



### **Features**

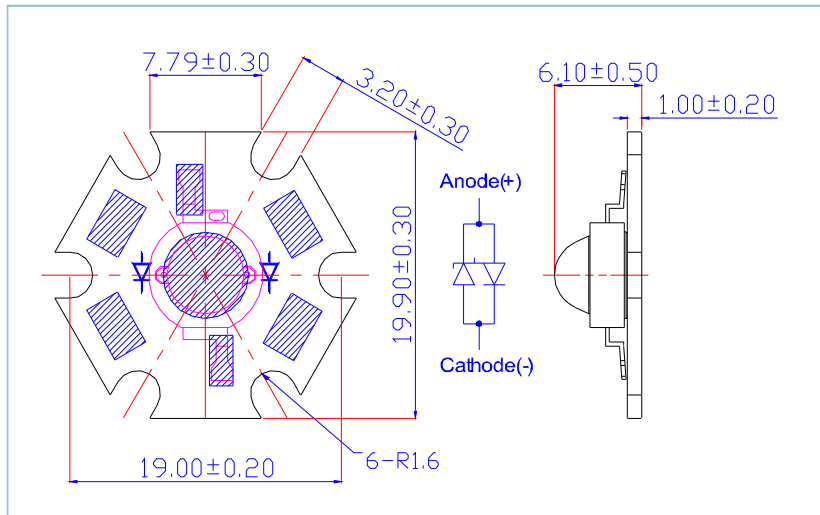
- **Various colors**
- **High energy efficiency**
- **Low voltage**
- **Suitable for all SMT assembly methods**
- **Long operating life**

### **Typical Applications**

- **Effect and accent lighting: display cases, front panels**
- **Architectural lighting: flood lights, stairway lighting, garden lighting**
- **Room lighting: contour lighting, chandeliers, pendants, coves**
- **Specialty lighting: security lighting, portable flashlight, reading lamps**

**Package Outlines**

**Lambertian**



**Notes:**

1. All dimensions are in mm.
2. Drawings are not to scale.
3. It is strongly recommended that the temperature of lead be not higher than  $55^{\circ}\text{C}$ .

**Absolute Maximum Ratings**

| Parameter  | Symbol             | Rating     | Units   |
|--|--------------------|------------|---------|
| DC Forward Current   | I <sub>F</sub>     | 350        | mA      |
| Peak pulse current;(t <sub>p</sub> ≤ 100 s, Duty cycle=0.25) | I <sub>pulse</sub> | 500        | mA      |
| Reverse Voltage  | V <sub>R</sub>     | 5          | V       |
| Reverse Current(V <sub>R</sub> =5V)                          | I <sub>R</sub>     | 50         | μA      |
| LED junction Temperature ( at 350 mA)                        | T <sub>j</sub>     | 125        | °C      |
| Operating Temperature  | T <sub>opr</sub>   | -30 ~ +110 | °C      |
| Storage Temperature  | T <sub>stg</sub>   | -40 ~ +120 | °C      |
| Manual Soldering Time at 260°C(Max.)                         | T <sub>sol</sub>   | 5          | seconds |

**Luminous Flux Characteristics at I<sub>F</sub>=350mA(T<sub>a</sub>=25°C, T<sub>opr</sub>=100ms):**

| Lens Item  | Part Name      | Color      | Flux |      |      | Units |
|------------|----------------|------------|------|------|------|-------|
|            |                |            | Min. | Typ. | Max. |       |
| Lambertian | VAOL-SW1xAx-SA | White      | 70.3 | 90.0 | --   | lm    |
|            | VAOL-SX1xAx-SA | Warm White | 63.0 | 80.0 | --   | lm    |
|            | VAOL-SR1xAx-SA | Red        | 30.0 | 50.0 | --   | lm    |
|            | VAOL-SO1xAx-SA | Red Orange | 33.3 | 55.0 | --   | lm    |
|            | VAOL-SA1xAx-SA | Amber      | 30.0 | 50.0 | --   | lm    |
|            | VAOL-ST1xAx-SA | True Green | 70.3 | 90.0 | --   | lm    |
|            | VAOL-SB1xAx-SA | Blue       | 20.3 | 35.0 | --   | lm    |

**Forward Voltage Characteristics at  $I_F=350\text{mA}$  ( $T_a=25^\circ\text{C}$ ,  $T_{opr}=100\text{ms}$ ):**

| Lens Item | Part Name      | Color      | $V_F$ |      |      | Units |
|-----------|----------------|------------|-------|------|------|-------|
|           |                |            | Min.  | Typ. | Max. |       |
|           | VAOL-SW1xAx-SA | White      | 3.1   | --   | 4.3  | V     |
|           | VAOL-SX1xAx-SA | Warm White | 3.1   | --   | 4.3  | V     |
|           | VAOL-SR1xAx-SA | Red        | 2.0   | --   | 3.0  | V     |
|           | VAOL-SO1xAx-SA | Red Orange | 2.0   | --   | 3.0  | V     |
|           | VAOL-SA1xAx-SA | Amber      | 2.0   | --   | 3.0  | V     |
|           | VAOL-ST1xAx-SA | True Green | 2.8   | --   | 4.0  | V     |
|           | VAOL-SB1xAx-SA | Blue       | 3.1   | --   | 4.3  | V     |

**Wavelength or Color Temperature Characteristics at  $I_F=350\text{mA}$  ( $T_a=25^\circ\text{C}$ ,  $T_{opr}=100\text{ms}$ ):**

| Lens Item | Part Name      | Color      | $\lambda_d/\text{CCT}$ |      |      | Units |
|-----------|----------------|------------|------------------------|------|------|-------|
|           |                |            | Min.                   | Typ. | Max. |       |
|           | VAOL-SW1xAx-SA | White      | 5000                   | --   | 8000 | K     |
|           | VAOL-SX1xAx-SA | Warm White | 2800                   | --   | 3800 | K     |
|           | VAOL-SR1xAx-SA | Red        | 620                    | --   | 630  | nm    |
|           | VAOL-SO1xAx-SA | Red Orange | 610                    | --   | 620  | nm    |
|           | VAOL-SA1xAx-SA | Amber      | 585                    | --   | 595  | nm    |
|           | VAOL-ST1xAx-SA | True Green | 515                    | --   | 535  | nm    |
|           | VAOL-SB1xAx-SA | Blue       | 460                    | --   | 475  | nm    |

**Temperature Coefficient of Forward Voltage & Thermal Resistance Junction to Board Characteristics at  $I_F=350\text{mA}$  ( $T_a=25^\circ\text{C}$ ):**

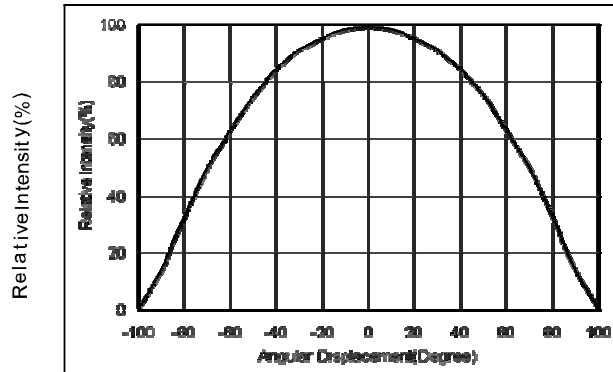
| Lens Item | Part Name      | Color      | $\Delta V_F/\Delta T$ |       | $R_{\theta J-B}$ |       |
|-----------|----------------|------------|-----------------------|-------|------------------|-------|
|           |                |            | Typ.                  | Units | Typ.             | Units |
|           | VAOL-SW1xAx-SA | White      | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-SX1xAx-SA | Warm White | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-SR1xAx-SA | Red        | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-SO1xAx-SA | Red Orange | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-SA1xAx-SA | Amber      | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-ST1xAx-SA | True Green | -2                    | mV/°C | 20               | °C/W  |
|           | VAOL-SB1xAx-SA | Blue       | -2                    | mV/°C | 20               | °C/W  |

**Emission Angle Characteristics at  $I_F=350\text{mA}$  ( $T_a=25^\circ\text{C}$ ):**

| Part Name      | Color      | $2\theta$ (Typ.) | Units   |
|----------------|------------|------------------|---------|
| VAOL-SW1xAx-SA | White      | 130              | Degrees |
| VAOL-SX1xAx-SA | Warm White | 130              | Degrees |
| VAOL-SR1xAx-SA | Red        | 120              | Degrees |
| VAOL-SO1xAx-SA | Red Orange | 120              | Degrees |
| VAOL-SA1xAx-SA | Amber      | 120              | Degrees |
| VAOL-ST1xAx-SA | True Green | 150              | Degrees |
| VAOL-SB1xAx-SA | Blue       | 150              | Degrees |

**Typical Radiation Pattern for**

**Lambertian**

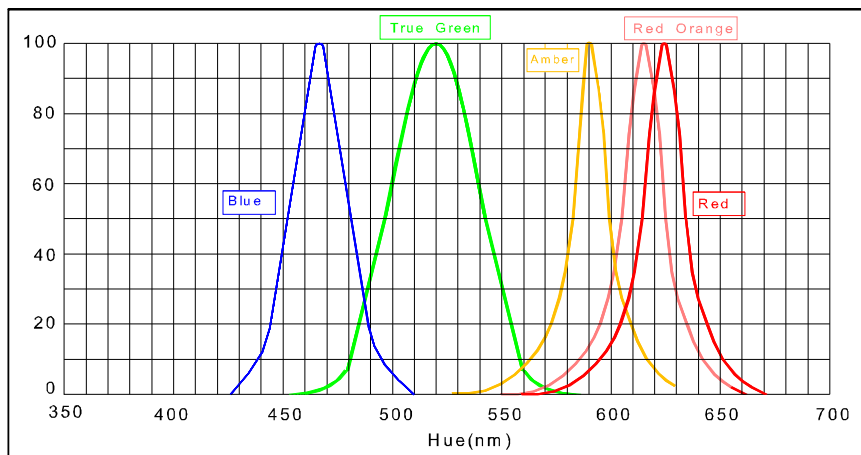
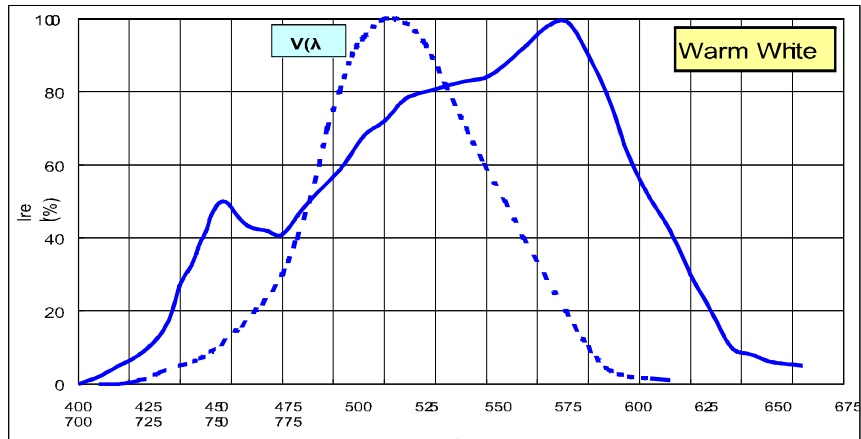
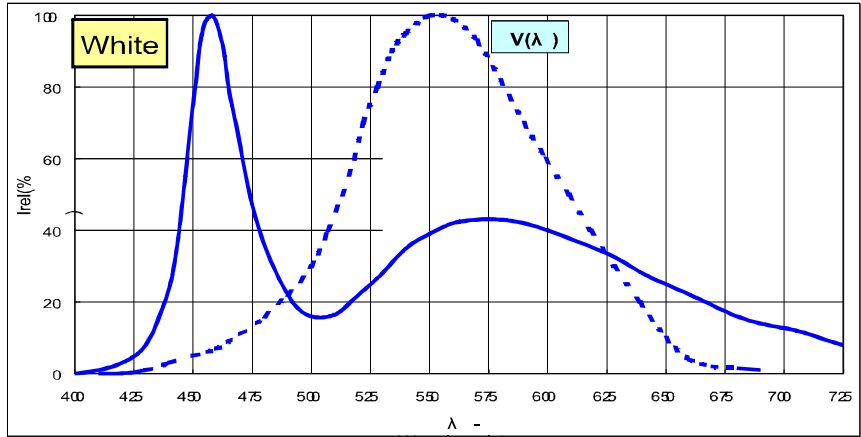


Specific binning requirements- please contact our home office

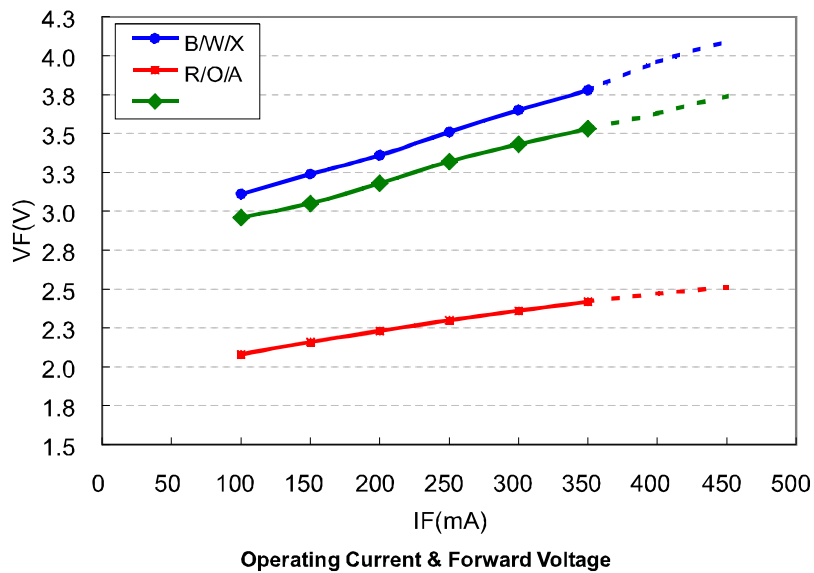
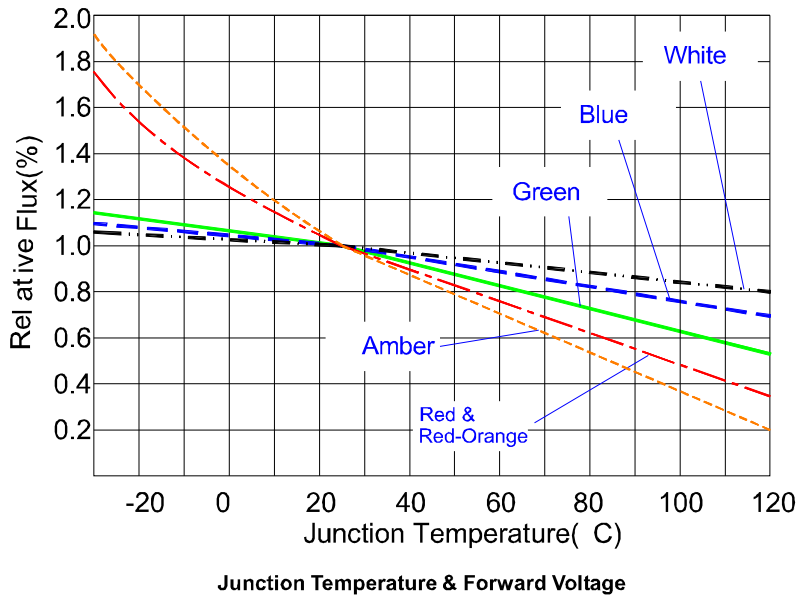
**Note**

1. Flux is measured with an accuracy of  $\pm 10\%$ .
2. CCT selection acc. to CCT groups and an accuracy of  $\pm 200\text{K}$
3. Forward Voltage is measured with an accuracy of  $\pm 0.1\text{V}$
4. Wavelength is measured with an accuracy of  $\pm 0.5\text{nm}$
5. All white, warm white, True green and blue emitters are built with InGaN
6. All red, red-orange and amber emitters are built with AlGaInP

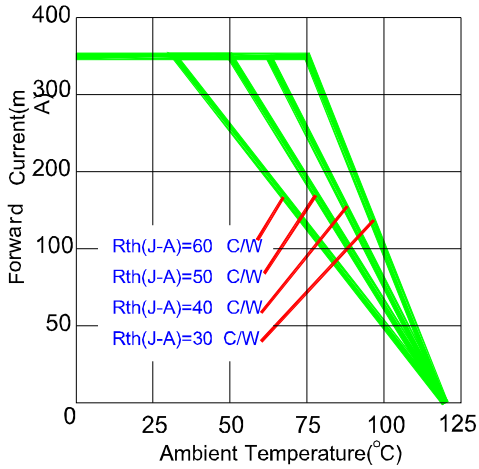
**Electrical & Optical Curves-Spectrum**



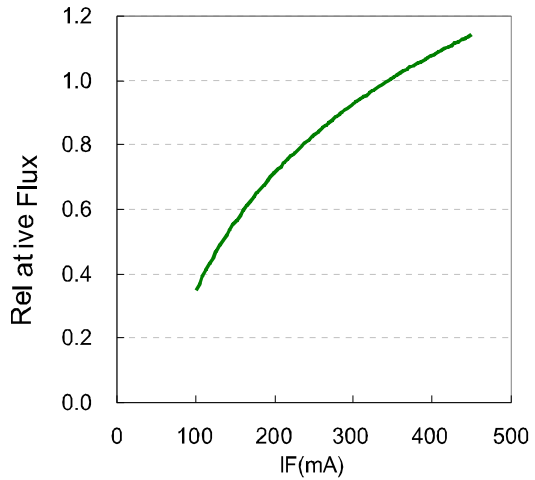
**Typical Optical and Electrical Curves**



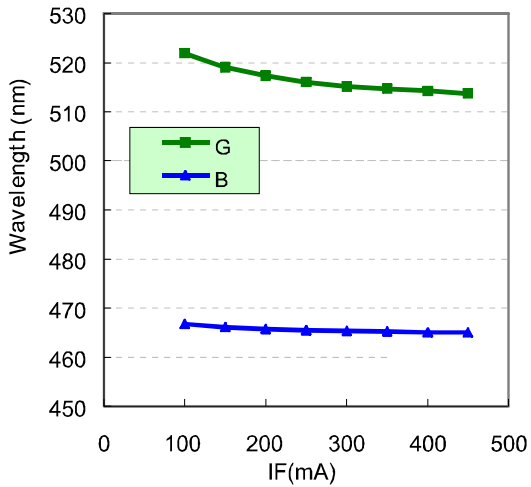
**Typical Optical and Electrical Curves**



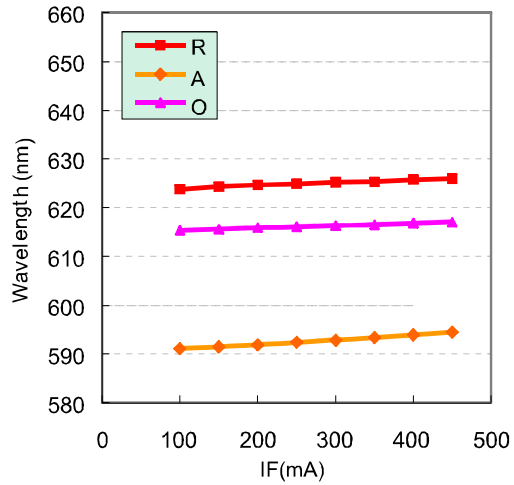
**Operating Current & Ambient Temperature**



**Forward Current & Luminous Flux**



**Forward Current & Wavelength**





**Package Specifications**

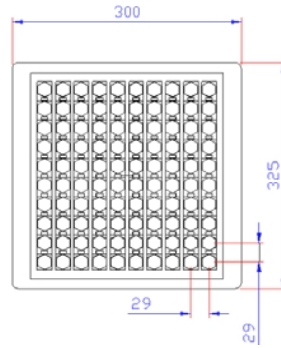
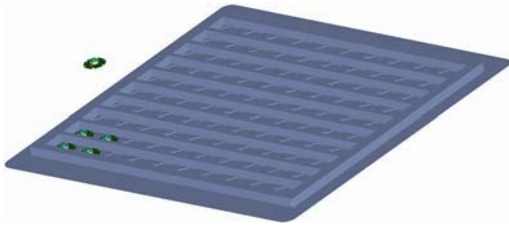


Figure 1: Tray

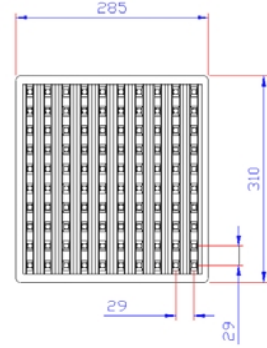


Figure 2: Cover

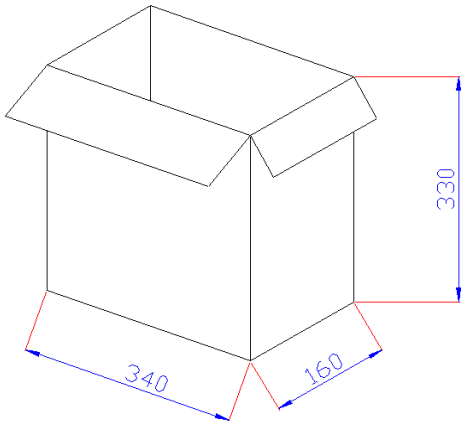


Figure 3: Inner box

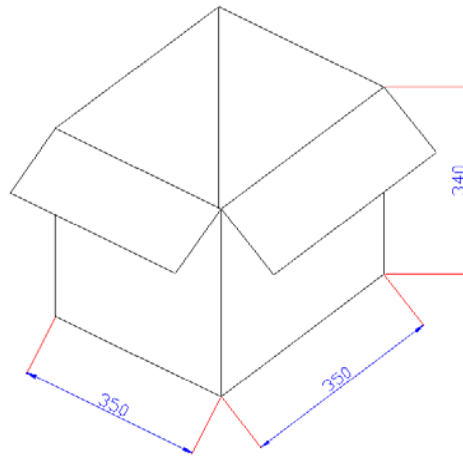


Figure 4: Outer box

**Note**

1. All dimensions are in mm.
2. There are 100pcs stars in a tray.(Tray+Cover)
3. There are 10 trays in an inner box.
4. There are 2 inner boxes in an outer box.