1W HIGH POWER LED

NINGBO ANDY OPTOELECTRONIC CO.,LTD

Add:Xinan Street Industrial Zone,Yuyao City,Zhejiang,China
Tel:+86-0574-62593880 62593879 Fax: +86-0574-62593852
Http://www.ledlighting.cc E-mail:sales@ledlighting.cc

◆ Features:

★ Long operating life (up to 100,000 hours)
★ More Energy Efficient than incandescent and most halogen lamps
★ Low forward voltage operated
★ Instant light (Less than 100 ns)
★ No UV
★ High ESD protection.

◆ Typical Applications

★ Reading lights
★ Portable flashlight
★ Uplighters and Downlighters
★ Bollards / Security / Garden lighting
★ Indoor and Outdoor Commercial lighting
★ LCD Backlights / Light guides
★ General lighting

◆ Full Code of LED Series

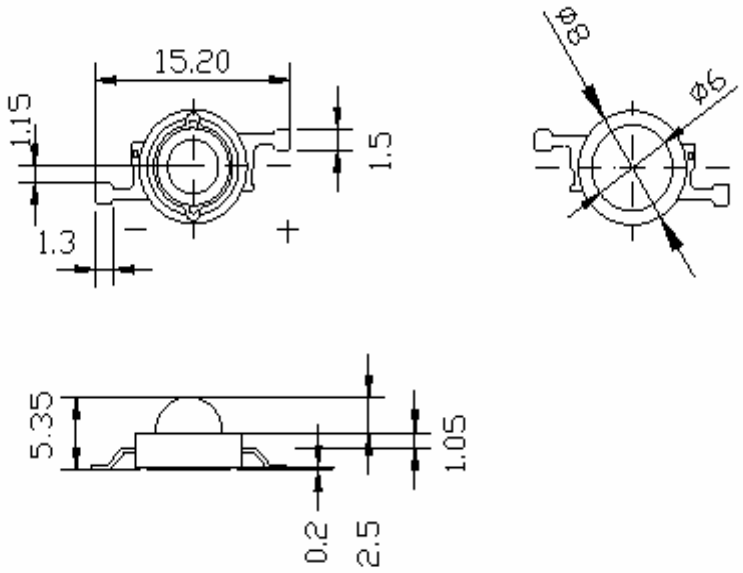
Full code form : X1 X2- X3 X4 X5 X6 X7–X8 X9 - X10 X11 X12

Part Number :

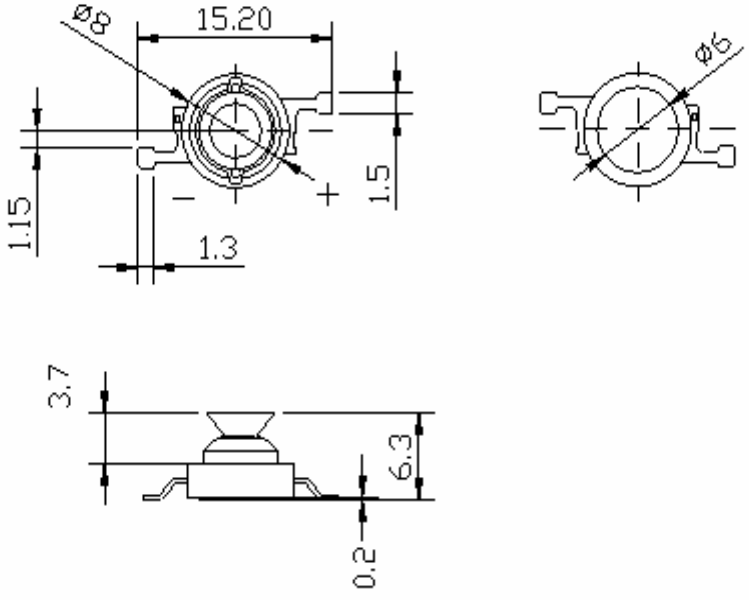
-X1 : Andy
-X2 : Power LED
-X3 X4 : Color
-X5 X6 : Type of bracket or basic board
-X7 : Type of lens
-X8 X9 : Subsection of color
-X10 X11 : Grade of chip
-X12 : Viewing angle

◆ Package Dimension:

AP-XX30C-XX-XXK **Lambertian**



AP-XX30F-XX-XXN **Side Emitting**



Notes:1. All dimensions are in millimeters (inches).

2. Tolerance is ±0.25(.010”)mm unless otherwise noted.

◆ Flux Characteristics at 350mA,Ta=25℃

Part No.	Grade	Color	Flux(lm)		
			Min.	Typ.	Max.
AP-WE30X-	1A	White	40	45	/
	1C		45	50	/
	2A		50	55	/
	2B		60	65	/
AP-WR30X-	1A	Warm White	30	35	/
	1C		35	40	/
	2A		40	45	/
	2B		45	50	/
AP-BL30X-	1A	Blue	4	5	/
	1C		6	8	/
	2A		6	7	/
	2B		8	10	/
AP-OR30X-	1B	Red	15	20	/
	2B		30	33	/
AP-YL30X-	1B	Yellow	25	30	/
AP-PG30X-	1A	Green	25	30	/
	1B		40	45	/

◆ Optical Characteristics at 350mA,Ta=25℃

Color	CCT(K)/λd (nm)			Viewing Angle	Radiation Pattern
	Min.	Typ.	Max.		
White	5000	6500	10000	120°-140°	Lambertian
Warm White	2700	3000	3500		
Blue	455	460	465		
Green	515	520	525		
Red	620	625	630		
Yellow	585	590	595		
White	5000	6500	10000	150°-170°	Side Emitting
Warm White	2700	3000	3500		
Blue	455	460	465		
Green	515	520	525		
Red	620	625	630		
Yellow	585	590	595		

◆ Electrical Characteristics at 350mA,Ta=25℃

Color	Forward Voltage Vf(V)			Chip Material
	Min.	Typ.	Max.	
White	3.2	3.5	3.8	GaN
Warm White	3.2	3.5	3.8	GaN
Blue	3.2	3.5	3.8	GaN
Green	3.1	3.4	3.8	GaN
Red	2.2	2.4	2.7	AlInGaP
Yellow	2.2	2.4	2.7	AlInGaP

◆ Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Max.	Unit
Peak Forward Current (1/10 Duty Cycle 0.1ms Pulse Width)	I_{FP}	500	mA
Continuous Forward Current	I_F	350	mA
Reverse Voltage	V_R	5	V
Operating Temperature Range	T_{opr}	-30℃ to +85℃	
Storage Temperature Range	T_{stg}	-30℃ to +100℃	
Lead Soldering Temperature	T_{sld}	260℃ for 5 Seconds	

1. Luminous Intensity Measurement allowance is±10%
2. Tolerance of measurement of Wavelength or chromatic coordinates is ±1nm(±0.02)
3. Tolerance of measurement of forward voltage is ±0.05V
4. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity

◆ Reliability

1)Test Items and Results

Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat	JEITA ED-4701 300 302	Tsld=260±5℃,10sec	1Time	0/10
Solderability	JEITA ED-4701 300 303	Tsld=235±5 ℃,5sec(using flux)	1Time	0/10
Temperature Cycle	JEITA ED-4701 100 105	-40℃~25℃~100℃~25℃ 30min,5min,30min,5min	100 cycles	0/10
High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000hrs	0/10
Temperature Humidity Storage	JEITA ED-4701 100 103	Ta=60℃,RH=90%	1000hrs	0/10
Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000hrs	0/10
Steady State Operating Life	------	Ta=25℃，IF＝350mA	1000hrs	0/10
Steady State Operating Life of High Temperature	------	Ta=85℃,IF=120mA	1000hrs	0/10
Steady State Operating Life of High Humidity Heat	------	Ta=60℃,RH=90% ,IF=350mA	500hrs	0/10
Steady State Operating Life of Low Temperature	------	Ta=-30℃，IF＝350mA	1000hrs	0/10

2)Criteria For Judging The Damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF＝350mA	__	F.V.*)×1.1
Reverse Current	IR	VR=5V	__	F.V.*)×2.0
Luminous Intensity	IV	IF＝350mA	F.V.*)×0.7	

*)F.V.:First Value

◆ Wavelength Characteristics,Ta=25℃

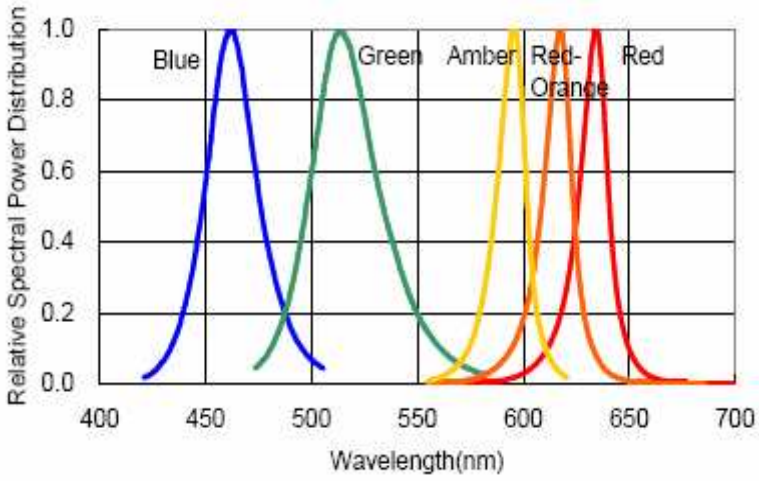


Figure 1a. Relative Intensity vs. Wavelength

White Color Spectrum

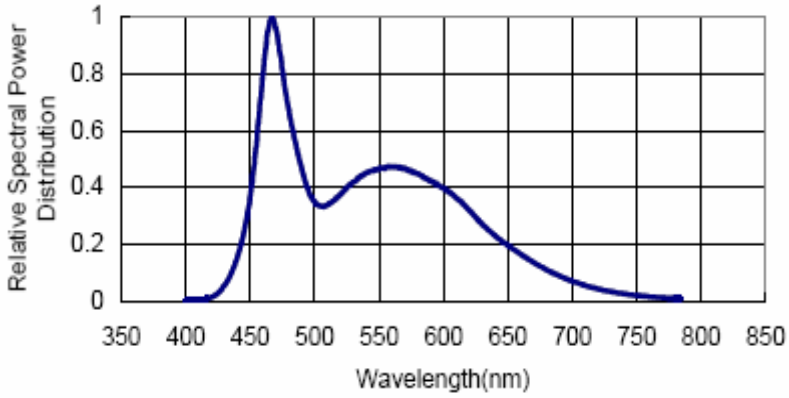


Figure 1b. White Color Spectrum of Typical 5500K Part.

Warm White Color Spectrum

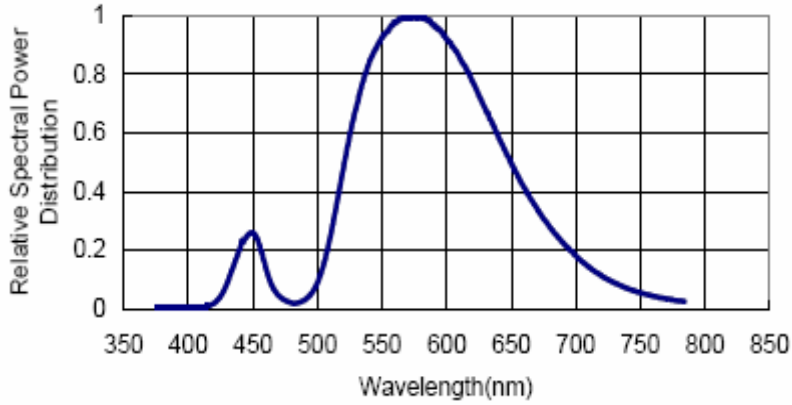


Figure 1c. Warm White Color Spectrum of Typical 3300K Part.

◆ Light Output Characteristics

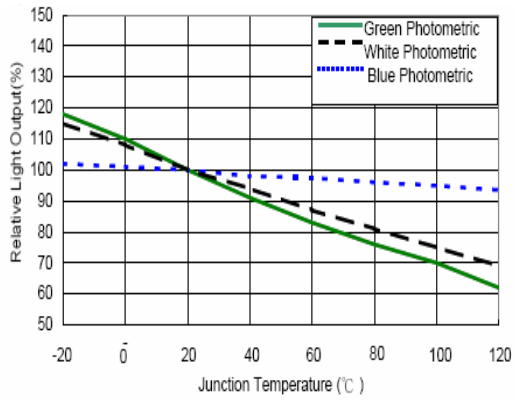


Figure 2a. Relative Light Output vs. Junction Temperature

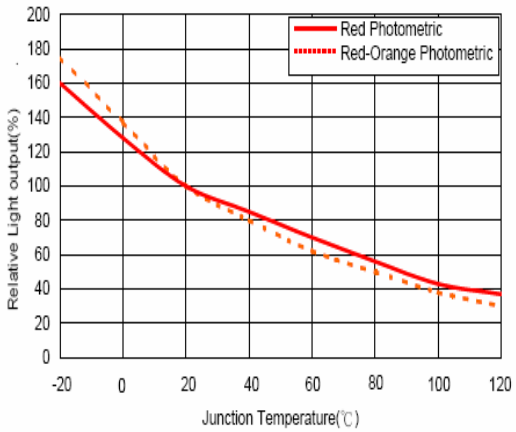
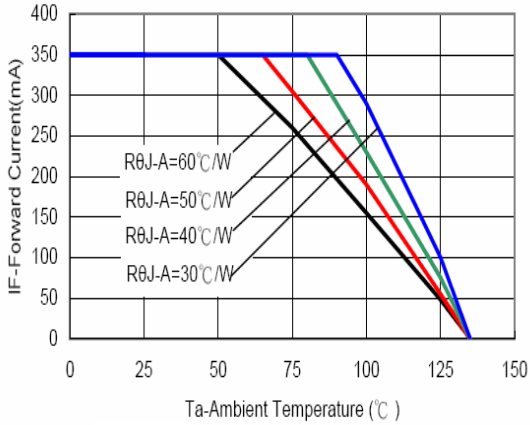
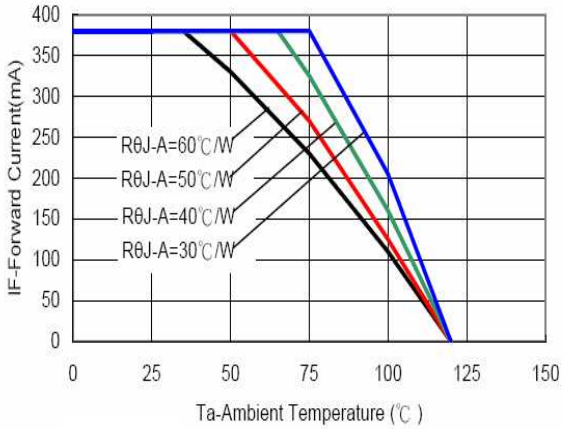


Figure 2b. Relative Light Output vs. Junction Temperature

◆ Current Derating Curves



Maximum Forward Current vs. Ambient Temperature. Derating based on TjMAX=135℃ for White, Warm White, Blue and Green.



Maximum Forward Current vs. Ambient Temperature. Derating based on TjMAX=120℃ for Amber, Red-Orange and Red.

◆ Forward Current Characteristics,Ta=25℃

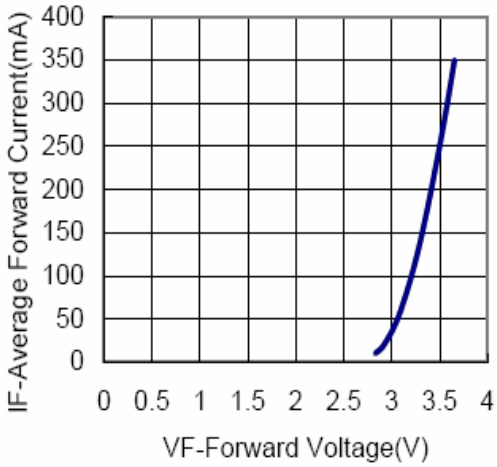


Fig 3a. Forward Current vs. Forward Voltage for White, Warm White, Blue and Green.

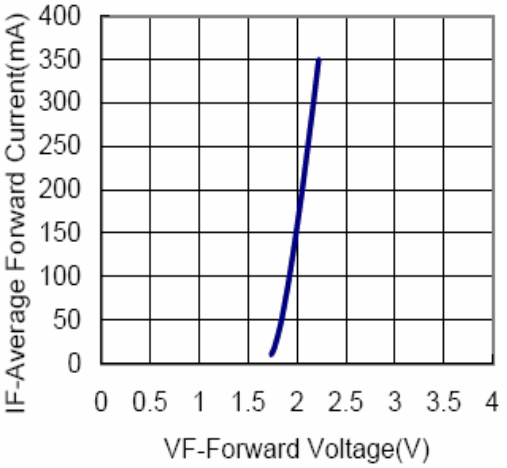


Fig 3b. Forward Current vs. Forward Voltage for Amber, Red-Orange and Red.

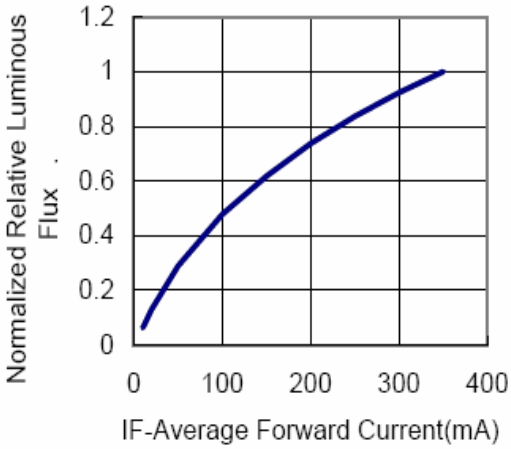


Fig 4a. Relative Luminous Flux vs. Forward Current for White, Warm White, Blue and Green at Tj=25℃ maintained.

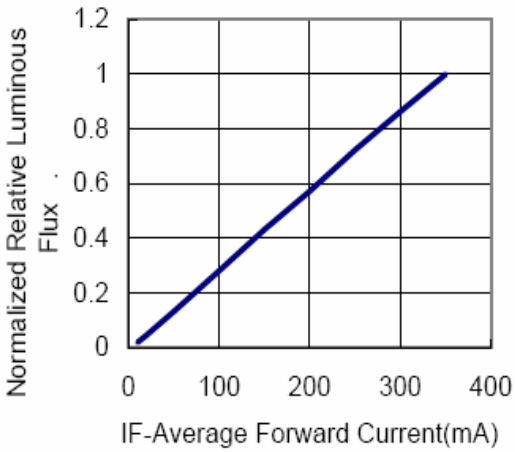
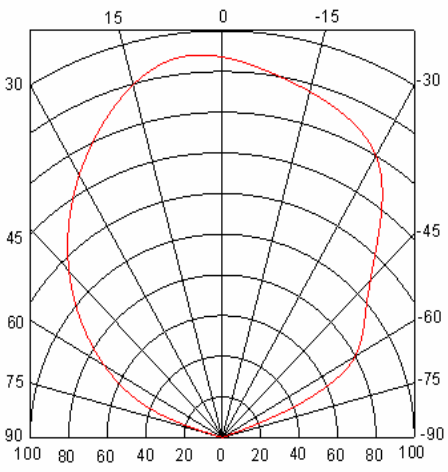
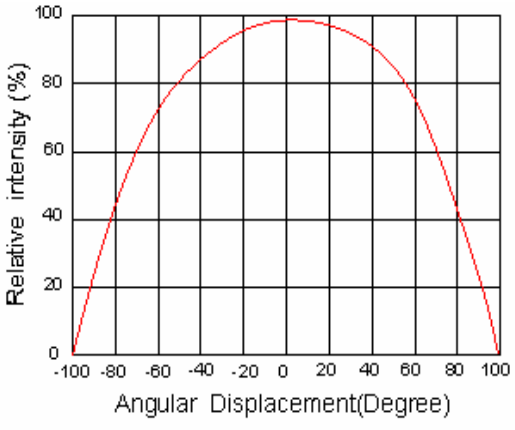


Fig 4b. Relative Luminous Flux vs. Forward Current for Amber, Red-Orange, Red at Tj=25℃ maintained.

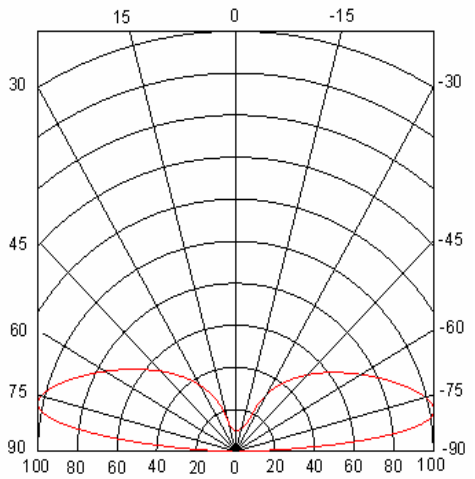
◆ Radiation Pattern

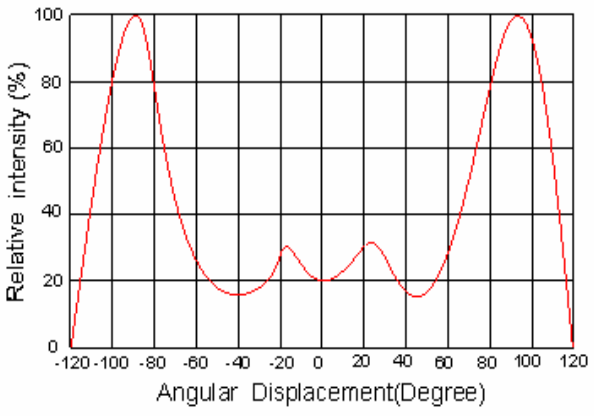
Typical Radiation Pattern for Lambertian





Typical Radiation Pattern for Side Emitting





◆ Cautions:

Honorific users , it's thankfulness that you use ANDY's LEDs. Before the LEDs are used ,please read the consider.ation lest blight by using incorrectly.

1.Storage

1.1)Before opening the package, The LEDs should be kept at 30℃ or less and 70%RH or less. The LEDs should be used within a year.When storing the LEDs, moisture proof packsging with absorbent material is recommended.

1.2) After opening the package, the LEDs should be kept at 30℃ or less and 40%RH or less. the LEDs should be used within 12 hours. If unused LEDs remain, they should be stored in the moisture proof packsges, It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again .

1.3)If the moisture absorbent material(silica gel) has faded away or the LEDs have exceeded the storage time ,baking treatment should be performed using the following condition.

Baking treatment: more than 12 hours at 65±5℃

1.4)ANDY LED electrode ,leadframe and die heat sink are comprised of a silver plated copper alloy. Please avoid conditions which may cause the LED to corrode , tarnish or discolor. This corrosion or discoloration might lower solderability or might affect on optical characteristics .

1.5)Please avoid rapid transitions in ambient temperature , especially in high humidity environments where condensation can occur .

2. Cleaning

2.1)It's becareful when we clean LEDs with chymic impregnant, some chymic impregnant can damage the colloid such as acetone、chloroethlene……. It is recommend that ethanol be used by cleaning 、dipping,it's not more than 3mins at normal temperature.

2.2) We can clean the LEDs by the ultrasonic.

3. Static Electricity

3.1)Static electricity or surge voltage damages the LEDs.
It is recommend that a wrist band or an anti-electrostatic glove be used when handling the LEDs.

3.2)All devices, equipment and machinery must be properly grounded.

3.3)When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find static- damaged LEDs by a light-on test or a VF test at a lower current (below lmA is recommended).

3.4)Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases,the forward voltage becomes lowers, or the LEDs do not light at the low current.
Criteria:(VF>2.0v at IF=0.5mA)

4.Soldering Conditions

4.1)solder with searing-iron: It is recommend that 30W constant temperature searing-iron be used when soldering. The temperature of the tip of the searing-iron should be kept at 320℃ or less. Soldering should be completed within 3sec.one time .

4.2) Repairing should not be done after the LEDs have been soldered . When repairing is unavoidable, It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing .

4.3)Die Heat sink is to be soldered .If not , please use the heat conductive adhesive.

4.4)When soldering ,do not put stress on the LEDs during heating .

4.5)After soldering ,do not warp the circuit board.

5 .Heat Generation

5.1)Thermal design of the end product is of paramount importance.Please consider the heat generation of the LED when making the system design .The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation ,and don't exceed the maximum ratings given in this specification. While soldering, it is recommended to solder the twice dispelling heat equipment. Criteria（volume> 1.5mm*5cm*5cm, Material:pure aluminum）please use the heat conductive adhesive.

5.2)Please decide on operating current volume according to LEDs ambient temperature and conduct heat release treatment .

5.3)The equation①indicates correlation between Tj and Ta, and the equation② indicates correlation between Tj and Tc

① Tj=Ta+Rja*W

② Tj=Tc+Rjc*W

Tj=Dice Temperature: ℃， Ta=Ambient Temperature: ℃， Tc=Case Temperature: ℃

Rja=Heat resistance from Dice to Ambient Temperature: ℃/W,

Rjc=Heat resistance from Dice to Tc measuring point≈17℃/W,

W=Inputting Power (If * Vf): W

6 .Others

6.1)Encapsulating resin is made from silicone . Silicone has clambered up the lens thinly, so there is possibility of occurring delamination on the surface of the lens. Please take care of handling for LEDs .

6.2) The LED light output is strong enough to injure human eyes. Precautions must be taken to prevent looking directly at the LEDs with unaided eyes for more than a few seconds .

6.3)Flashing lights have been known to cause discomfort in people; you can prevent this by taking precautions during use.

6.4)The LEDs described in this brochure are intended to be used for ordinary lighting (such as lamps and lanterns,illumination,display,backlights).If you have special use or the request of use is higher,please consult with our sales staff.We will supply the productor which will satisfy the need of you .

6.5)User shall not reverse engineer by disassembling or analysis of the LEDs without having prior written consent .When defective LEDs are found, the User shall inform ANDY directly before disassembling or analysis.

6.6)The appearance and specifications of the product may be modified for improvement without notice.