



## KPGF-0606GBRC-120

0.65 x 0.65 x 0.2 mm Full-Color Surface Mount LED

### DESCRIPTIONS

- The Green source color devices are made with InGaN on SiC substrate Light Emitting Diode
- The Blue source color devices are made with InGaN on SiC substrate Light Emitting Diode
- The Hyper Red source color devices are made with AlGaInP 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

- 0.65 mm x 0.65mm SMD LED, 0.2 mm thickness
- Low power consumption
- Can produce any color in visible spectrum
- Package: 4000 pcs / reel
- Moisture sensitivity level: 3
- RoHS compliant

### APPLICATIONS

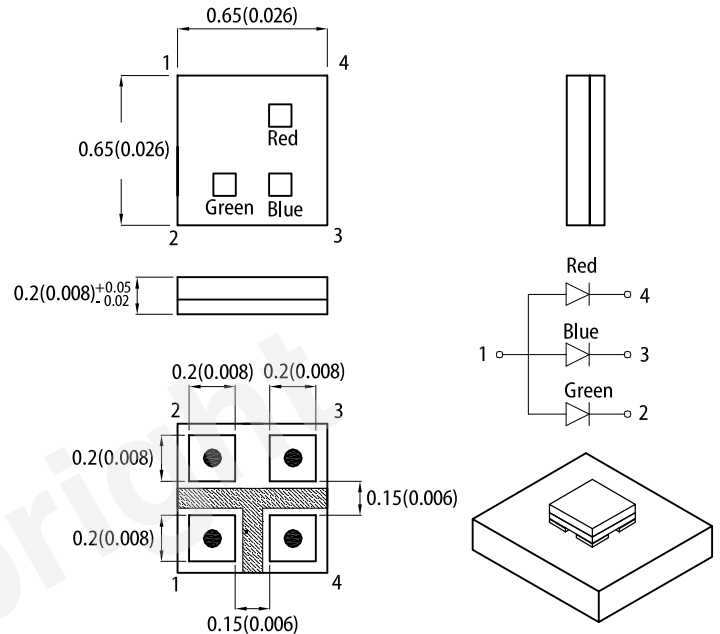
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

### ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

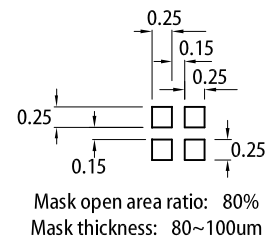


### PACKAGE DIMENSIONS



### RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1(0.004)$  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) @ 5mA <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>
			Min.	Typ.	2θ1/2
KPGF-0606GBRC-120	■ Green (InGaN)	Water Clear	30	90	140°
	■ Blue (InGaN)		5	20	
	■ Hyper Red (AlGaInP)		15	25	

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: +/-15%.  
 3. 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> = 5mA	λ <sub>peak</sub>	Green Blue Hyper Red	518 461 632	-	nm
Dominant Wavelength I <sub>F</sub> = 5mA	λ <sub>dom</sub> [1]	Green Blue Hyper Red	527 467 624	-	nm
Spectral Bandwidth at 50% Φ REL MAX I <sub>F</sub> = 5mA	Δλ	Green Blue Hyper Red	35 22 20	-	nm
Capacitance	C	Green Blue Hyper Red	100 110 25	-	pF
Forward Voltage I <sub>F</sub> = 5mA	V <sub>F</sub> [2]	Green Blue Hyper Red	3 2.9 1.95	3.2 3.1 2.3	V
Reverse Current (V <sub>R</sub> = 5V)	I <sub>R</sub>	Green Blue Hyper Red	-	50 50 10	uA
Temperature Coefficient of λ <sub>peak</sub> I <sub>F</sub> = 5mA, -10°C ≤ T ≤ 85°C	TC <sub>λpeak</sub>	Green Blue Hyper Red	0.05 0.04 0.13	-	nm/°C
Temperature Coefficient of λ <sub>dom</sub> I <sub>F</sub> = 5mA, -10°C ≤ T ≤ 85°C	TC <sub>λdom</sub>	Green Blue Hyper Red	0.03 0.03 0.06	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 5mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	Green Blue Hyper Red	-3.0 -3.0 -1.9	-	mV/°C

**Notes:**

1. The dominant wavelength (λ<sub>d</sub>) above is the setup value of the sorting machine. (Tolerance λ<sub>d</sub>: ±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.

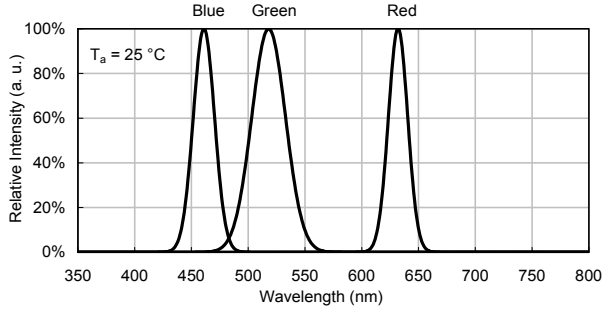
**ABSOLUTE MAXIMUM RATINGS at T<sub>A</sub>=25°C**

Parameter	Symbol	Value			Unit
		Green	Blue	Hyper Red	
Power Dissipation	P <sub>D</sub> [1]	35			mW
Reverse Voltage	V <sub>R</sub>	5	5	5	V
Junction Temperature	T <sub>j</sub>	125	125	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +85			°C
Storage Temperature	T <sub>stg</sub>	-40 to +100			°C
DC Forward Current	I <sub>F</sub> [2]	10	10	10	mA
Peak Forward Current	I <sub>FM</sub> [3]	50	50	50	mA
Electrostatic Discharge Threshold (HBM)	-	1000	1000	3000	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> [4]	510	415	700	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> [4]	395	305	530	°C/W

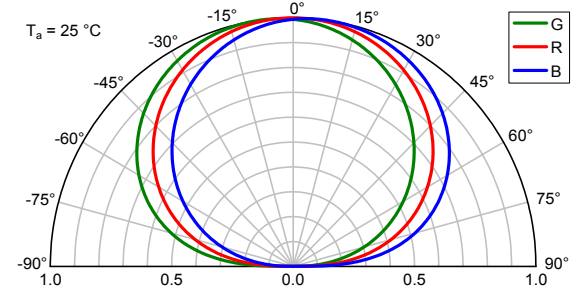
- Notes:
1. Within 35mW when multiple chips are lightened
  2. The maximum ratings are valid for the case of lighting a single chip  
When two chips are lit at the same time, each chip should be driven at a current lower than 50% of the absolute maximum ratings  
When three chips are lit at the same time, each chip should be driven at a current lower than 30% of the absolute maximum ratings
  3. Duty Cycle ≤ 1/20, Pulse Width = 1ms.
  4. R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad).
  5. 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

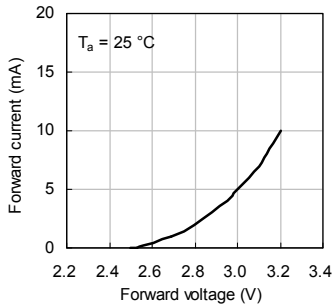


### SPATIAL DISTRIBUTION

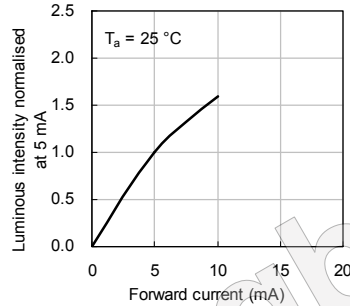


## GREEN

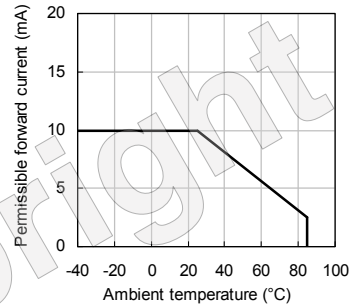
Forward Current vs. Forward Voltage



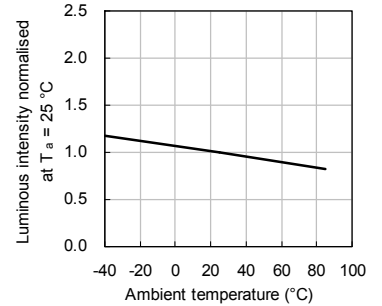
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

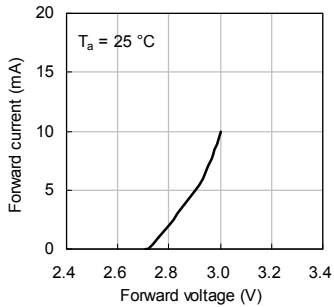


Luminous Intensity vs. Ambient Temperature

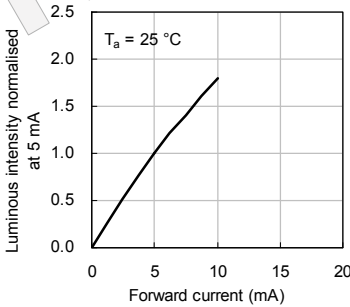


## BLUE

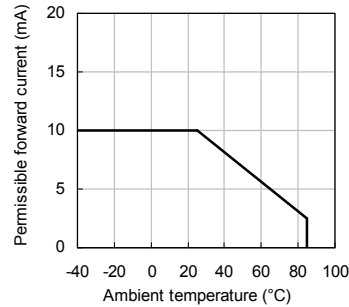
Forward Current vs. Forward Voltage



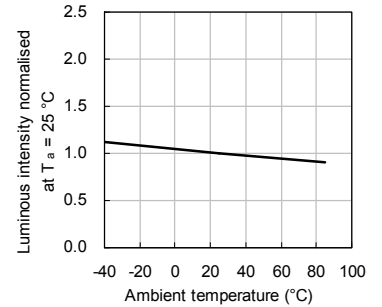
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

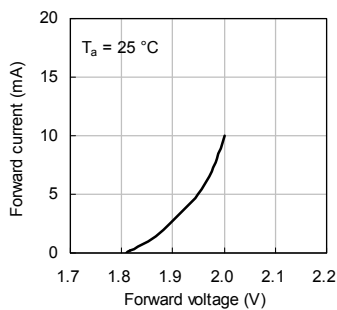


Luminous Intensity vs. Ambient Temperature

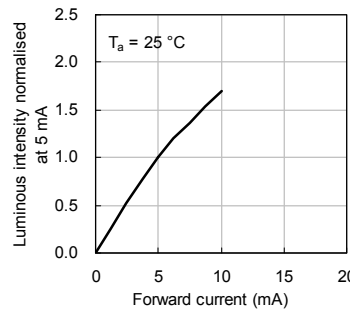


## HYPER RED

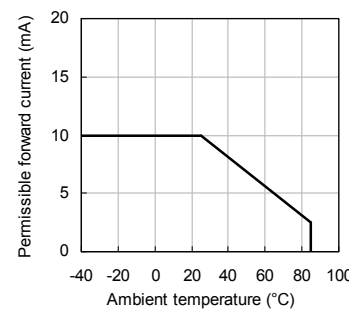
Forward Current vs. Forward Voltage



Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Luminous Intensity vs. Ambient Temperature

