

## SE2220IRC-2A

### 2.2x1.95mm, 940nm Infrared Emitters

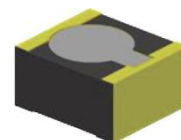
### Surface Mount Infrared Emitters

### Technical Data Sheet

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#### Features:

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- View angle 40° (Typ.)
- Low forward voltage.
- The product itself will remain within RoHS compliant version.



#### Descriptions:

- SE2220IRC-2A is an infrared emitting diode with miniature MIDLED package.
- The device is spectrally matched with silicon photodiode and phototransistor.

#### Applications:

- Proximity sensing.
- Infrared emitting for miniature light barrier.
- Infrared communication links
- Optoelectronic switch.
- General IR illumination for cameras

| Part No.     | Emitting Color | Lens Color  |
|--------------|----------------|-------------|
| SE2220IRC-2A | Infrared       | Water Clear |

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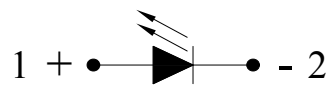
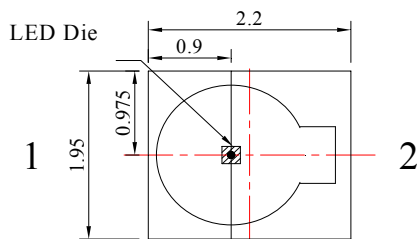
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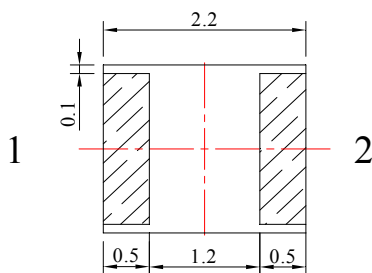
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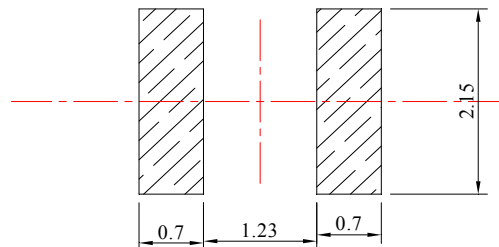
#### Package Dimension:



Polarity



#### Recommended Soldering Pad Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$  mm (.010") unless otherwise noted.

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#### Absolute Maximum Ratings at Ta=25°C

| Parameters                  | Symbol | Max                 | Unit |
|-----------------------------|--------|---------------------|------|
| Power Dissipation           | Pd     | 140                 | mW   |
| Peak Forward Current* (a)   | IFP    | 700                 | mA   |
| DC Forward Current          | IF     | 70                  | mA   |
| Reverse Voltage             | VR     | 5                   | V    |
| Operating Temperature Range | Topr   | -40°C to +80°C      |      |
| Storage Temperature Range   | Tstg   | -40°C to +85°C      |      |
| Soldering Temperature*(b)   | Tsld   | 260°C for 5 Seconds |      |

Notes:

\*a: IFP Conditions--Pulse Width  $\leq 100 \mu s$  and Duty  $\leq 1\%$ .

\*b: Soldering time  $\leq 5$  seconds.

#### Electrical Optical Characteristics at Ta=25°C

| Parameters                   | Symbol         | Min. | Typ. | Max. | Unit  | Test Condition                                                   |
|------------------------------|----------------|------|------|------|-------|------------------------------------------------------------------|
| Radiant Intensity* (a)       | I <sub>E</sub> | 25.0 | 50.0 | ---  | mW/sr | IF=70mA tp=20ms                                                  |
|                              |                | 55.0 | 65.0 | 80.0 | mW/sr | IF=100mA tp=20ms                                                 |
| Viewing Angle*(b)            | 2θ 1/2         | ---  | 40   | ---  | Deg   | IF=20mA                                                          |
| Peak Emission Wavelength*(c) | λ <sub>p</sub> | ---  | 940  | ---  | nm    | IF=20mA                                                          |
| Spectral Bandwidth           | Δλ             | ---  | 30   | ---  | nm    | IF=20mA                                                          |
| Forward Voltage              | VF             | 1.10 | 1.40 | 1.80 | V     | IF=20mA                                                          |
|                              |                | 1.30 | 1.60 | 2.00 |       | IF=100mA<br>(Pulse Width $\leq 100 \mu s$ ,<br>Duty $\leq 1\%$ ) |
| Reverse Current              | IR             | ---  | ---  | 10   | μA    | VR=5V                                                            |

Notes:

\*a. Radiant Intensity tolerance is  $\pm 10\%$ .

\*b. 2θ1/2 is the o -axis angle where the luminous intensity is 1/2 the peak intensity.

\*c. The dominant wavelength (λ<sub>d</sub>) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

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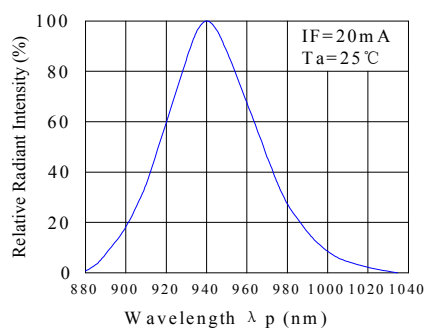
### 2.2x1.95mm, 940nm Infrared Emitters

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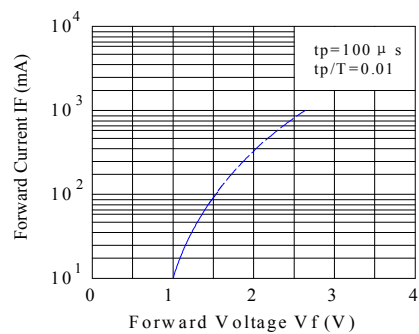
### Technical Data Sheet

### Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)

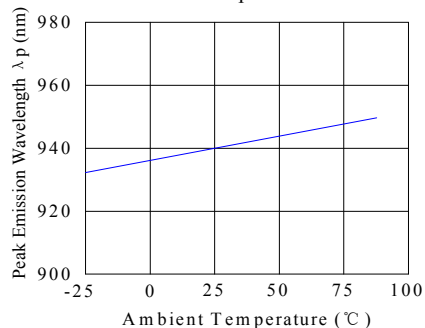
Spectral Distribution



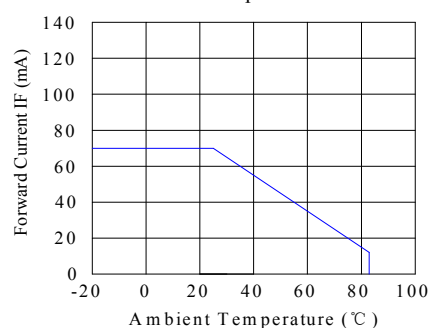
Forward Current & Forward Voltage



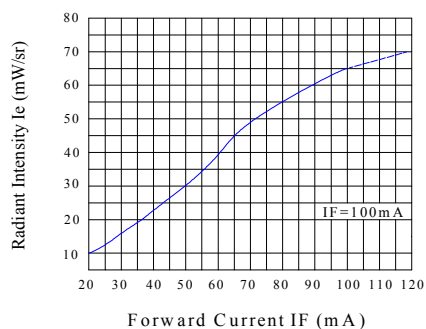
Peak Emission Wavelength & Ambient Temperature



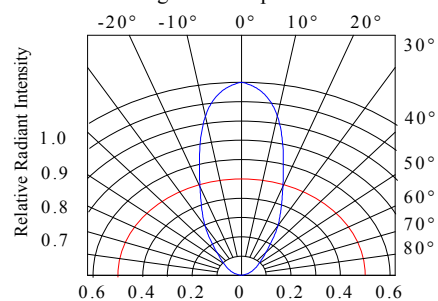
Forward Current & Ambient Temperature



Relative Intensity & Forward Current



Relative Radiant Intensity & Angular Displacement



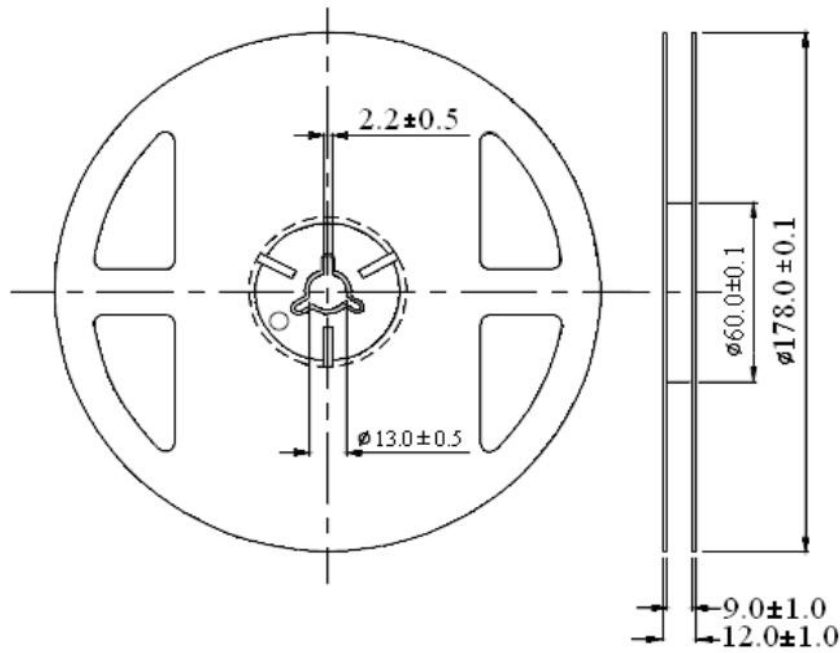
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#### Reel Dimensions:

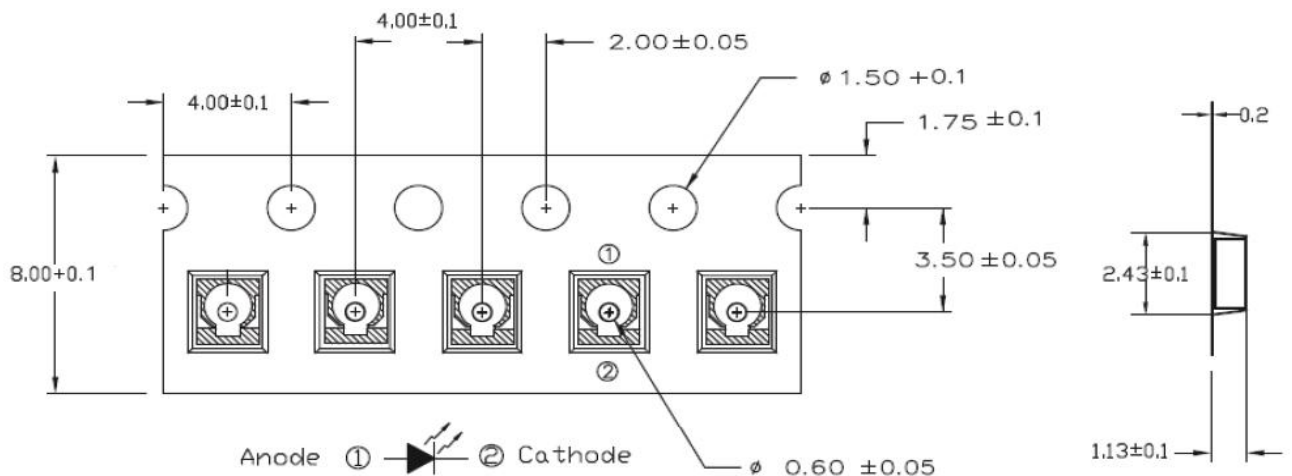


Unit: mm

Tolerance:  $\pm 0.25$ mm

#### Carrier Tape Dimensions:

Loaded quantity 2000 pcs per reel.



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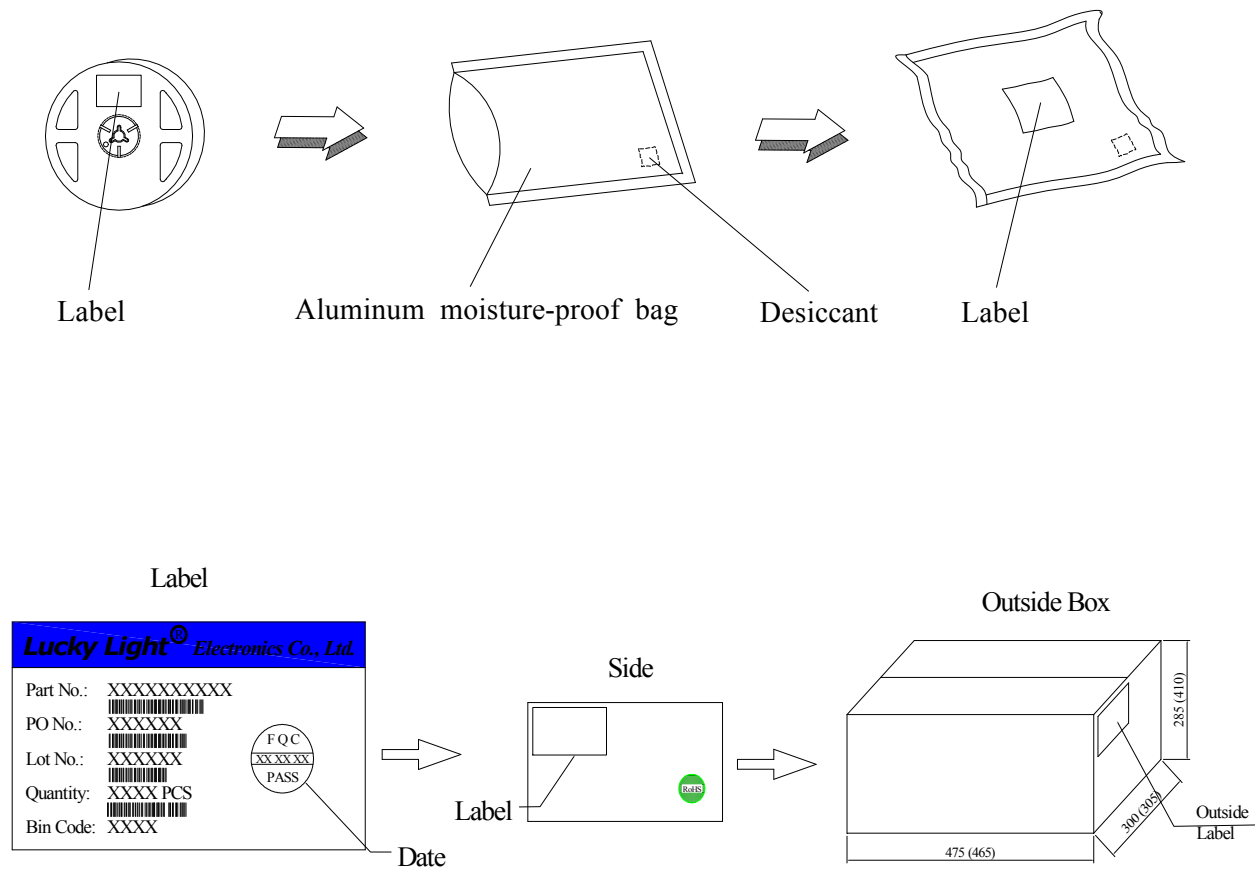
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#### Packing & Label Specifications:

Moisture Resistant Packaging:



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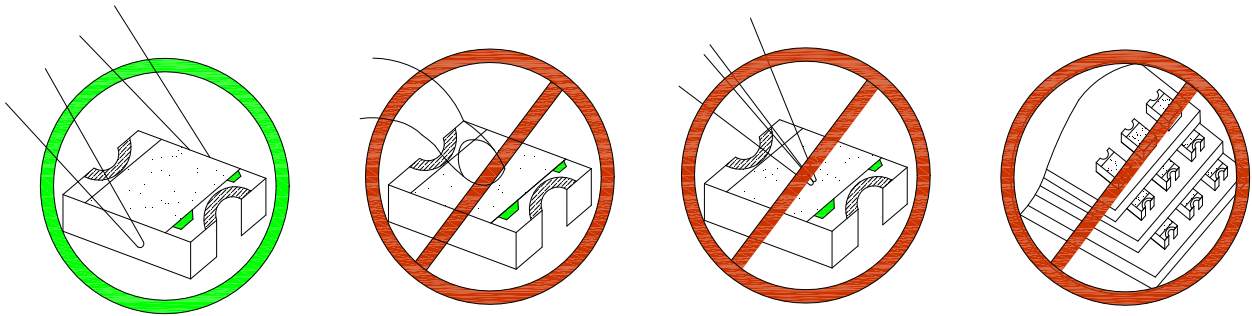
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#### CAUTIONS

##### 1. Handling Precautions:

- 1.1. Handle the component along the side surfaces by using forceps or appropriate tools.
- 1.2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.
- 1.3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

##### 2. Storage

- 2.1. Do not open moisture proof bag before the products are ready to use.
- 2.2. Before opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
- 2.3. The LEDs should be used within a year.
- 2.4. After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
- 2.5. The LEDs should be used within 168 hours after opening the package.
- 2.6. If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 65±5°C for 24 hours.

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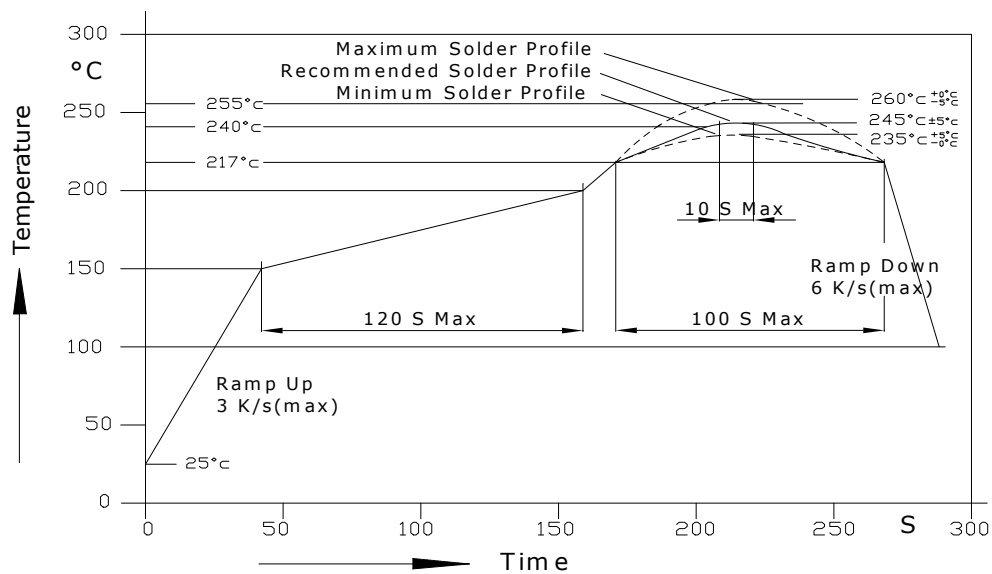
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### 3. Soldering Condition

#### 3.1. Pb-free solder temperature profile



3.2. Reflow soldering should not be done more than two times.

3.3. When soldering, do not put stress on the LEDs during heating.

3.4. After soldering, do not warp the circuit board.

3.5. Recommended soldering conditions:

| Reflow soldering |                              | Soldering iron |                 |
|------------------|------------------------------|----------------|-----------------|
| Pre-heat         | 150~200°C                    | Temperature    | 300°C Max.      |
| Pre-heat time    | 120 sec. Max.                | Soldering time | 3 sec. Max.     |
| Peak temperature | 260°C Max.                   |                | (one time only) |
| Soldering time   | 10 sec. Max.(Max. two times) |                |                 |



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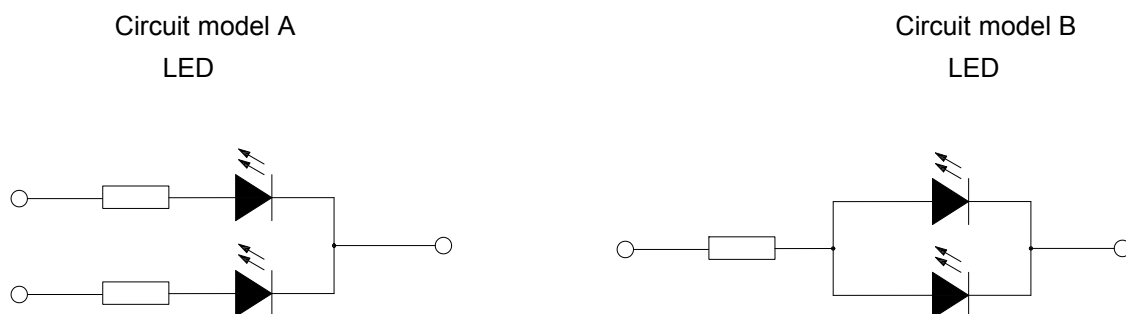
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3.6. Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

#### 4. Drive Method

4.1. An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.



a. Recommended circuit.

b. The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

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#### Revision History

| Date        | Revision History                                                 | Version | Writer |          |
|-------------|------------------------------------------------------------------|---------|--------|----------|
|             |                                                                  |         | Drawn  | Approved |
| 12-Sep-2017 | Datasheet Created                                                | G-Rev-1 | Li     | JoJo     |
| 10-Oct-2017 | The data for radiation intensity at IF= 100mA                    | G-Rev-2 | Li     | JoJo     |
| 25-Oct-2017 | The title description modified                                   | G-Rev-3 | Li     | JoJo     |
| 8-Dec-2017  | The testing conditions for Peak Forward Current have been noted. | G-Rev-4 | Li     | Zhou     |
| 9-Dec-2023  | Modified the test conditions and data                            | G-Rev-5 | Li     | Zhou     |