

# VISIBLE LIGHT PRODUCTS SPECIFICATION

## HPR20D-19K20xWx-D



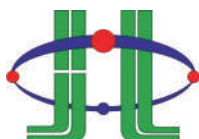
High Power 20W LED

Drawn by	Checked by	Approved by



DATE:2010/11/6

REV:D



**HUEY JANN ELECTRONICS INDUSTRY CO., LTD.**

No.27 Line 466 Sec.2,Cannng-nan Rd. Wu-chi Town Taichung Shien, Taiwan, R.O.C.

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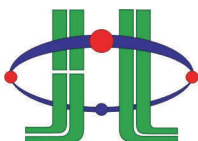
HUEY JANN High Power 20W LED is made of GaInN chips with precise package technique which makes excellent heat dissipation to reach the advantages of high luminous efficiency, low decay, and long endurance. Now we have these colors available: red, green, blue, white, yellow .

#### FEATERUS

- Instant light
- Long operating life
- Superior ESD defense
- Low voltage DC operated
- More energy efficient than incandescent and most halogen lamps

#### TYPICAL APPLICATIONS

- Architectural detail lighting
- Portable flashlight
- Reading lights
- Medical applications
- Beacon lights
- Decoration lights



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Explanation of Part Number:

H P R 20 D - 1 9K 20 xWx - D  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

1.H: Huey Jann

2.P: High power LED Type

3.Shape distinguish:

4.Identification no:

R: Rectangular type

5.Lead frame type

6.Appearance:

1:White Diffusion

7.Color number:

8.Power type:

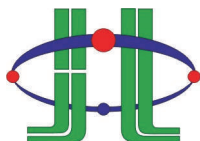
3K: Green      4K: Yellow  
5K: Red        8K: Blue  
9K: White

10: 10W                  20: 20W

9.Color kind:

10.D: Low voltage product

BWx: Cool White  
Wx: Pure White  
NWx: Nature White  
YWx: Warm White



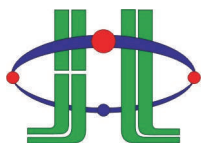
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DEVICES

Item	Lens Color	Dice Source	Color Temperature (°K)	
HPR20D-19K20BW-D	White Diffusion	GaN/GaN	8000	Cool White
HPR20D-19K20BWG-D				
HPR20D-19K20BWGAA-D				
HPR20D-19K20BWGBA-D				
HPR20D-19K20W-D			6000	Pure White
HPR20D-19K20WG-D				
HPR20D-19K20WGAA-D				
HPR20D-19K20WGBA-D				
HPR20D-19K20NW-D			4000	Nature White
HPR20D-19K20NWG-D				
HPR20D-19K20NWGAA-D				
HPR20D-19K20NWGBA-D				
HPR20D-19K20YW-D			3300	Warm white
HPR20D-19K20YWG-D				
HPR20D-19K20YWGAA-D				
HPR20D-19K20YWGBA-D				

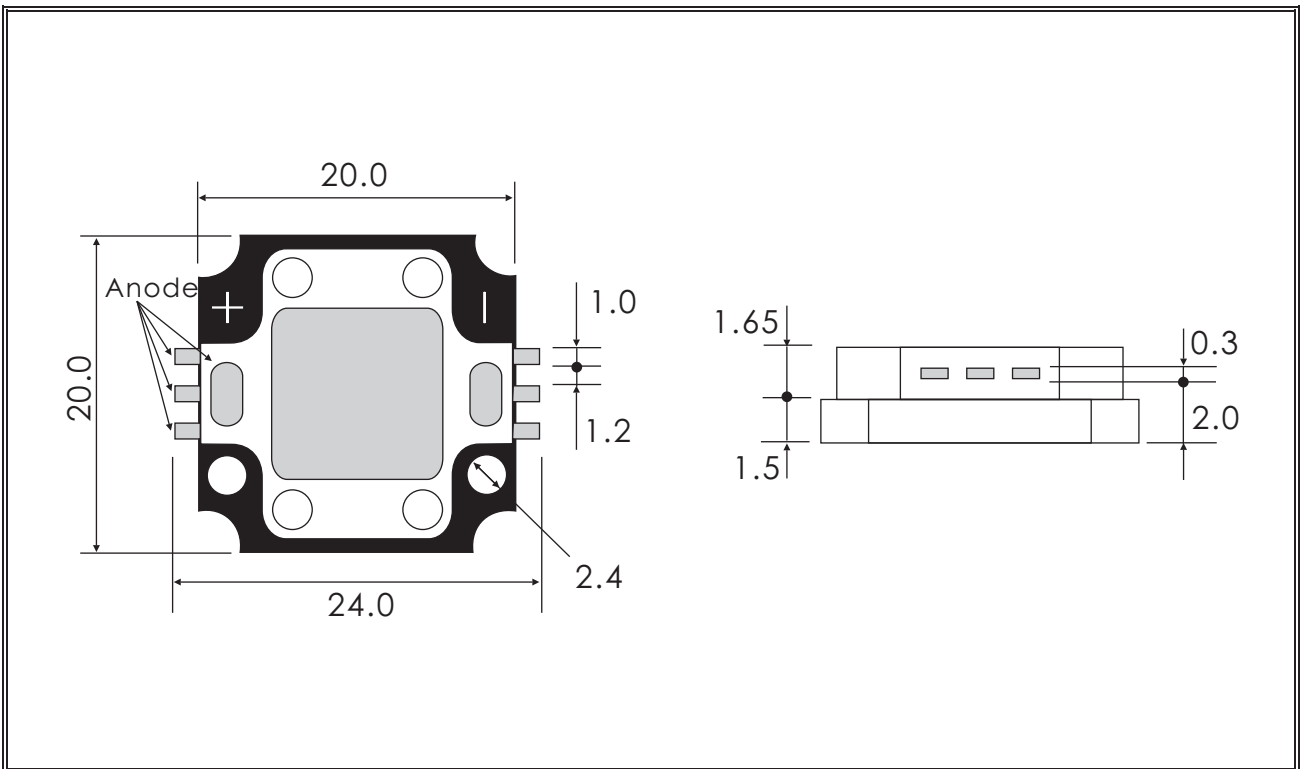


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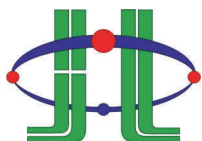
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PACKAGE DIMENSIONS:



NOTE:

- 1.All dimensions are in millimeter.
- 2.Lead spacing in measured where the lead emerge from the package.
- 3.prodruded resin under flange is 1.5mm max.
- 4.specifications are subject to change without notice.
- 5.Tolerance is 0.3mm unless otherwise noted.
- 6.Driving LED without heat sinking device is forbidden.
- 7.It is strongly recommended that the temperature of lead be not higher than 55°C.
- 8.Proper current derating must be observed to maintain junction temperature below the maximum.
- 9.LEDs are not designed to be driven in reserve bias.
10. Warps the degree 0.5mm.



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**ABSOLUTE MAXIMUM RATINGS**

TA=25°C

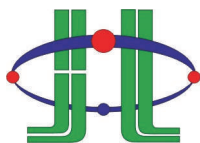
PARAMETER	SYMBOL	MAX. RATING	UNIT
Continuous Forward Current	IF	1750	mA
Peak Forward Current *1	IFM	2000	mA
Electrostatic Discharge (HBM)	ESD	4000	V
LED Junction Temperature	Tj	135	°C
Operating Temperature	Topr	-40 ~ +110	°C
Storage Temperature	Tstg	-40 ~ +120	°C
Manual Soldering Temperature 260 °C for 5 seconds max. *2			

\*1.Duty Ratio=0.1%,Pulse Width=10us.

\*2.Iron soldering high temperature will not cause damage to the dice. But be aware of the high temperature will not only make the epoxy soften but also cause the lead moving and the gold wire broken and even open. So before returning to the normal temperatures PLEASE AVOID any serious pressure on the top of epoxy and lead.

\*3. We suggest using PWM (Pulse Width Modulation) for driving.

\*4. It is recommended to use series as there are several 3pcs. If there are more than 5pcs, please use product with higher power.



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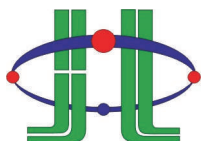
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ELECTRIC-OPTICAL CHARACTERISTICS

TA=25°C

PARAMETER		SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
View Angle of Half Power		2θ <sub>1/2</sub>	IF=1750mA		120		deg
Forward Voltage	HPR20D-19K20xW-D	VF			10.5	12.0	V
	HPR20D-19K20xWG-D				11.0	13.0	
	HPR20D-19K20xWGx-D				10.5	12.0	
Color Rendering Index For <b>4000°K</b>		CRI			75		
Color Rendering Index For <b>3300°K</b>		CRI			70		
Thermal Resistance Junction To Case		R <sub>θ J-C</sub>			2.5		°C/W
Temperature Coefficient Of Forward Voltage		ΔV <sub>F</sub> /ΔT			-2		mV/°C



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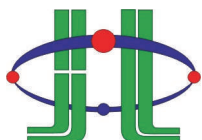
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ELECTRIC-OPTICAL CHARACTERISTICS FOR LUMINOUS INTENSITY

TA=25°C

ITEM	SYMBOL	TEST CONDITION	MIN	TYP	UNIT
HPR20D-19K20BW-D	IV	IF=1750mA		1400	lm
HPR20D-19K20BWG-D				1500	
HPR20D-19K20BWGAA-D				1600	
HPR20D-19K20BWGBA-D				1695	
HPR20D-19K20W-D				1400	
HPR20D-19K20WG-D				1500	
HPR20D-19K20WGAA-D				1600	
HPR20D-19K20WGBA-D				1695	
HPR20D-19K20NW-D				1360	
HPR20D-19K20NWG-D				1455	
HPR20D-19K20NWGAA-D				1550	
HPR20D-19K20NWGBA-D				1640	
HPR20D-19K20YW-D				1260	
HPR20D-19K20YWG-D				1348	
HPR20D-19K20YWGAA-D				1440	
HPR20D-19K20YWGBA-D				1525	

\*Tolerance: 15% HUEY-JANN measuring equipment : EXELTRON 2001. 2.S370 made by U.D.T.



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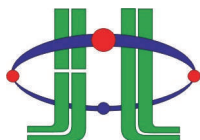
RELIABILITY TEST

➤ Endurance Test

Test Item	Reference Standard	Test Conditions	Result
Operation Life	MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1	Connect with a power if=1750mA Ta=Under room temperature Test Time=1,000hrs	0/22
High Temperature High Humidity Storage	MIL-STD-202:103B JIS-C-7021 :B-11	Ta=+85°C 5°C RH=80% ~ 85% Test Time=1,000hrs	0/22
High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High Ta=+120°C 5°C Test Time=1,000hrs	0/22
Low Temperature Storage	JIS-C-7021 :B-12	Low Ta=-40°C 5°C Test Time=1,000hrs	0/22

\*Failure Criteria:

1. VF arise  $\geq 10\%$
2. IV decline  $\geq 30\%$
3. A failure is an LED that is open or shorted



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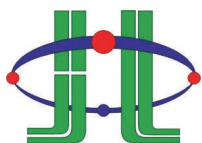
RELIABILITY TEST

➤ Environmental Test

Test Item	Reference Standard	Test Conditions	Result
Temperature Cycling	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS-C-7021 :A-4	-40°C ~ +25°C ~ +85°C ~ +25°C 60min 20min 60min 20min Test Time=200cycle	0/22
Thermal Shock	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010	-40°C 5°C ~ +110°C 5°C 20min 20min Test Time=200cycle	0/22

\*Failure Criteria:

1. VF arise  $\geq$  10%
2. IV decline  $\geq$  30%
3. A failure is an LED that is open or shorted

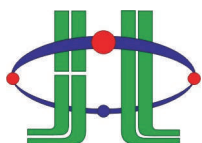
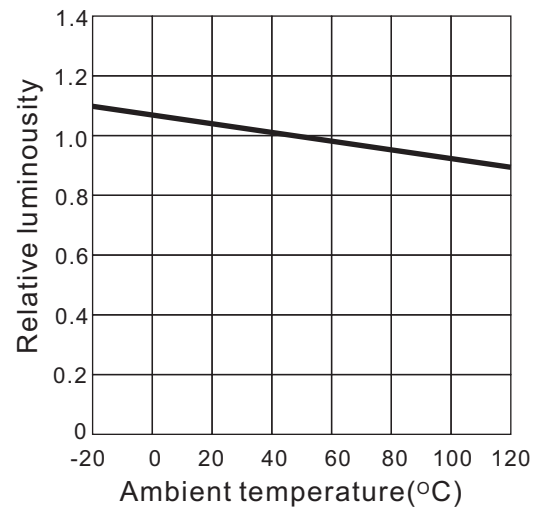
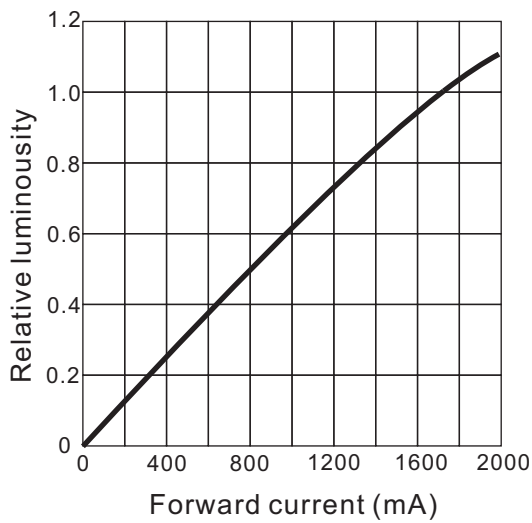
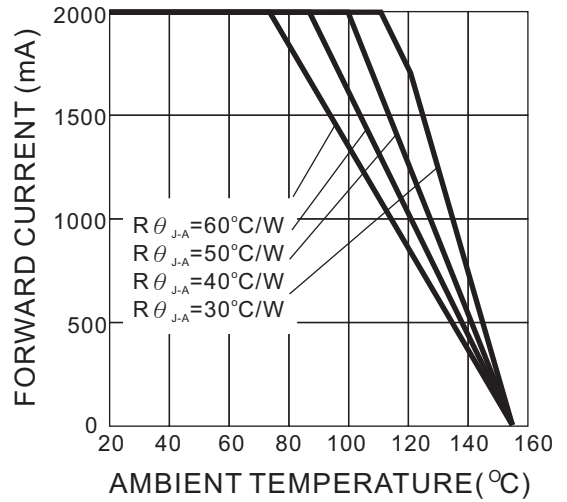
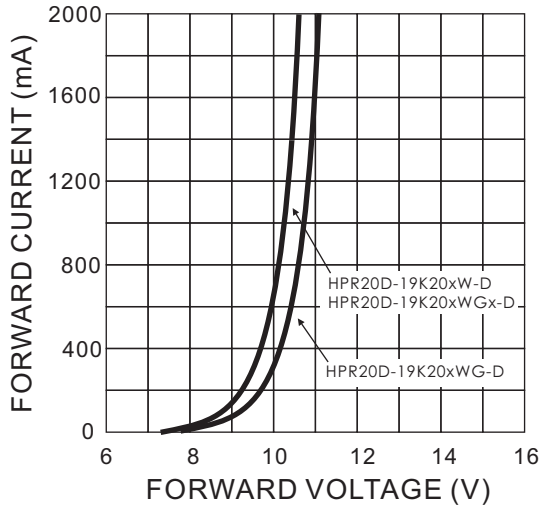


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TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES

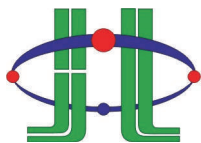
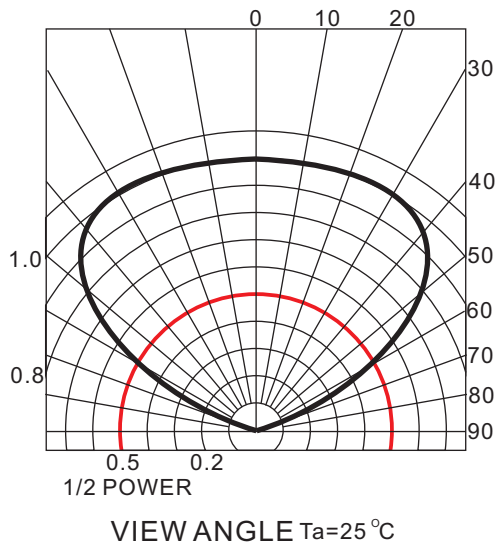
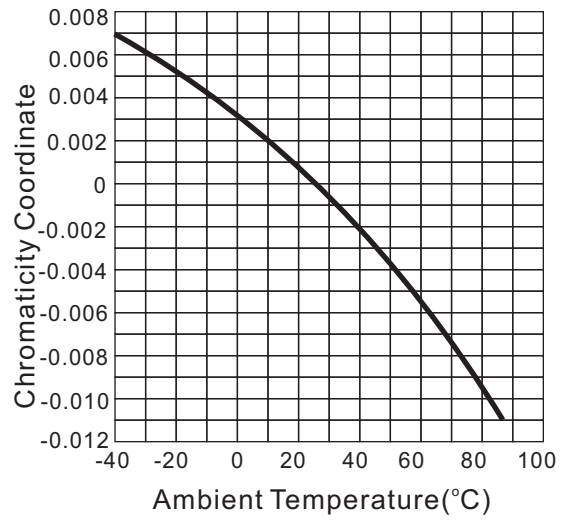
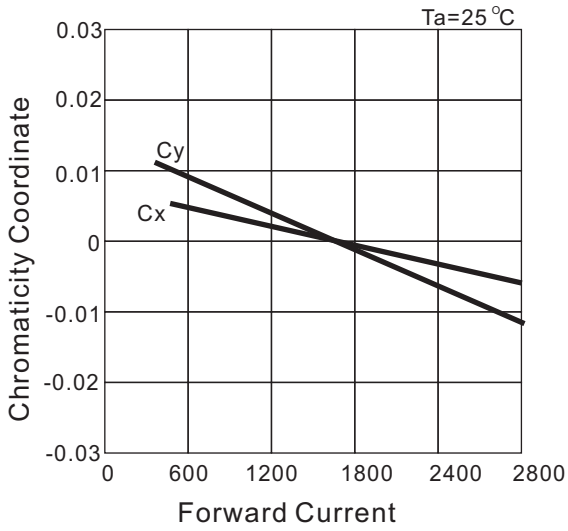


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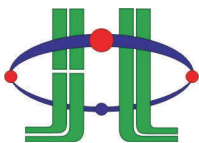
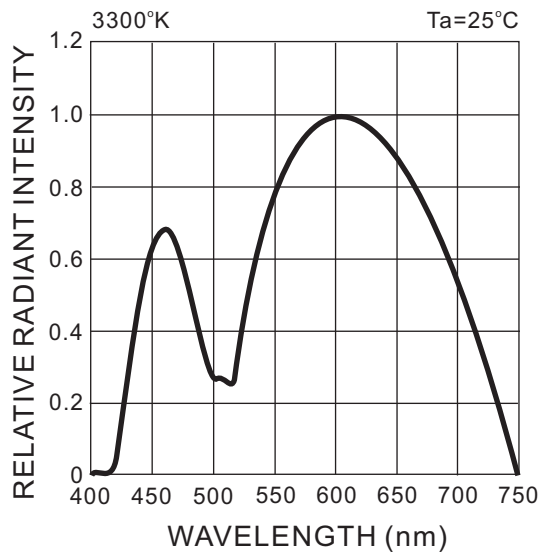
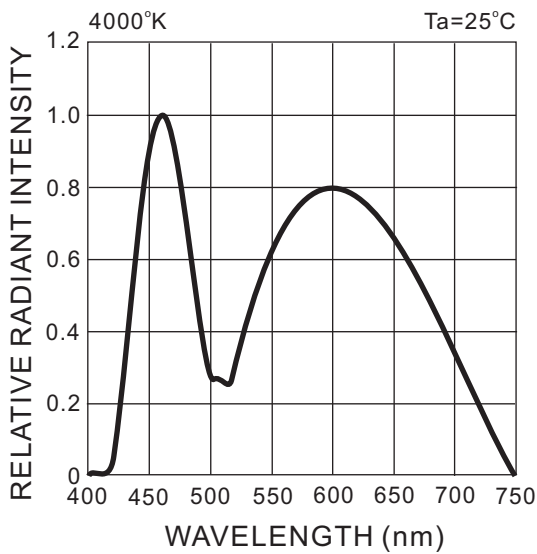
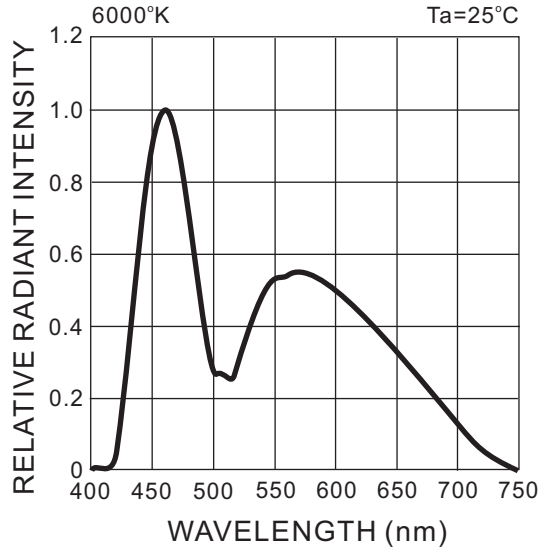
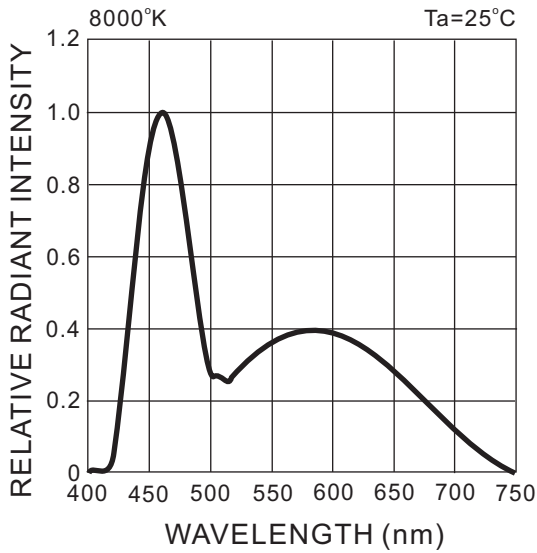


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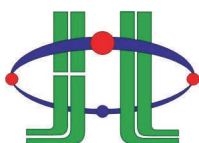
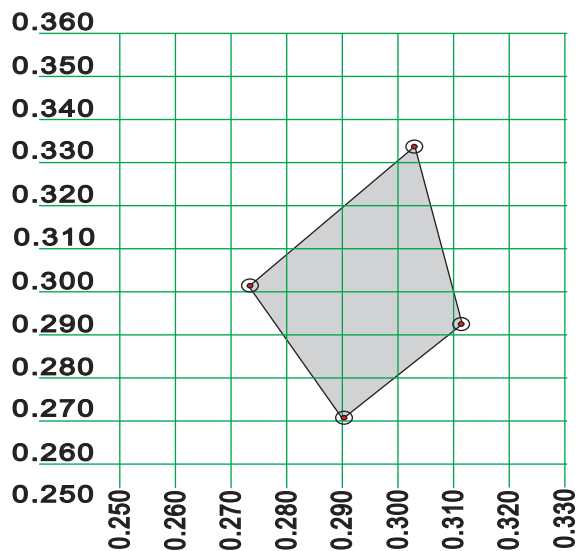
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☰ Cool White Color Bin Selection

CCT(°K)	Chromaticity Coordinates					
TYP						
8000	x	0.274	0.303	0.311	0.290	
	y	0.301	0.333	0.293	0.270	
Tolerance		$x \pm 0.02$			$y \pm 0.02$	

☰ Cool White CIE Light Color Chart



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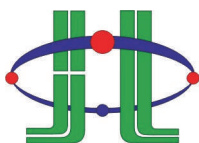
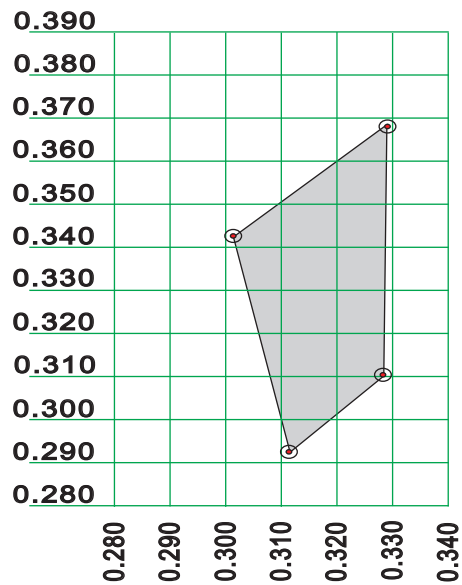
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Pure White Color Bin Selection

CCT(°K)	Chromaticity Coordinates				
TYP					
6000	x	0.301	0.329	0.329	0.311
	y	0.342	0.369	0.310	0.293
Tolerance		$x \pm 0.02$		$y \pm 0.02$	

Pure White CIE Light Color Chart



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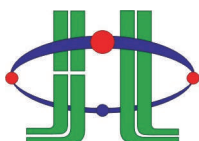
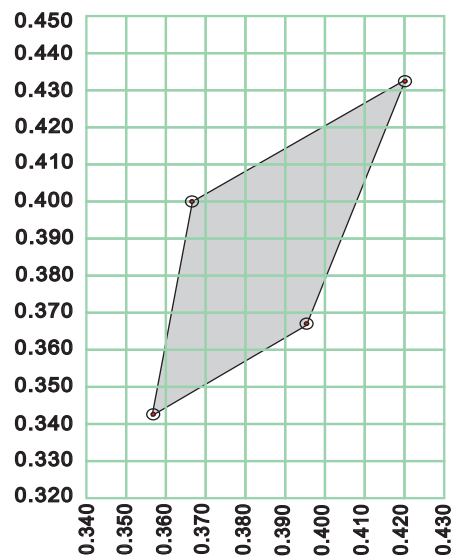
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☰ Nature White Color Bin Selection

CCT(°K)	Chromaticity Coordinates				
TYP					
4000	x	0.367	0.420	0.396	0.357
	y	0.400	0.432	0.367	0.342
Tolerance		$x \pm 0.02$		$y \pm 0.02$	

☰ Nature White CIE Light Color Chart



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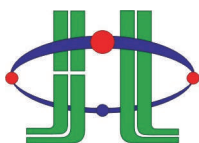
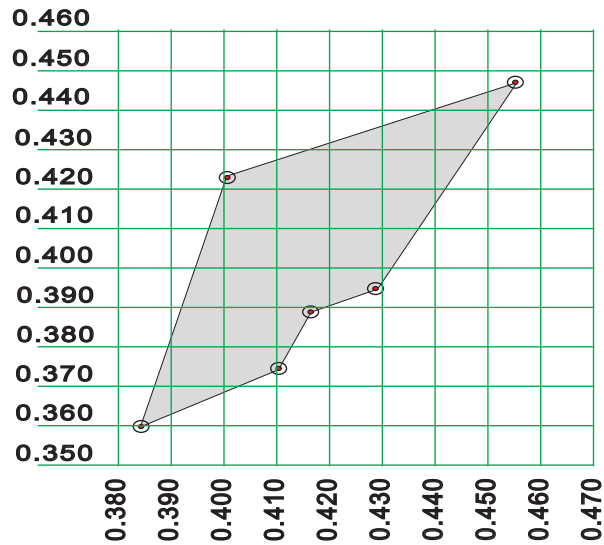
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Warm White Color Bin Selection

CCT(K)	Chromaticity Coordinates						
TYP							
3300	x	0.402	0.454	0.429	0.416	0.410	0.383
	y	0.423	0.446	0.394	0.389	0.374	0.360
Tolerance		$x \pm 0.02$			$y \pm 0.02$		

Warm White CIE Light Color Chart

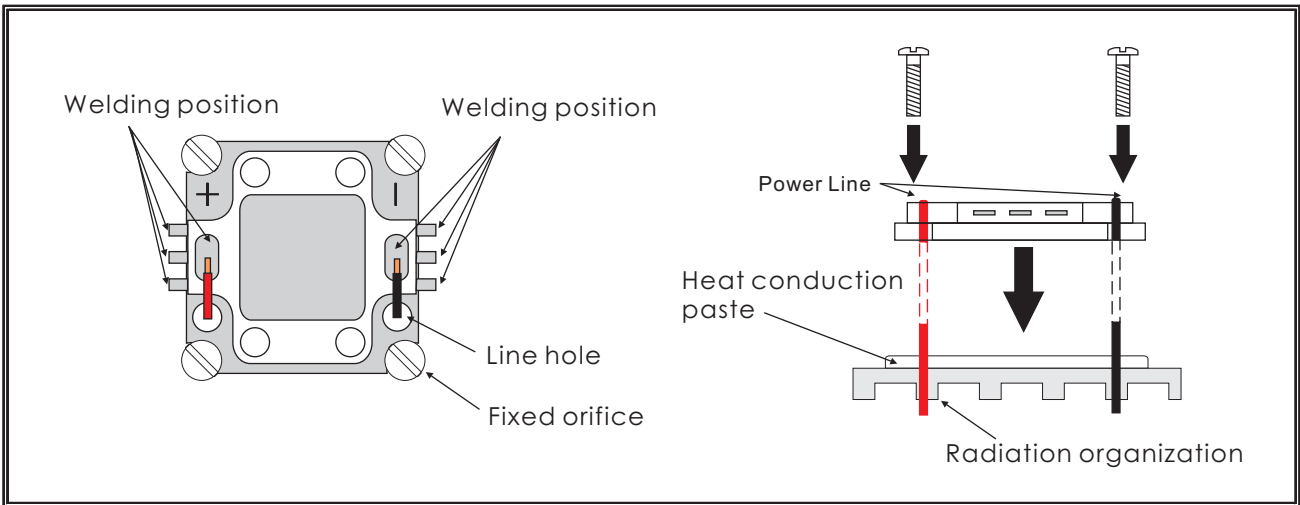


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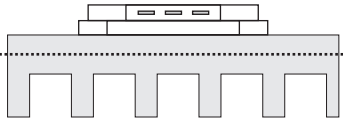
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**POSITION EXPLANATION:**



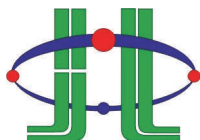
**Conclusion**

Huey Jann provide simple comparison table for High Power LED, you could find your request heat dissipation area from the following table.

			
	Free Convection Horizontal Flat Heat Dissipation-Set-up ( Area Require mm <sup>2</sup> )	Free Convection Vertical Flat Heat Dissipation-Set-up ( Area Require mm <sup>2</sup> )	Free Convection Finned Heat Dissipation-Set-up ( Area Require mm <sup>2</sup> )
20W	24,000	18,000	82,500

\*TAB in this table is according to highest operating temperature 65°C.

\*Different materials of second heat dissipation device, the surface area of heat sink will be different. Thus, this document is for reference only.

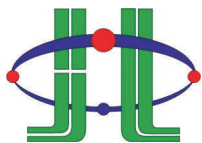
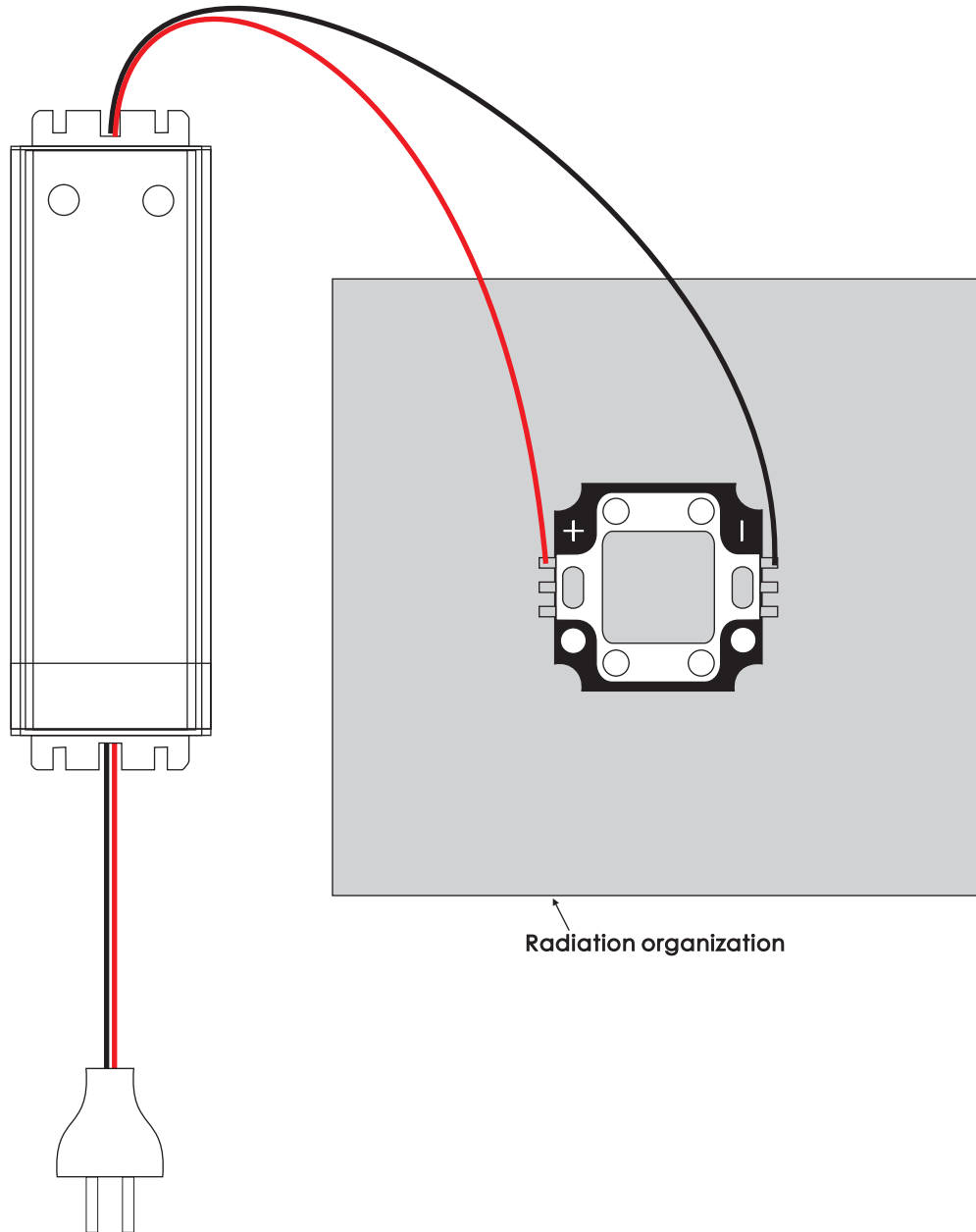


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PRODUCT APPLICATION

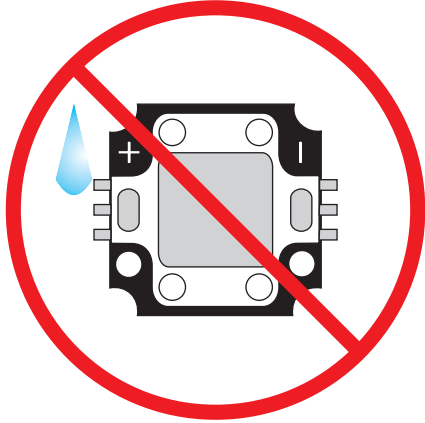


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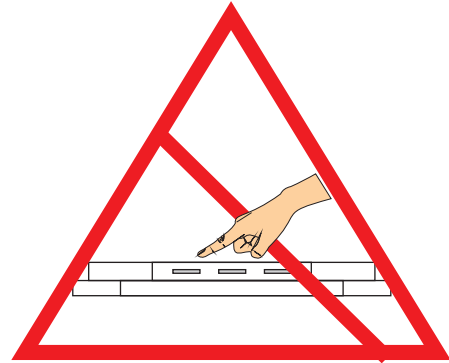
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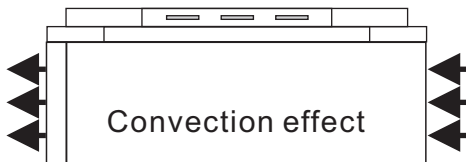
20W Operating Instructions



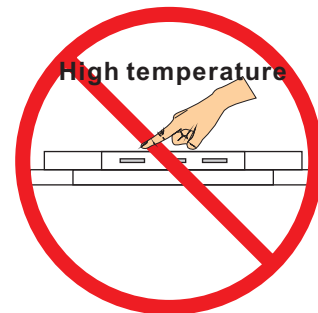
1. It is important to keep away the product from water, in order to avoid the product's electronic characteristics becoming harmful.



2. When making use of products, it is necessary to use anti-ESD devices to prevent destructive electronic characteristics.



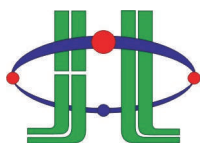
3. It should be noticed whether there is convection in the design of the device. Convection must exist.



Above 150°C



4. There is 150°C directly from the front of the 20W emitting diode. It is untouchable to prevent burning.

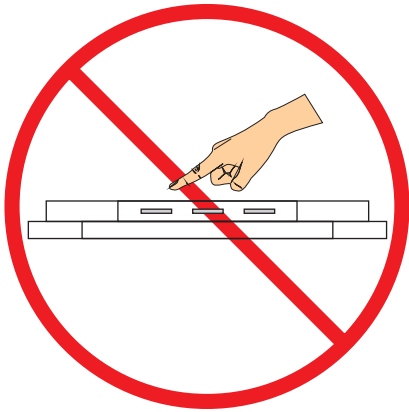


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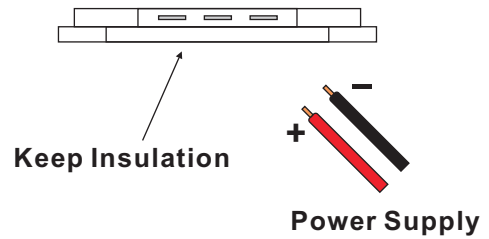
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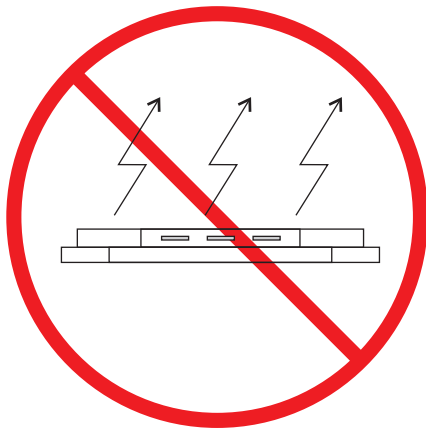
20W Operating Instructions



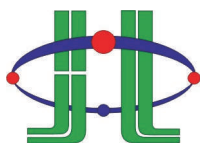
5. The material in the central top of 20W LED is soft. Therefore, it is un-squeezable and un-touchable.



6. In the bottom of heat sink cannot be touched with neither positive nor negative pole. (Heat sink has to be insulation.)



7. The product should not be light up directly without heat dissipation device.

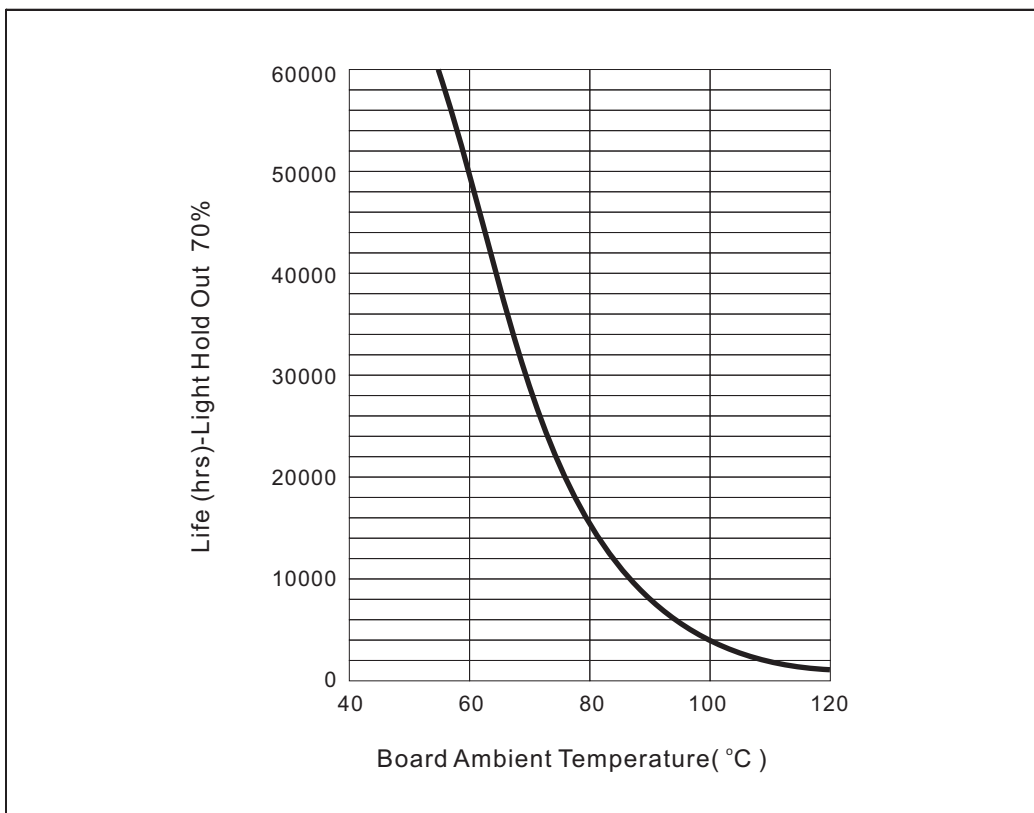
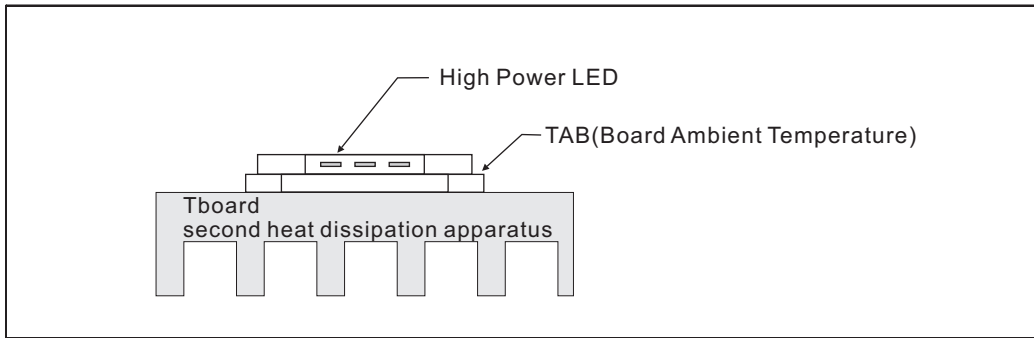


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TAB Temperature - Life Characteristics Curves

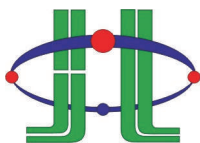


\*Board Ambient Temperature Tolerance 5°C.

\*TAB in this table is according to highest operating temperature 65°C.

\*The TAB is the stable testing value for the product lighted 100% after one hour.

\*Different materials of second heat dissipation device, the surface area of heat sink will be different. Thus, this document is for reference only.



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