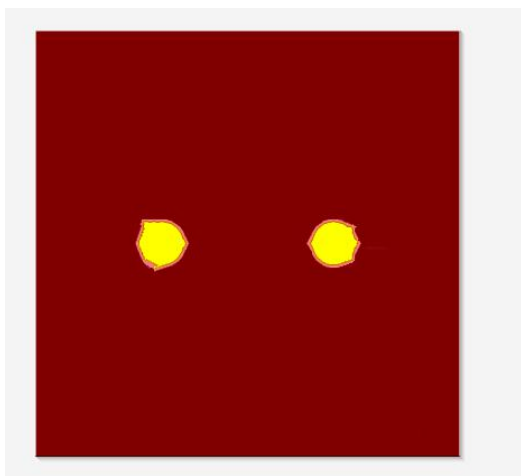


IN-F42IR-D

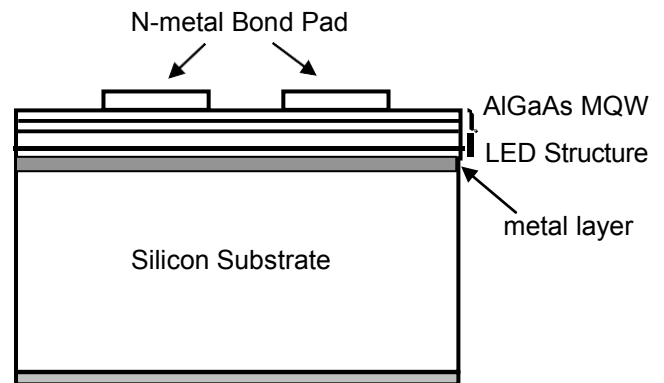
1. Descriptions:

F42IR is a Infra-red LED chip made from MOCVD process and bonded with Silicon. It is fabricated by the proprietary metal Bonding mechanism, F42IR 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 F42IR 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 | 1070±25um × 1070±25um |
| Chip thickness | 180±15um |
| Pad Diameter | 110±15um |

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

| Parameter | Condition *1 | Symbol | Min. | Typ. | Max. | Unit |
|-------------------|---------------------|-----------------|------|------|------|---------------|
| Forward voltage | $I_F=350\text{mA}$ | V_{F1} | 1.3 | 1.5 | 1.9 | V |
| Threshold voltage | $I_F=10\mu\text{A}$ | V_{F3} | - | 1.1 | 1.3 | V |
| Reverse current | $V_R=5\text{V}$ | I_R | - | - | 10.0 | μA |
| Peak wavelength | $I_F=350\text{mA}$ | λ_p | 840 | - | 860 | nm |
| Half width *2 | $I_F=350\text{mA}$ | $\Delta\lambda$ | - | 30 | - | nm |
| Radiant Power *3 | $I_F=350\text{mA}$ | P_o | 180 | - | - | 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 on bare chips.
- 4 Characteristic curves are measured on standard TO-39 package type without encapsure.

5. Characteristic Curves:

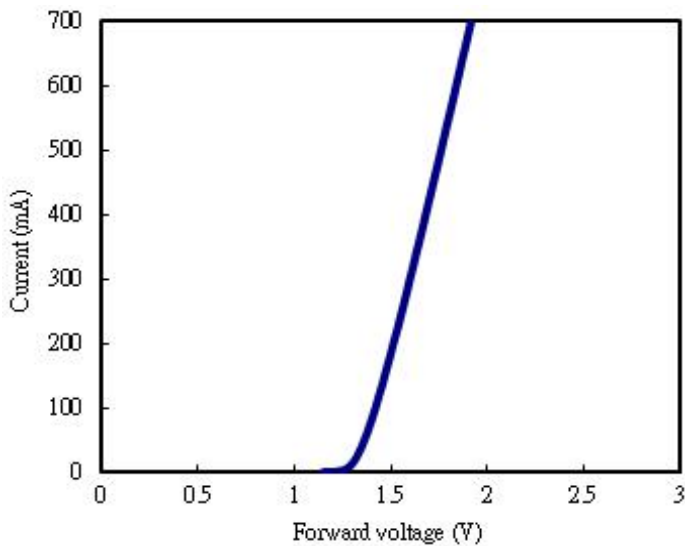


Fig.1 The I-V characteristics (0-700mA)

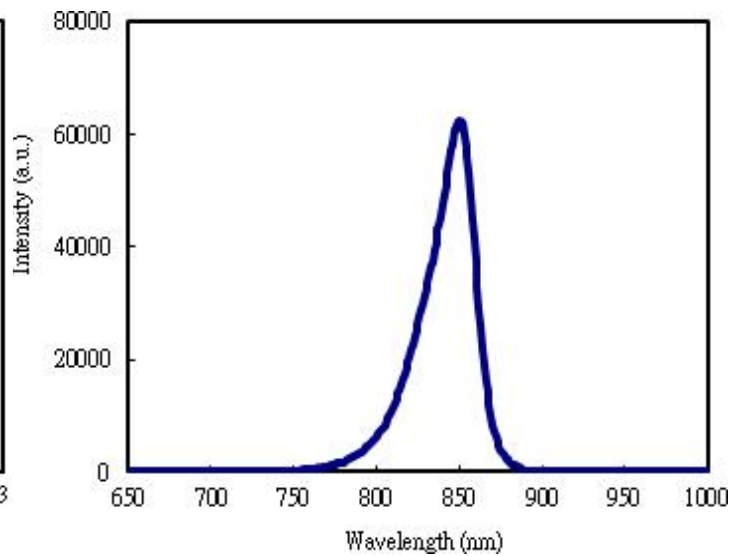


Fig.2 The EL spectrum

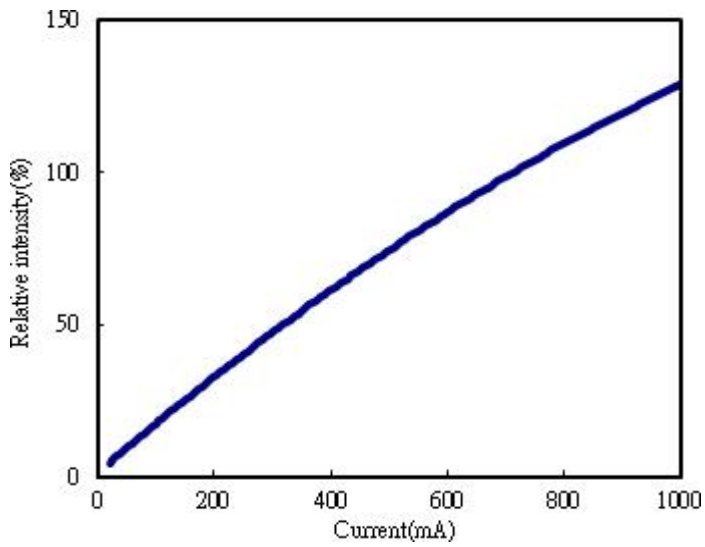


Fig.3 Relative intensity vs forward current

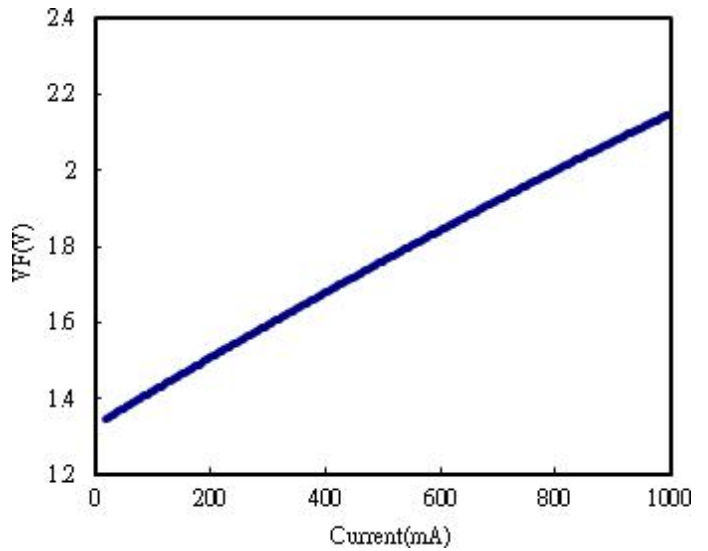


Fig.4 The V-I characteristics (0-1000mA)

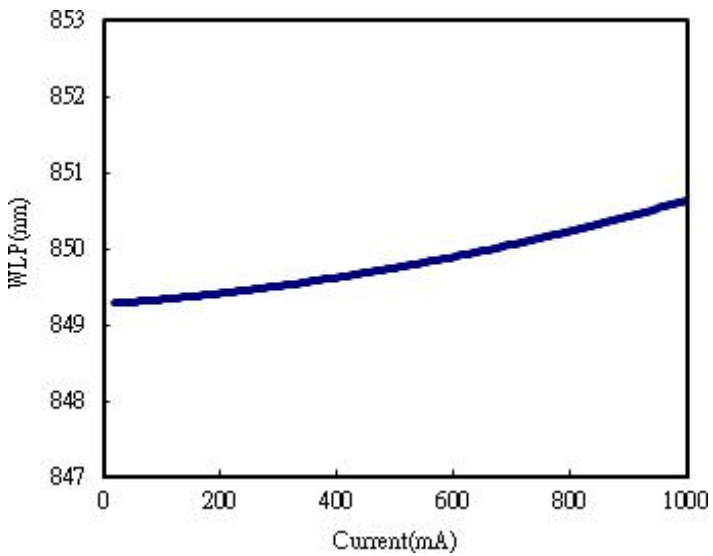


Fig.5 The WLP shift vs forward current

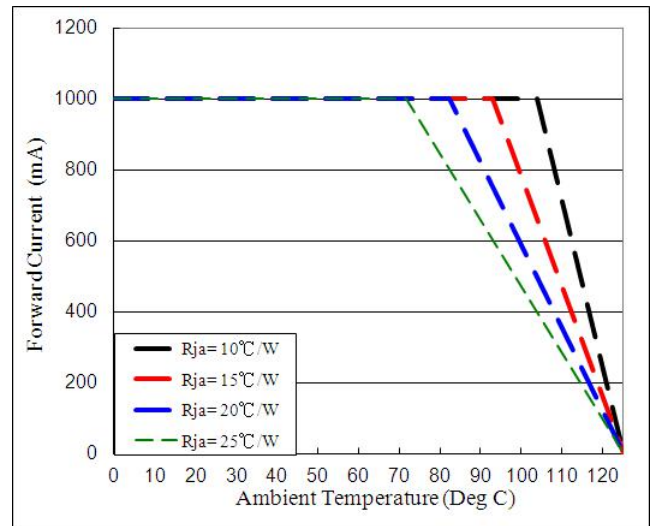


Fig.6 Derating curve based on $T_j(\max)=125^\circ\text{C}$

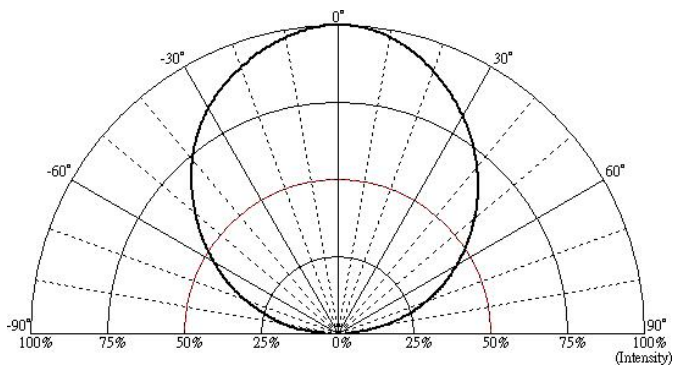


Fig.7 Light pattern and view angle of bare chip

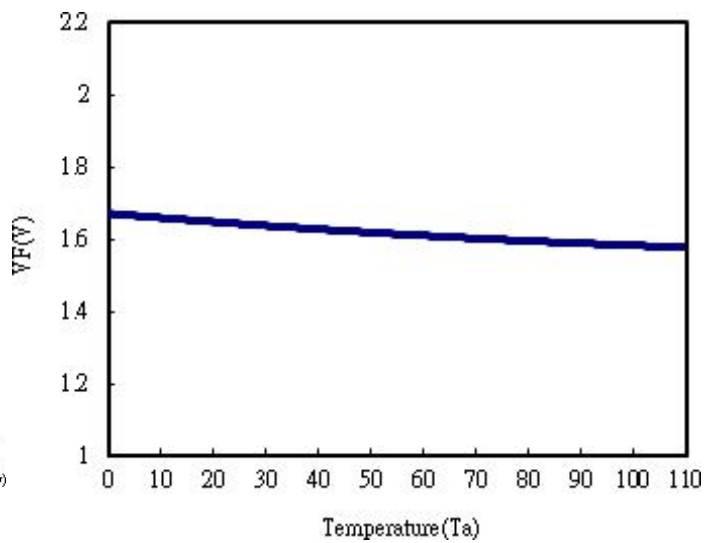


Fig.8 The forward voltage vs $T_a(^{\circ}\text{C})$

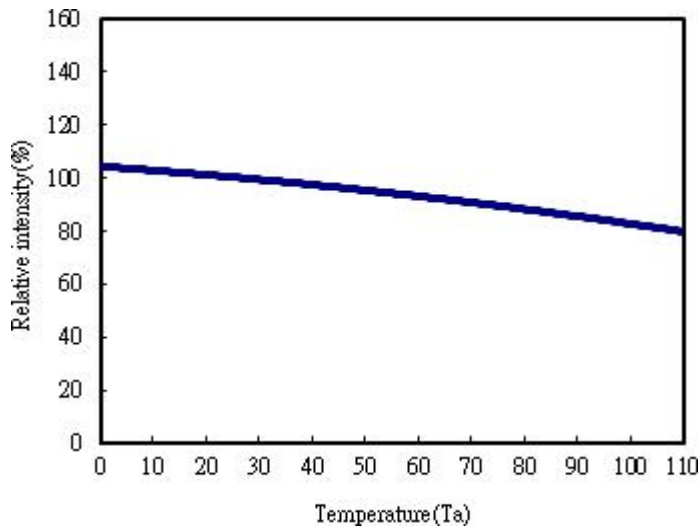


Fig.9 Relative intensity vs Ta(°C)

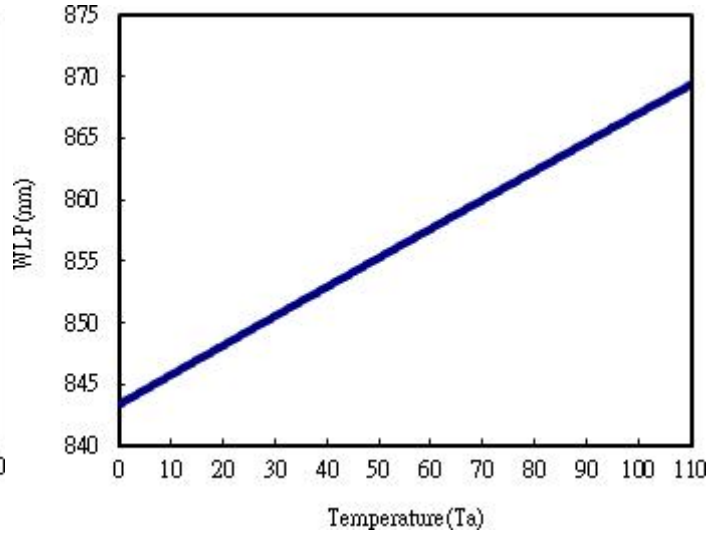


Fig.10 The WLP shift vs Ta(°C)

6. Absolute Maximum Ratings(Ta=25°C):

| Parameter | Symbol | Condition | Rating |
|------------------------------|-------------------|---|--------------------------|
| DC Forward Current | I_F | Ta=25°C | $\leq 1000\text{mA}$ |
| Peak Pulsing Current | I_{peak} | 1/10 duty cycle @ 1kHz ($T_j \leq 65^\circ\text{C}$) | $\leq 1200\text{mA}$ |
| Reverse Voltage | V_R | Ta=25°C | $\leq 10\text{V}$ |
| 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 | | $\leq 125^\circ\text{C}$ |
| 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 encapsulant. Stress in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.