

## APHBM2012SURKZGKC

2.0 x 1.25 mm SMD Chip LED Lamp



## DESCRIPTIONS

- The Hyper Red source color devices are made with AIGaInP on GaAs substrate Light Emitting Diode
- The Green source color devices are made with InGaN on Sapphire 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
- 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

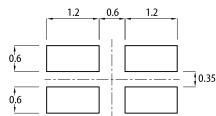


2(0.079) Red 2 Red 20 ┢ 1.25(0.049) -01 Green **---**04 3 0 Green **Polarity Mark** 1.3(0.051) 1.2(0.047) 0.4(0.016) 0.45(0.018)Max. 0.15(0.006) 0.5(0.02) 0.5(0.02) 3 0.45(0.018) **Polarity Mark** 

### **RECOMMENDED SOLDERING PATTERN**

PACKAGE DIMENSIONS

(units : mm; tolerance :  $\pm 0.1$ )



Notes

1. All dimensions are in millimeters (inches)

Tolerance is ±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. 4.

### SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	lv (mcd) @ 20mA <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>	
			Min.	Тур.	201/2	
APHBM2012SURKZGKC	Hyper Red (AlGaInP)	Water Clear	120	250		
			*40	*80	120°	
	Green (InGaN)		200	280		
			*200	*280		

- 1. 01/2 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.

# **Kingbright**

### ELECTRICAL / OPTICAL CHARACTERISTICS at T<sub>A</sub>=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Тур.	Max.	
Wavelength at Peak Emission $I_F$ = 20mA	$\lambda_{peak}$	Hyper Red Green	645 515	-	nm
Dominant Wavelength $I_F = 20 \text{mA}$	λ <sub>dom</sub> <sup>[1]</sup>	Hyper Red Green	630 525	-	nm
Spectral Bandwidth at 50% $\Phi$ REL MAX I <sub>F</sub> = 20mA	Δλ	Hyper Red Green	28 35	-	nm
Capacitance	С	Hyper Red Green	35 45	-	pF
Forward Voltage I <sub>F</sub> = 20mA	V <sub>F</sub> <sup>[2]</sup>	Hyper Red Green	1.95 3.3	2.5 4.1	V
Reverse Current ( $V_R = 5V$ )	I <sub>R</sub>	Hyper Red Green	-	10 50	μA
Temperature Coefficient of $\lambda_{peak}$ I <sub>F</sub> = 20mA, -10°C $\leq T \leq 85$ °C	TC <sub>λpeak</sub>	Hyper Red Green	0.14 0.05	-	nm/°C
Temperature Coefficient of $\lambda_{dom}$ $I_F$ = 20mA, -10°C $\leq~T \leq 85^\circ C$	TC <sub>λdom</sub>	Hyper Red Green	0.05 0.03	-	nm/°C
Temperature Coefficient of $V_F$ $I_F$ = 20mA, -10°C $\leq T \leq 85^\circ C$	TCv	Hyper Red Green	-1.9 -3.0	-	mV/°C

Notes:

The dominant wavelength (λd) above is the setup value of the sorting machine. (Tolerance λd : ±1nm.)
Forward voltage: ±0.1V.
Wavelength value is traceable to CIE127-2007 standards.
Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

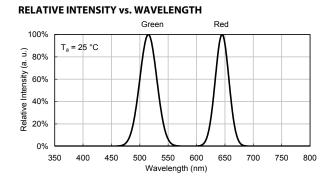
### ABSOLUTE MAXIMUM RATINGS at $T_A=25^{\circ}C$

Parameter	Symbol	Value	Unit	
·		Hyper Red	Green	Sint
Power Dissipation	PD	75	102.5	mW
Reverse Voltage	V <sub>R</sub>	5	5	V
Junction Temperature	TJ	115	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +8	°C	
Storage Temperature	T <sub>stg</sub>	-40 to +8	°C	
DC Forward Current	I <sub>F</sub>	30	25	mA
Peak Forward Current	I <sub>FM</sub> <sup>[1]</sup>	185	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	450	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> <sup>[2]</sup>	560	560	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> <sup>[2]</sup>	425	450	°C/W

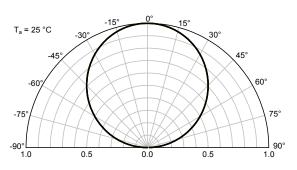
Notes: 1. /1/10 Duty Cycle, 0.1ms Pulse Width. 2. R<sub>in, Ja</sub>, R<sub>in, JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad). 3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity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

# Kingbright

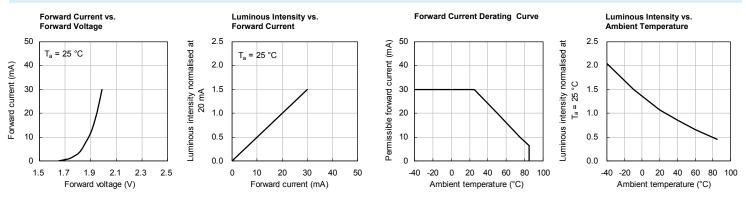
### **TECHNICAL DATA**

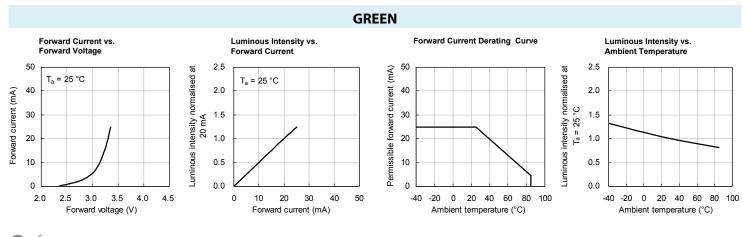


### SPATIAL DISTRIBUTION



HYPER RED





# **Kingbright**

## APHBM2012SURKZGKC

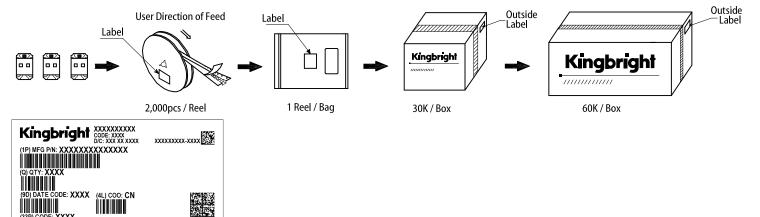
### **REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS**

#### 300 above 255°C (°C) 260°C max. 30s max 10s max. 250 3°C/s max. 6°C/s max. 200 150 Temperature pre-heating 100 150~200°C above 217°C 60~120s 60~150s 50 . 25℃ 0 100 150 200 50 250 0 300 (sec) Time

#### Notes

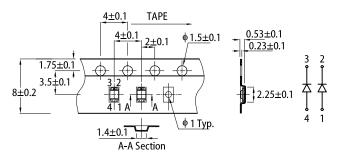
 Don't cause stress to the LEDs while it is exposed to high temperature.
The maximum number of reflow soldering passes is 2 times.
Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product

### **PACKING & LABEL SPECIFICATIONS**



#### **PRECAUTIONARY NOTES**

- The information included in this document reflects representative usage scenarios and is intended for technical reference only.
- 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. 2
- 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. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening
- 4. The contents and information of this document may not be reproduced or re-transmitted without permission by Kingbright.
- 5
- 6 All design applications should refer to Kingbright application notes available at https://w Votes



**REEL DIMENSION** (units : mm)

TAPE SPECIFICATIONS (units : mm)

