

5mm Round Standard T-1 3/4 Type
Infrared LED
Technical Data Sheet

Part No.: LL-503IRT2E-2AE

Features:

- ◇ Standard T-1 3/4 diameter package.
- ◇ Low forward voltage.
- ◇ Viewing angle=45°.
- ◇ Reliable and rugged.
- ◇ The product itself will remain within RoHS complaint Version.

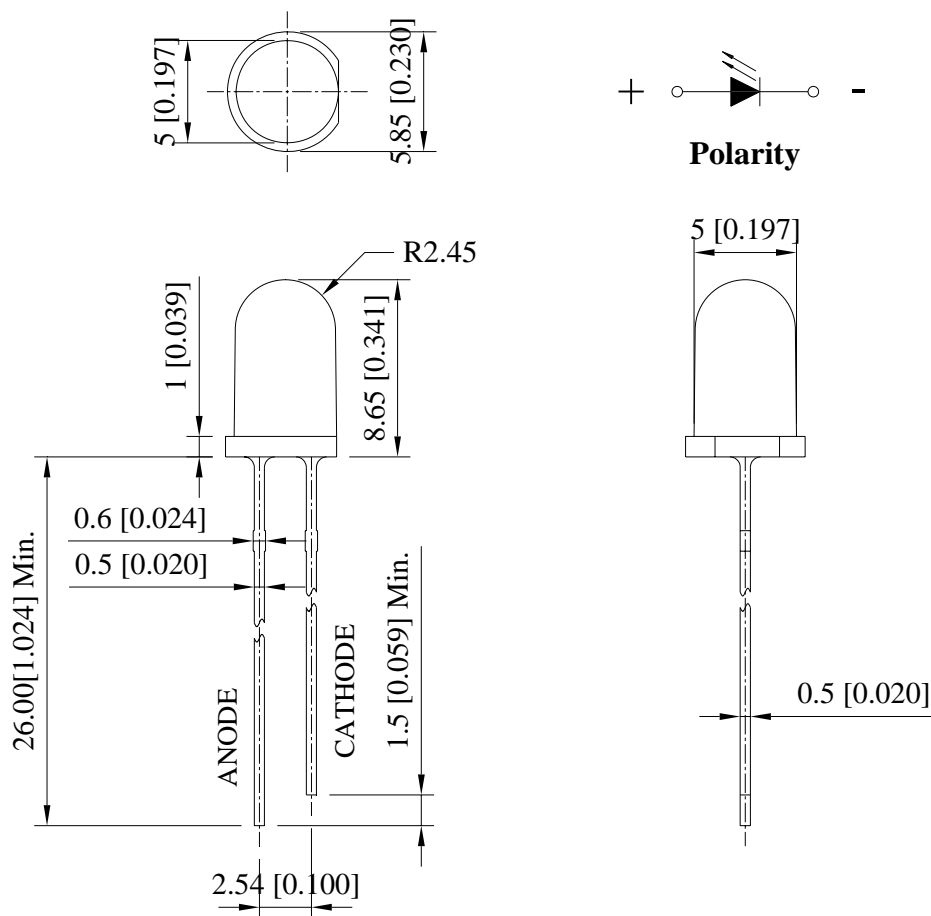
Descriptions:

- ◇ The device is spectrally matched with silicon photodiode and phototransistor.

Applications:

- ◇ Floppy disk drive.
- ◇ Optoelectronic switch.
- ◇ Camera.
- ◇ Free air transmission system.
- ◇ Video.

Package Dimension:



| Part No. | Chip Material | Lens Color | Source Color |
|-----------------|---------------|------------------|--------------|
| LL-503IRT2E-2AE | GaAlAs | Blue Transparent | Infrared |

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010") unless otherwise specified.
3. Protruded resin under flange is 1.00 mm (.039") max.
4. Specifications are subject to change without notice.

Absolute Maximum Ratings at Ta=25°C

| Parameters | Symbol | Max. | Unit |
|--|--------|---------------------|------|
| Power Dissipation | PD | 100 | mW |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width) | IFP | 1.00 | A |
| Forward Current | IF | 100 | 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 | Tsld | 260°C for 5 Seconds | |

Electrical Optical Characteristics at Ta=25°C

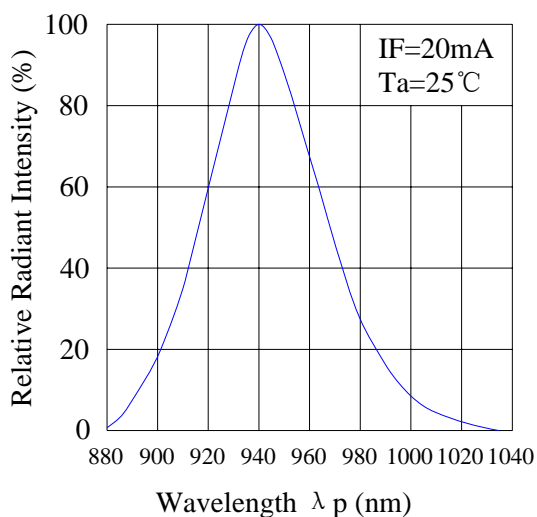
| Parameters | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|------------------------------|--------|------|------|------|-------|-------------------------------------|
| Radiant Intensity (Note 1) * | Ee | 5.5 | 8.5 | --- | mW/sr | IF=20mA |
| | | --- | 20.0 | --- | | IF=100mA, tp=100μs, tp/T=0.01 |
| Viewing Angle (Note 2) * | 2θ1/2 | --- | 45 | --- | Deg | IF=20mA |
| Peak Emission Wavelength | λp | --- | 940 | --- | nm | IF=20mA (Note 3) |
| Spectral Bandwidth | Δλ | --- | 50 | --- | nm | IF=20mA |
| Forward Voltage | VF | 0.80 | 1.20 | 1.50 | V | IF=20mA |
| | | --- | 1.60 | 1.80 | | IF=100mA, tp=100μs, tp/T=0.01 |
| Reverse Current | IR | --- | --- | 10 | μA | VR=5V |

Notes:

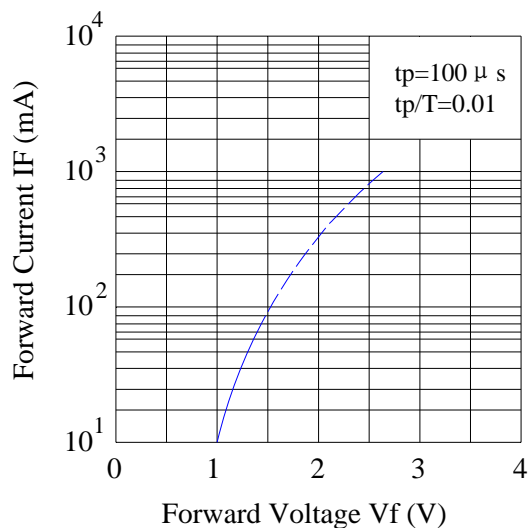
1. Luminous (Radiant) Intensity Measurement allowance is $\pm 10\%$.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength (λ_p) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

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

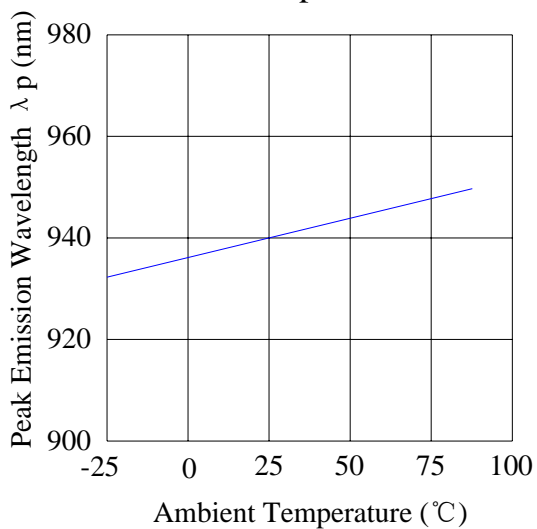
Spectral Distribution



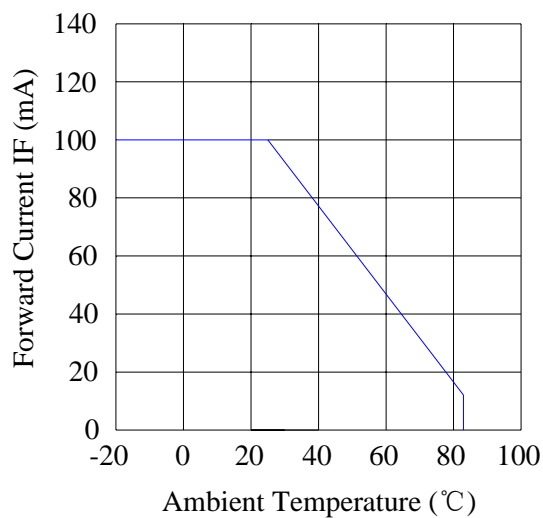
Forward Current & Forward Voltage



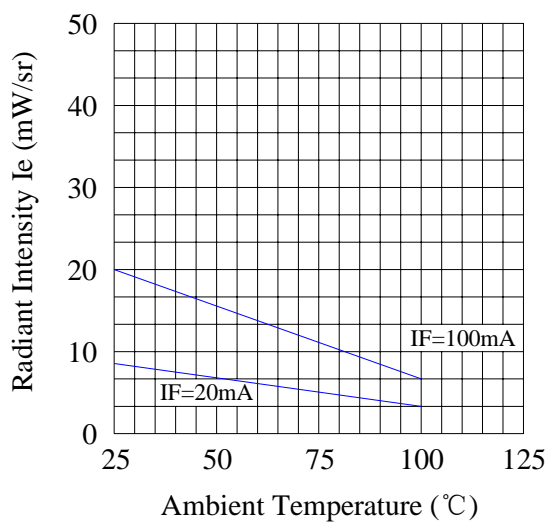
Peak Emission Wavelength & Ambient Temperature



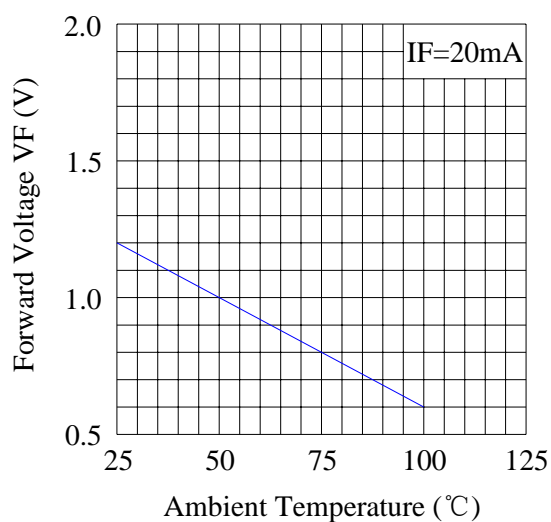
Forward Current & Ambient Temperature



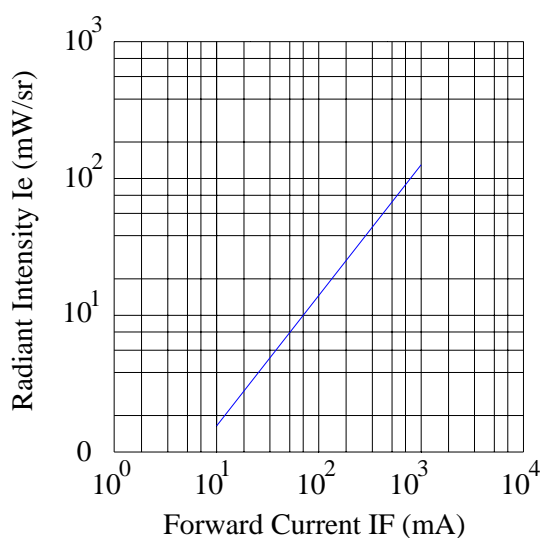
Relative Intensity &
Ambient Temperature



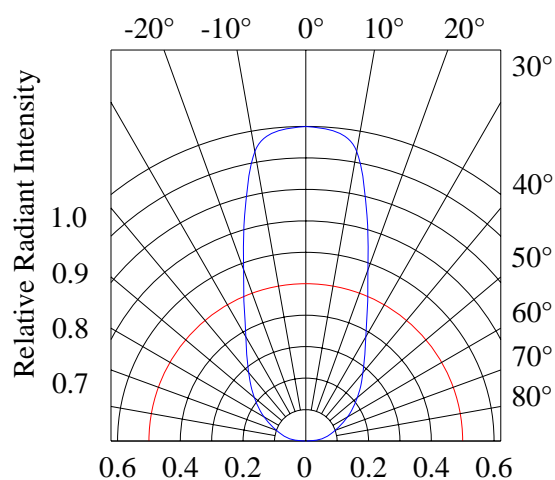
Forward Voltage &
Ambient Temperature



Relative Intensity & Forward Current



Relative Radiant Intensity
& Angular Displacement



Reliability Test Items And Conditions:

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

Confidence level: 90%.

LTPD: 10%.

| No. | Item | Test Conditions | Test Hours/ Cycles | Sample Sizes | Failure Judgment Criteria | Ac/ Re |
|-----|---------------------------------------|---|-----------------------|-----------------|---|-----------|
| 1 | Reflow Soldering | TEMP.: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 5secs | 6mins | 22pcs | $\text{IR} \geq \text{U} * 2$ $\text{Ee} \leq \text{L} * 0.8$ $\text{VF} \geq \text{U} * 1.2$ U: Upper Specification Limit L: Lower Specification Limit | 0/1 |
| 2 | Temperature Cycle | H: $+100^{\circ}\text{C}$ 15mins ↓ 5 mins ↓ L: -40°C 15mins | 50Cycles | 22pcs | | 0/1 |
| 3 | Thermal Shock | H: $+100^{\circ}\text{C}$ 15mins ↓ 10mins ↓ L: -10°C 5mins | 50Cycles | 22pcs | | 0/1 |
| 4 | High Temperature Storage | TEMP.: $+100^{\circ}\text{C}$ | 1000hrs | 22pcs | | 0/1 |
| 5 | Lower Temperature Storage | TEMP.: -40°C | 1000hrs | 22pcs | | 0/1 |
| 6 | DC Operating Life | $\text{V}_{\text{CE}} = 5\text{V}$ | 1000hrs | 22pcs | | 0/1 |
| 7 | High Temperature/ High Humidity | 85°C / 85% R.H | 1000hrs | 22pcs | | 0/1 |

Please read the following notes before using the product:

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

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℃ or less and 90% 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℃ or less and 70% RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

3. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260℃ for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

4. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.