



## APHBM2012SURKZGKC 2.0 x 1.25 mm SMD Chip LED Lamp

### DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaInP 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

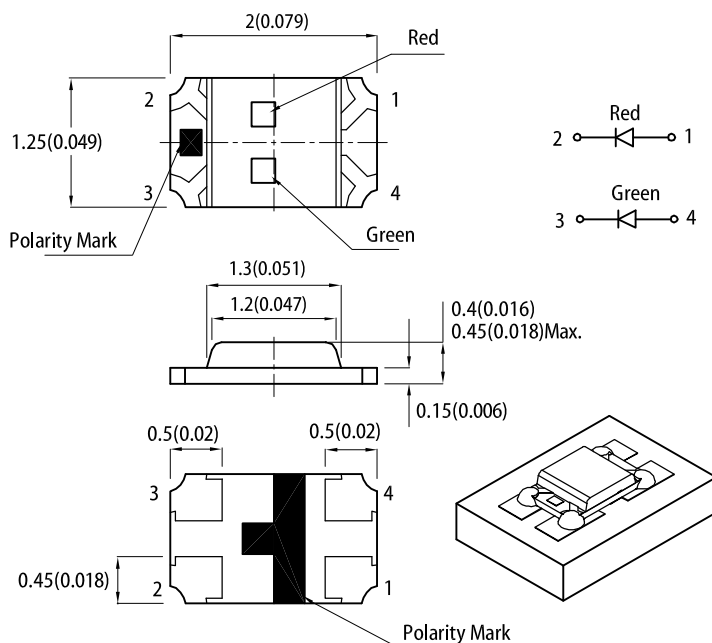
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

### ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

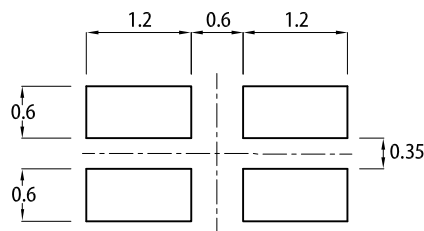


### PACKAGE DIMENSIONS



### RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.1(0.004") 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 <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>
			Min.	Typ.	2θ1/2
APHBM2012SURKZGKC	■ Hyper Red (AlGaInP)	Water Clear	120	250	120°
	■ Green (InGaN)		*40	*80	
			200	280	
			*200	*280	

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<sub>A</sub>=25°C**

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I <sub>F</sub> = 20mA	$\lambda_{peak}$	Hyper Red Green	645 515	-	nm
Dominant Wavelength I <sub>F</sub> = 20mA	$\lambda_{dom}^{[1]}$	Hyper Red Green	630 525	-	nm
Spectral Bandwidth at 50% $\Phi$ REL MAX I <sub>F</sub> = 20mA	$\Delta\lambda$	Hyper Red Green	28 35	-	nm
Capacitance	C	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 <sub>R</sub> = 5V)	I <sub>R</sub>	Hyper Red Green	-	10 50	$\mu$ A
Temperature Coefficient of $\lambda_{peak}$ I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{peak}</math></sub>	Hyper Red Green	0.14 0.05	-	nm/°C
Temperature Coefficient of $\lambda_{dom}$ I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{dom}</math></sub>	Hyper Red Green	0.05 0.03	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	Hyper Red Green	-1.9 -3.0	-	mV/°C

## Notes:

1. The dominant wavelength ( $\lambda_d$ ) above is the setup value of the sorting machine. (Tolerance  $\lambda_d$ :  $\pm 1$ nm.)
2. Forward voltage:  $\pm 0.1$ 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<sub>A</sub>=25°C**

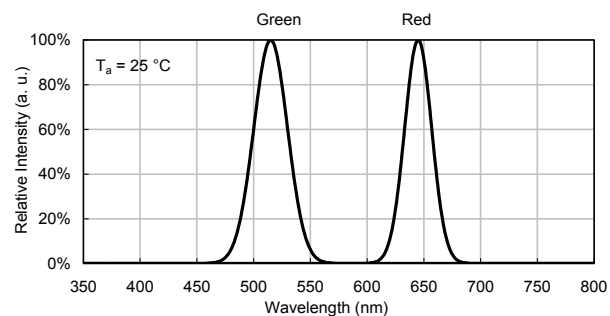
Parameter	Symbol	Value		Unit
		Hyper Red	Green	
Power Dissipation	P <sub>D</sub>	75	102.5	mW
Reverse Voltage	V <sub>R</sub>	5	5	V
Junction Temperature	T <sub>J</sub>	115	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +85		°C
Storage Temperature	T <sub>stg</sub>	-40 to +85		°C
DC Forward Current	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:

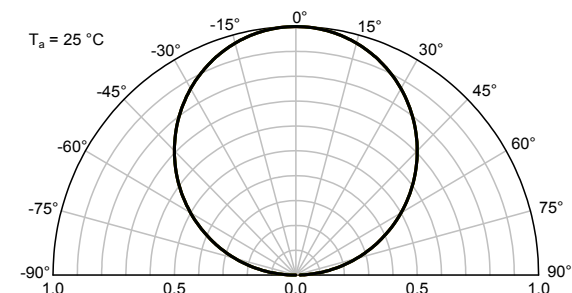
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size  $\geq 16$  mm<sup>2</sup> per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity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

## TECHNICAL DATA

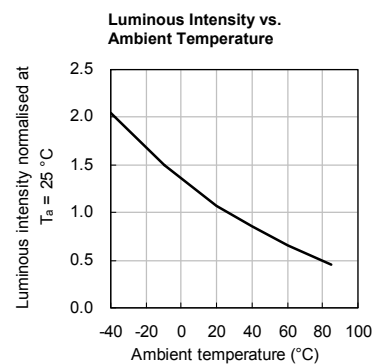
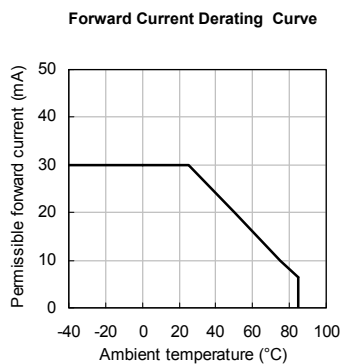
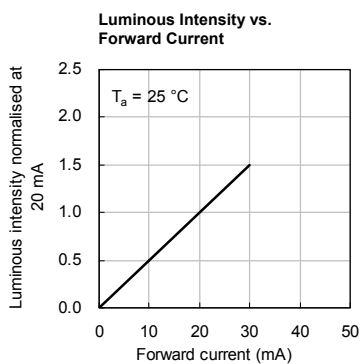
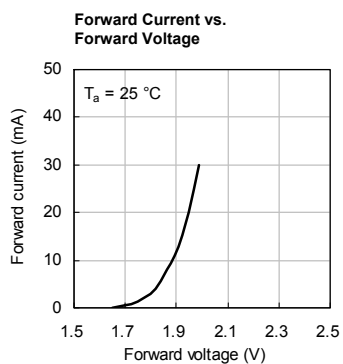
### RELATIVE INTENSITY vs. WAVELENGTH



### SPATIAL DISTRIBUTION



## HYPER RED



## GREEN

