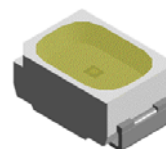


## 3.0 x 2.0mm Package SMD LED

### VR HWE99

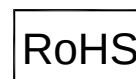
#### Description

The constructive of this series of LED are different from the PCB type SMD LED. The lead-frame is of metal, reflector is made of thermoplastic and construct into this unique type of SMD LED. Such construction is very suitable to be used in high demanding reliability applications such as in-car dashboard or telecommunications.



#### Features

- High reliability LED package
- Available in full selection of colors
- Package in 8mm carrier tape on 7 inch reel.
- Luminous and color categorized for each reel.
- Super wide viewing at 120°



#### Electronic Optical Characteristics (at 20mA):

| Part Number | Emitted Color | CCT(k) |      | Lens Color | Iv(mcd) |       | View Angle (2θ1/2) | VF(V) |      |
|-------------|---------------|--------|------|------------|---------|-------|--------------------|-------|------|
|             |               | Min.   | Max. |            | Min.    | Max.. |                    | Min.  | Max. |
| VR HWE99    | White         | 5000   | 6300 | Yellow     | 2200    | 2600  | 120                | 2.8   | 3.6  |

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

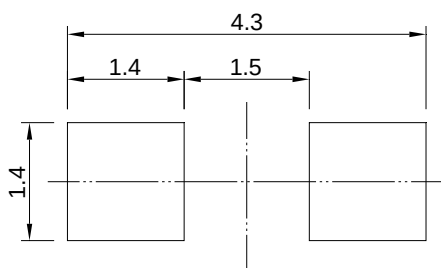
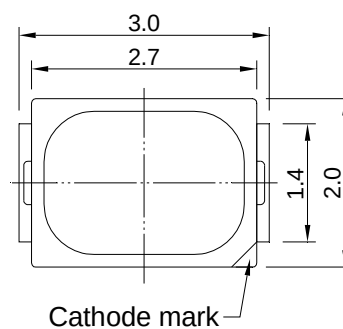
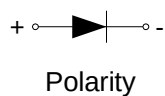
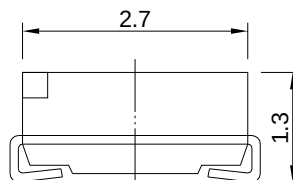
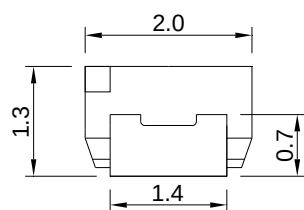
| P <sub>D</sub> (mW) | I <sub>FP</sub> (mA) | I <sub>F</sub> (mA) | Iron Solder(°C)    | I <sub>R</sub> (uA)@V <sub>R</sub> =5V | Topr(°C) | Tstg(°C) |
|---------------------|----------------------|---------------------|--------------------|----------------------------------------|----------|----------|
| 110                 | 100*                 | 30                  | 350 ± 5 for 3 sec. | 50                                     | -40~+85  | -40~+100 |

Note: Please take note the Absolute Maximum Rating values. Any operation beyond the specify ratings in this table will result degradation of LED life-span and may cause LED to fail.

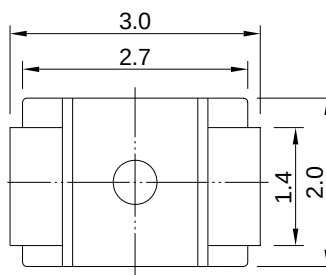
\* I<sub>FP</sub>: Peak Forward Current under 1/10 duty, 1KHz condition

## Package Dimension:

unit : mm



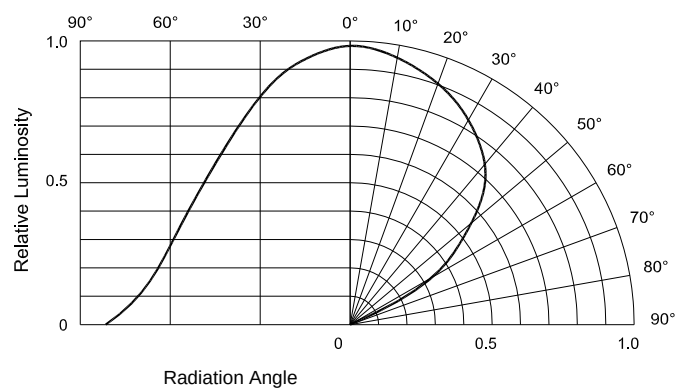
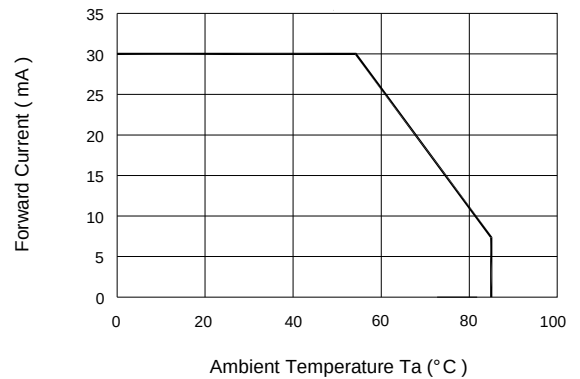
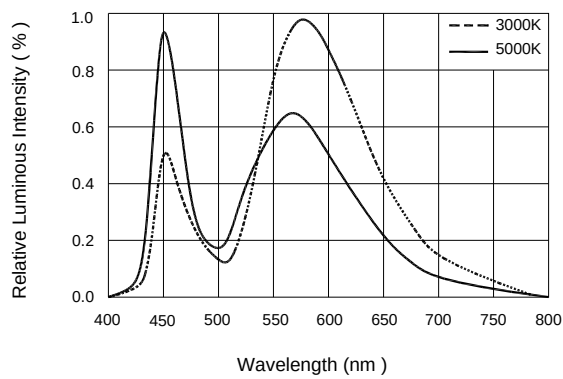
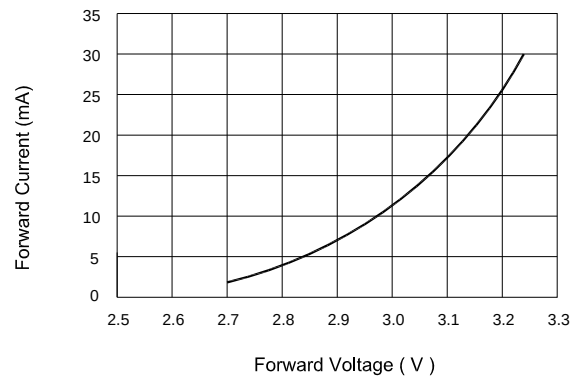
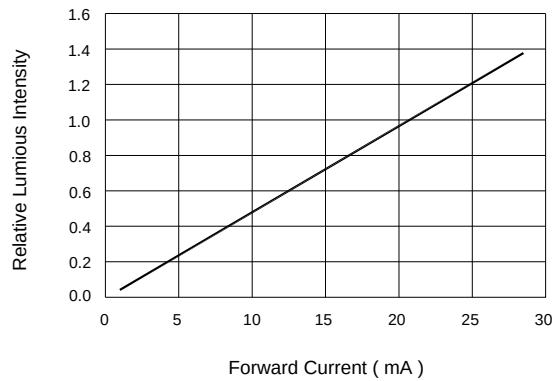
Recommended Soldering Pad



## Notes:

1. All dimensions are millimeters.
2. Tolerance is  $\pm 0.2\text{mm}$  unless otherwise specified.
3. Specifications are subject to change without notice.

## Optical Characteristics Curves



**Color Ranks ( $I_F=20\text{mA}$ )**

| Rank | CIE x  | CIE y  | Rank | CIE x  | CIE y  |
|------|--------|--------|------|--------|--------|
| V5   | 0.3288 | 0.3569 | W5   | 0.3148 | 0.3444 |
|      | 0.3469 | 0.3717 |      | 0.3288 | 0.3569 |
|      | 0.3458 | 0.3592 |      | 0.3290 | 0.3551 |
|      | 0.3290 | 0.3451 |      | 0.3160 | 0.3332 |
| V6   | 0.3290 | 0.3451 | W6   | 0.3160 | 0.3332 |
|      | 0.3458 | 0.3592 |      | 0.3290 | 0.3451 |
|      | 0.3444 | 0.3442 |      | 0.3292 | 0.3313 |
|      | 0.3292 | 0.3313 |      | 0.3175 | 0.3204 |

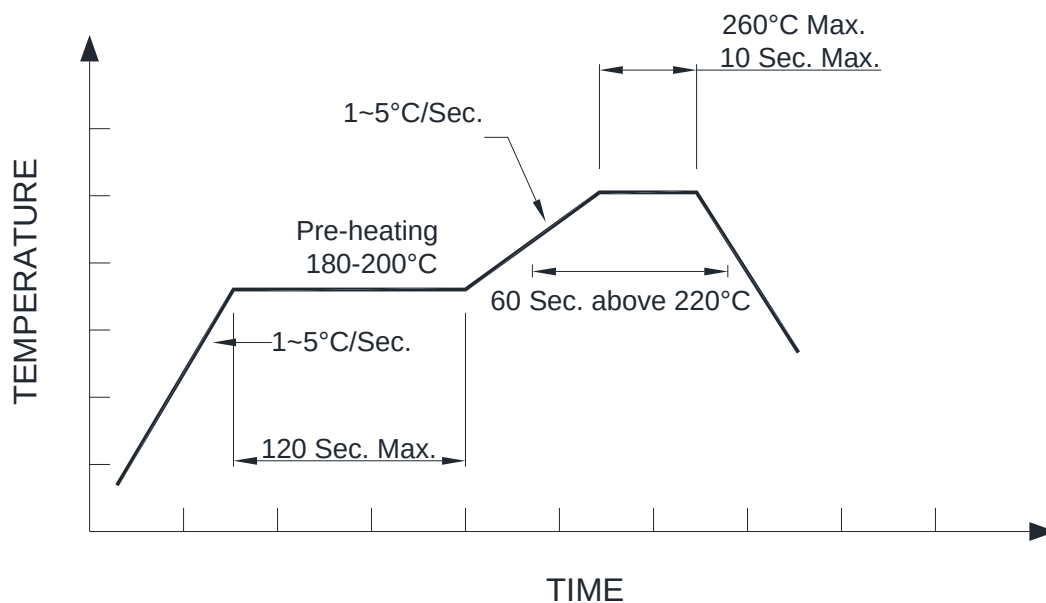
Measurement uncertainty of the color coordinates:  $\pm 0.005$

**Specification for bin grade @ 20 mA**

| Iv(mcd) |      |      | VF(Volt) |      |      | CIE Rank |
|---------|------|------|----------|------|------|----------|
| Code    | Min. | Max. | Code     | Min. | Max. | Code     |
| 4C      | 2200 | 2400 | 36       | 2.9  | 3.0  | V5       |
| 6C      | 2400 | 2600 | 37       | 3.0  | 3.1  | V6       |
| --      | --   | --   | 38       | 3.1  | 3.2  | W5       |
| --      | --   | --   | 39       | 3.2  | 3.3  | W6       |
| --      | --   | --   | 40       | 3.3  | 3.4  | --       |
| --      | --   | -    | 41       | 3.4  | 3.5  | --       |
| --      | --   | --   | 42       | 3.5  | 3.6  | --       |



# Recommended Pb-free re-flow soldering profile:



## Note:

All the specifications listed in this data sheet are suitable for general electronic equipment, office equipment and communication devices. Kindly consult Sales Representatives for specific reliabilities request, Forward Voltage, Luminous Intensity, Wavelength, Radiant Power or Viewing Angle.