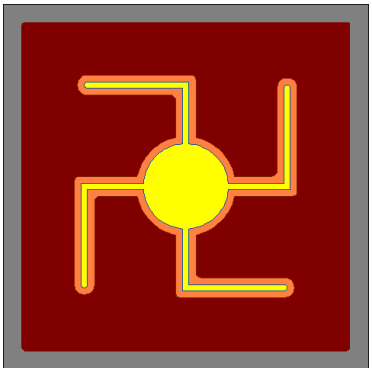
014MR-U-FF1

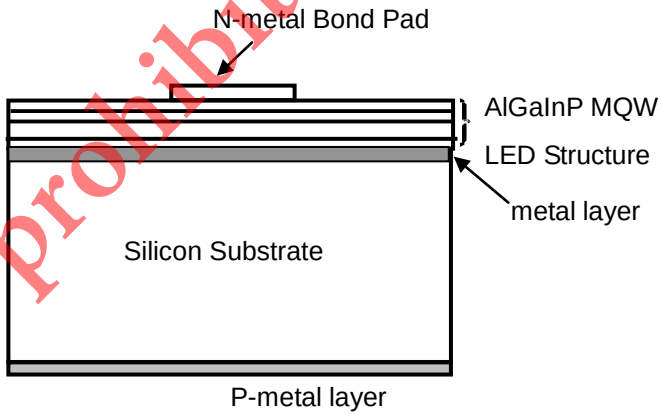
1. Descriptions:

014MR-U is a reddish-orange LED chip made from Aluminum Gallium Indium Phosphide (AlGaInP) MOCVD process and bonded with Silicon. It is fabricated by the HPO's proprietary metal Bonding mechanism, 014MR-U is featured by homogeneous and high light output at all sides with superior beam pattern. Excellent performance under sunlight and reliable life-long stability make 014MR-U ideal for both lighting and outdoor applications.

2. Chip Diagram:



Chip pattern



Chip Side view

3. Chip characteristics:

Substrate	Si
Emitting material	AlGaInP
p-pad electrode	Au-alloy
n-pad electrode	Au-alloy
Chip size	360±25um × 360±25um
Chip thickness	150±25um
Pad Diameter	84±15um

4. Electrical and Optical Characteristics(Ta=25°C):

Parameter	Condition *1	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I_F=20mA	V_{F1}	1.8	2.1	2.4	V
Threshold voltage	I_F=10uA	V_{F3}	1.3	1.5	1.8	V
Reverse current	V_R=5V	I_R	-	-	10.0	uA
Peak wavelength	I_F=20mA	λ_p	620	-	650	nm
Dominant wavelength	I_F=20mA	λd	615	-	640	nm
Half width *2	I_F=20mA	$\Delta\lambda$	-	15	-	nm
Luminous Intensity *3	I_F=20mA	LOP	500	-	-	mcd

Note:

*1 IF : DC Forward current VR : Reverse voltage

*2 Value of Half width is only for reference

*3 Luminous Intensity is measured by HPO's equipment on bare chips.

4 Characteristic curves are measured on standard TO-46 package type without encapsure.

5. Characteristic Curves:

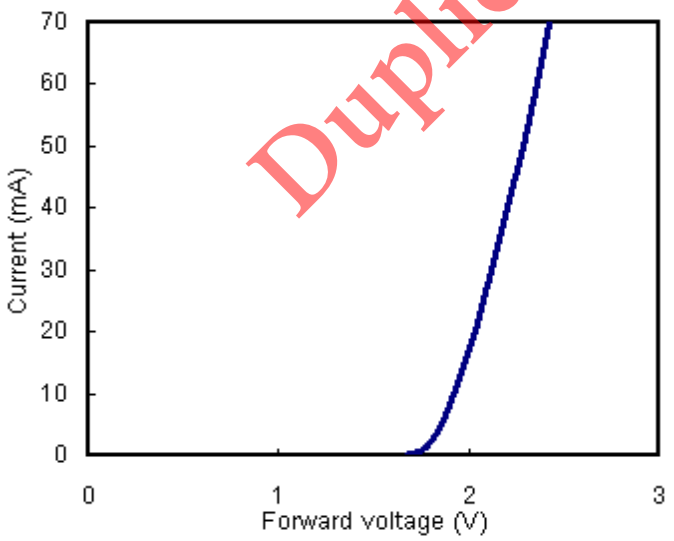


Fig.1 The I-V characteristics (0-70mA)

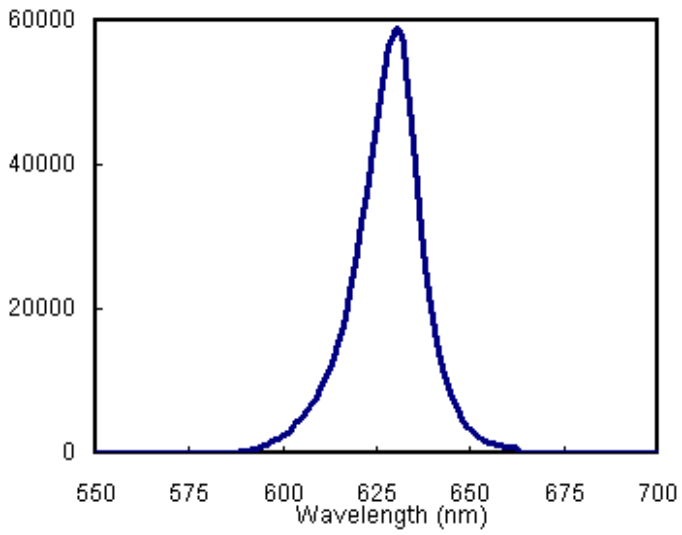


Fig.2 The EL spectrum

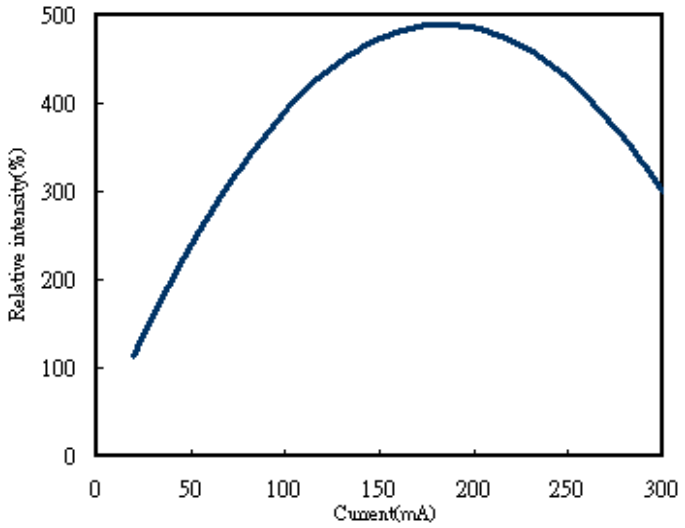


Fig.3 Relative intensity vs forward current

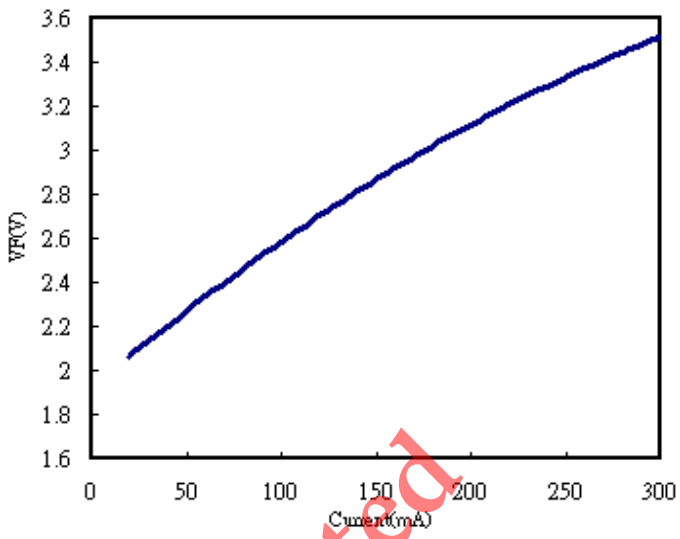


Fig.4 The V-I chracteristics (0-300mA)

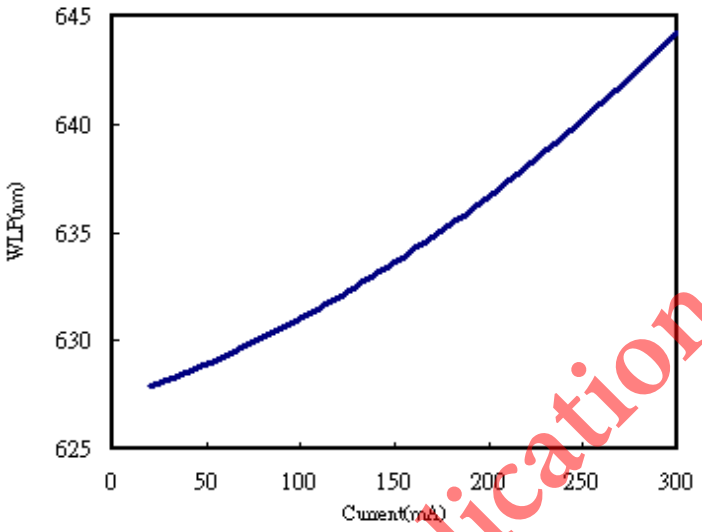


Fig.5 The WLP shift vs forward current

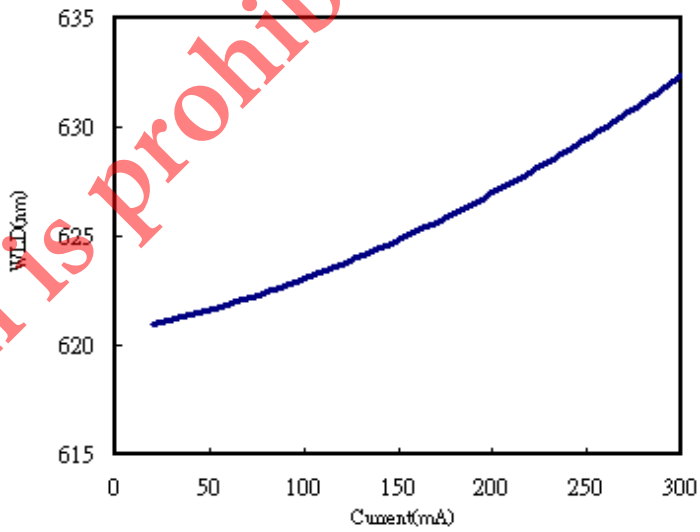


Fig.6 The WLD shift vs forward current

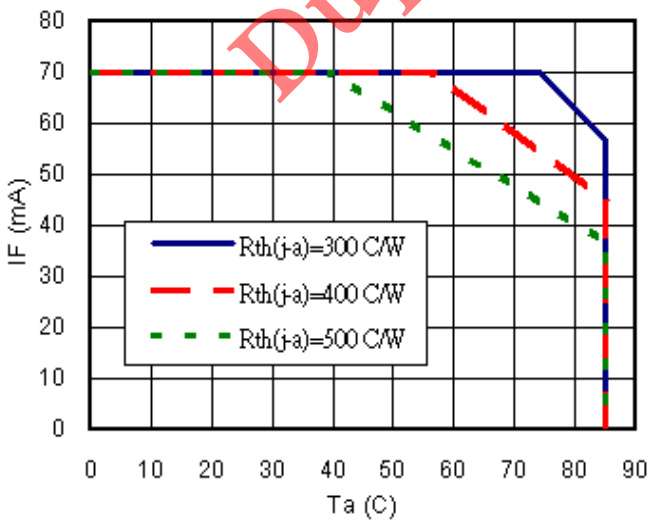


Fig.7 Derating curve based on Tj(max)=125℃

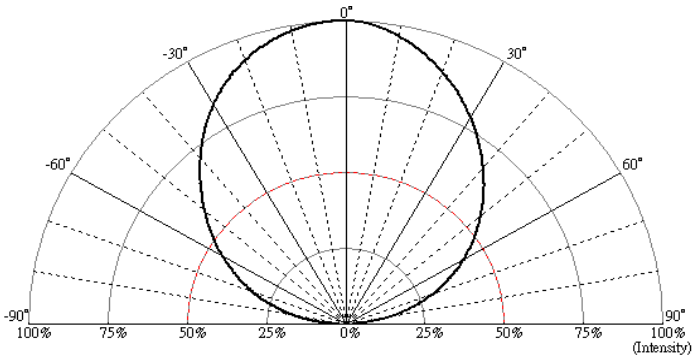


Fig.8 Light pattern and view angle of bare chip

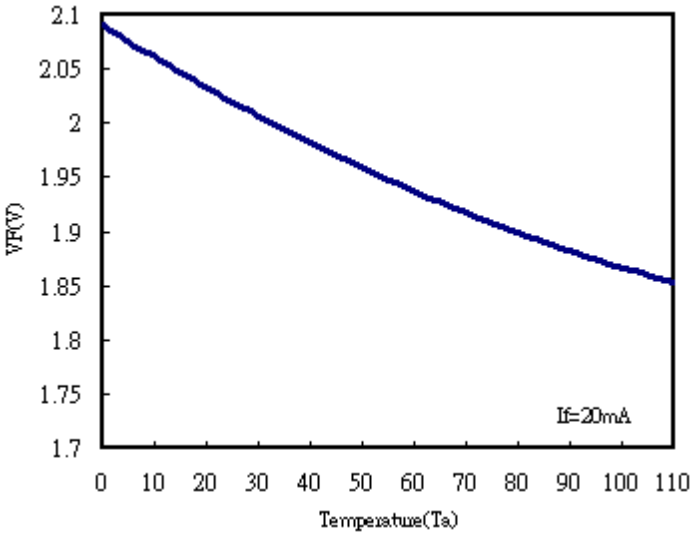


Fig.9 The forward voltage vs Ta(℃)

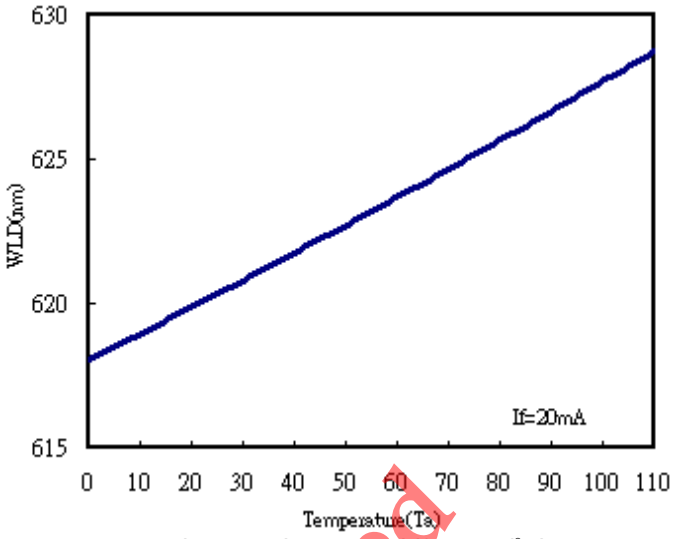


Fig.10 The WLD shift vs Ta(℃)

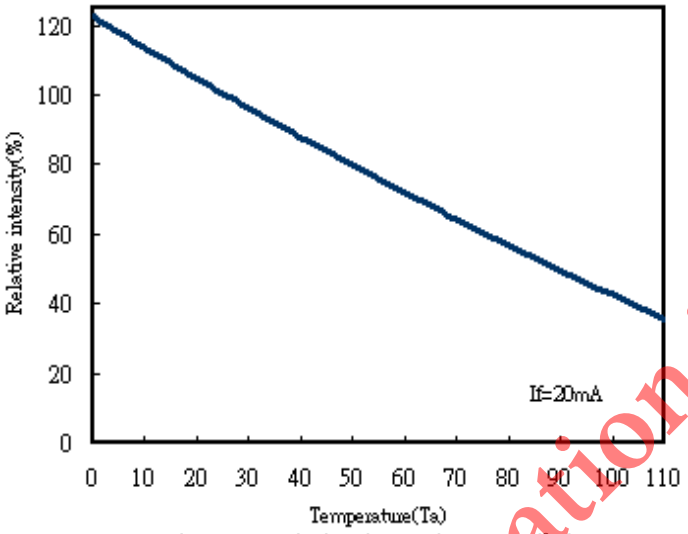


Fig.11 Relative intensity vs Ta(℃)

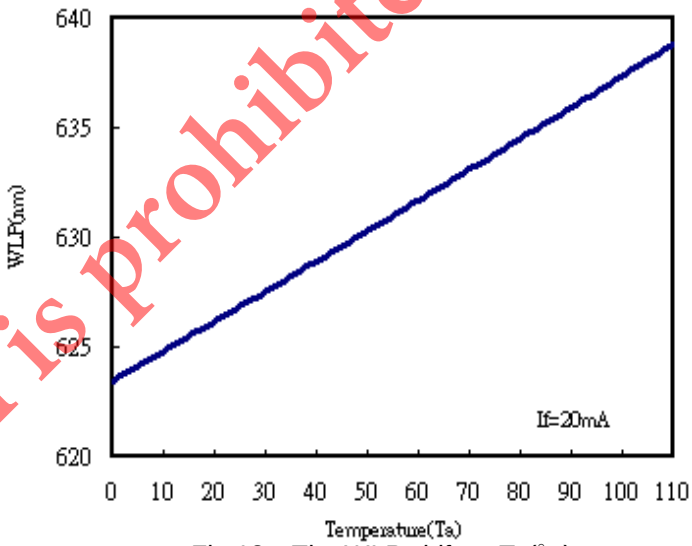


Fig.12 The WLP shift vs Ta(℃)

6. Absolute Maximum Ratings(Ta=25°C):

Parameter	Symbol	Condition	Rating
DC Forward Current	I_F	Ta=25℃	≦70mA
Peak Pulsing Current	Ipeak	1/10 duty cycle @ 1kHz	≦150mA
Reverse Voltage	V_R	Ta=25℃	≦10V
Operating Temperature Range	T_{OP}	-	-40℃ to +85℃
Storage Temperature Range	T_{stg}	Chip-on-tape/storage	+5℃ to +30℃
		Chip-on-tape/transportation	-20℃ to +65℃
LED Junction Temperature	T_j	-	≦125℃
Temperature during Packaging	-	-	280℃(<10sec)

Note: Maximum ratings are package dependent. The above maximum ratings were determined using a Metal Core Printed Circuit Board(MCPCB) without an encapsulant. Stress in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.