



## 3mm Infrared LED

MODEL NO : IR204/P1

### ■ Features :

- High radiant intensity
- Peak wavelength  $\lambda_p=940\text{nm}$
- View angle  $35^\circ$
- High reliability
- 2.54mm Lead spacing

### ■ Description :

- EVERLIGHT's Infrared Emitting Diode (IR204/P1) is a high intensity diode, molded in a blue transparent plastic package.

The device is spectrally matched with phototransistor, photodiode and infrared receiver module.

### ■ Applications :

- Free air transmission system
- Optoelectronic switch
- Floppy disk drive
- Infrared applied system
- Smoke detector

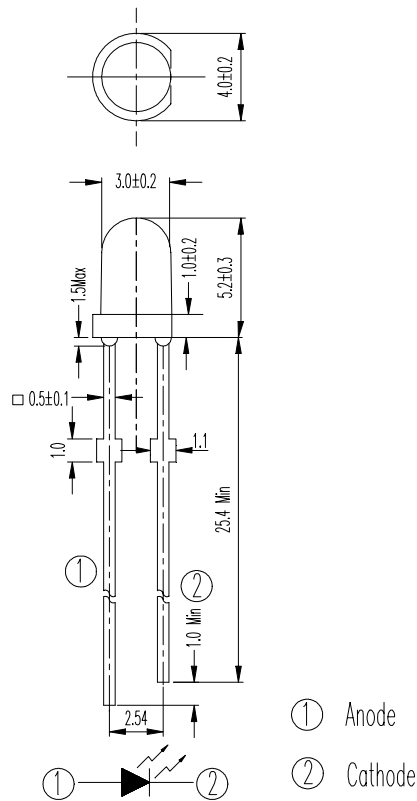
| PART NO. | CHIP     | LENS COLOR |
|----------|----------|------------|
|          | MATERIAL |            |
| IR       | GaAlAs   | Blue       |



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### ■ Package Dimensions :



### ■ Notes :

- 1.All dimensions are in millimeter.
- 2.Protruded resin under flange 1.5 mm Max.
- 3.Lead spacing is measured where the lead emerge from the package.
- 4.Lens color : Blue transparent.
- 5.Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 6.These specification sheets include materials protected under copyright of EVERLIGHT corporation . Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
- 7.When using this product , please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. EVERIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.



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### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

| Parameter   | Symbol          | Rating    | Unit | Notice                                 |
|---|-----------------|-----------|------|--|
| Continuous Forward Current                                | I <sub>F</sub>  | 50        | mA   |  |
| Peak Forward Current<br>Pulse width=100 μs, Duty cycle=1% | I <sub>FP</sub> | 1.0       | A    |  |
| Reverse Voltage   | V <sub>R</sub>  | 5         | V    |  |
| Operating Temperature                                     | Topr            | -40 ~ +85 | °C   |  |
| Storage Temperature                                       | Tstg            | -40 ~ +85 | °C   |  |
| Soldering Temperature                                     | Tsol            | 260       | °C   | 4mm from mold body less than 5 seconds |
| Power Dissipation at(or below) 25°C Free Air Temperature  | Pd              | 100       | mW   |  |

### ■ Electronic Optical Characteristics :

| Parameter          | Symbol         | Min. | Typ. | Max. | Unit  | Condition  |
|--------------------|----------------|------|------|------|-------|--|
| Radiant Intensity  | E <sub>e</sub> | 4.0  | 5.6  | ---- | mW/sr | I <sub>F</sub> =20mA                                     |
|                    |                | ---- | 35   | ---- |       | I <sub>F</sub> =100mA, tp=100 μs, t <sub>p</sub> /T=0.01 |
|                    |                | ---- | 390  | ---- |       | I <sub>F</sub> =1A, tp=100 μs, t <sub>p</sub> /T=0.01    |
| Peak Wavelength    | λ <sub>P</sub> | ---- | 940  | ---- | nm    | I <sub>F</sub> =20mA                                     |
| Spectral Bandwidth | Δλ             | ---- | 45   | ---- | nm    | I <sub>F</sub> =20mA                                     |
| Forward Voltage    | V <sub>F</sub> | ---- | 1.2  | 1.5  | V     | I <sub>F</sub> =20mA                                     |
|                    |                | ---- | 1.4  | 1.85 |       | I <sub>F</sub> =100mA, tp=100 μs, t <sub>p</sub> /T=0.01 |
|                    |                | ---- | 2.6  | 4.0  |       | I <sub>F</sub> =1A, tp=100 μs, t <sub>p</sub> /T=0.01    |
| Reverse Current    | I <sub>R</sub> | ---- | ---- | 10   | μA    | V <sub>R</sub> =5V                                       |
| View Angle         | 2θ1/2          | ---- | 35   | ---- | deg   | I <sub>F</sub> =20mA                                     |



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### ■ Typical Electrical/Optical/Characteristics Curves

Fig. 1 Forward Current vs. Ambient Temperature

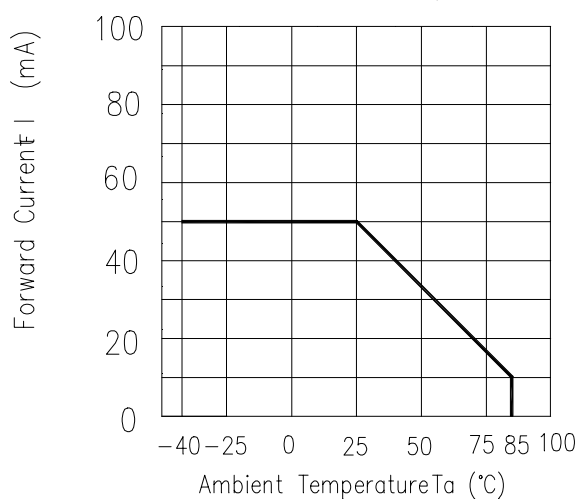


Fig. 2 Spectral Distribution

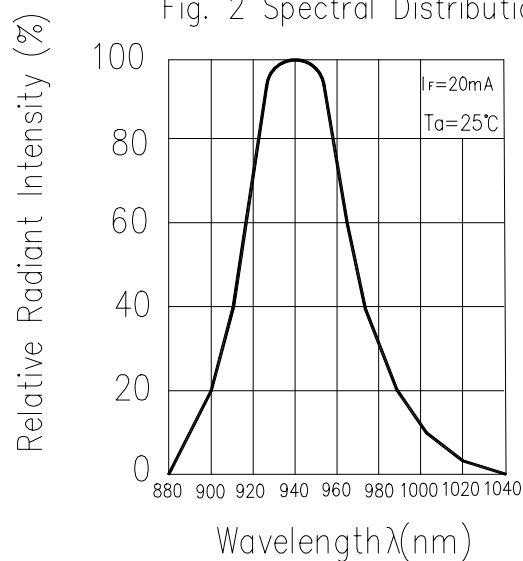


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

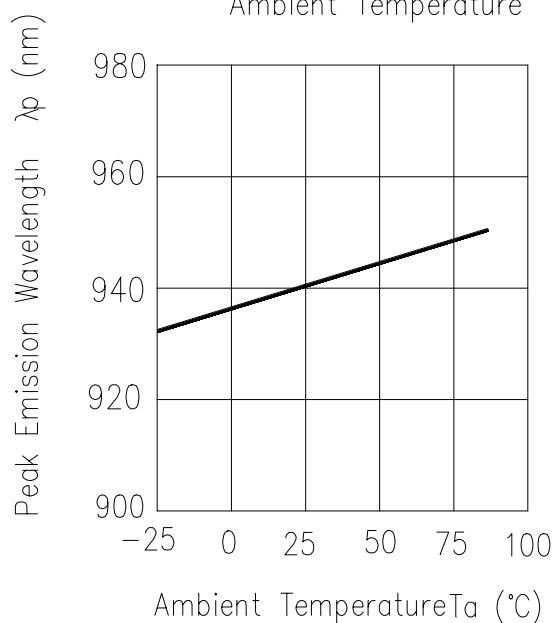
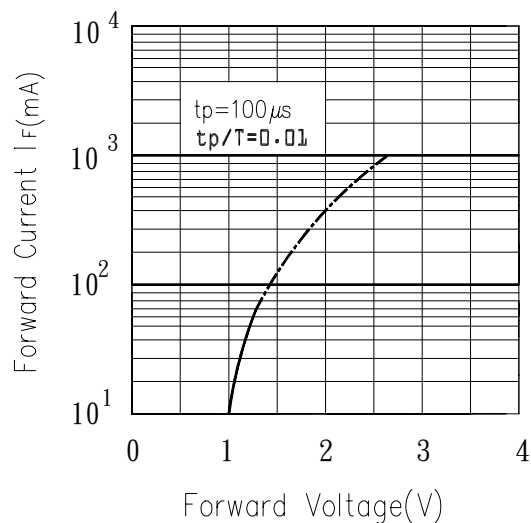


Fig. 4 Forward Current vs. Forward Voltage





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### ■ Typical Electrical/Optical/Characteristics Curves

Fig. 5 Relative Intensity vs. Forward Current

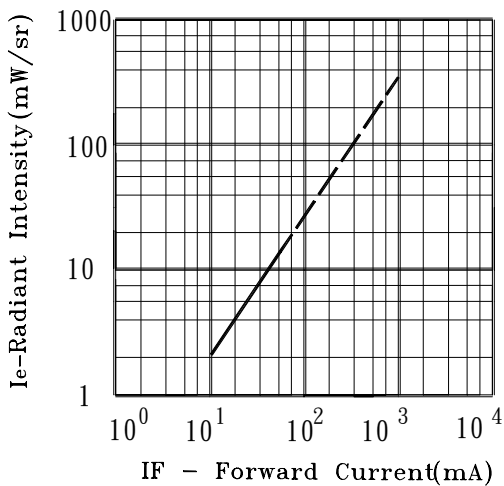


Fig. 6 Relative Radiant Intensity vs. Angular Displacement

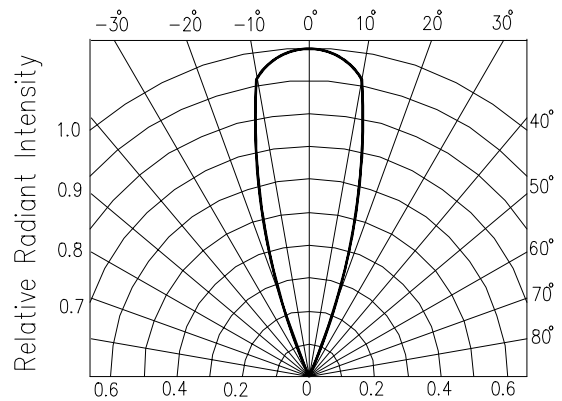


Fig. 7 Relative Intensity vs. Ambient Temperature (°C)

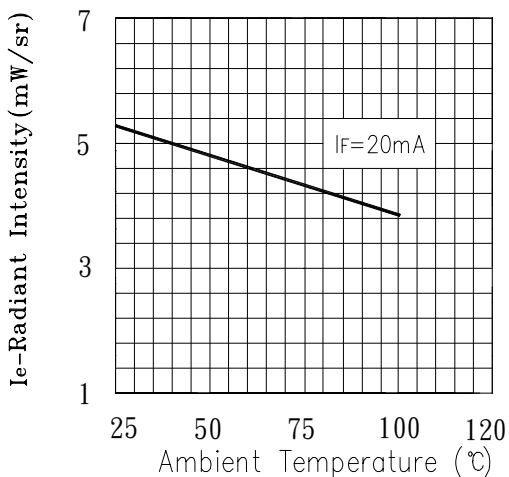
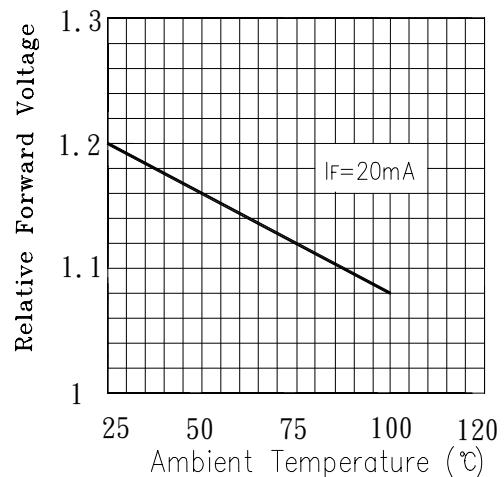


Fig. 8 Forward Current vs. Ambient Temperature (°C)





# EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DIR-020-060      REV : 1.2  
 ECN : \_\_\_\_\_      PAGE : 6/8

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### ■ Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level:90%

LTPD:10%

| NO. | Item                             | Test Conditions   | Test Hours/<br>Cycle | Sample Size | Failure Judgement Criteria  | Ac/Re |
|-----|----------------------------------|---|----------------------|-------------|---|-------|
| 1   | Solder Heat                      | TEMP : 260°C ± 5 °C   | 5 sec                | 22 PCs      |   | 0/1   |
| 2   | Temperature Cycle                | H : +85°C    30 min<br><div style="text-align: center;"> </div> L : -55°C    30 min | 50 cycle             | 22 PCs      | $I_R \geq U \times 2$<br>$E_e \leq L \times 0.8$<br>$V_F \geq U \times 1.2$ | 0/1   |
| 3   | Thermal Shock                    | H : +100°C    5 min<br><div style="text-align: center;"> </div> L : -10°C    30 min | 50 cycle             | 22 PCs      | U :Upper specification limit<br>L :Lower specification limit                | 0/1   |
| 4   | High Temperature Storage         | TEMP. : +100°C  | 1000 hrs             | 22 PCs      |   | 0/1   |
| 5   | Low Temperature Storage          | TEMP. : -55°C   | 1000 hrs             | 22 PCs      |   | 0/1   |
| 6   | DC Operating Life                | $I_F=20mA$  | 1000 hrs             | 22 PCs      |   | 0/1   |
| 7   | High Temperature / High Humidity | 85°C / 85% R.H.   | 1000 hrs             | 22 PCs      |   | 0/1   |



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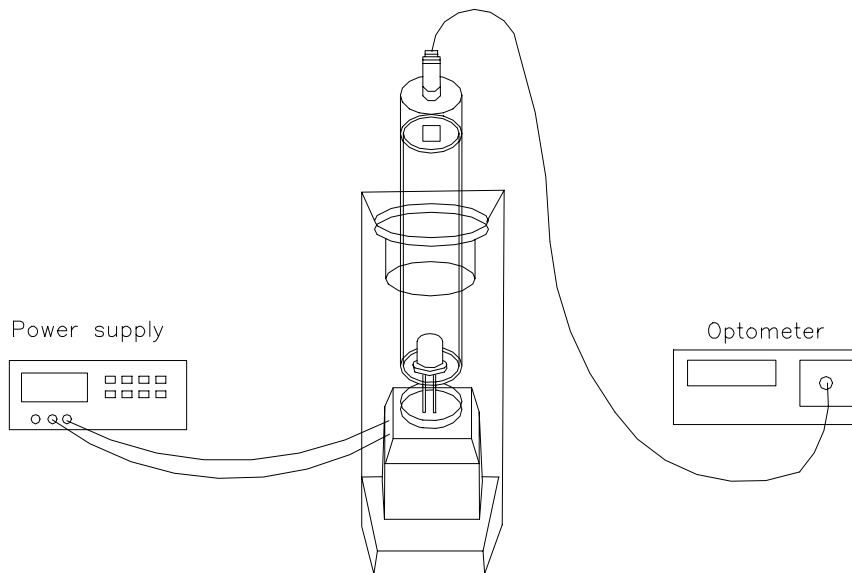
MODEL NO : IR204/P1

### ■ Test Method For Power :

Condition :  $I_F=20$  mA

Test Item : Radiant Intensity

Unit : mW/sr



### ■ To Distinguish Intensity:

Condition:  $I_F=20$ mA

| Bin Number | K    | L    | M    | N    |
|------------|------|------|------|------|
| Min        | 4.00 | 5.60 | 7.80 | 11.0 |
| Max        | 6.40 | 8.90 | 12.5 | 17.6 |

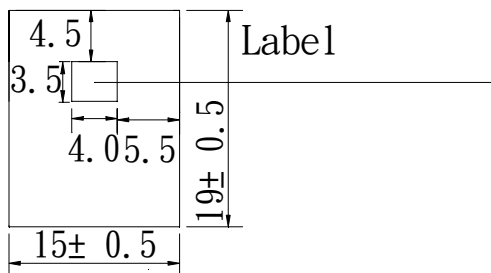


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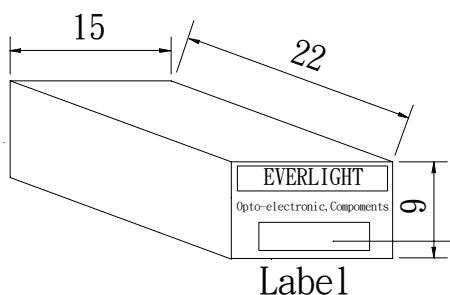
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### ■ Packing Specifications

1. Bag



2. Box



EVERLIGHT

CPN:

P/N:



IR204/P1

QTY:

CAT:



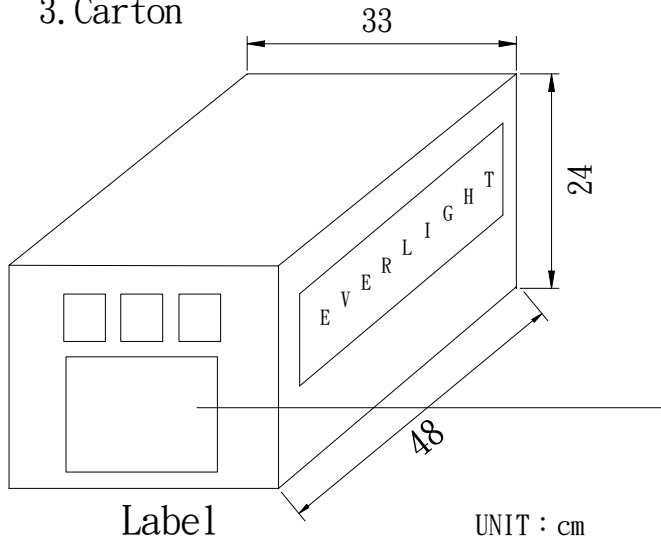
HUE:

REF:

LOT NO:

MADE IN TAIWAN

3. Carton



CPN : Customer's Production Number

P/N : Production Number

QTY : Packing Quantity

CAT : Ranks

HUE : Peak Wavelength

REF : Reference

LOT NO : Lot Number

MADE IN TAIWAN : Production place

### ■ Packing Quantity Specification

1. 1000 Pcs/1Bag , 4 Bags/1Box

2. 10 Boxes/1Carton

IR204/P1