

0.5W HI-POWER LED SPECIFICATION

HPTLB6-19K05xW



Drawn by	Checked by	Approved by



DATE:2011/8/4

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.

TEL:+886-4-26393976 FAX:+886-4-26393125

HUEY JANN High Power 0.5W 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. Now we have these colors available: red, green, blue, white, yellow and infrared.

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
- Medical applications
- Beacon lights
- Decoration lights
- Spotlight



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Explanation of Part Number:

H P TLB6 - 1 9K 05 xW
① ② ③ ④ ⑤ ⑥ ⑦

1.H: Huey Jann

2.P: High power LED Type

3.Shape distinguish:

TLB6: 5050 type

4. Appearance:

1:White Diffusion

4:Water Clear

5.Color number:

3K: Green

4K: Yellow

5K: Red

8K: Blue

9K: White

6.Power type:

Non: 1W

05: 0.5W

3: 3W

5: 5W

7.Color kind:

W: Pure White

YW: Warm White



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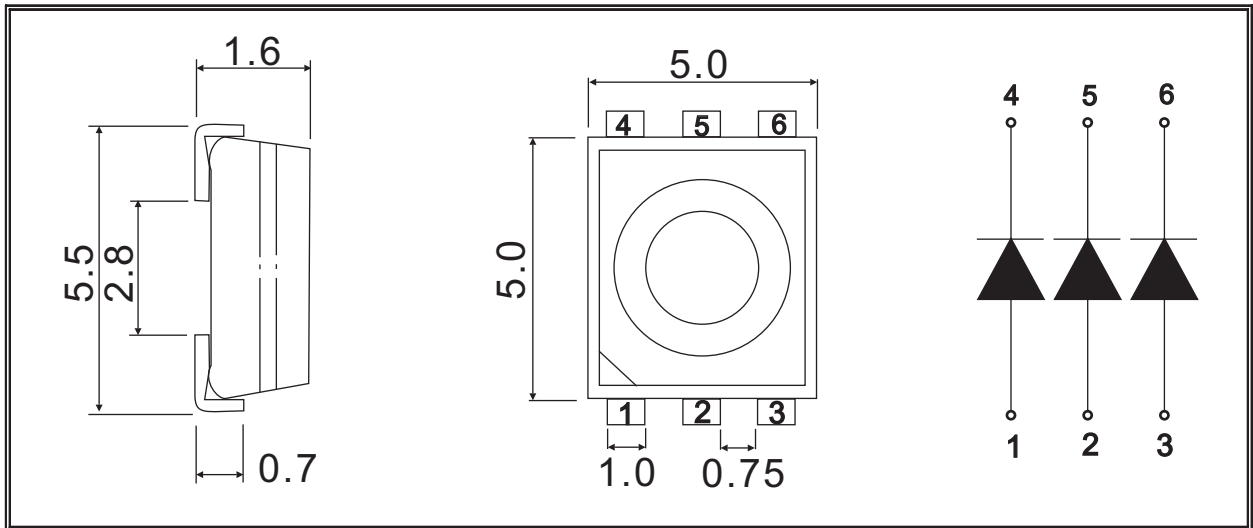
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DEVICES

Part Number	Lens		Source
	Color	Diffusion	Dice Source
HPTLB6-19K05xW	Yellow	Diffusion	GaNN/GaN

PACKAGE DIMENSIONS



NOTE:

- 1.All dimensions are in millimeter.
- 2.specifications are subject to change without notice.
- 3.Tolerance is 0.3mm unless otherwise noted.



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ABSOLUTE MAXIMUM RATINGS

TA=25°C

PARAMETER	SYMBOL	MAX. RATING	UNIT
Power Dissipation	Pd	120	mW
Continuous Forward Current	IF	75	mA
Peak Forward Current *1	IFM	150	mA
Reverse Voltage	VR	4	V
Electrostatic Discharge (HBM)	ESD	2000	V
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +85	°C
Reflow Soldering (preheat 150-180°C 60-120sec, soldering temp 260°C 10sec)			

*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.



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ELECTRIC-OPTICAL CHARACTERISTICS FOR COLOR TEMPERATURE

Emitter Type

TA=25°C

ITEM	SYMBOL	TEST CONDITION	TYP	UNIT
HPTLB6-19K05W	CCT	IF=60mA	6000	°K
HPTLB6-19K05YW			3300	

ELECTRIC-OPTICAL CHARACTERISTICS

TA=25°C

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
View Angle of Half Power	2θ1/2	IF=60mA		120		deg
Forward Voltage	VF			6.3	6.8	V
Reverse Current	IR	VR=4V			60	μA
Luminous Intensity For 6000°K	IV	IF=60mA	6000	12000		mcd
Luminous Intensity For 3300°K	IV		5000	9300		



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RELIABILITY TEST

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1	Connect with a power if=60mA 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=90% ~ 95% Test Time=1000hrs	0/22
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High Ta=+85°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
	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 ~ +85°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

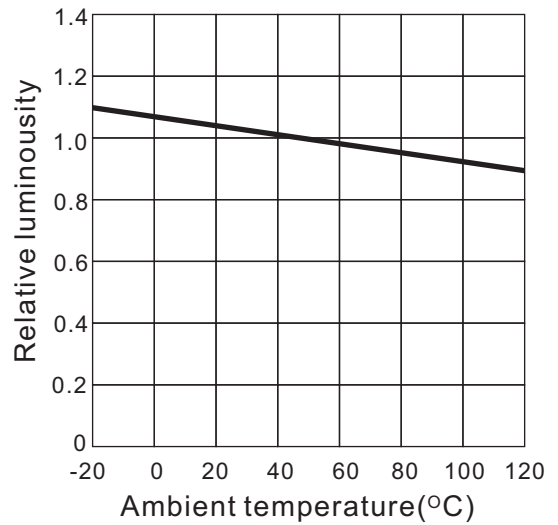
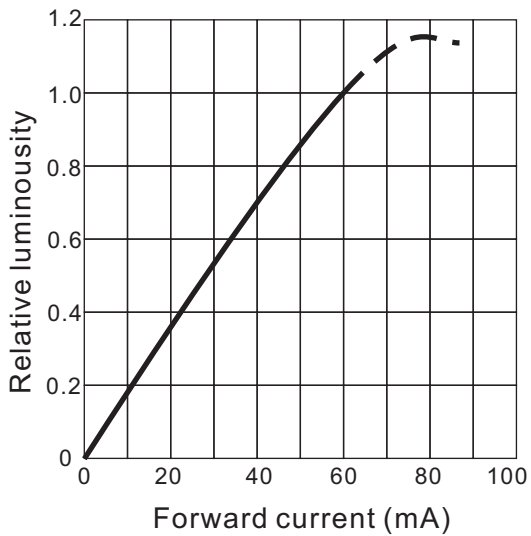
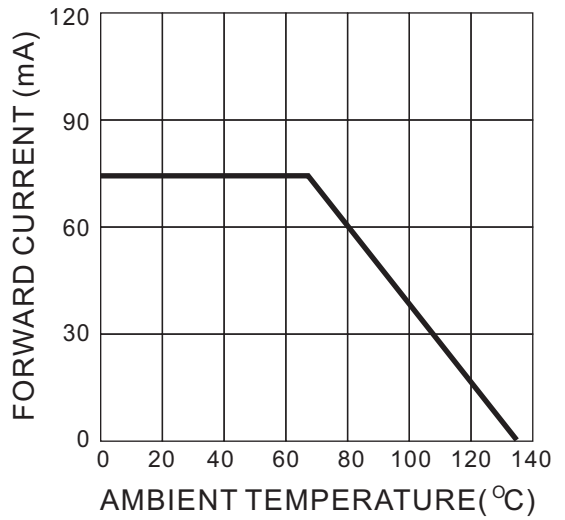
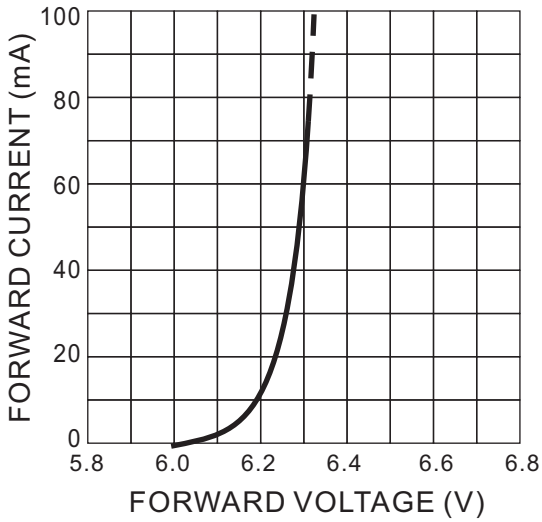


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TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES

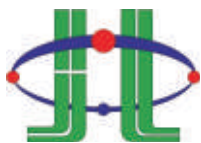
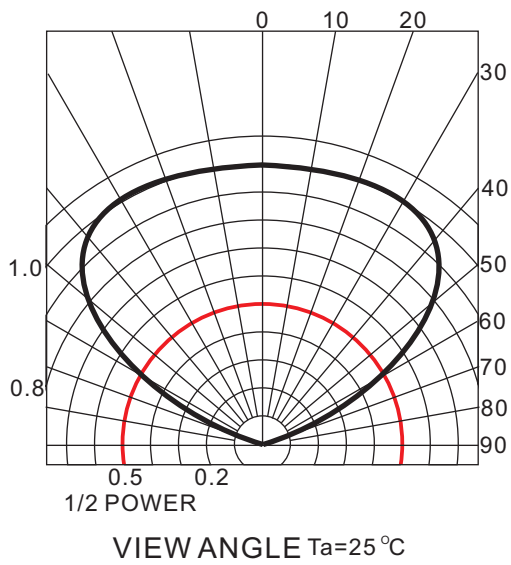
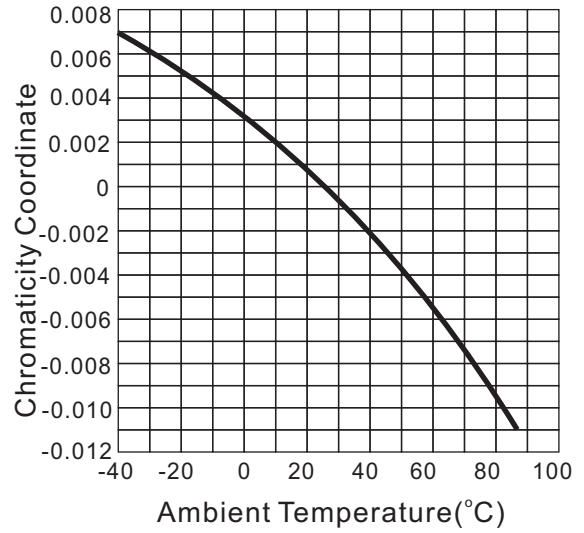
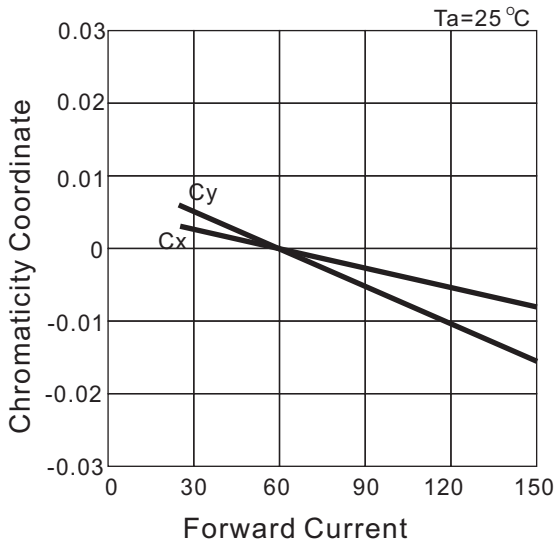


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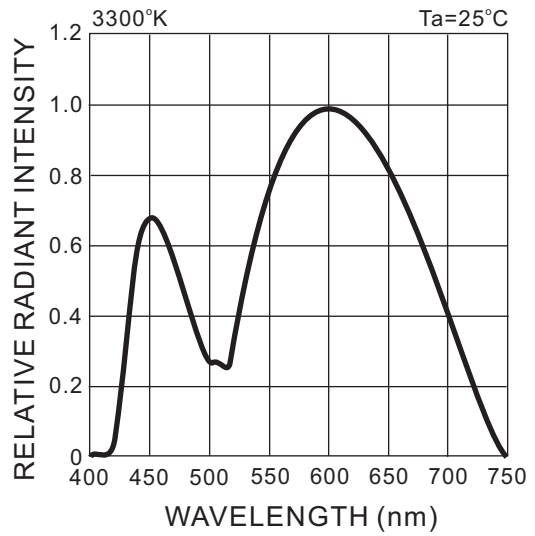
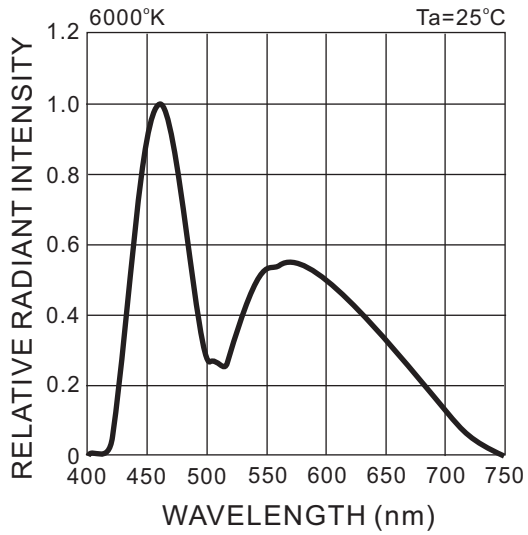


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TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES



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Brightness Bin Selection

Brightness Code		
BIN CODE	Brightness in mcd	
	Minimum	Maximum
W	5500	7200
X	7200	9300
Y	9300	12000
Z	12000	16000

NOTE:

1. Test Condition at IF=60mA.



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Pure White Color Bin Selection

Bin	CCT(°K)	Chromaticity Coordinates				
	TYP	x	y	z	u	v
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



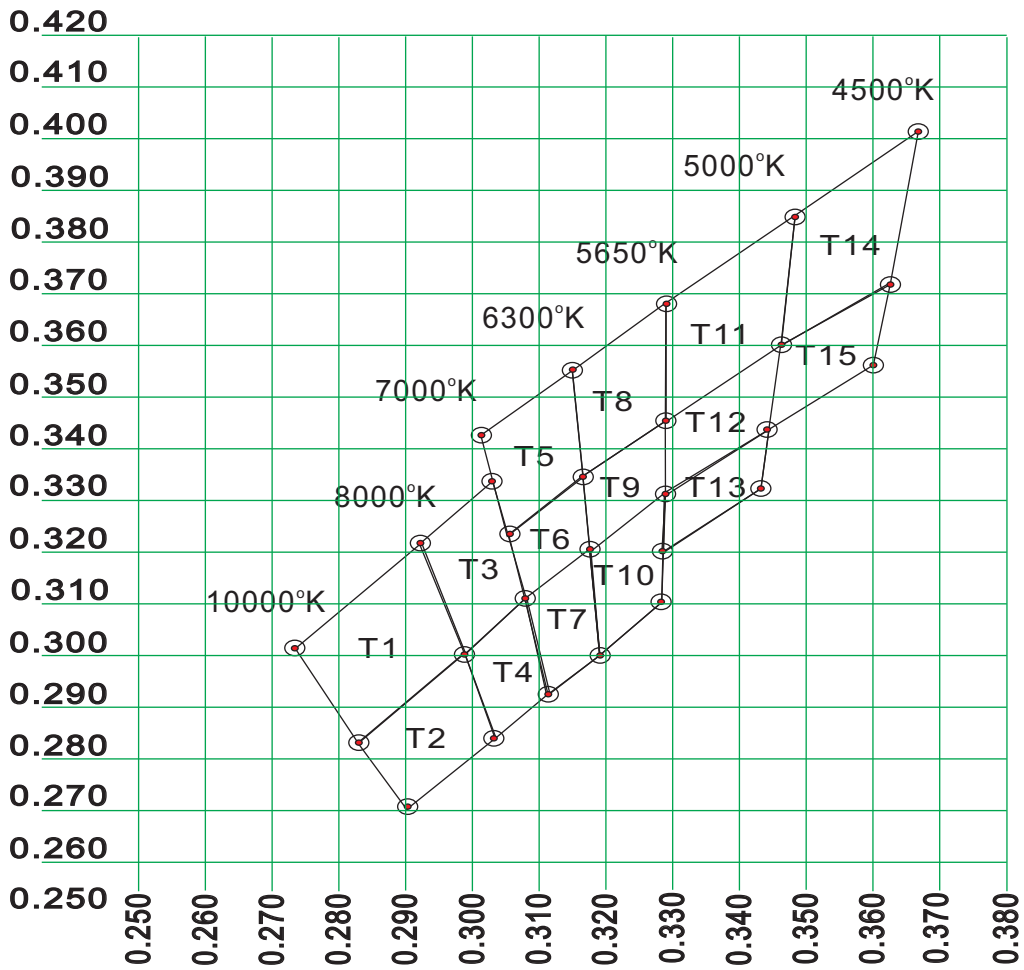
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Pure White Color Bin Selection

CIE Light Color Chart



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Warm White Color Bin Selection

Bin	CCT(°K)	Chromaticity Coordinates				
	TYP	x	y	z	u	v
C10	3640	x	0.402	0.417	0.409	0.392
		y	0.423	0.431	0.400	0.391
C11	3500	x	0.402	0.438	0.424	0.392
		y	0.423	0.440	0.406	0.391
C12	3640	x	0.392	0.409	0.402	0.387
		y	0.391	0.400	0.382	0.374
C13	3370	x	0.409	0.424	0.416	0.402
		y	0.400	0.406	0.389	0.382
C14	3500	x	0.387	0.416	0.410	0.383
		y	0.374	0.389	0.374	0.360
C15	3150	x	0.438	0.454	0.438	0.424
		y	0.440	0.446	0.412	0.406
C16	3150	x	0.424	0.438	0.429	0.416
		y	0.406	0.412	0.394	0.389
C17	2950	x	0.454	0.471	0.453	0.438
		y	0.446	0.451	0.416	0.412
C18	2950	x	0.438	0.453	0.444	0.429
		y	0.412	0.416	0.399	0.394



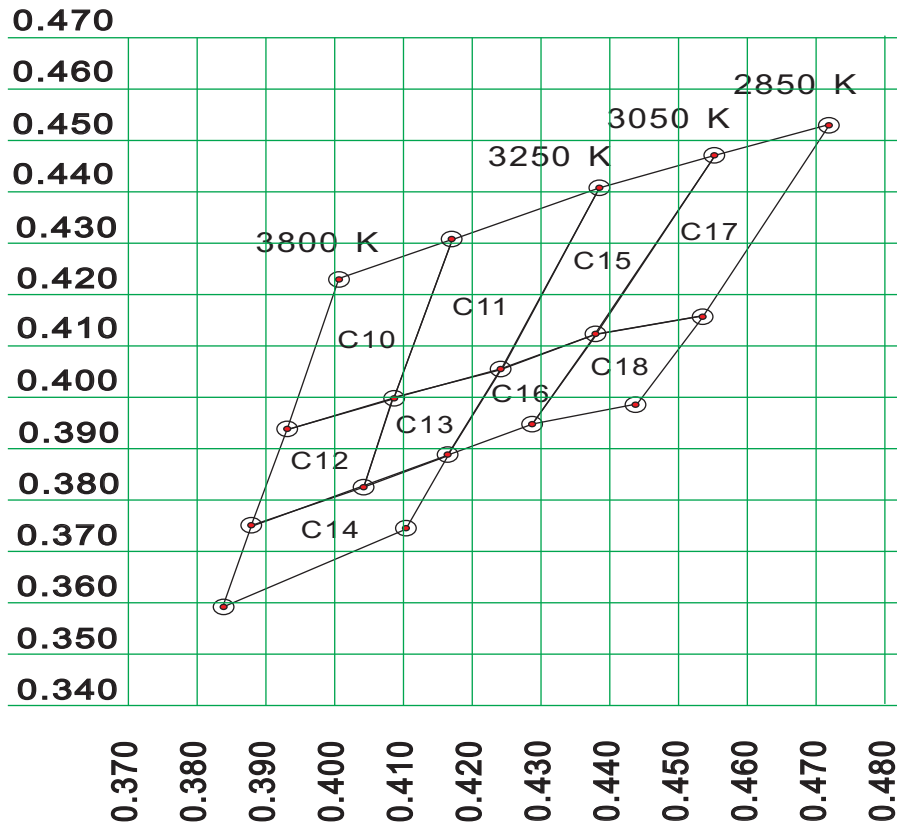
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Warm White Color Bin Selection

CIE Light Color Chart



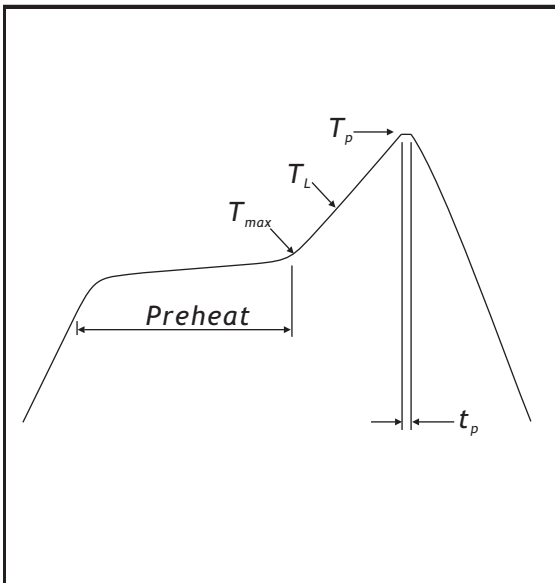
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Reflow Solder Condition For Emitter Type

Profile Feature	Sn-Pb Eutectic Assembly	Lead-Free Assembly
Average Ramp-Up Rate (T_{max} To T_p)	3 °C/sec max	3 °C/sec max
Average Ramp-Down Rate	6 °C/sec max	6 °C/sec max
Preheat		
Temperature Min	100 °C	150 °C
Temperature Max	150 °C	200 °C
Time	60-120sec	60-180sec
Time Maintained Above		
Temperature (T_L)	180 °C	210 °C
Time Max	150sec	150sec
Peak Temperature (T_p)	240 °C	260 °C
Time Within 5°C of Actual Peak Temperature (t_p)	10 ~ 30sec	20 ~ 40sec



Note:

- 1.All temperature regarding topside of the package, measured on the package body surface.
- 2.After the LEDs have been soldered repairing should not be done. When repairing is unavoidable, a heat plate should be used. It should be confirmed beforehand whether the characteristics of LEDs will or will not be damaged by repairing.
- 3.Reflow soldering more than two times is not recommended.
- 4.While soldering do not put stress on the LEDs during heating.
- 5.After soldering do not warp the circuit board.



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Remarks:

1. Brightness values are measured during a current pulse of typical 25 ms, the brightness tolerance is $\pm 15\%$.
2. Chromaticity coordinates are measured during a current pulse of typical 200 ms, the chromaticity tolerance is ± 0.015 .
3. Forward voltage are measured during a current pulse of typical 5 ms, the VF tolerance is $\pm 0.15V$.
4. Dimensions are specified as follows: mm.
5. Related technical parameters of LED are average value resulted from statistic. The actual parameters of LED could be slightly different from average and characteristic curve.
6. The average value of LED will be changed by technical improvement and elevation, and subject to change without prior notice.
7. Hi-Power LED can not be operated without second heat dissipating structure.
8. Poor or damaged second heat dissipating structure could lead to defective electrical characteristic of High Power LED, CCT escalation, brightness drop, lifetime shortening or burn out. Following instructions of Huey Jann Hi-Power LED series document can avoid LED burn out and electrical defectiveness due to improper usage, and maintain normal performance of the products.



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