3mm Infrared LED

# KEL-304C

SIVAGO®
SEMICONDUCTOR

## Features

High reliability

High radiant intensity

Peak wavelength λp=940nm

2.54mm Lead spacing

Low forward voltage

Pb Free

This product itself will remain within RoHS compliant version.

## Application

Free air transmission system

Infrared remote control units with high power requirement

Smoke detector

Infrared applied system

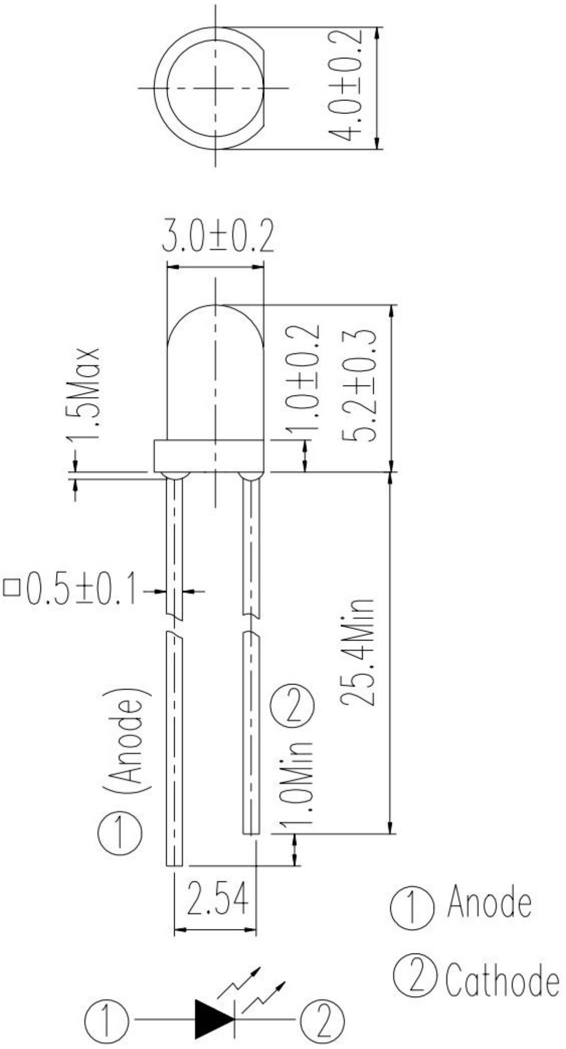
Compliance with EU REACH

Compliance Halogen Free(Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)

## Description

Infrared Emitting Diode (KEL-304C) is a high intensity diode , molded in a water clear plastic package.The device is spectrally matched with phototransistor , photodiode and infrared receiver module.

## PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm(.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

## ABSOLUTE MAXIMUM RATINGS AT TA =25℃

| Parameter | Symbol | Rating | Units |
|---|---|---|---|
| Continuous Forward Current | $I_F$ | 100 | mA |
| Peak Forward Current | $I_{FP}$ | 1.0 | A |
| Reverse Voltage | $V_R$ | 5 | V |
| Operating Temperature | $T_{opr}$ | -40 ~ +85 | ℃ |
| Storage Temperature | $T_{stg}$ | -40 ~ +85 | ℃ |
| Soldering Temperature | $T_{sol}$ | 260 | ℃ |
| Power Dissipation at(or below)25℃Free Air Temperature | $P_d$ | 150 | mW |

**Notes:** *1:$I_{FP}$ Conditions--Pulse Width≦100µs and Duty≦1%.
*2:Soldering time≦5 seconds.

## ELECTRICAL OPTICAL CHARACTERISTICS AT $T_A$=25℃

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Radiant Intensity | Ee | $I_F$=20mA | 7.8 | 15 | -- | mW/sr |
| | | $I_F$=100mAPulse Width≦100μs ,Duty≦1% | -- | 60 | -- | |
| | | $I_F$=1APulse Width≦100μs ,Duty≦1% | -- | 450 | -- | |
| Peak Wavelength | λp | $I_F$=20mA | -- | 940 | -- | nm |
| Spectral Bandwidth | Δλ | $I_F$=20mA | -- | 45 | -- | nm |
| Forward Voltage | $V_F$ | $I_F$=20mA | | 1.2 | 1.5 | V |
| | | $I_F$=100mAPulse Width≦100μs ,Duty≦1% | -- | 1.4 | 1.85 | |
| Reverse Current | $I_R$ | $V_R$=5V | -- | -- | 10 | μA |
| View Angle | 2θ1/2 | $I_F$=20mA | -- | 15 | -- | deg |

## Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs.
Ambient Temperature

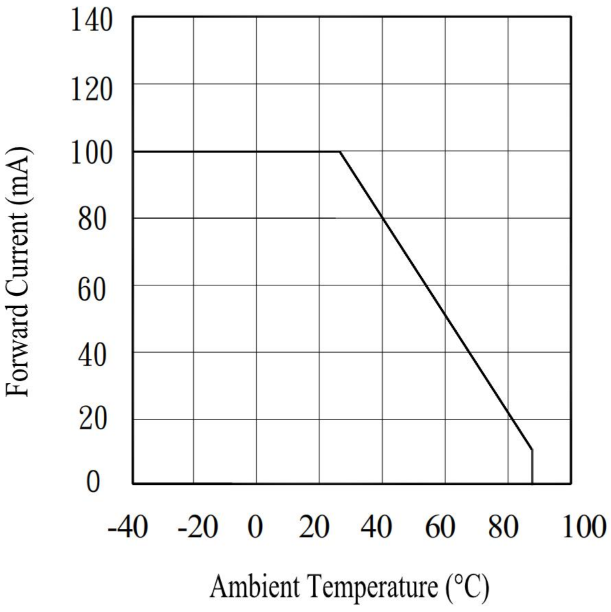


Fig.2 Spectral Distribution

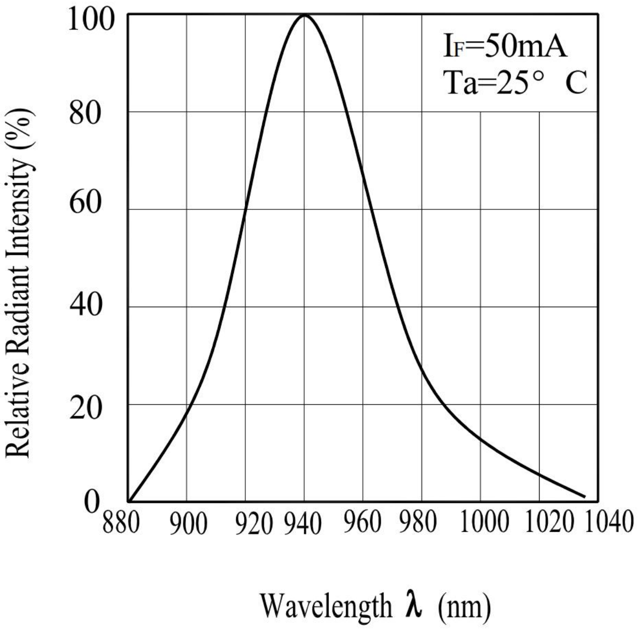


Fig.3 Peak Emission Wavelength
Ambient Temperature

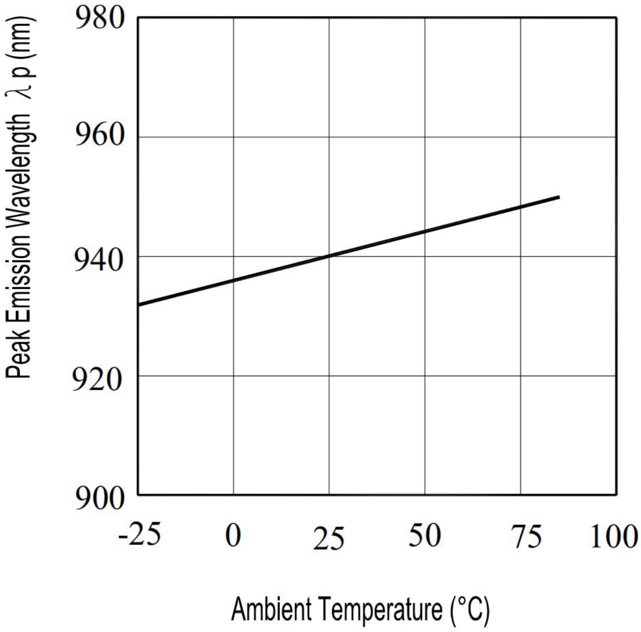
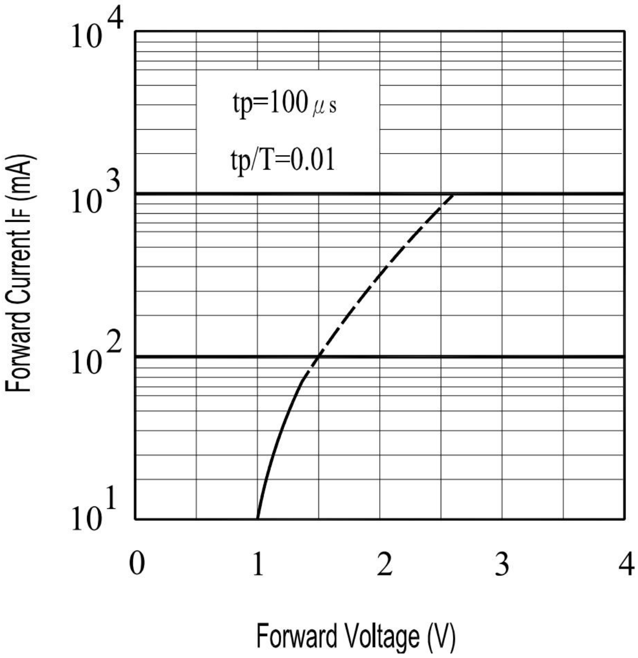


Fig.4 Forward Current
vs. Forward Voltage



## Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs.
Forward Current

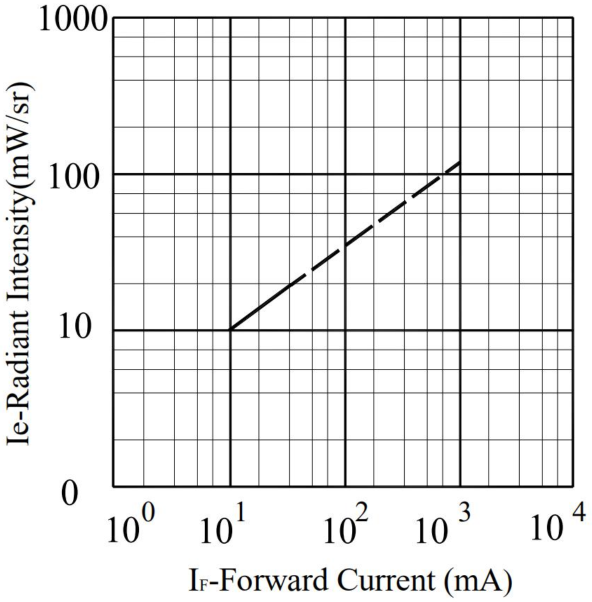


Fig.6 Relative Radiant Intensity vs.
Angular Displacement

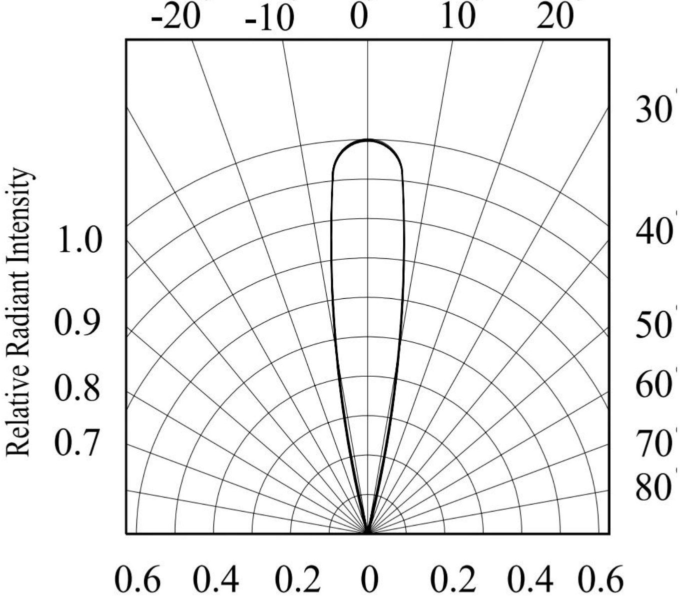


Fig.7 Relative Intensity vs.
Ambient Temperature(°C)

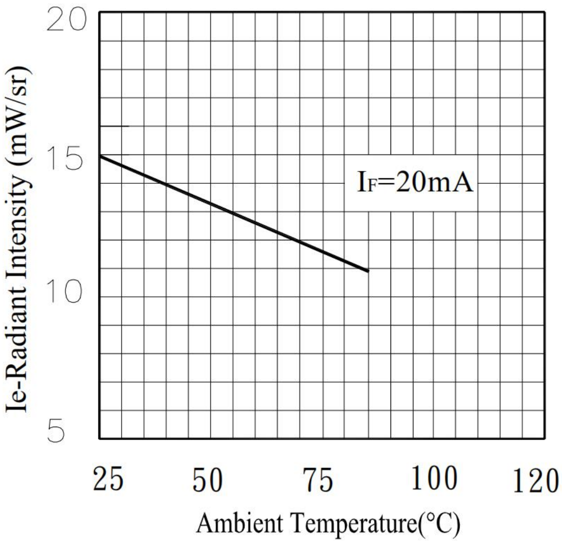
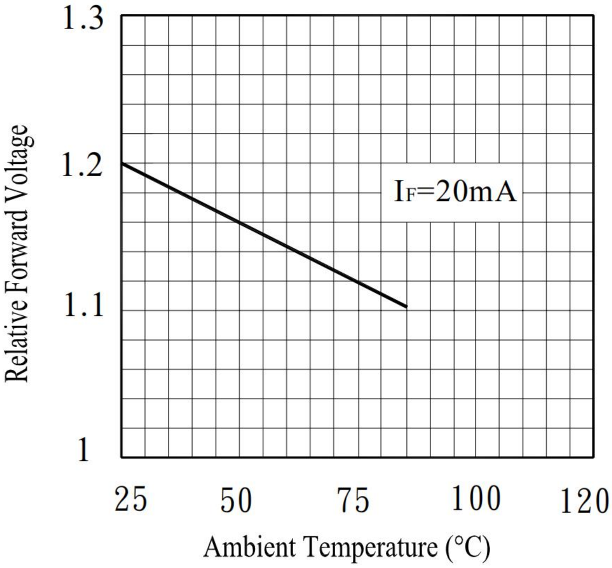


Fig.8 Forward Current vs.
Ambient Temperature(°C)



## Packing Quantity Specification

1. 1000Pcs/1Bag,8 Bag/1Box

2. 4Boxes/1Carton

## Label Form Specification

| | |
|---|---|
| 製品名<br>PRODUCT | |
| コードNo.<br>CODE No. | |
| 数 量<br>Q' TY | |
| ロットNo.<br>LOT No. | |
| 備 考<br>REMARKS | |

SIVAGO® SEMICONDUCTOR

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

## Notes

### Lead Forming

1.During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.

2.Lead forming should be done before soldering.

3.Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.

4.Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.

5.When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

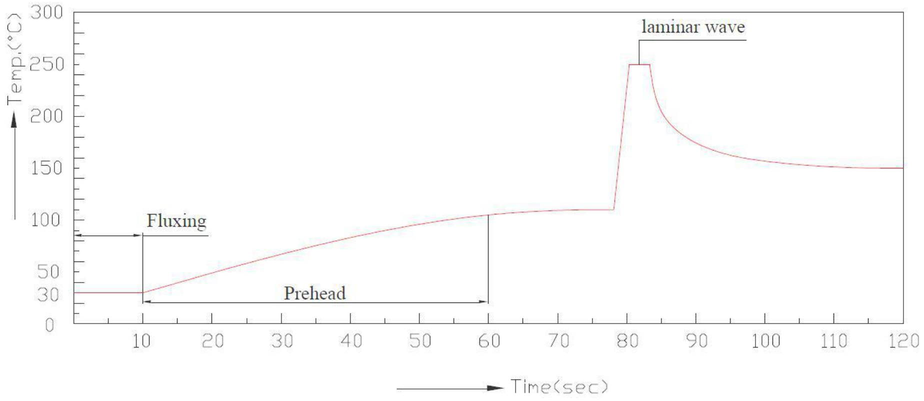
## Soldering

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.

2. Recommended soldering conditions:

| Hand Soldering | | DIP Soldering | |
|---|---|---|---|
| Temp. at tip of iron | 300°C Max. (30W Max.) | Preheat temp. | 100°C Max. (60 sec Max.) |
| Soldering time | 3 sec Max. | Bath temp. & time | 260 Max., 5 sec Max |
| Distance | 3mm Min.(From solder joint to epoxy bulb) | Distance | 3mm Min. (From solder joint to epoxy bulb) |

3. Recommended soldering profile



4.Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

5.Dip and hand soldering should not be done more than one time

6.After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

7.A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.

8.Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.

9.Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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