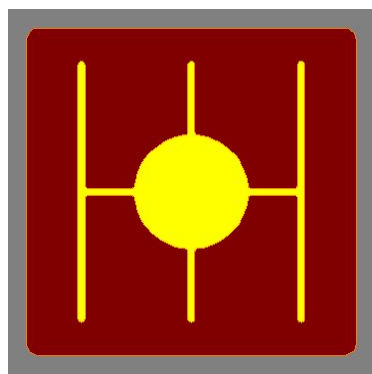


# IN-F12IR-B

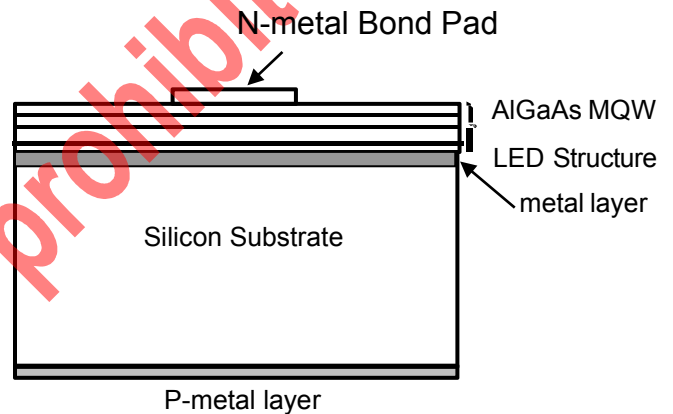
## 1. Descriptions:

F12IR-B 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, F12IR-B 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 F12IR-B 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	305±25um × 305±25um
Chip thickness	150±25um
Pad Diameter	94±15um

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

Parameter	Condition *1	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I <sub>F</sub> =100mA	V <sub>F1</sub>	-	1.6	1.8	V
Threshold voltage	I <sub>F</sub> =10uA	V <sub>F3</sub>	0.9	1.1	1.3	V
Reverse current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10.0	uA
Peak wavelength	I <sub>F</sub> =100mA	λ <sub>p</sub>	800	-	900	nm
Half width *2	I <sub>F</sub> =100mA	Δλ	-	40	-	nm
Radiant Power *3	I <sub>F</sub> =100mA	P <sub>o</sub>	20	-	-	mW

Note:

- \*1 I<sub>F</sub> : DC Forward current    V<sub>R</sub> : 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 encapsulation.

#### 5. Characteristic Curves:

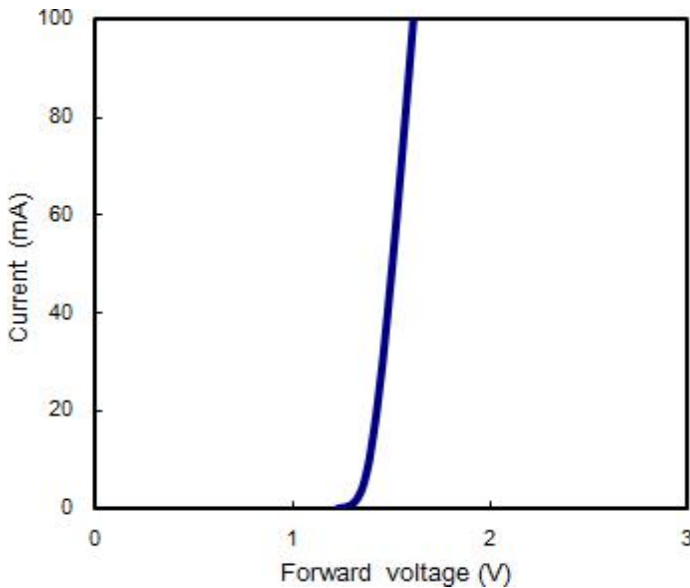


Fig.1 The I-V characteristics (0-100mA)

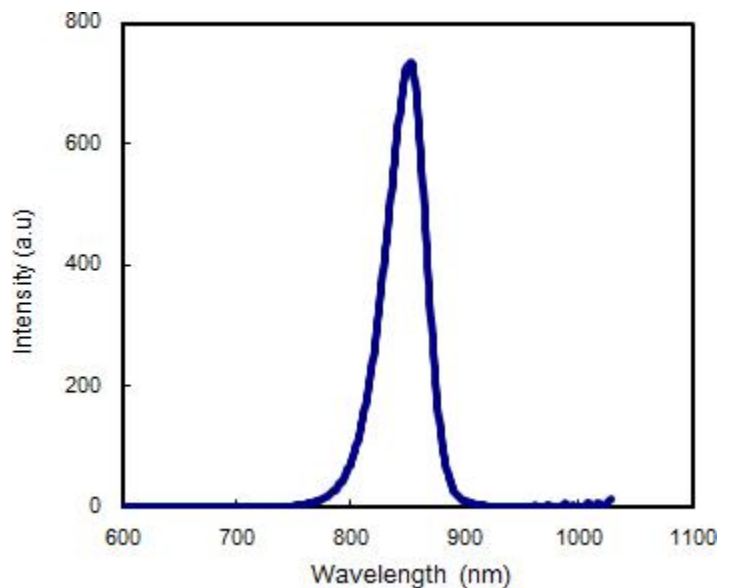


Fig.2 The EL spectrum

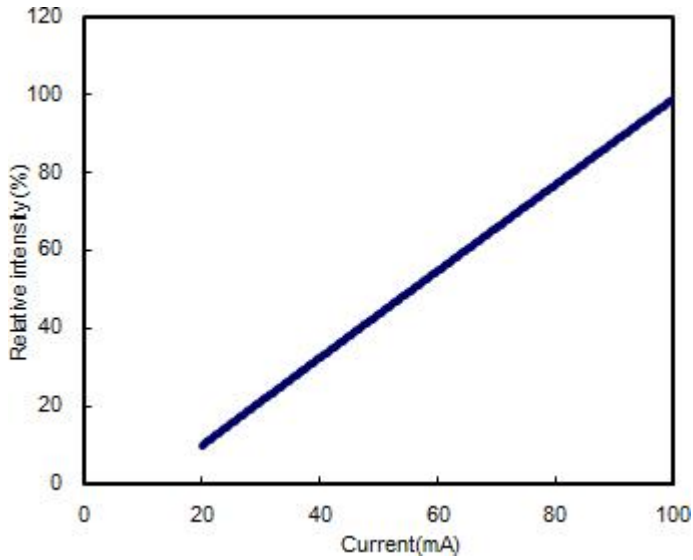


Fig.3 Relative intensity vs forward current

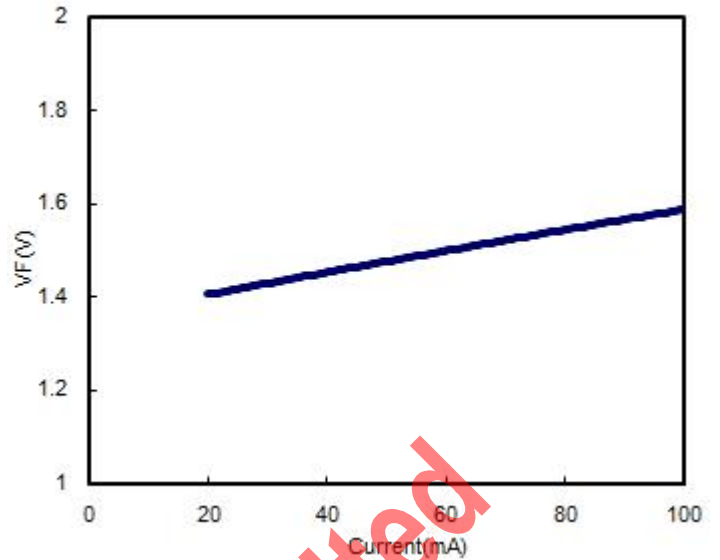


Fig.4 The V-I characteristics (0-100mA)

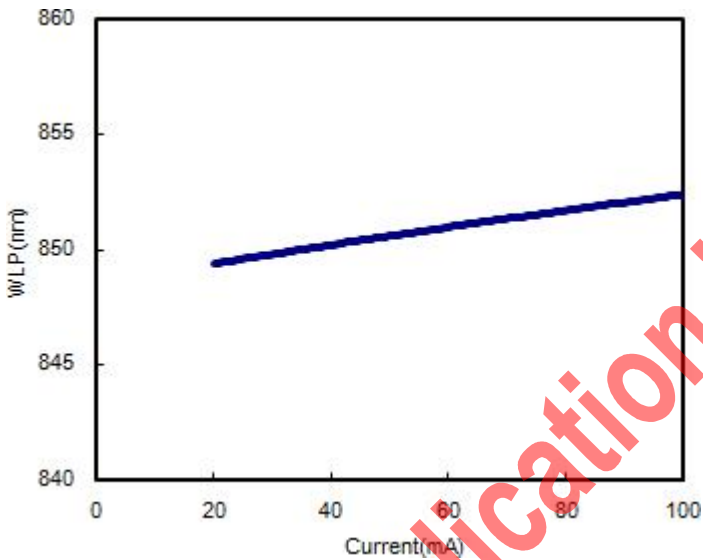


Fig.5 The WLP shift vs forward current

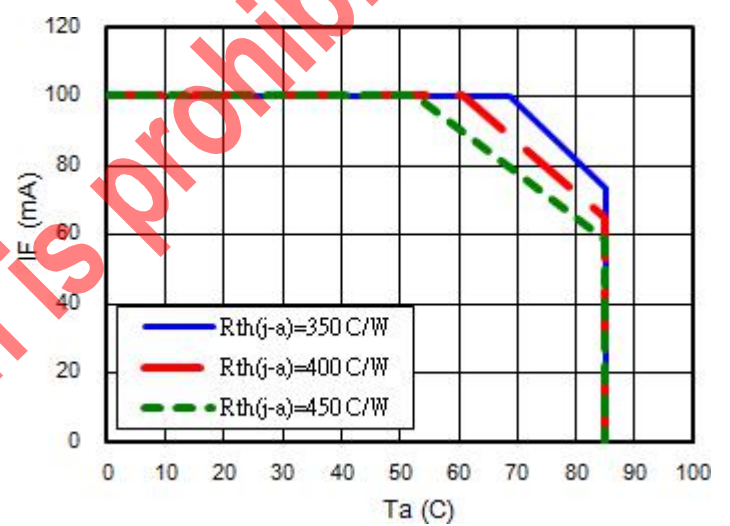


Fig.6 Derating curve based on  $T_j(\max)=125^\circ\text{C}$

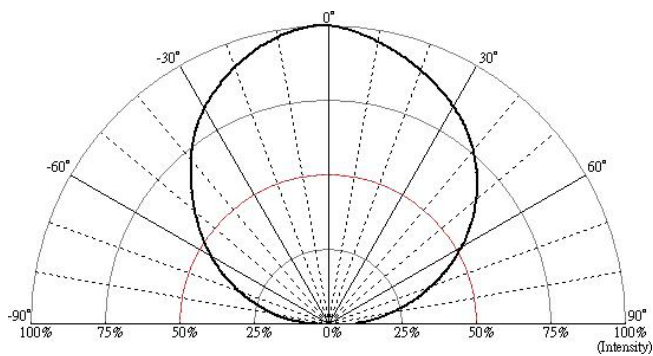


Fig.7 Light pattern and view angle of bare chip

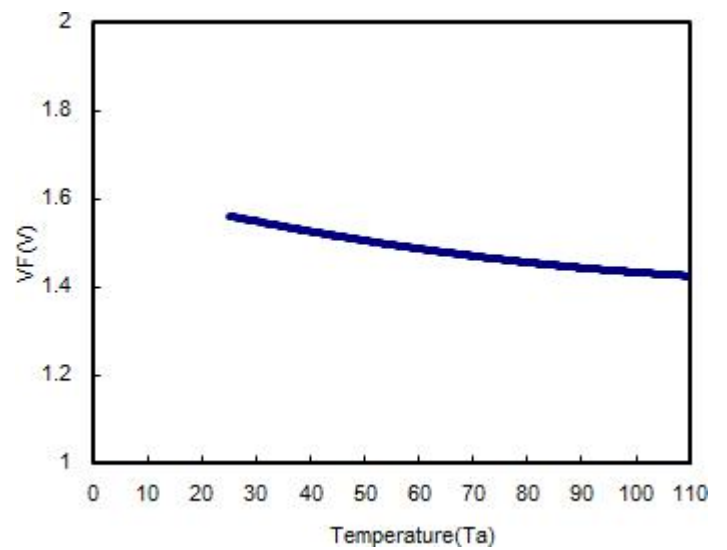


Fig.8 The forward voltage vs  $T_a(^{\circ}\text{C})$

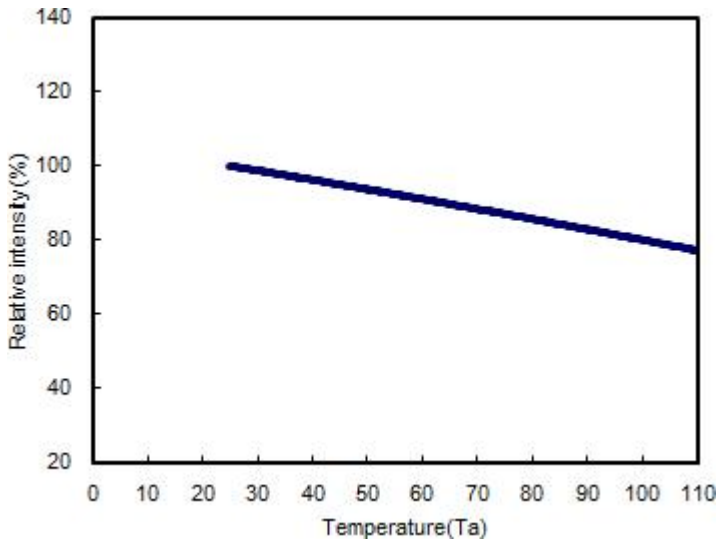


Fig.9 Relative intensity vs Ta(°C)

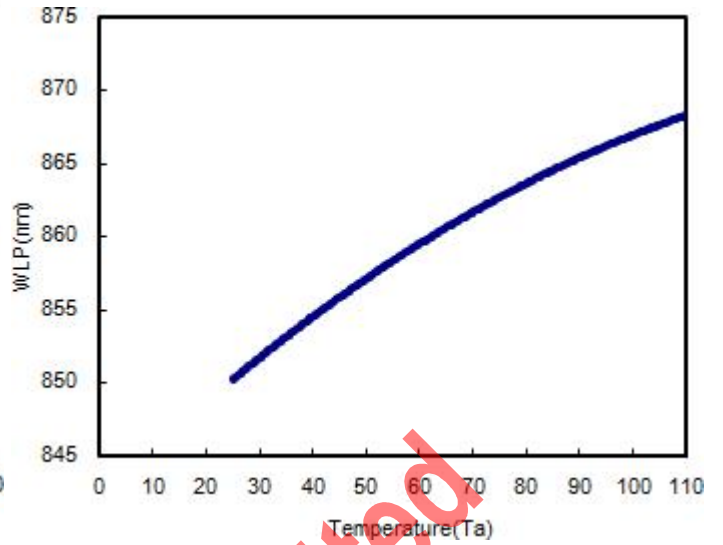


Fig.10 The WLP shift vs Ta(°C)

## 6. Absolute Maximum Ratings(Ta=25°C):

Parameter	Symbol	Condition	Rating
DC Forward Current	$I_F$	Ta=25°C	$\leq 100\text{mA}$
Peak Pulsing Current	$I_{\text{peak}}$	1/10 duty cycle @ 1kHz	$\leq 150\text{mA}$
Reverse Voltage	$V_R$	Ta=25°C	$\leq 10\text{V}$
Operating Temperature Range	$T_{\text{op}}$	-	-40°C to +85°C
Storage Temperature Range	$T_{\text{stg}}$	Chip-on-tape/storage	+5°C to +30°C
		Chip-on-tape/transportation	-20°C to +65°C
LED Junction Temperature	$T_j$	-	$\leq 125^\circ\text{C}$
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 encapsulation. Stress in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.