

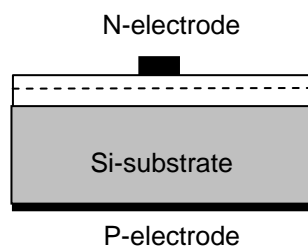
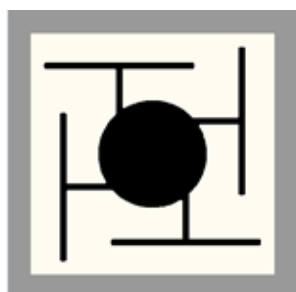
> Mechanical Specification:

(1) Dimension

- Chip size: 12 mil x 12 mil ($290\pm 25\ \mu\text{m}$ x $290\pm 25\ \mu\text{m}$)
- Thickness: 8.8 mil ($225\pm 25\ \mu\text{m}$)
- N bonding pad: 4.1 mil ($105\pm 10\ \mu\text{m}$)

(2) Metallization

- Topside N electrode : Au alloy
- Backside P electrode: Au alloy



Features:

- Long-term supply
- High luminous intensity
- Thin film structure
- Vertical electrode
- High driving current

Applications:

- Automotive

> Electro-optical Characteristics at 25°C:

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit | |
|--------------------------------------|-----------------|-----------------|-----------|------|------|---------|-----|
| Forward Voltage | Vf1 | If = 10 μ A | 1.3 | - | - | V | |
| | Vf2 | If = 20mA | - | 2.15 | 2.5 | V | |
| Reverse Current | Ir | Vr = 25V | - | - | 5.0 | μ A | |
| Peak Wavelength | λ_p | If = 20mA | - | 591 | - | nm | |
| Dominant Wavelength ⁽¹⁾ | λ_d | If = 20mA | 584 | - | 594 | nm | |
| Spectra Half-width | $\Delta\lambda$ | If = 20mA | - | 15 | - | nm | |
| Luminous Intensity ⁽²⁾⁽³⁾ | Iv | E19 | If = 20mA | 650 | - | - | mcd |
| | | E20 | | 700 | - | - | |
| | | E21 | | 770 | - | - | |
| | | E22 | | 850 | - | - | |

Note:

(1) Basically, the wavelength span is 10nm; however, customers' special requirements are also welcome.

(2) Customers' special requirements are also welcome.

(3) Luminous intensity is measured by EPISTAR's equipment on bare chips.

> Absolute Maximum Ratings⁽¹⁾:

| Parameter | Symbol | Condition | Rating | Unit |
|---|------------------|-----------------------------|-------------|------|
| Forward DC Current | If | Ta = 25°C | ≤ 70 | mA |
| Reverse Voltage | Vr | Ta = 25°C | ≤ 10 | V |
| Junction Temperature | Tj | - | ≤ 125 | °C |
| ESD withstand voltage(HBM) ⁽²⁾ | V _{ESD} | | Up to 2 | kV |
| Storage Temperature | Tstg | Chip | -40 ~ +85 | °C |
| | | Chip-on-tape/storage | 5 ~ 35 | °C |
| | | Chip-on-tape/transportation | -20 ~ +65 | °C |
| Temperature during Packaging | - | - | 280(<10sec) | °C |

Note: (1)Maximum ratings are package dependent. The above maximum ratings were determined using a Printed Circuit Board (PCB) without an encapsulant. Stresses in excess of the absolute maximum ratings such as forward current and junction temperature may cause damage to the LED.

(2)According to ANSI/ESDA/JEDEC JS-001

> Characteristic Curves:

Fig.1 – Relative luminous Intensity vs. Forward Current

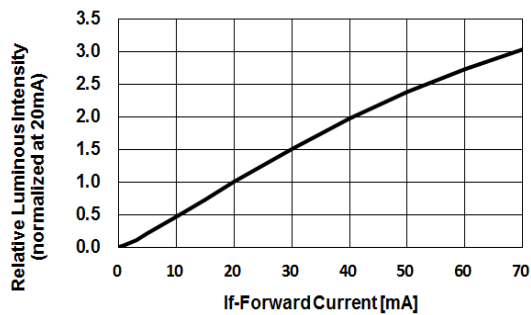


Fig.2 – Forward Current vs. Forward Voltage

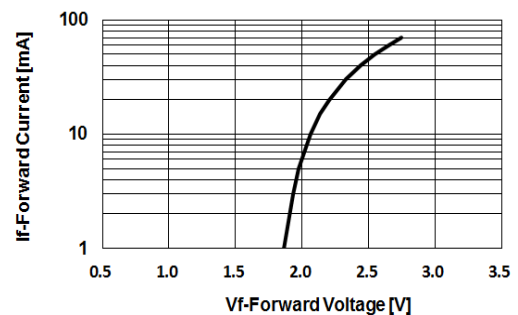


Fig.3 – Relative Intensity (@20mA) vs. Ambient Temperature

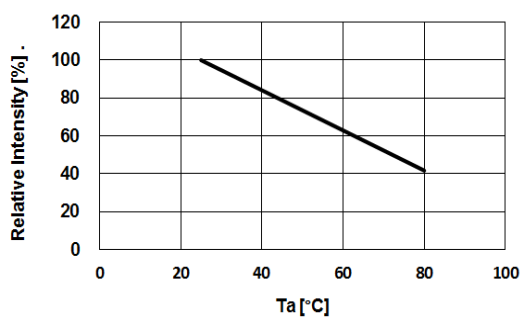


Fig.4 – Forward Voltage (@20mA) vs. Ambient Temperature

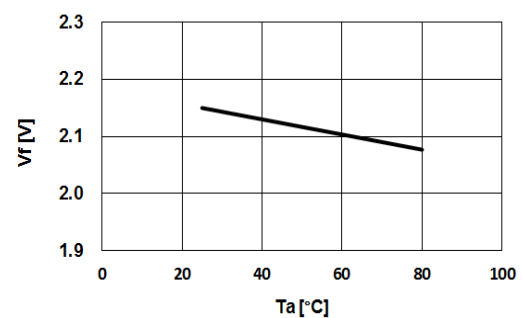


Fig.5 – Dominant Wavelength (@20mA) vs. Ambient Temperature

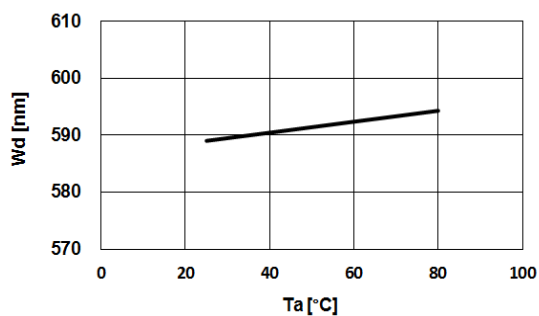
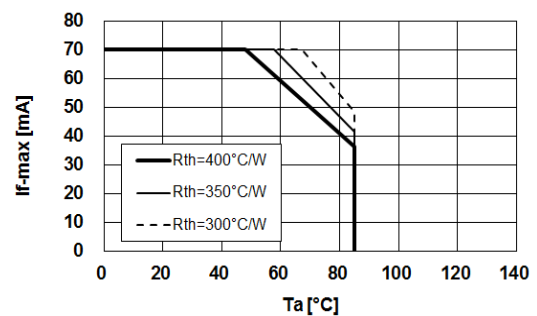


Fig.6 – Maximum Driving Forward DC Current vs. Ambient Temperature (De-rating based on Tj max. = 125°C)



> Qualification :

- ¹⁾ EPISTAR's LED chips and epi-wafers are designed and manufactured according to the quality management system that complies to the IATF 16949:2016 requirements (IATF No: 0325277/ Certificate Registration No: 20000910 IATF16).
- ²⁾ The chip qualification test plan is based on the guidelines of AEC-Q101-REV-D , Failure Mechanism Based Stress Test Qualification for Discrete Semiconductors in Automotive Applications.

> Revision :

| Version | Page | Subjects | Date of Modification |
|---------|------|-----------------|----------------------|
| A | | Initial Release | Oct. 2019 |