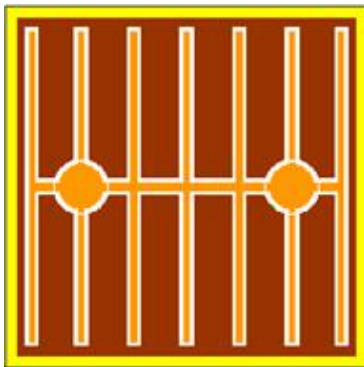


# IN-F45IRL-R

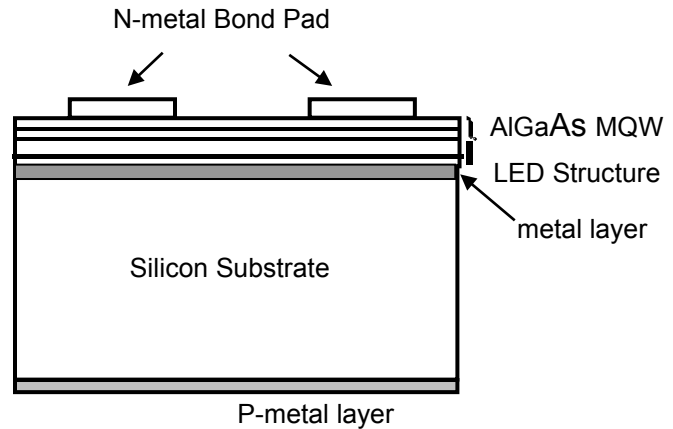
## 1. Descriptions:

IN-F45IRL-R (R=Reducing the red glow) is an Infra-red LED chip made from MOCVD process and bonded with Silicon. It is fabricated by the proprietary metal Bonding mechanism, IN-F45IRL-R 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 IN-F45IRL-R 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	1150±25um × 1150±25um
Chip thickness	180±25um
Pad Diameter	115±15um

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

Parameter	Condition *1	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	I <sub>F</sub> =350mA	V <sub>F1</sub>	1.3	1.6	1.8	V
Threshold voltage	I <sub>F</sub> =10uA	V <sub>F3</sub>	1.0	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> =350mA	λ <sub>p</sub>	925	-	950	nm
Half width *2	I <sub>F</sub> =350mA	Δλ	-	40	-	nm
Radiant Power *3	I <sub>F</sub> =350mA	P <sub>o</sub>	100	-	-	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-39 package type without encapsure.

#### 5. Characteristic Curves:

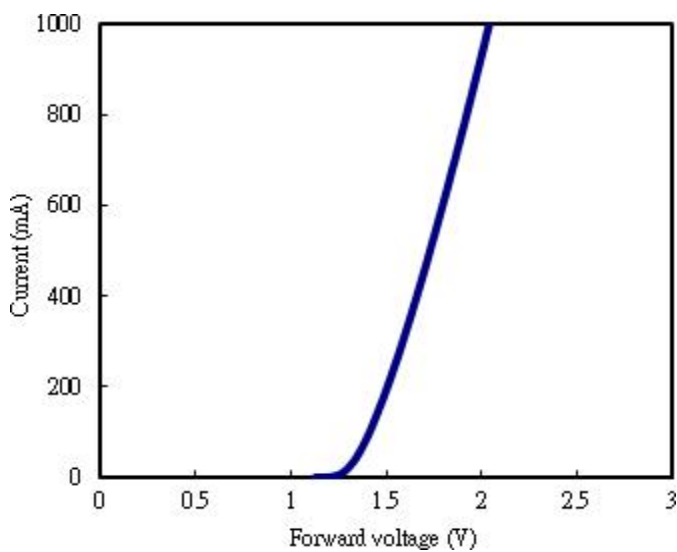


Fig.1 The I-V characteristics (0-1000mA)

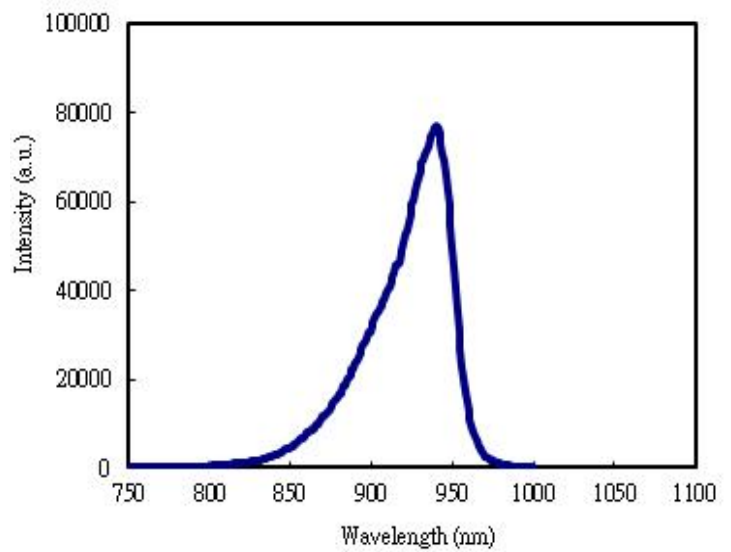


Fig.2 The EL spectrum

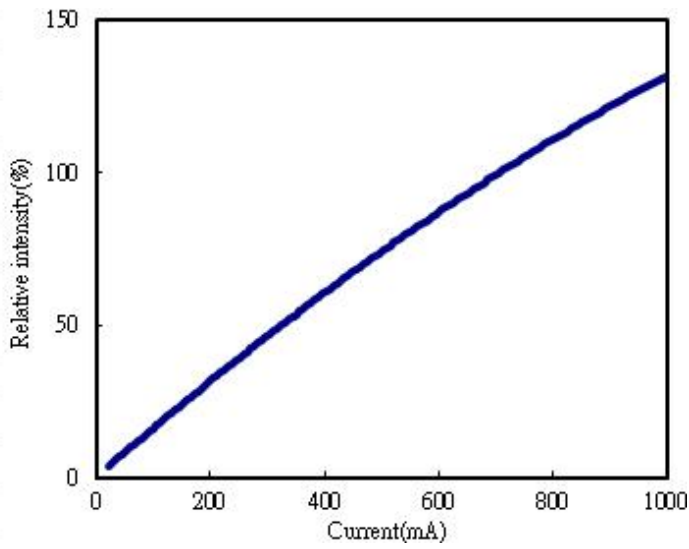


Fig.3 Relative intensity vs forward current

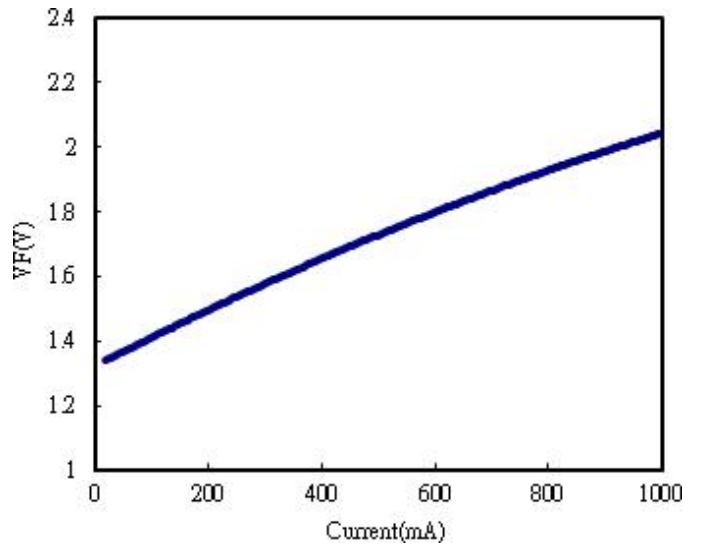


Fig.4 The V-I characteristics (0-1000mA)

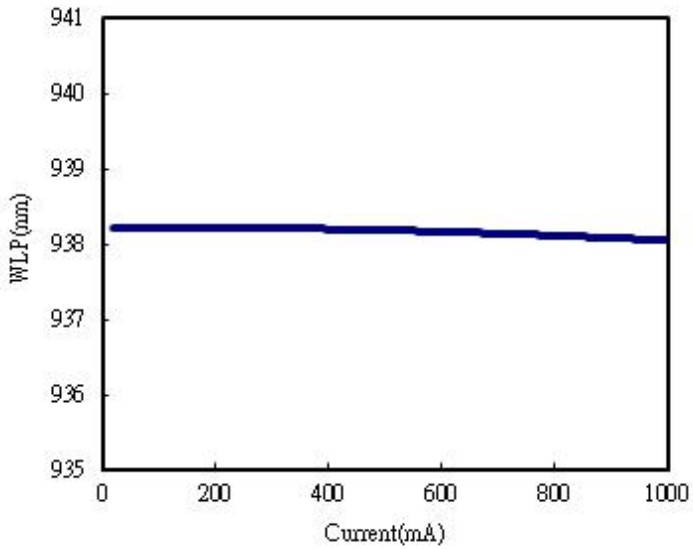


Fig.5 The WLP shift vs forward current

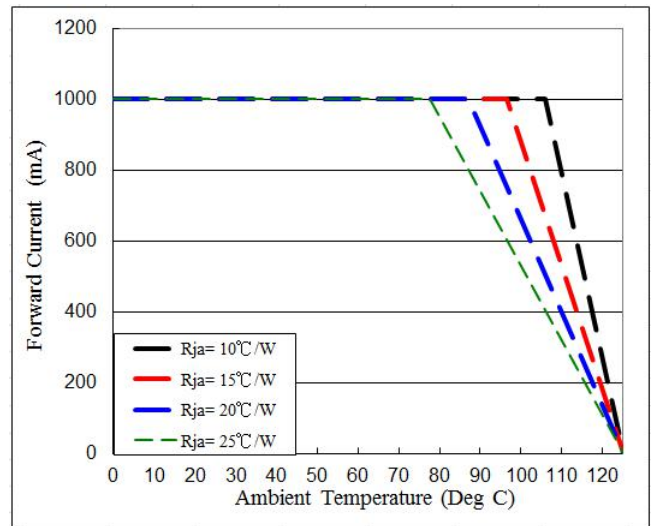


Fig.6 Derating curve based on  $T_j(\max)=125^\circ\text{C}$

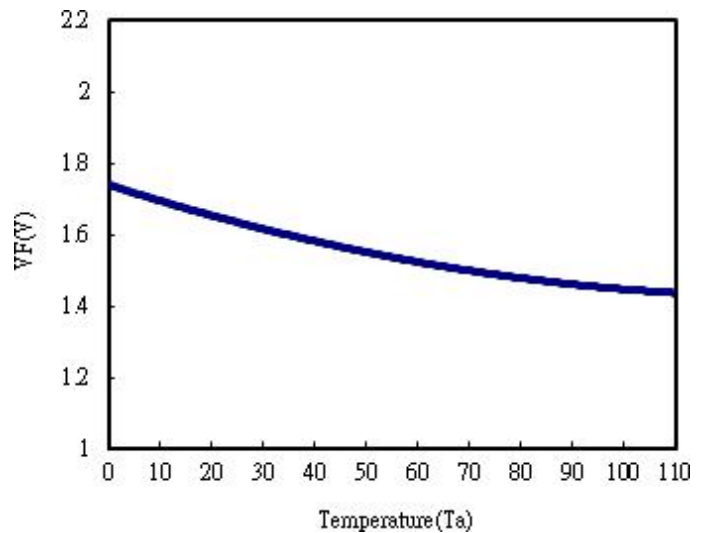
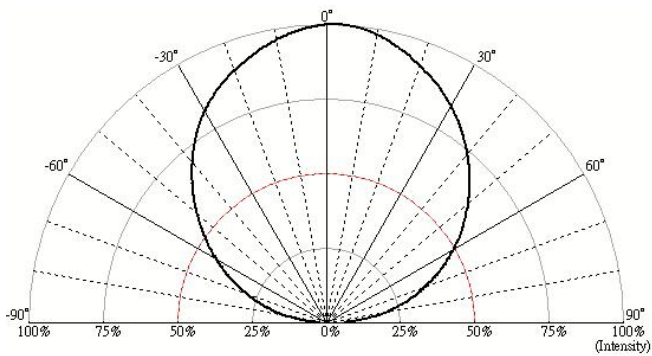


Fig.7 Light pattern and view angle of bare chip

Fig.8 The forward voltage vs Ta(°C)

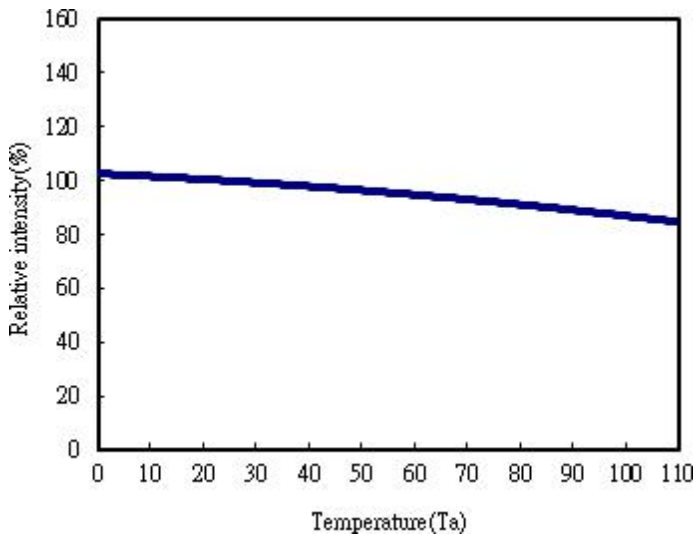


Fig.9 Relative intensity vs Ta(°C)

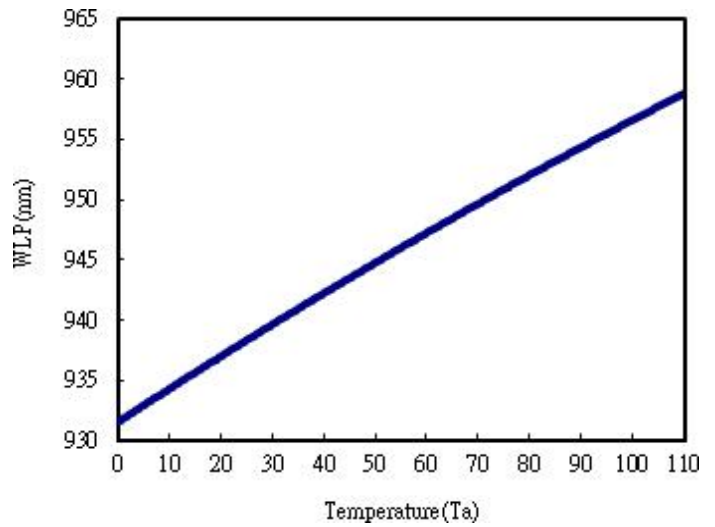


Fig.10 The WLP shift vs Ta(°C)

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

Parameter	Symbol	Condition	Rating
DC Forward Current	I <sub>F</sub>	Ta=25°C	≅ 1000mA
Peak Pulsing Current	I <sub>peak</sub>	1/10 duty cycle @ 1kHz	≅ 1200mA
Reverse Voltage	V <sub>R</sub>	Ta=25°C	≅ 10V
Operating Temperature Range	T <sub>OP</sub>	-	-40°C to +85°C
Storage Temperature Range	T <sub>stg</sub>	Chip-on-tape/storage	+5°C to +30°C
		Chip-on-tape/transportation	-20°C to +65°C
LED Junction Temperature	T <sub>j</sub>		≅ 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.