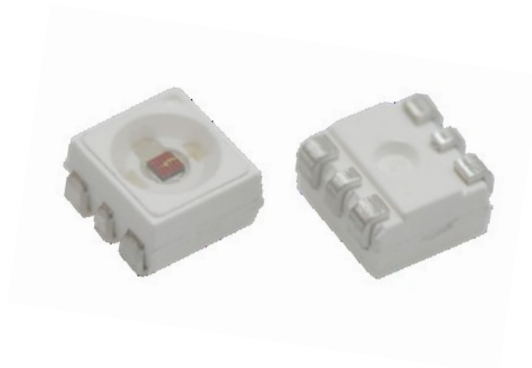


# HVR-3433EES



## 3433 PLCC6 系列产品 / Products Series

具有高发光效率、高一致性、高稳定性、高可靠性，主要用于汽车应用

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

### 特征

- 外观：白色PPA塑料，无色透明硅胶封装
- 50% I<sub>v</sub> 视角：120°
- 颜色：红色（623nm）
- 资格：通过了AEC-Q102 & IEC 60810可靠性测试
- 潮湿敏感等级-2

### Features

- Package: Colorless clear silicone in white PPA cup
- Viewing angle at 50% I<sub>v</sub>: 120°
- Color: Red (623nm)
- Qualifications: Passed reliability test per AEC-Q102 & IEC 60810 requirement
- MSL-2

### 应用

- 信号灯
- 汽车内外部照明应用

### Applications

- Signaling
- Interior and exterior lighting for automotive

## 订购信息 / Ordering Information

| 型号<br>Type  | 发光强度<br>Luminous Intensity<br>I <sub>v</sub> @ I <sub>f</sub> =140mA | 订单编号<br>Ordering<br>Code |
|---|--|--------------------------|
| HVR-3433EES- XXXX - XX - XXXX<br> <br>亮度档<br>Brightness | 3.55 -9.00 cd  | XXXXXX                   |
| <br>颜色档<br>Color  |  |                          |
| <br>电压档<br>Forward<br>Voltage                           |  |                          |

## 备注

## ■ 亮度档

单个最小包装只装有同一个亮度档次的产品，具体分档信息请见第4页

例如：HVR-3433EES-CBEA-XX-XXXX，单个卷盘中的产品只有CB、DA、DB、EA中的某一档

## ■ 颜色档

具体分档信息请见第4页

## ■ 正向电压档

单个最小包装只装有同一个正向电压档次的产品，具体分档信息请见第4页

例如：HVR-3433EES-XXXX-XX-3A4B，单个卷盘中的产品只有3A、3B、4A、4B中的某一档

## Note

## ■ Brightness Grouping

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

E.g.: HVR-3433EES-CBEA-XX-XXXX, means only one bin of CB, DA, DB or FA is in each reel.

## ■ Color Groups

Please refer to page #4 for details.

## ■ Forward Voltage Groups

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

E.g.: HVR-3433EES-XXXX-XX-3A4B, means only one bin of 3A, 3B, 4A or 4B is in each reel.

## 极限参数 / Maximum Ratings

| 参数<br>Parameters  | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---|--------------|--------------|------------|
| 结温 / Junction Temperature   | $T_j$        | 125          | °C         |
| 正向电流 / Forward Current<br>( $T_s=25^\circ\text{C}$ )  | $I_f$        | 200          | mA         |
| 峰值正向电流<br>Peak Forward Current<br>( $t \leq 10\mu\text{s}$ ; $D=0.005$ ; $T_s=25^\circ\text{C}$ ) | $I_{fp}$     | 1000         | mA         |
| 反向电压 / Reverse Voltage<br>( $T_s=25^\circ\text{C}$ )  | $V_r$        | 12           | V          |
| 抗静电能力<br>Electrostatic Discharge (HBM)  | $V_{ESD}$    | 2000         | V          |
| 操作温度 / Operating Temperature  | $T_{opr}$    | -40 ~ +110   | °C         |
| 储存温度 / Storage Temperature  | $T_{stg}$    | -40 ~ +110   | °C         |

## 特性 / Characteristics ( $T_s = 25^\circ\text{C}$ ; $I_f = 140\text{ mA}$ )

| 参数<br>Parameters   |      | 符号<br>Symbol       | 数值<br>Rating | 单位<br>Unit |
|--|------|--------------------|--------------|------------|
| 峰值波长 / Wavelength at Peak Emission                                 | typ. | $\lambda_{peak}$   | 634          | nm         |
|  | min. | $\lambda_{dom}$    | 620          | nm         |
| 主波长 / Dominant Wavelength  | typ. | $\lambda_{dom}$    | 623          | nm         |
|  | max. | $\lambda_{dom}$    | 629          | nm         |
| 半波宽 / Spectral Bandwidth at 50% $I_{rel}$ max                      | typ. | $\Delta\lambda$    | 18           | nm         |
| 50 % $I_v$ 下的视角 / Viewing Angle at 50 % $I_v$                      | typ. | $2\Phi$            | 120          | °          |
|  | min. | $V_f$              | 1.90         | V          |
| 正向电压 / Forward Voltage   | typ. | $V_f$              | 2.15         | V          |
|  | max. | $V_f$              | 2.50         | V          |
| 反向电流 / Reverse Current<br>( $V_R=12\text{V}$ )                     | typ. | $I_r$              | 0.2          | uA         |
|  | max. | $I_r$              | 10           | uA         |
| 实际热阻值 (PN结-环境) / Real Thermal Resistance (Junction / Ambient)      | max. | $R_{th JA_{real}}$ | 60           | K/W        |
| 实际热阻值 (PN结-焊点) / Real Thermal Resistance (Junction / Solder Point) | max. | $R_{th JS_{real}}$ | 37           | K/W        |

亮度分档 / Brightness Grouping .0 ( $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ )

| 档次<br>Grouping | 发光强度<br>Luminous Intensity<br>$I_v$ ( min. ) | 发光强度<br>Luminous Intensity<br>$I_v$ ( max. ) | 光通量<br>Luminous Flux<br>$\Phi_v$ ( typ. ) |
|----------------|--|--|---|
| CB             | 3.55 cd                                      | 4.50 cd                                      | 12.10 lm                                  |
| DA             | 4.50 cd                                      | 5.60 cd                                      | 15.20 lm                                  |
| DB             | 5.60 cd                                      | 7.10 cd                                      | 19.10 lm                                  |
| EA             | 7.10 cd                                      | 9.00 cd                                      | 24.20 lm                                  |

亮度分档 / Brightness Grouping .1 ( $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ )

|    |        |         |         |
|----|--------|---------|---------|
| 6D | 5.0 cd | 5.6 cd  | 15.9 lm |
| 7D | 5.6 cd | 6.3 cd  | 17.8 lm |
| 8D | 6.3 cd | 7.1 cd  | 20.1 lm |
| 5E | 7.1 cd | 8.0 cd  | 22.7 lm |
| 6E | 8.0 cd | 9.0 cd  | 25.5 lm |
| 7E | 9.0 cd | 10.0 cd | 28.5 lm |

正向电压分档 / Forward Voltage Grouping ( $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ )

| 档次<br>Grouping | 正向电压<br>Forward Voltage<br>$V_f$ ( min. ) | 正向电压<br>Forward Voltage<br>$V_f$ ( max. ) |
|----------------|---|---|
| 3A             | 1.90 V                                    | 2.05 V                                    |
| 3B             | 2.05 V                                    | 2.20 V                                    |
| 4A             | 2.20 V                                    | 2.35 V                                    |
| 4B             | 2.35 V                                    | 2.50 V                                    |

主波长分档 / Dominant Wavelength Grouping .0( $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ )

| 档次<br>Grouping | 主波长<br>Dominant Wavelength<br>$\lambda_{\text{dom}}$ ( min. ) | 主波长<br>Dominant Wavelength<br>$\lambda_{\text{dom}}$ ( max. ) |
|----------------|---|---|
| 1              | 620 nm  | 629 nm  |

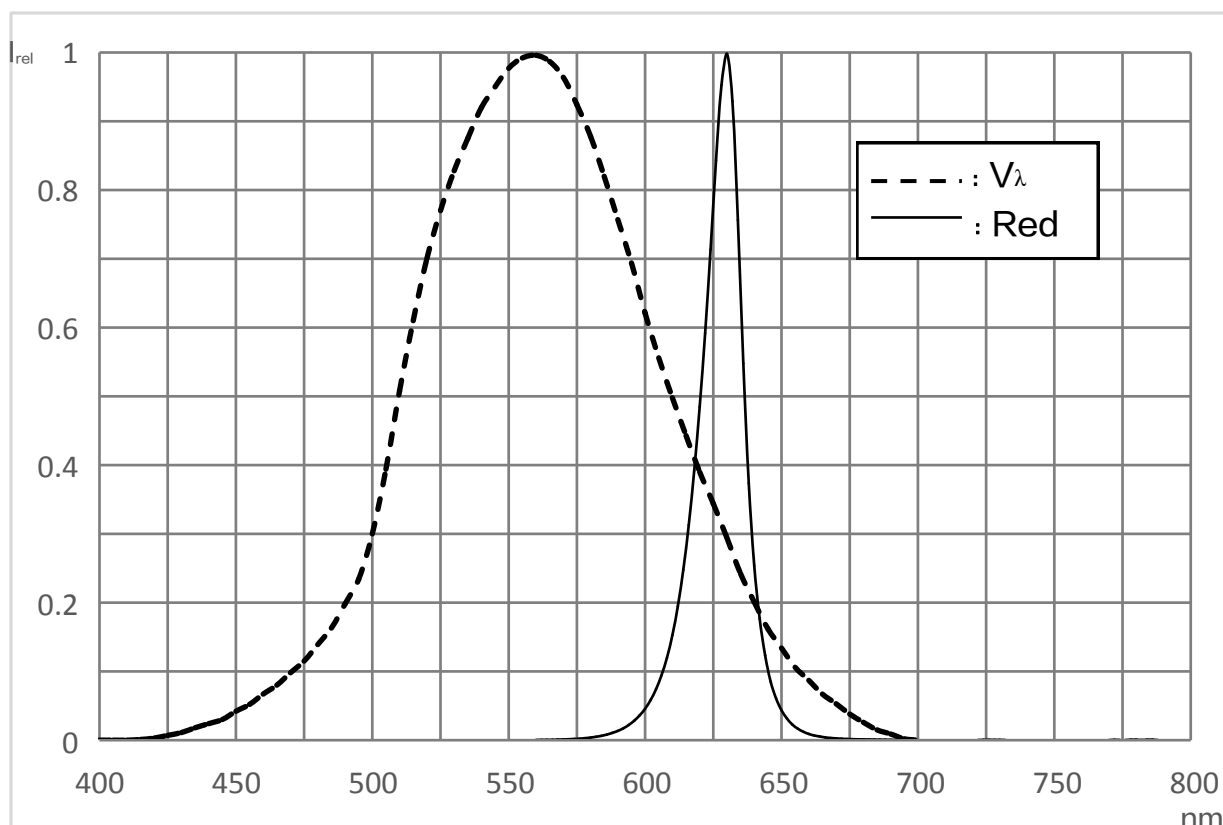
主波长分档 / Dominant Wavelength Grouping .1( $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ )

|   |        |        |
|---|--------|--------|
| 4 | 620 nm | 624 nm |
| 5 | 624 nm | 627 nm |
| 6 | 627 nm | 630 nm |

## 标签信息 / Information on Label

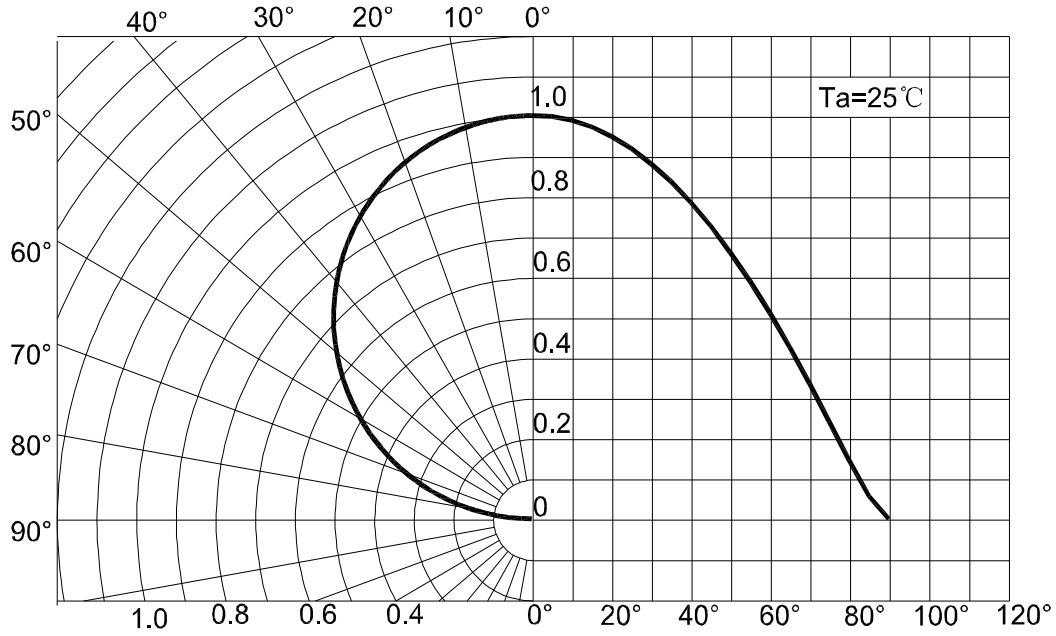
例 / E.g.: DA-1-3A

| 亮度档 / Brightness | 颜色 / Color | 正向电压 / Forward Voltage |
|------------------|------------|------------------------|
| DA               | 1          | 3A                     |

相对发射光谱 -  $V(\lambda)$  = 标准人眼视觉曲线Relative Spectral Emission -  $V(\lambda)$  = Standard Eye Response Curve $I_{rel} = f(\lambda)$ ;  $T_s = 25\text{ }^\circ\text{C}$ ;  $I_f = 140\text{ mA}$ 

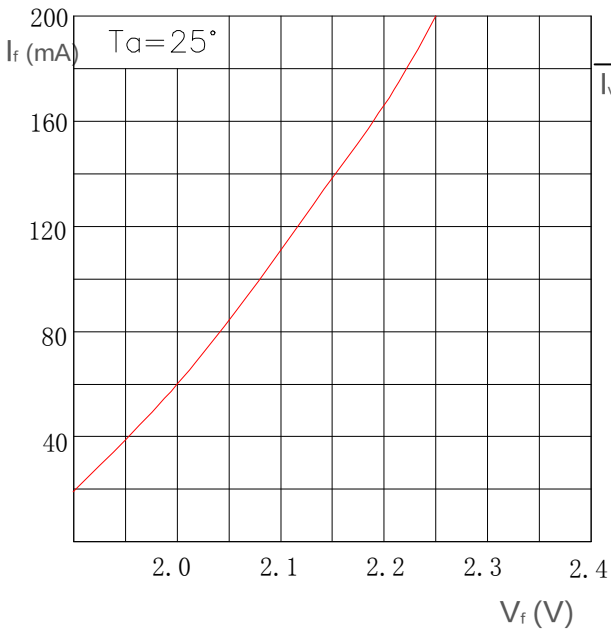
辐射特性 / Radiation Characteristics

$I_{rel} = f(\phi); T_s = 25\text{ }^\circ\text{C}$



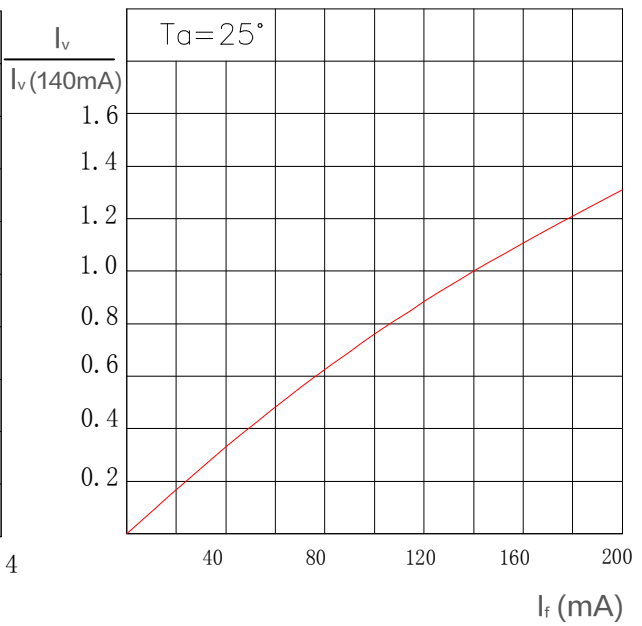
正向电流 / Forward Current

$I_f = f(V_f); T_a = 25\text{ }^\circ\text{C}$

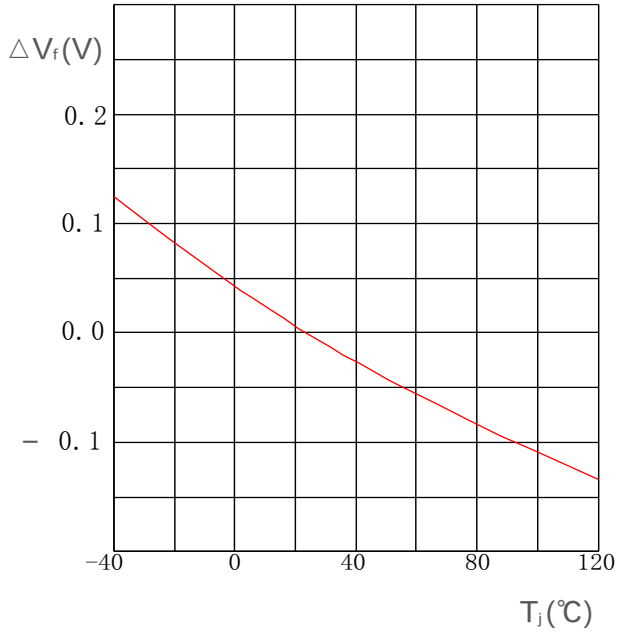


相对亮度特性曲线 / Relative Luminous Intensity

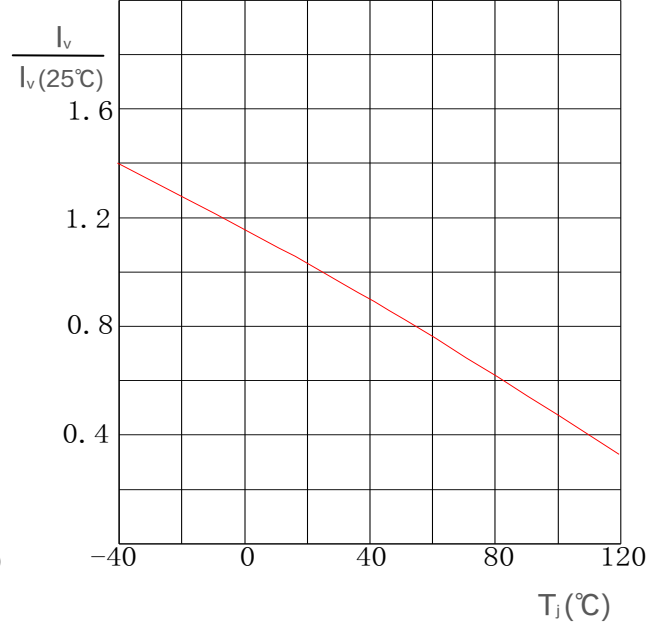
$I_v/I_v(140\text{ mA}) = f(I_f); T_a = 25\text{ }^\circ\text{C}$



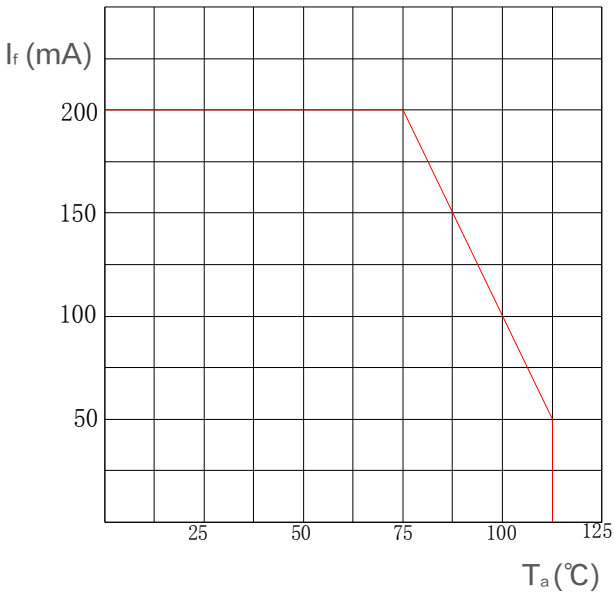
相对正向电压 / Relative Forward Voltage  
 $\Delta V_f = V_f - V_f(25^\circ\text{C}) = f(T_j); I_f = 140\text{ mA}$



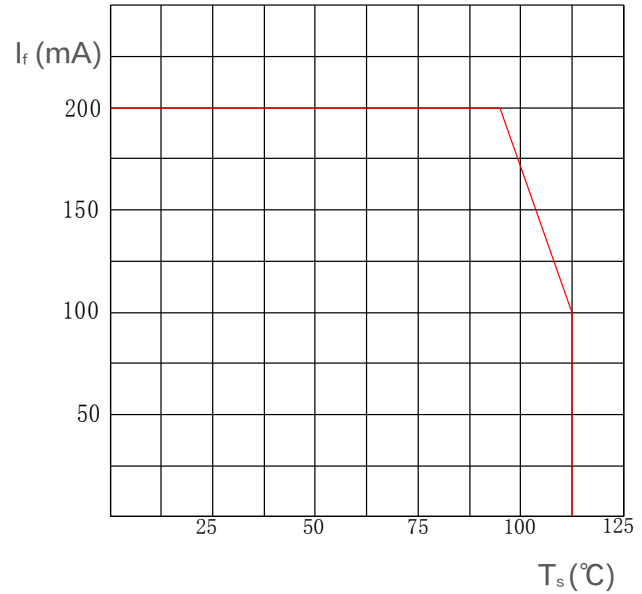
相对发光强度 / Relative Luminous Intensity  
 $I_v/I_v(25^\circ\text{C}) = f(T_j); I_f = 140\text{ mA}$



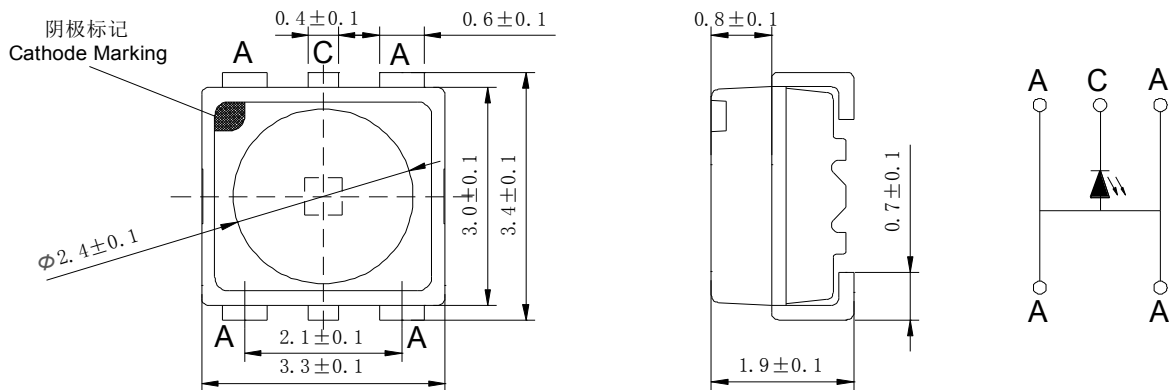
环境温度与正向电流  
 Ambient Temperature vs. Forward Current  
 $I_f = f(T_a)$



焊点温度与正向电流 / Solder Point Temperature vs. Forward Current  
 $I_f = f(T_s)$



## 产品尺寸 / Package Outline



### 备注

■ 统计质量: 40mg

■ 标 记: 阴极

■ 腐蚀试验: 等级 3B

测试条件: 1) H<sub>2</sub>S 测试: 40°C / 90%R.H, 15ppm, 336小时 (标准IEC 60068-2-43)

2) 流动混合气体测试: 25°C / 75 %R.H, 500小时

(标准IEC 60068-2-60 方法 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: 40mg

■ Mark: Cathode

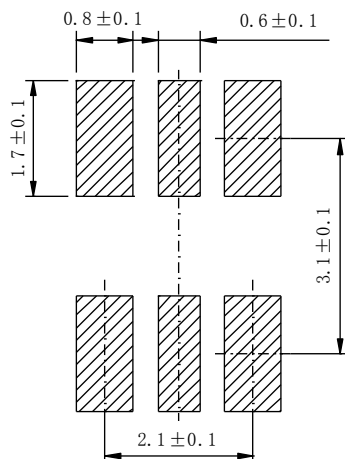
■ Corrosion test: Class 3B

Test conditions: 1) H<sub>2</sub>S test: 40°C / 90%R.H, 15ppm, 336hours  
(Standards IEC 60068-2-43)

2) Flowing mixed gas test: 25°C / 75 %R.H, 500hours

(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>)

## 推荐焊盘 / Recommended Solder Pad



### 注释

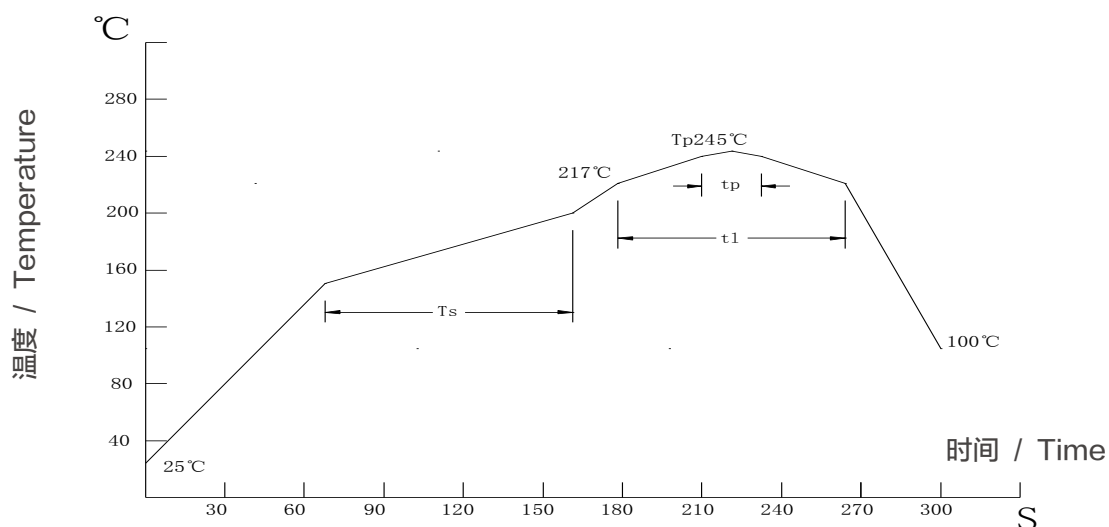
■ 不适合超声波清洗的封装

### NOTE

■ Package not suitable for ultrasonic cleaning

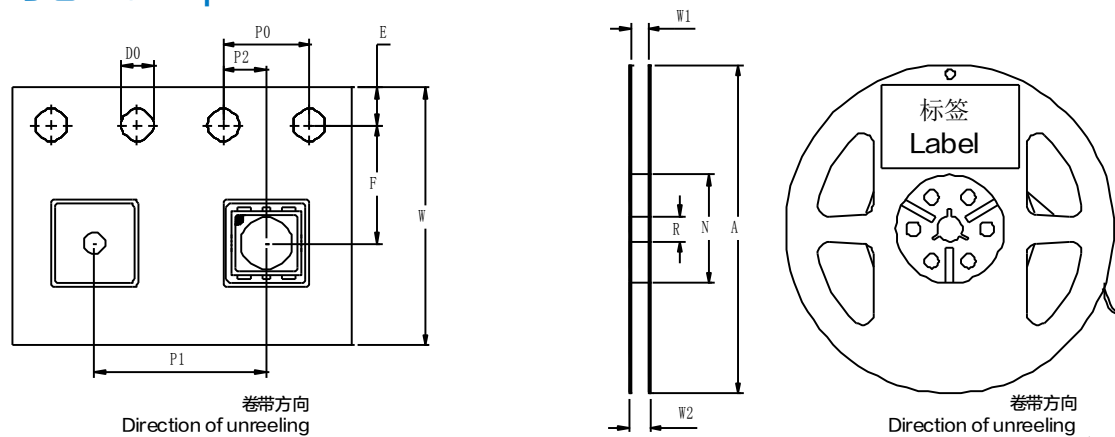


## 回流焊要求 / Reflow Soldering Profile



| 主要特性<br>Profile Feature   | 符号<br>Symbol | 无铅焊接<br>Pb-Free (SnAgCu) Assembly |      |      | 单位<br>Unit |
|---|--------------|-----------------------------------|------|------|------------|
|   |              | min.                              | rec. | max. |            |
| 预热升温速率<br>Ramp-up Rate to Preheat<br>25°C-150°C                             | -            | -                                 | 2    | 3    | °C/s       |
| 时间 / Time<br>( $T_{smin}$ to $T_{smax}$ )                                   | $T_s$        | 60                                | 100  | 120  | s          |
| 峰值升温速率<br>Ramp-up Rate to Peak<br>( $T_{smax}$ to $T_p$ )                   | -            | -                                 | 2    | 3    | °C/s       |
| 熔点温度<br>Liquidus Temperature  | $T_l$        | -                                 | 217  | -    | °C         |
| 高于熔点温度的时间<br>Time above Liquidus<br>Temperature                             | $t_l$        | -                                 | 80   | 100  | s          |
| 峰值温度 / Peak Temperature   | $T_p$        | -                                 | 245  | 260  | °C         |
| 规定的峰值温度 ± 5°C 以内的时间<br>Time within 5°C of the<br>Specified Peak Temperature | $t_p$        | 10                                | 20   | 30   | s          |
| 降温速率 / Ramp-down Rate<br>( $T_p$ to 100°C)                                  | -            | -                                 | 3    | 6    | °C/s       |
| 时间 / Time<br>(25°C to $T_p$ )   | -            | -                                 | -    | 480  | s          |

## 卷带与卷盘 / Tape and Reel



前端空带: 最小400 mm; 尾端空带: 最小160 mm; 尺寸符合: IEC 60286-3, EIA 481-D标准

Leader: min. 400 mm; Trailer: min. 160 mm; Requirement acc. to IEC 60286-3, EIA 481-D

## 卷带尺寸 / Tape Dimensions ( mm )

| W      | P0    | P1    | P2    | D0         | E        | F       |
|--------|-------|-------|-------|------------|----------|---------|
| 12±0.3 | 4±0.1 | 4±0.1 | 2±0.1 | 1.5+0.1/-0 | 1.75±0.1 | 5.5±0.1 |

## 卷盘尺寸 / Reel Dimensions ( mm )

| A         | W1          | W2          | N        | R        |
|-----------|-------------|-------------|----------|----------|
| 177.8±0.1 | 12.7+2/-0.5 | 14.8+2/-0.5 | 58.5±0.2 | 13.5±0.2 |

## 数量 (颗/卷) / Quantity ( pcs/reel )

1000

## 条形码标签 / Barcode-Product-Label (BPL)

**HONGLI TRONIC**  
鸿利光电

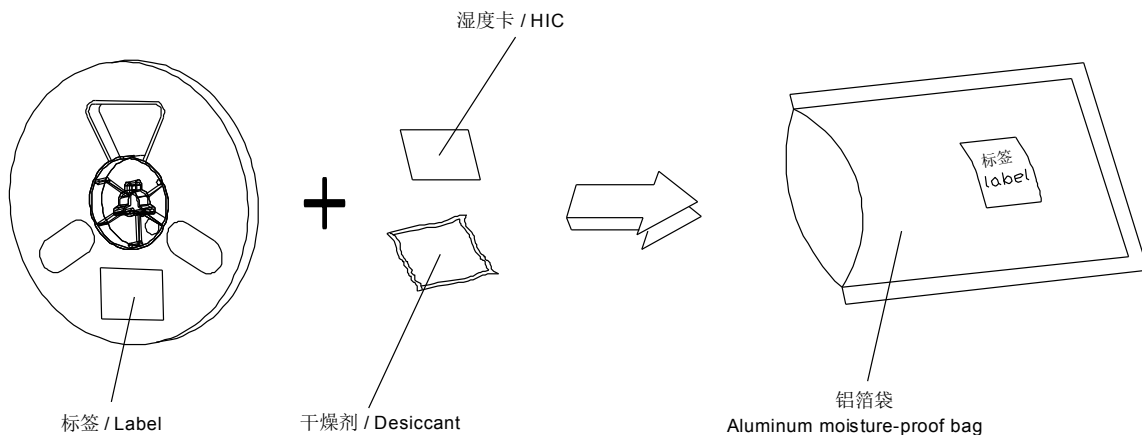
**RoHS**

Device No:HVX-XXXXXXX  
Lot No:XXXX-XXXXXXXX  
Product No:XXXXXXXXXXXX  
Qty:XXXXPCS D/C:XXXX

BIN:XX-XX-XX  
IV:XXXX-XXXX mcd  
WLD:XXX-XXX nm  
VF:XXX-XXX V

MSL:2

## 包装材料及过程 / Dry Packing Process and Materials



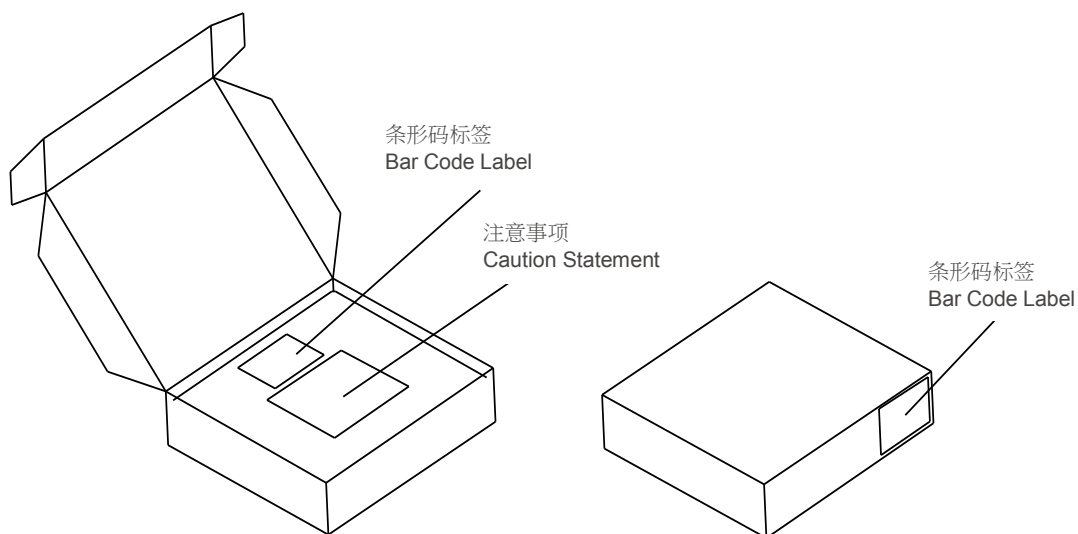
### 备注

产品包装在一个干燥的铝箔袋里，同时内附有干燥剂和湿度卡。  
对于干燥包装，您可以从网络或JEDEC标准里获取。

### 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.

## 出货包装及材料 / Transportation Packing and Materials



## 出货箱尺寸 / Dimensions of Transportation Box (mm)

| 宽度 / Width | 长度 / Length | 高度 / Height |
|------------|-------------|-------------|
| 256 ± 5    | 223 ± 5     | 62 ± 5      |
| 256 ± 5    | 223 ± 5     | 124 ± 5     |

## 注释

**典型值:** 每个产品的实际值可能与这些统计出的典型值不同。

**公差:** 除非图纸中有说明, 公差默认为  $\pm 0.1$  mm。

**正向电压:** 正向电压是在8ms脉冲电流并且内部在线性为  $\pm 0.05$ V和一个  $\pm 0.1$ V的外在不确定性 (按照GUM K=3因子) 来进行测试的。

**波长:** 波长是在25ms脉冲电流并且内部在线性为  $\pm 0.5$ nm和一个  $\pm 1$ nm的外在不确定性 (按照GUM K=3因子) 来进行测试的。

**亮度:** 亮度是在25ms脉冲电流并且内部在线性为  $\pm 8\%$ 和一个  $\pm 11\%$ 的外在不确定性 (按照GUM K=3因子) 来进行测试的。

**特殊声明:** 本版本最终解释权归属鸿利智汇, 当中英文意思发生歧义时, 以中文为准。

## 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, with an internal reproducibility of  $\pm 0.05$  V and an expanded uncertainty of  $\pm 0.1$  V (acc. to GUM with a coverage factor of  $k = 3$ ).

**Wavelength:** The wavelength is measured at a current pulse of typically 25 ms, with an internal reproducibility of  $\pm 0.5$  nm and an expanded uncertainty of  $\pm 1$  nm (acc. to GUM with a coverage factor of  $k = 3$ ).

**Brightness:** Brightness values are measured during a current pulse of typically 25 ms, with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (acc. to GUM 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.