

# HVB-3433EES

## 3433 PLCC6

## Products Series

High luminous efficiency, consistency, stability and reliability, it is mainly used in automobile applications.

- PPA
- 50% I<sub>v</sub> 120
- 470nm
- AEC-Q102 & IEC 60810

## Ordering Information

| Type                               | Luminous Intensity<br>I <sub>v</sub> @ I <sub>f</sub> =140mA | Ordering Code |
|------------------------------------|--|---------------|
| HVB-3433EES-<br>XXXX - XX - XX<br> | 1.80 -4.50 cd  | XXXXXX        |
| Brightness Color                   | Forward Voltage  |               |

|   |                                 |                  |
|---|---------------------------------|------------------|
| ■ | HVB-3433EES- <u>BACB</u> -XX-XX | 4<br>BA BB CA CB |
| ■ | HVB-3433EES-XXXX- <u>35</u> -XX | 4<br>3 4 5       |
| ■ | HVB-3433EES-XXXX-XX- <u>47</u>  | 4<br>4 5 6 7     |

### Note

■ Brightness Grouping

Only one brightness group will be packed in each reel. Please refer to page #4 for details.  
E.g.: HVB-3433EES-CBDB-XX-XX, means only one bin of CB, DA or DB is in each reel.

■ Color Grouping

Only one color group will be packed in each reel. Please refer to page #4 for details.  
E.g.: HVB-3433EES-XXXX-35-XX, means only one bin of 3, 4 or 5 is in each reel.

■ Forward Voltage Groups

Only one forward voltage group will be packed in each reel. Please refer to page #4 for details.

E.g.: HVB-3433EES-XXXX-XX-47, means only one bin of 4, 5, 6 or 7 is in each reel.

## Maximum Ratings

| Parameters  | Symbol    | Rating                                | Unit |
|---|-----------|---------------------------------------|------|
| Junction Temperature  | $T_j$     | 125                                   |      |
| Forward Current<br>( $T_s=25$ )                                 | $I_f$     | 250                                   | mA   |
| Peak Forward Current<br>( $t \leq 10\mu s$ $D=0.005$ $T_s=25$ ) | $I_{fp}$  | 750                                   | mA   |
| Reverse Voltage<br>( $T_s=25$ )                                 | $V_r$     | 12                                    | V    |
| Electrostatic Discharge (HBM)                                   | $V_{ESD}$ | not designed<br>for reverse operation | V    |
| Operating Temperature   | $T_{opr}$ | -40 ~ +110                            |      |
| Storage Temperature   | $T_{stg}$ | -40 ~ +110                            | op   |

## Characteristics ( $T_s = 25^\circ C$ , $I_f = 140$ mA)

| Parameters  | Symbol                   | Rating                                      | Unit               |
|---|--------------------------|---|--------------------|
| Wavelength at peak emission                               | typ. $\lambda_{peak}$    | 465   | nm                 |
| Dominant Wavelength                                       | min. $\lambda_{dom}$     | 464   | nm                 |
|   | typ. $\lambda_{dom}$     | 470   | nm                 |
|   | max. $\lambda_{dom}$     | 476   | nm                 |
| Spectral bandwidth at 50% $I_{rel}$ max                   | typ.                     | 25  | nm                 |
| 50 % $I_v$ Viewing Angle at 50 % $I_v$                    | typ.                     | 120   |                    |
| Forward Voltage   | min. $V_f$               | 2.90  | V                  |
|   | typ. $V_f$               | 3.30  | V                  |
|   | max. $V_f$               | 4.10  | V                  |
| Reverse Current<br>( $V_R=12V$ )                          | typ. $I_r$<br>max. $I_r$ | not<br>designed for<br>reverse<br>operation | $\mu A$<br>$\mu A$ |
| PN - Real Thermal<br>Resistance (Junction / Ambient)      | max. $R_{th JA_{real}}$  | 40  | K/W                |
| PN - Real Thermal<br>Resistance (Junction / Solder Point) | max. $R_{th JS_{real}}$  | 33  | K/W                |

### Brightness Grouping ( $T_s$ $\bar{I} = 140$ mA)

| Grouping | Luminous Intensity<br>$I_v$ min. | Luminous Intensity<br>$I_v$ max. | Luminous Flux<br>$\Phi_v$ typ. |
|----------|----------------------------------|----------------------------------|--------------------------------|
| BA       | 1.80 cd                          | 2.24 cd                          | 6.30 lm                        |
| BB       | 2.24 cd                          | 2.80 cd                          | 7.90 lm                        |
| CA       | 2.80 cd                          | 3.55 cd                          | 9.90 lm                        |
| CB       | 3.55 cd                          | 4.50 cd                          | 12.60 lm                       |

### Forward Voltage Grouping ( $T_s$ $\bar{I} = 140$ mA)

| Grouping | Forward Voltage<br>$V_f$ min. | Forward Voltage<br>$V_f$ max. |
|----------|-------------------------------|-------------------------------|
| 4        | 2.90 V                        | 3.20 V                        |
| 5        | 3.20 V                        | 3.50 V                        |
| 6        | 3.50 V                        | 3.80 V                        |
| 7        | 3.80 V                        | 4.10 V                        |

### Dominant Wavelength Grouping ( $T_s$ $\bar{I} = 140$ mA)

| Grouping | Dominant Wavelength<br>$\lambda_{dom}$ min | Dominant Wavelength<br>$\lambda_{dom}$ max |
|----------|--|--|
| 3        | 464 nm                                     | 468 nm                                     |
| 4        | 468 nm                                     | 472 nm                                     |
| 5        | 472 nm                                     | 476 nm                                     |

## Information on Label

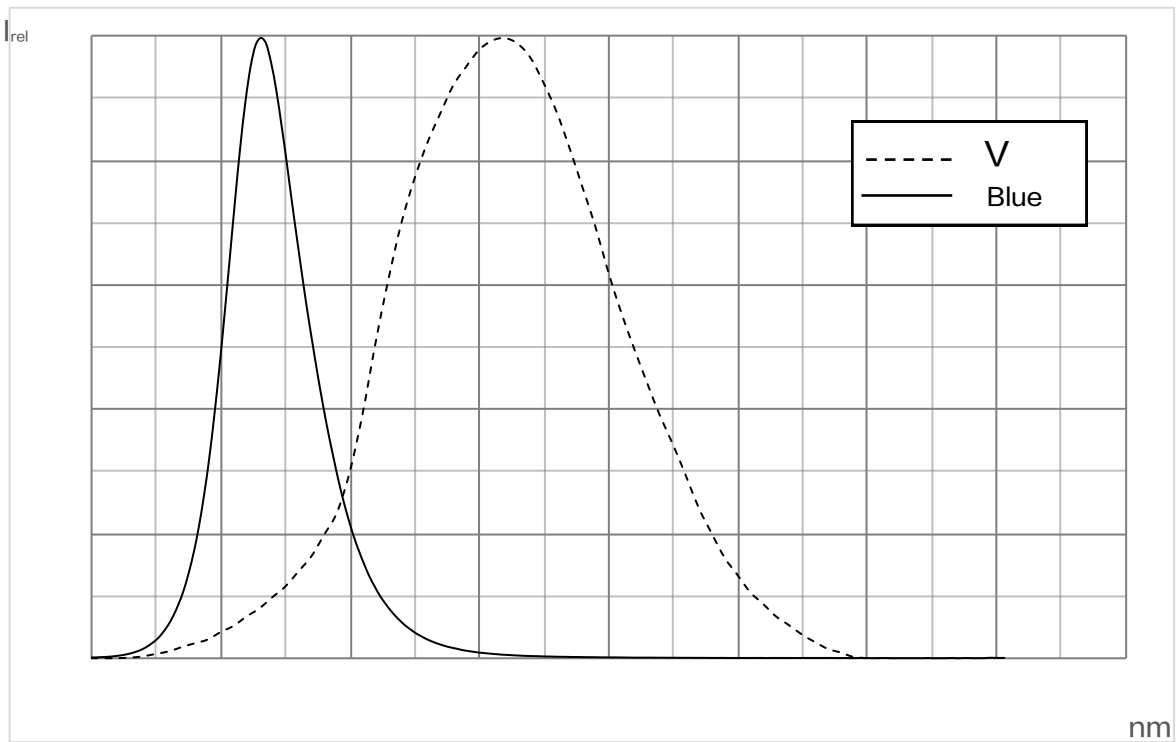
E.g. BA-3-4

| Brightness | Wavelength | Forward Voltage |
|------------|------------|-----------------|
| BA         | 3          | 4               |

$$- V(\lambda) =$$

Relative Spectral Emission -  $V(\lambda)$  = Standard Eye Response Curve

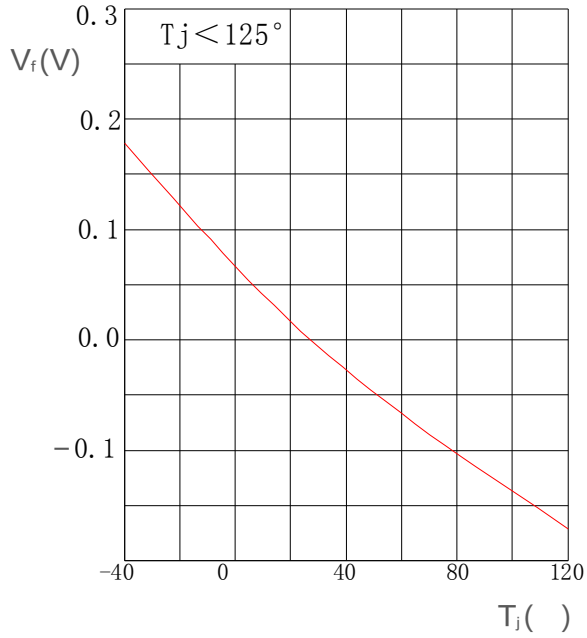
$$I_{rel} = f(\lambda); T_s \quad I_f = 140 \text{ mA}$$





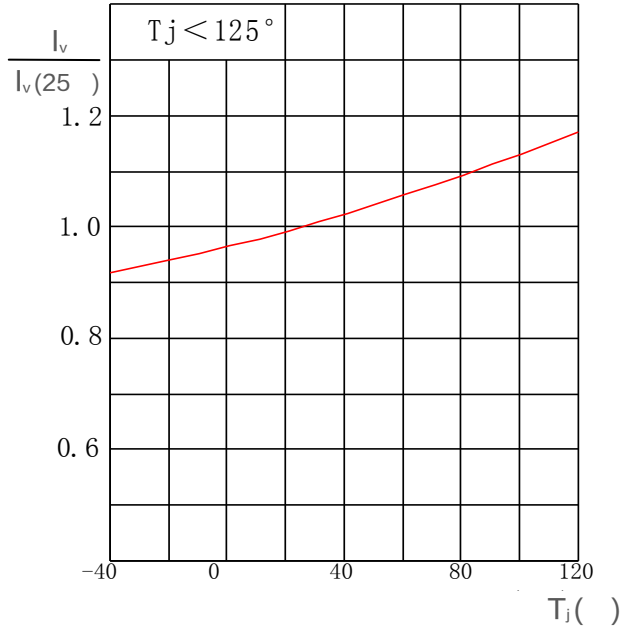
Relative Forward Voltage

$V_f = V_f - V_f$   $T_j$ ;  $I_f = 140 \text{ mA}$



Relative Luminous Intensity

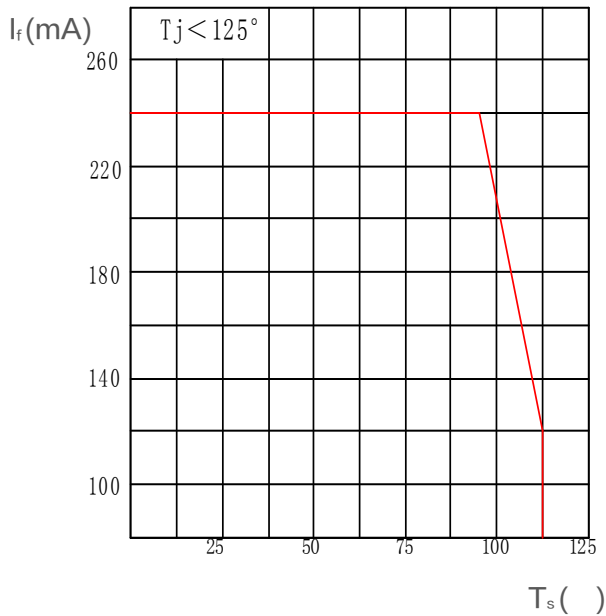
$I_v/I_v$   $T_j$ ;  $I_f = 140 \text{ mA}$



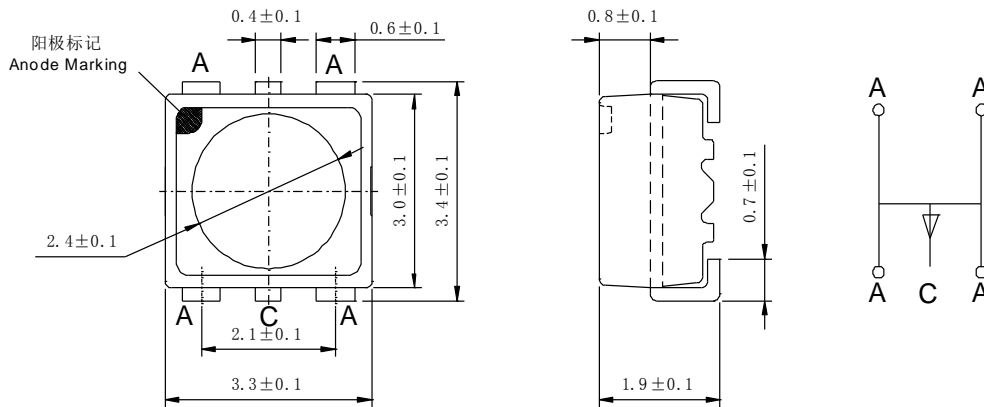
Solder point Temperature

vs. Forward Current

$I_f = f(T_s)$



## Package Outline

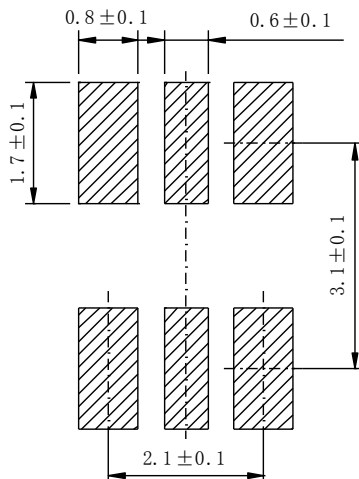


- 40mg
- Class 3B
- : 1) H<sub>2</sub>S ! ! , 336 IEC 60068-2-43)
- 2) IEC 60068-2-60 4: 10ppb H<sub>2</sub>S, 200ppb SO<sub>2</sub>, 200ppb NO<sub>2</sub>, 10ppb Cl<sub>2</sub>)

### NOTE

- Approximate Weight: 30mg
  - Mark: Anode
  - Corrosion test: Class 3B
- Test conditions: 1) H<sub>2</sub>S test ! ! , 15ppm, 336hours  
(Standards IEC 60068-2-43)
- 2) Flowing RU !!  
(Standards IEC 60068-2-60 test method 4: 10ppb H<sub>2</sub>S, 200ppb SO<sub>2</sub>, 200ppb NO<sub>2</sub>, 10ppb Cl<sub>2</sub>)

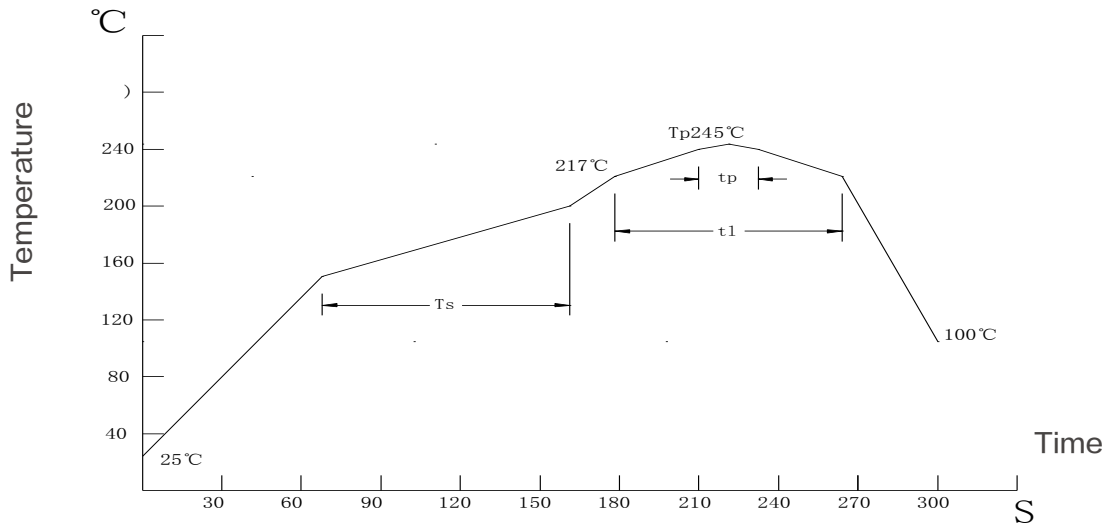
## Recommended Solder Pad



- NOTE
- Package not suitable for ultrasonic cleaning



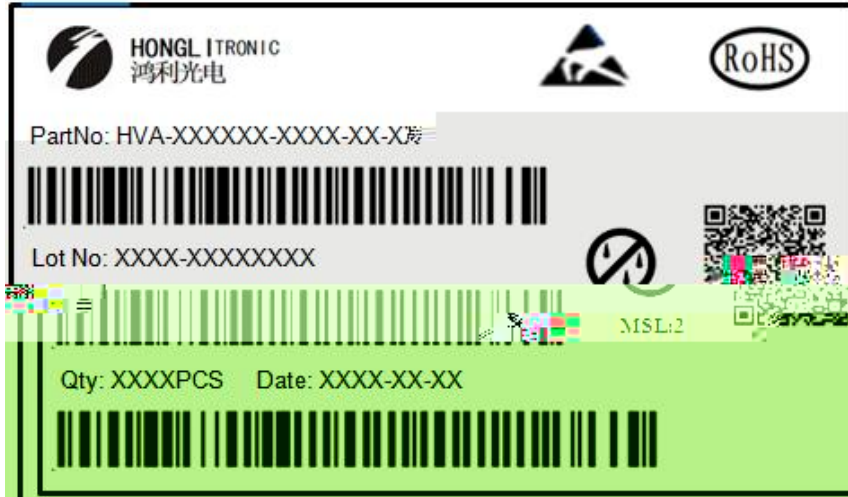
## Reflow Soldering Profile



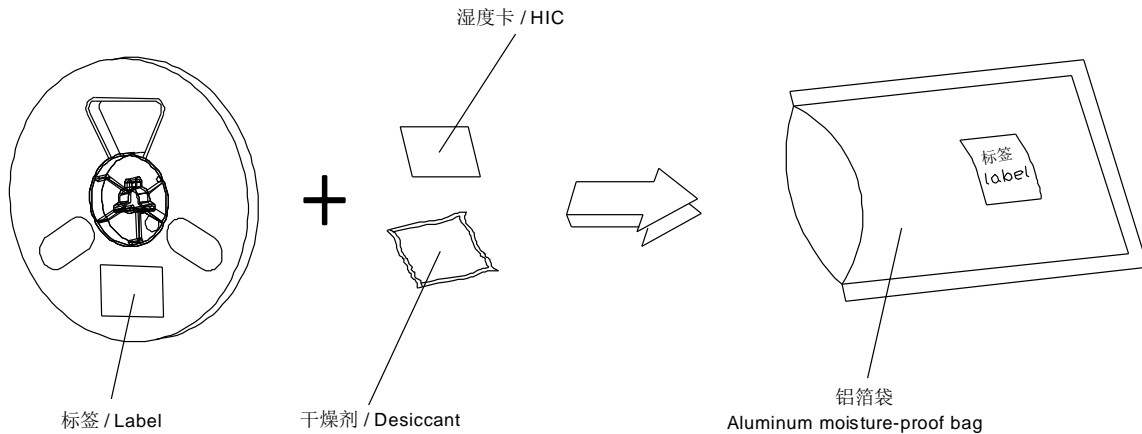
| Profile Feature                                       | Symbol | Pb-Free (SnAgCu) Assembly |      |      | Unit |
|---|--------|---------------------------|------|------|------|
|   |        | min.                      | rec. | max. |      |
| Ramp-up Rate to Preheat<br>25 -150                    | -      | -                         | 2    | 3    | /s   |
| Time<br>$T_{smin}$ to $T_{smax}$                      | $T_s$  | 60                        | 100  | 120  | s    |
| Ramp-up Rate to Peak<br>$T_{smax}$ to $T_p$           | -      | -                         | 2    | 3    | s    |
| Liquidus Temperature                                  | $T_l$  | -                         | 217  | -    | -    |
| Time above Liquidus<br>Temperature                    | $t_l$  | -                         | 80   | 100  | s    |
| Peak Temperature                                      | $T_p$  | -                         | 245  | 260  | -    |
| Time within 5<br>of the<br>Specified Peak Temperature | $t_p$  | 10                        | 20   | 30   | s    |
| Ramp-down Rate<br>$T_p$ to 100                        | -      | -                         | 3    | 6    | s    |
| Time<br>25 to $T_p$                                   | -      | -                         | -    | 480  | s    |



## Barcode-Product-Label (BPL)



## Dry Packing Process and Materials

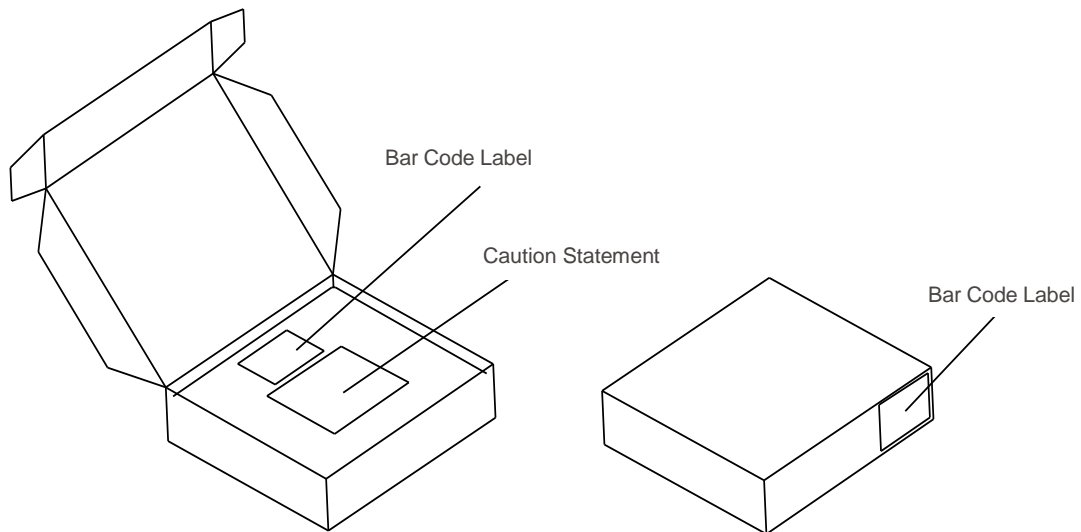


JEDEC

### NOTE

Moisture-sensitive product is packed in a dry bag containing desiccant and HIC (humidity indicator card). Regarding dry pack you may find further information in the internet or JEDEC.

## Transportation Packing and Materials



### Dimensions of Transportation Box (mm)

| Width | Length | Height |
|-------|--------|--------|
| 256 5 | 223 5  | 62 5   |
| 256 5 | 223 5  | 124 5  |

|   |         |   |                 |
|---|---------|---|-----------------|
| : |         |   |                 |
| : | ,       | ! |                 |
|   | 8ms     |   | 0.05V      0.1V |
|   | GUM K=3 |   |                 |
|   | 25ms    |   | 0.5nm      1nm  |
|   | GUM K=3 |   |                 |
|   | 25ms    |   | 8%          11% |
|   | GUM K=3 |   |                 |

## Glossary

**Typical Values:** Actual values of each product may differ from these statistical values .

**Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with +/-0.1mm.

**Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms,

R T !! R R R T !

GUM with a coverage factor of k = 3).

**Wavelength:** The wavelength is measured at a current pulse of typically 25 ms,

R T ! R R R T

GUM with a coverage factor of k = 3).

**Brightness:** Brightness values are measured during a current pulse of typically 25 ms,

R T R R R T 5 ;

with a coverage factor of k = 3).

**Special Statement:** The final interpretation of this specification shall be vested in Honglitronic, in the case of ambiguity, the Chinese version shall prevail.