

IN-F14IR

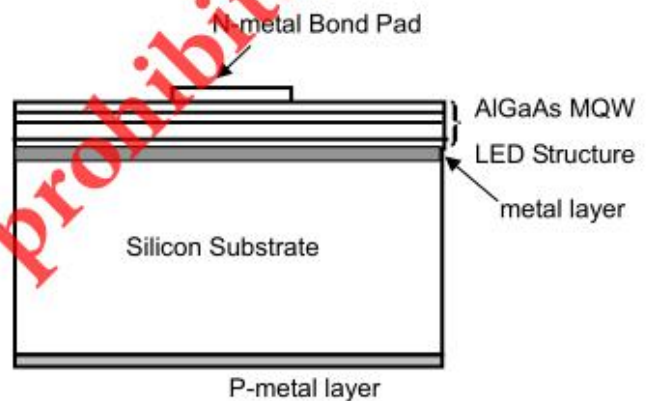
Descriptions:

F14IR is an Infra-red LED chip made from MOCVD process and bonded with Silicon. It is fabricated by the HPO's proprietary metal Bonding mechanism, F14IR is featured by homogeneous and high light output at top side with superior beam pattern. Excellent performance under sunlight and reliable life-long stability make F14IR ideal for IrDA, Encoder, data communication applications.

2. Chip Diagram:



Chip pattern



Chip Side view

3. Chip characteristics:

Substrate	Si
Emitting material	AlGaAs
p-pad electrode	Au-alloy
n-pad electrode	Au-alloy
Chip size	360±25um × 360±25um
Chip thickness	225±25um
Pad Diameter	95±15um

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

Parameter	Condition *1	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I _F =20mA	V _{F1}	1.3	1.5	1.8	V
Threshold voltage	I _F =10uA	V _{F3}		1.1	1.3	V
Reverse current	V _R =5V	I _R			10.0	uA
Peak wavelength	I _F =20mA	λ _p	840		860	nm
Half width *2	I _F =20mA	Δλ		30		nm
Radiant Power*3	I _F =20mA	P _o	2.0			mW

Note:

- *1 I_F : DC Forward current V_R : Reverse voltage
- *2 Value of Half width is only for reference
- *3 Radiant Power 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:

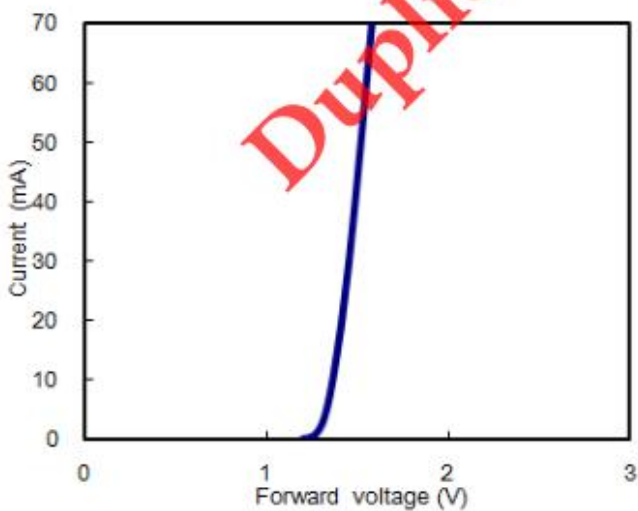


Fig.1 The I-V characteristics (0-70mA)

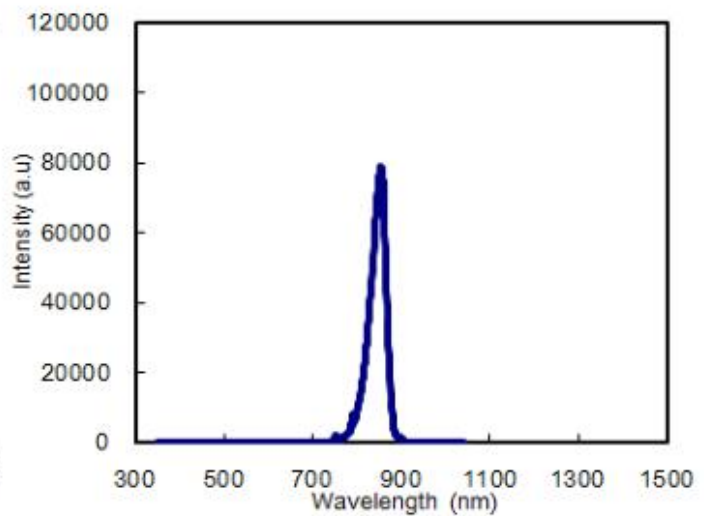


Fig.2 The EL spectrum

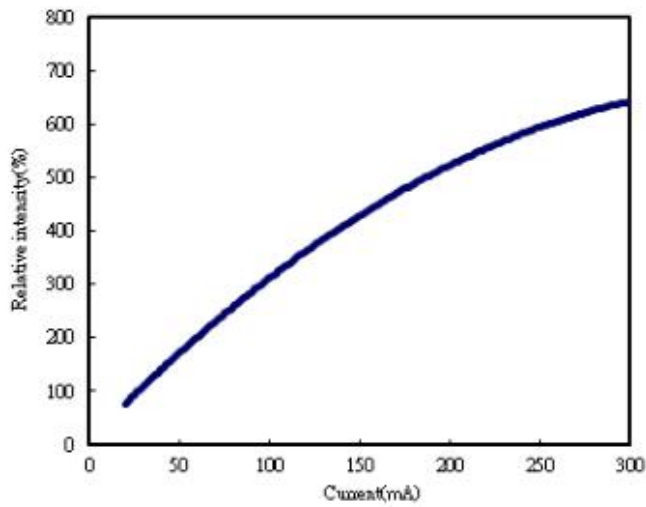


Fig.3 Relative intensity vs forward current

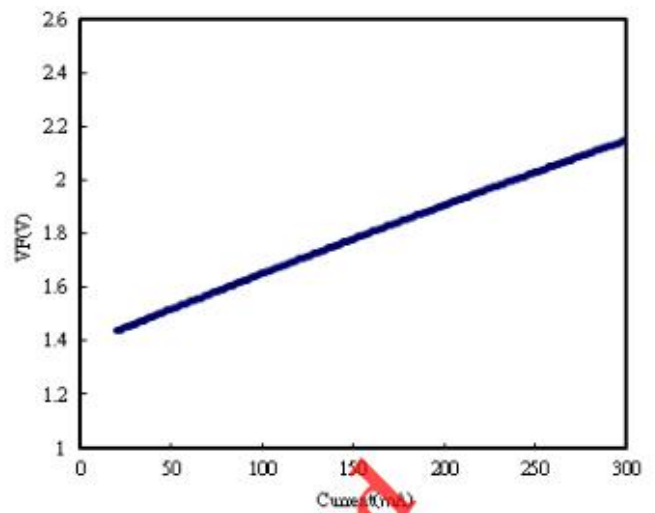


Fig.4 The V-I characteristics (0-300mA)

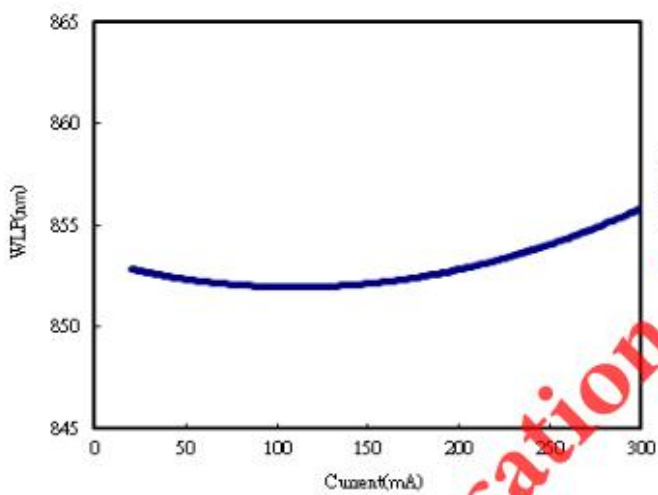


Fig.5 The WLP shift vs forward current

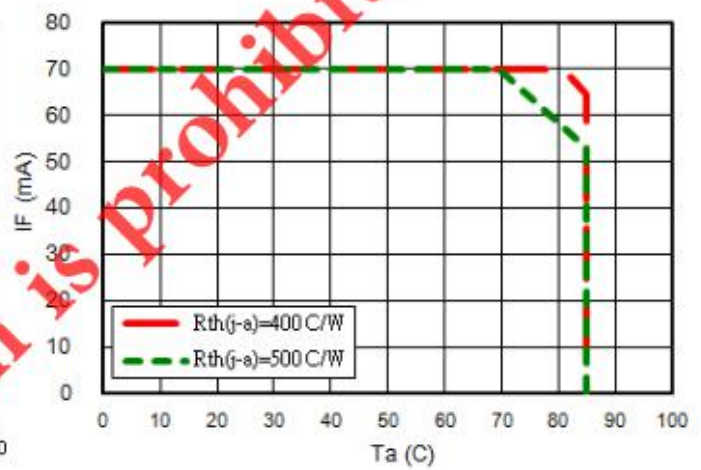


Fig.6 Derating curve based on $T_j(\text{max})=125^\circ\text{C}$

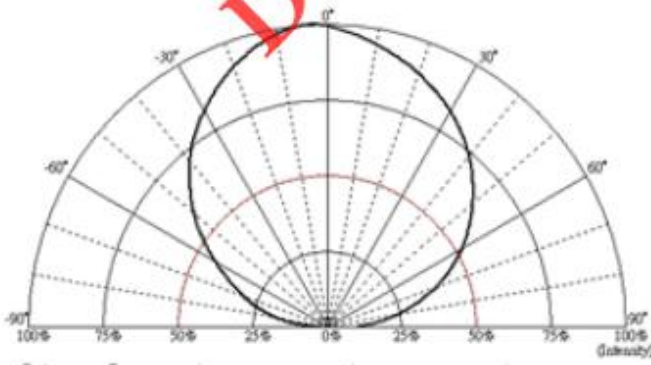


Fig.7 Light pattern and view angle of bare chip

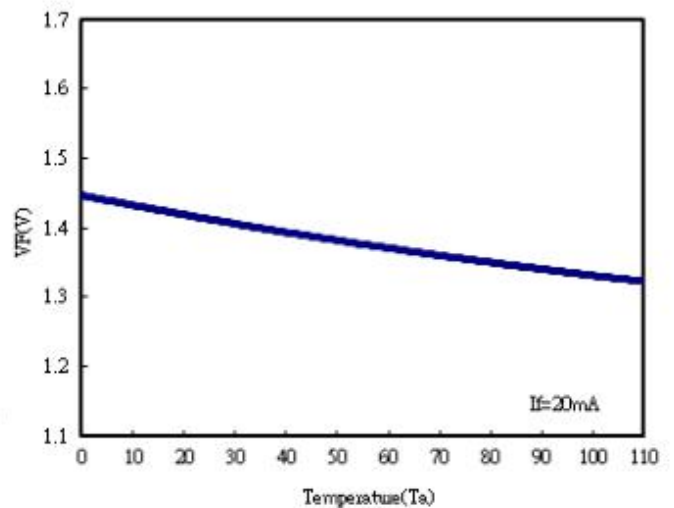


Fig.8 The forward voltage vs $T_a(^{\circ}\text{C})$

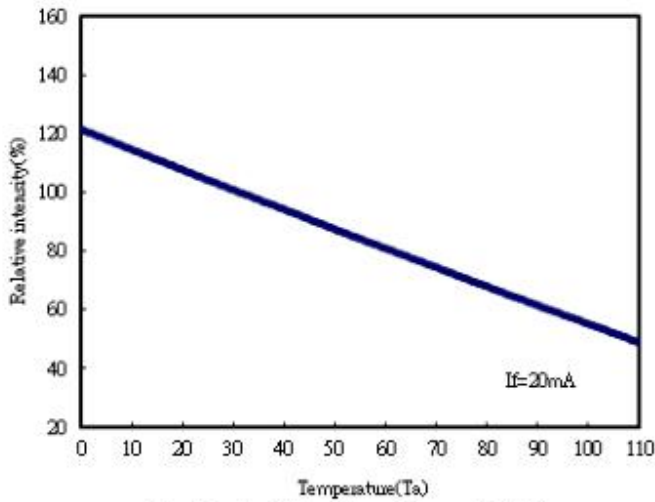


Fig.9 Relative intensity vs Ta(°C)

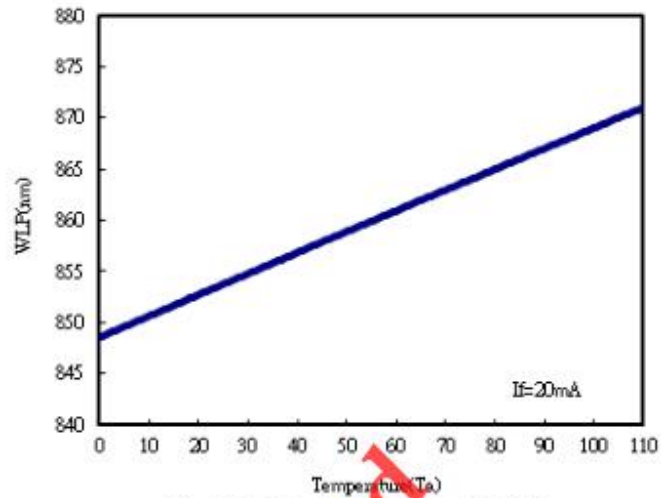


Fig.10 The WLP shift vs Ta(°C)

6. Absolute Maximum Ratings(Ta=25°C):

Parameter	Symbol	Condition	Rating
DC Forward Current	I_F	Ta=25°C	≤ 70mA
Peak Pulsing Current	I_{peak}	1/10 duty cycle @ 1kHz (T _j ≤ 65°C)	≤ 150mA
Reverse Voltage	V_R	Ta=25°C	≤ 10V
Operating Temperature Range	T _{OP}	-	-40°C to +85°C
Storage Temperature Range	T _{stg}	Chip-on-tape/storage	+5°C to +30°C
		Chip-on-tape/transportation	-20°C to +65°C
LED Junction Temperature	T _j		≤ 125°C
Temperature during Packaging	-		280°C (<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.