

HPB8b-49K5WHB/WPCB (5W White, 6000K, 340Lm)



HUEY JANN High Power 5W 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.

FEATURES

- 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
- Medical applications
- Beacon lights
- Decoration lights
- Spotlight

EXPLANATION OF PART NUMBER

H P B 8 b - 4 9K 5 WHB / WPCB
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

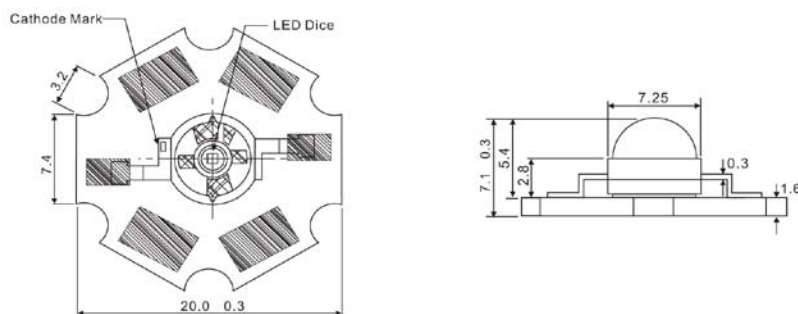
1. H: Huey Jann
2. P: High power LED Type
3. Shape distinguish:
B: Lambertian type
4. Identification No:
5. Lead frame type
6. Appearance:
4: Water Clear
7. Color number:
9K: White
8. Power type:
5: 5W
9. Color kind:
WHBx: Pure White
10. Heat conduction type:
/WPCB: with white star type heat sink

DEVICE

Item	Lens Color	Dice Source	Color Temperature Typ (°K)
HPB8b-49K5WHB/WPCB	Water Clear	GaInN/GaN	6000

PACKAGE DIMENSIONS

Star Type



NOTE:

1. All dimensions are in millimeter.
2. Lead spacing is measured where the lead emerges from the package.
3. Produced resin under flange is 1.5mm max.
4. Specifications are subject to change without notice.
5. Tolerance is $\pm 0.3\text{mm}$ 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.

ABSOLUTE MAXIMUM RATINGS

$T_A=25^{\circ}\text{C}$

PARAMETER	SYMBOL	MAX. RATING	UNIT
Continuous Forward Current	IF	1400	mA
Peak Forward Current *1	IFM	1500	mA
Electrostatic Discharge (HBM)	ESD	4000	V
LED Junction Temperature	Tj	135	$^{\circ}\text{C}$
Operating Temperature	Topr	$-40\sim+110$	$^{\circ}\text{C}$
Storage Temperature	Tstg	$-40\sim+120$	$^{\circ}\text{C}$
Manual Soldering Temperature 260°C for 5 seconds max. *2 *3			

- *1. Duty Ratio=0.1%, Pulse Width=10 μs .
- *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. Measured at leads, lens temperature must not exceed 120°C during lead soldering and slug attach. Soldering by general IR reflow, Vapor phase reflow and wave soldering on this system product is unsuitable. Selective heating of the leads limit lead soldering, such as by hot bar reflow, fiber focussed IR, or hand soldering. The package back plane (slug) may not be attached by soldering, but rather with a thermally conductive adhesive. Electrical insulation between the slug and the board is necessary. Please consult welding matters needing attention.

ELECTRIC-OPTICAL CHARACTERISTICS

$T_A=25^{\circ}\text{C}$

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
View Angle of Half Power	$2\theta_{1/2}$	IF=350mA		120		deg
Forward Voltage	VF			4.0	3.5	V
Thermal Resistance Junction to Case With Star Type Heat Sink	$R\theta_{J-C}$				8	$^{\circ}\text{C}/\text{W}$
Thermal Resistance Junction to Case	$R\theta_{J-C}$				11	$^{\circ}\text{C}/\text{W}$
Temperature Coefficient of Forward Voltage	$\Delta V_F/\Delta T$				-2	mV/ $^{\circ}\text{C}$

ELECTRIC-OPTICAL CHARACTERISTICS TO BE INDEPENDENT

IF=1400mA TA=25°C

Item	CCT (°K)	CRI (Ra)	Brightness (lm)
	Typical		
HPB8-49KWHB/WPCB	6000	75	340

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=1400mA 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

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

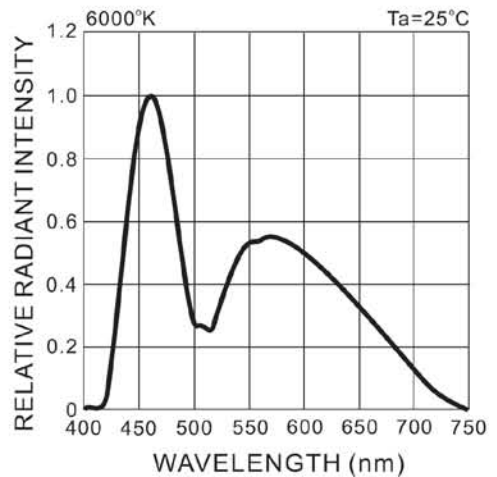
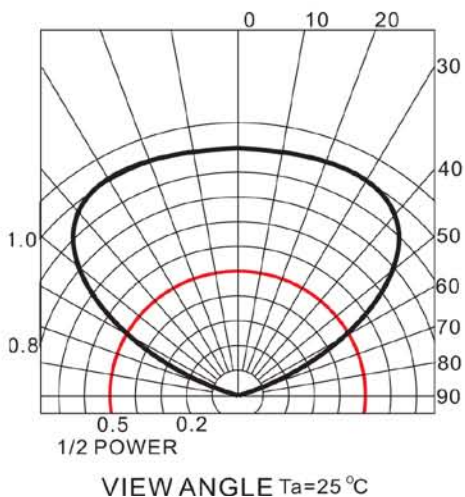
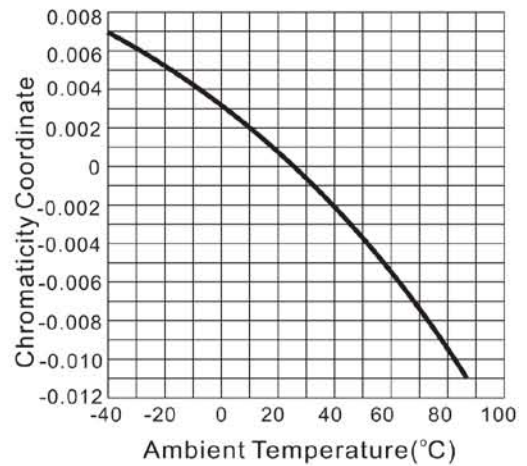
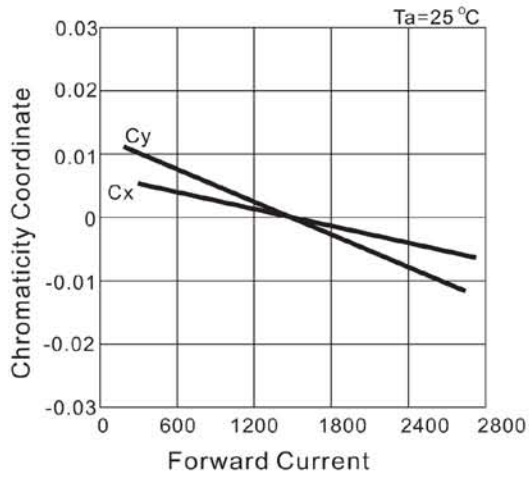
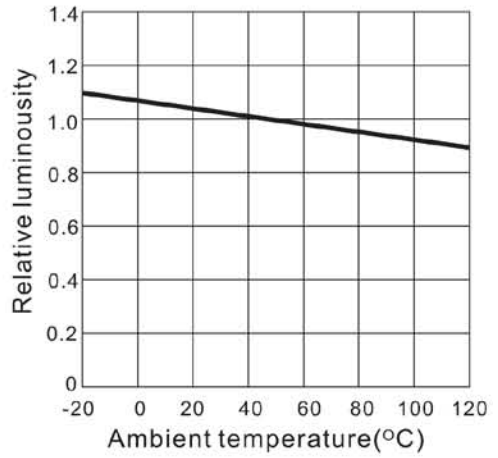
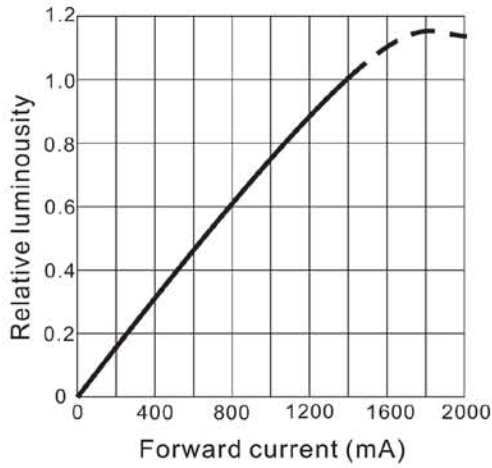
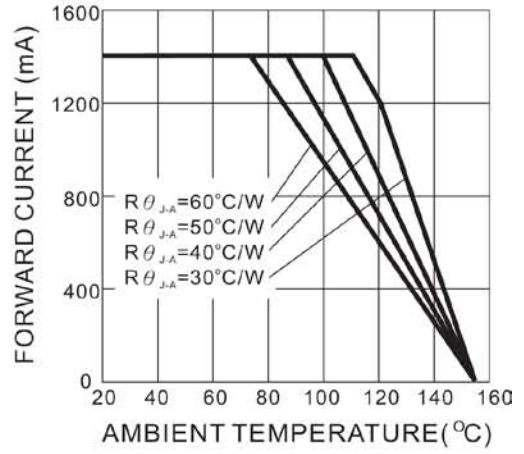
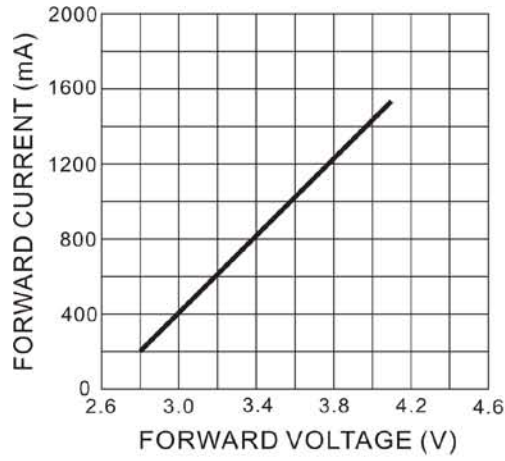
Brightness Bin Selection

Item	BIN CODE	Brightness in lm	
		Minimum	Maximum
HPB8-49KWHB/WPCB	R	310	410

NOTE:

1. Test Condition at IF=1400mA.
2. Brightness tolerance for each bin limit is $\pm 15\%$

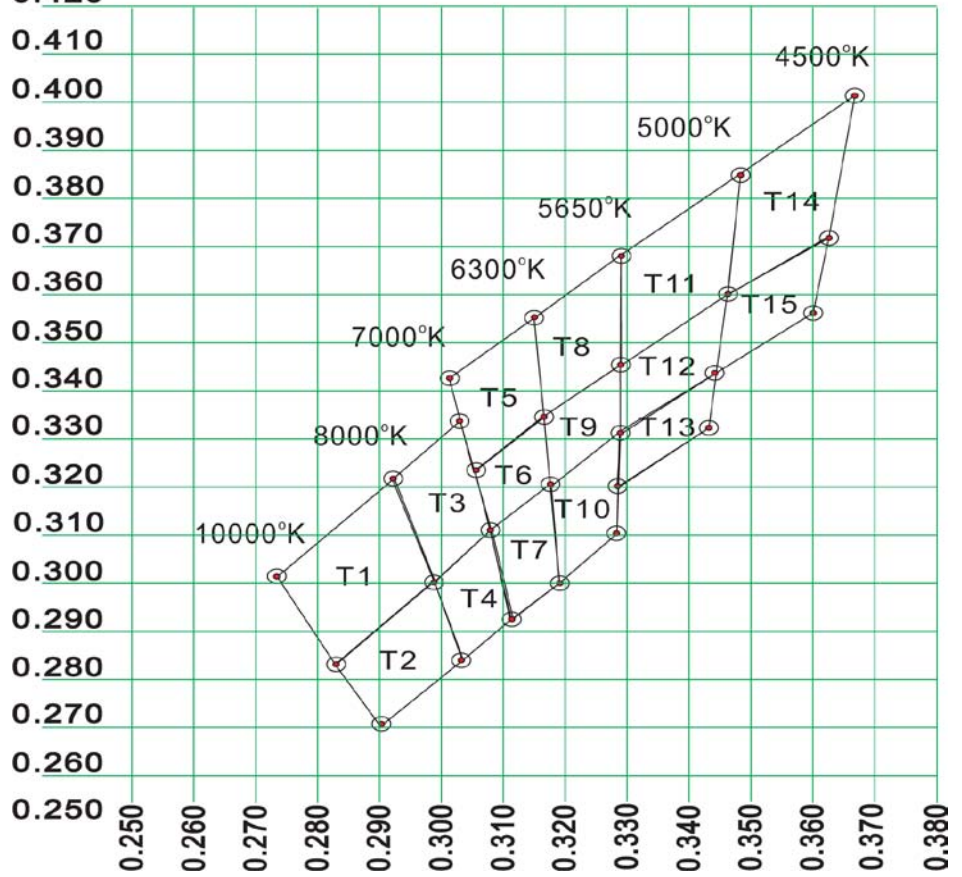
TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES



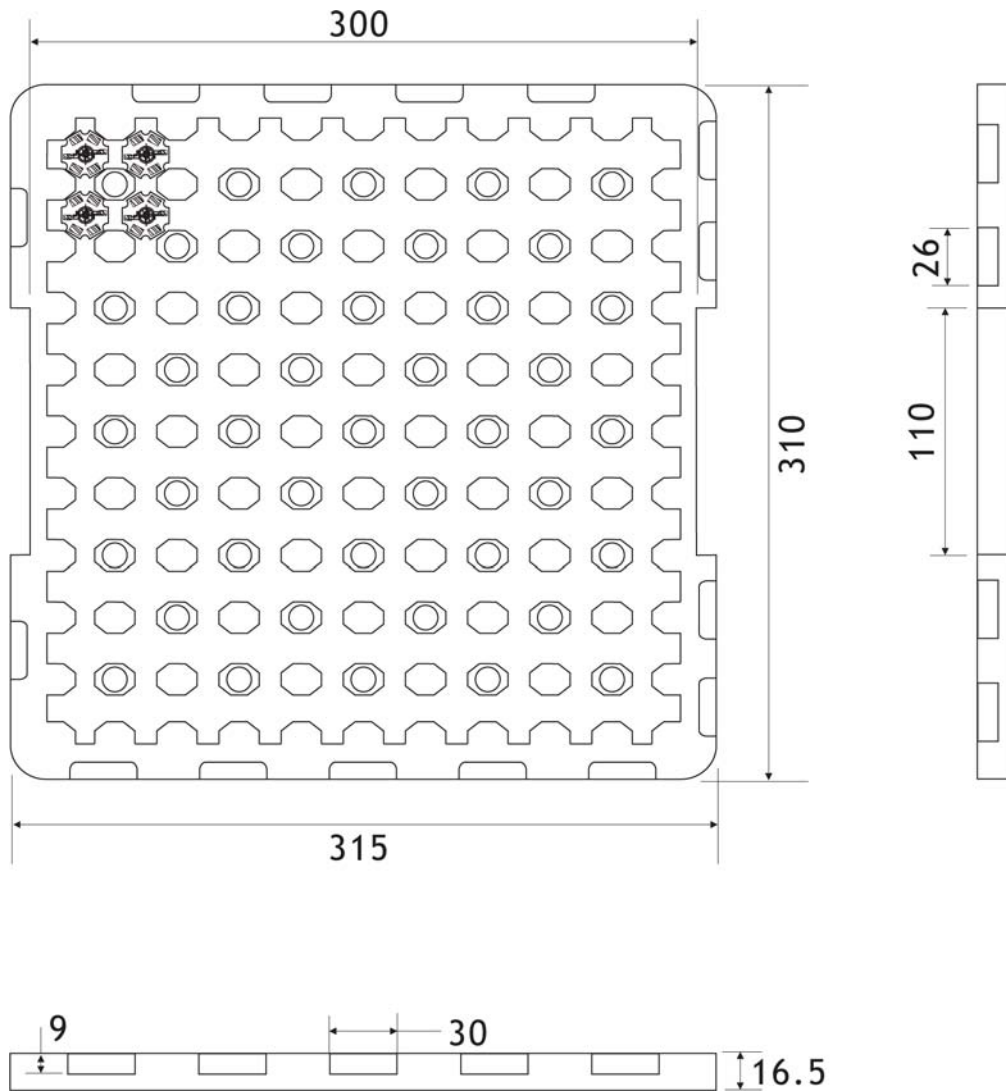
Pure White Color Bin Selection

Bin	CCT(°K)		Chromaticity Coordinates			
	TYP		x	y	x	y
T1	9000	x	0.274	0.292	0.299	0.283
		y	0.301	0.322	0.300	0.284
T2	9000	x	0.283	0.299	0.303	0.290
		y	0.284	0.300	0.283	0.270
T3	8000	x	0.292	0.303	0.308	0.299
		y	0.322	0.333	0.311	0.300
T4	8000	x	0.299	0.308	0.311	0.303
		y	0.300	0.311	0.293	0.283
T5	6700	x	0.301	0.314	0.316	0.305
		y	0.342	0.355	0.333	0.322
T6	6700	x	0.305	0.316	0.317	0.308
		y	0.322	0.333	0.320	0.311
T7	6700	x	0.308	0.317	0.319	0.311
		y	0.311	0.320	0.300	0.293
T8	6000	x	0.314	0.329	0.329	0.316
		y	0.355	0.369	0.345	0.333
T9	6000	x	0.316	0.329	0.329	0.317
		y	0.333	0.345	0.331	0.320
T10	6000	x	0.317	0.329	0.329	0.319
		y	0.320	0.331	0.310	0.300
T11	5300	x	0.329	0.348	0.346	0.329
		y	0.369	0.385	0.359	0.345
T12	5300	x	0.329	0.346	0.329	0.344
		y	0.345	0.359	0.331	0.344
T13	5300	x	0.344	0.329	0.343	0.329
		y	0.344	0.331	0.331	0.320
T14	4750	x	0.348	0.367	0.362	0.346
		y	0.385	0.400	0.372	0.359
T15	4750	x	0.346	0.362	0.360	0.344
		y	0.359	0.372	0.357	0.344
Tolerance			x ± 0.02		y ± 0.02	

CIE Light Color Chart: 0.420



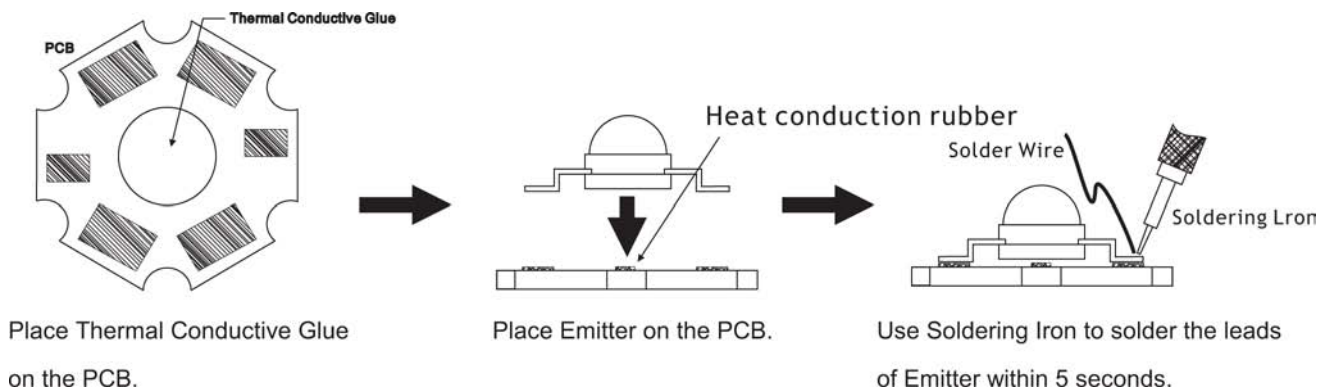
Package Dimension For Star Type



NOTE:

1. Dimensions are specified as follows: mm.
2. Tolerance is $\pm 0.3\text{mm}$ unless otherwise noted.
3. 100pcs star per tray.
4. 10 trays per box.

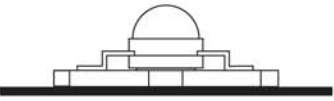

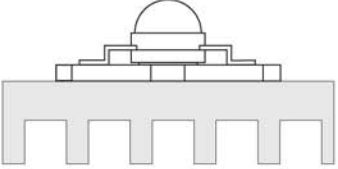
Manual Hand Soldering For Emitter Type



1. Solder tip temperature: 230°C max for Lead Solder and 260°C max for Lead-Free Solder.
2. Avoiding damage to the emitter or to the PCB dielectric layer. Damage to the epoxy layer can cause.
3. Do not let the solder contact from solder pad to back-side of PCB. This one will cause a short circuit and damage emitter.

Conclusion

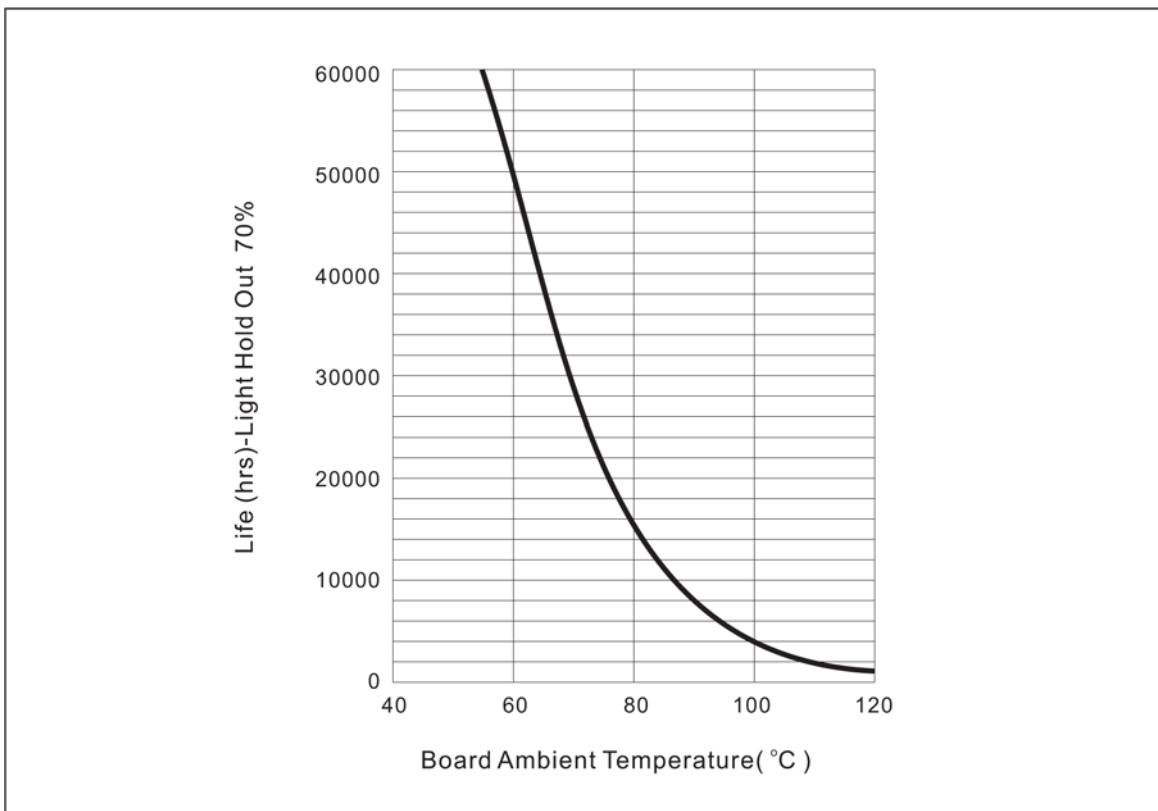
Huey Jann provide simple comparison table for High Power LED, you could find your request heat dissipation area from the following table.

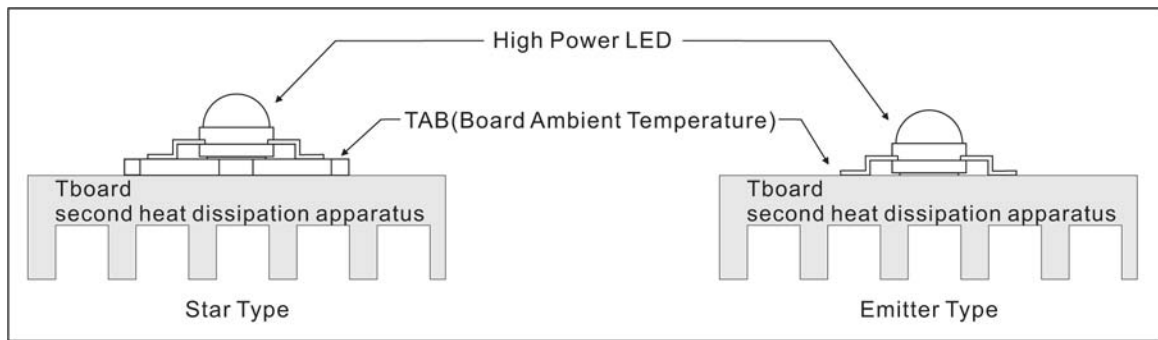
	 <p>Free Convection Horizontal Flat Heat Dissipation-Set-up (Area Require mm²)</p>	 <p>Free Convection Vertical Flat Heat Dissipation-Set-up (Area Require mm²)</p>	 <p>Free Convection Finned Heat Dissipation-Set-up (Area Require mm²)</p>
5W	9,000	7,500	12,000

* 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.

TAB Temperature - Life Characteristics Curves





* Board Ambient Temperature Tolerance $\pm 5^{\circ}\text{C}$.

* 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.