm}/^\circ\text{C}$
Temperature Coefficient of V_F $I_F = 20\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_V	Hyper Red Green	-1.9 -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.

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

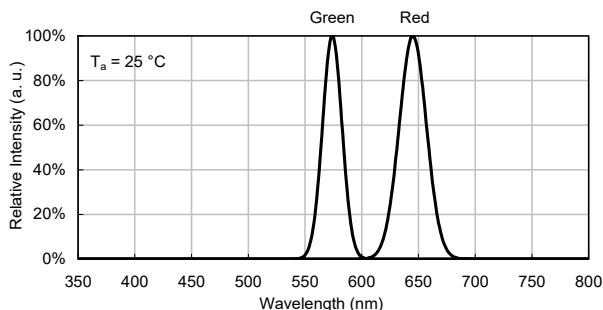
Parameter	Symbol	Value		Unit
		Hyper Red	Green	
Power Dissipation	P_D	75	75	mW
Reverse Voltage	V_R	5	5	V
Junction Temperature	T_J	115	115	°C
Operating Temperature	T_{op}	-40 To +85		°C
Storage Temperature	T_{stg}	-40 To +85		°C
DC Forward Current	I_F	30	30	mA
Peak Forward Current	$I_{FP}^{[1]}$	185	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	3000	V
Thermal Resistance (Junction / Ambient)	$R_{\text{th JA}}^{[2]}$	670	610	°C/W
Thermal Resistance (Junction / Solder point)	$R_{\text{th JS}}^{[2]}$	550	490	°C/W

Notes:

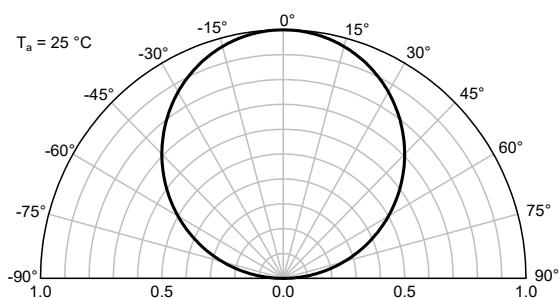
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{\text{th JA}}, R_{\text{th JS}}$ Results from mounting on PC board FR4 (pad size $\geq 16\text{ mm}^2$ per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref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

TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

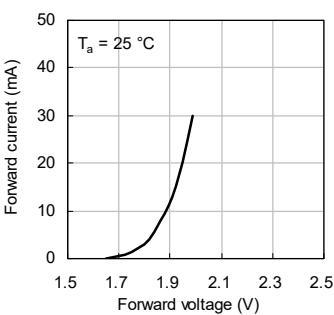


SPATIAL DISTRIBUTION

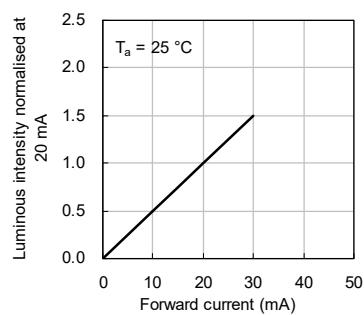


HYPER RED

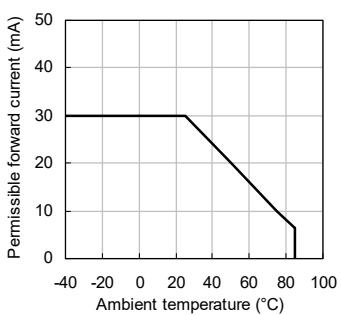
Forward Current vs. Forward Voltage



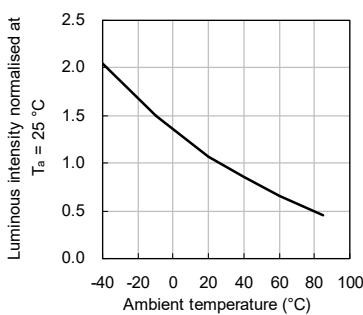
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

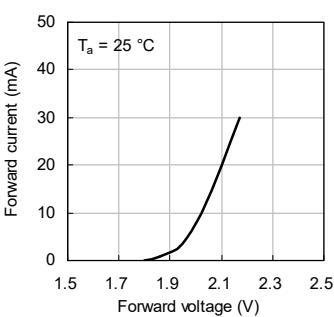


Luminous Intensity vs. Ambient Temperature

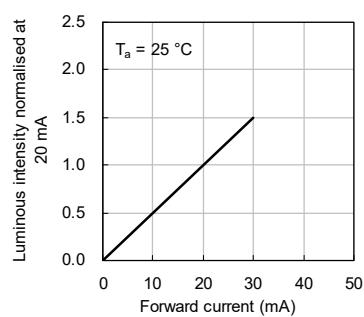


GREEN

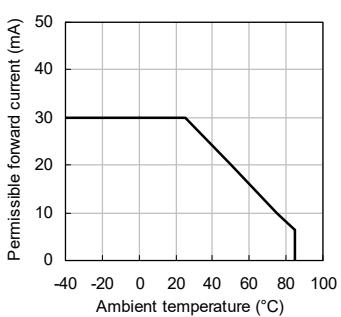
Forward Current vs. Forward Voltage



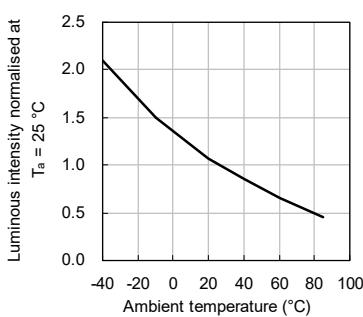
Luminous Intensity vs. Forward Current



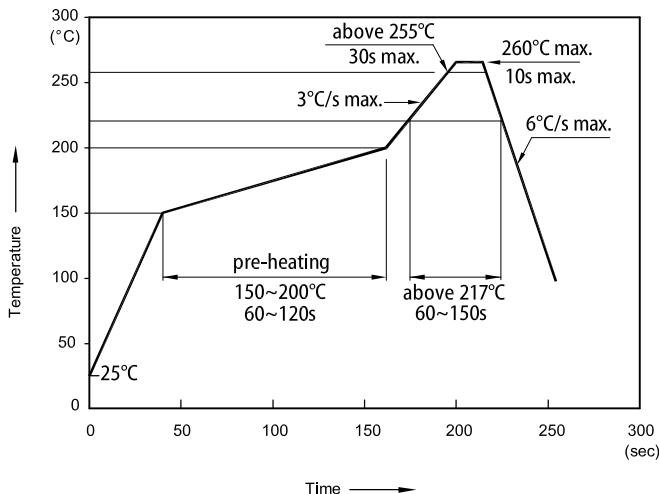
Forward Current Derating Curve



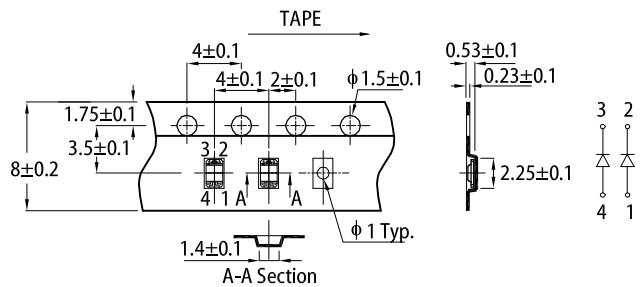
Luminous Intensity vs. Ambient Temperature



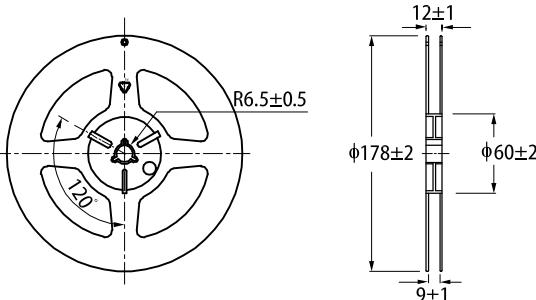
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



TAPE SPECIFICATIONS (units : mm)

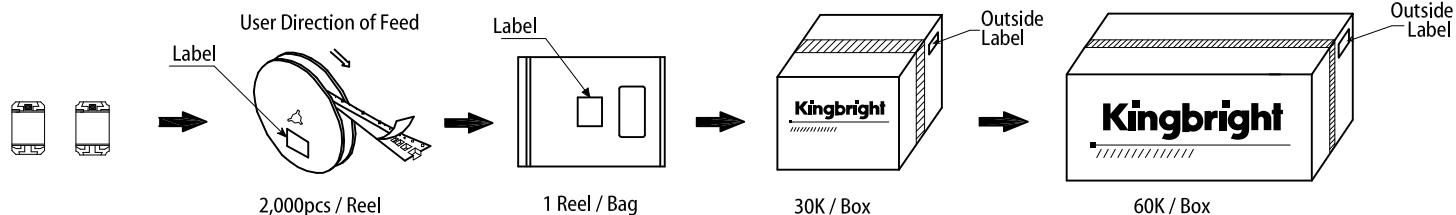


REEL DIMENSION (units : mm)



Notes:

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.
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