

# HVCY-3528CEX



## 3528 PLCC2 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，有色硅树脂封装
- 50%  $I_v$  视角：120°
- 颜色：Cx=0.57,Cy=0.41 ( CIE1931 )
- 资格：通过了AEC-Q102 & IEC 60810可靠性测试
- 潮湿敏感等级-2

### Features

- Package: Colored silicon resin in white PPA cup
- Viewing angle at 50%  $I_v$ : 120°
- Color: Cx=0.57,Cy=0.41
- 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> =50mA | 订购编号<br>Ordering<br>Code |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------|
| HVCY-3528CEX - XXXX - XXXX - XXXX                                                                                                                                                                          |                                                                     |                          |
| <div> <div>XXXX</div> <div>亮度档<br/>Brightness</div> </div> <div> <div>XXXX</div> <div>色坐标<br/>Chromaticity<br/>Coordinate</div> </div> <div> <div>XXXX</div> <div>电压档<br/>Forward<br/>Voltage</div> </div> | 3300 – 6100 mcd                                                     | XXXXXX                   |

## 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：HVCY-3528CEX-CYDY-XX-XXXX，单个卷盘中的产品只有CY、CZ、DX、DY中的某一档

## ■ 颜色档

单个最小包装只装有同一个颜色档次的产品，具体分档信息请见第5页

例如：HVCY-3528CEX-XXXX-WY1WY6-XXXX，单个卷盘中的产品只有WY1、WY2、WY3、WY4、WY5、WY6中的某一档

## ■ 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：HVCY-3528CEX-XXXX-XX-5B7A，单个卷盘中的产品只有5B、6A、6B、7A中的某一档

## Note

## ■ Brightness Grouping

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

E.g.: HVCY-3528CEX-CYDY-XX-XXXX, means only one bin of CY、CZ、DX or DY is in one reel.

## ■ Color Groups

Only one color group will be packed in one reel. Please refer to page #5 for details.

E.g.: HVCY-3528CEX-XXXX-WY1WY6-XXXX, means only one bin of WY1、WY2 WY3、WY4、WY5 or WY6is in one reel.

## ■ Forward Voltage Groups

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

E.g.: HVCY-3528CEX-XXXX-XX-5B7A, means only one bin of 5B、6A、6B or 7A is in one 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>( $T_s=25^{\circ}\text{C}$ )                                              | $I_f$        | 90                                                | mA         |
| 峰值正向电流<br>Peak Forward Current<br>( $t \leq 10\mu\text{s}$ ; $D=0.005$ ; $T_s=25^{\circ}\text{C}$ ) | $I_{fp}$     | 200                                               | mA         |
| 反向电压 / Reverse Voltage<br>( $T_s=25^{\circ}\text{C}$ )                                              | $V_r$        | 不适用于反向操作<br>Not designed for<br>reverse operation | V          |
| 抗静电能力<br>Electrostatic Discharge (HBM)                                                              | $V_{ESD}$    | 8000                                              | 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 ( $T_s = 25^{\circ}\text{C}$ ;  $I_f = 50\text{ mA}$ )

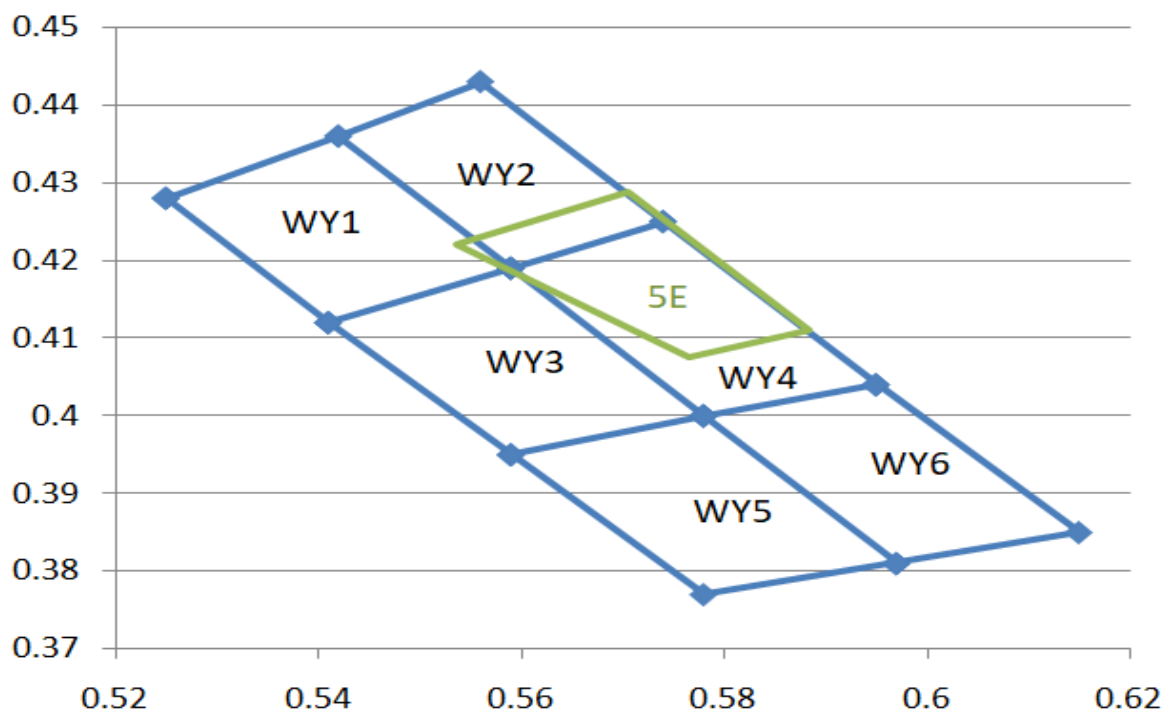
| 参数<br>Parameters                                   |      | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|----------------------------------------------------|------|--------------|--------------|------------|
| 色坐标 / Chromaticity coordinates acc. to<br>CIE 1931 | typ. | Cx           | 0.57         | —          |
|                                                    |      | Cy           | 0.41         | —          |
| 50 % $I_v$ 下的视角 / Viewing Angle at 50 % $I_v$      | typ. | $2\Phi$      | 120          | °          |
| 正向电压 / Forward Voltage                             | min. | $V_f$        | 2.70         | V          |
|                                                    | typ. | $V_f$        | 3.10         | V          |
|                                                    | max  | $V_f$        | 3.70         | V          |
| Real thermal resistance junction/ solder-point     | typ. | $R_{thJS}$   | 115          | °C/W       |

亮度分档 / Brightness Grouping ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 50\text{ mA}$ )

| 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. ) |
|----------------|----------------------------------------------|----------------------------------------------|-------------------------------------------|
| CY             | 3300 mcd                                     | 3900 mcd                                     | 10.3 lm                                   |
| CZ             | 3900 mcd                                     | 4500 mcd                                     | 12.5 lm                                   |
| DX             | 4500 mcd                                     | 5200 mcd                                     | 14.8 lm                                   |
| DY             | 5200 mcd                                     | 6100 mcd                                     | 17.4 lm                                   |

正向电压分档 / Forward Voltage Grouping ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 50\text{ mA}$ )

| 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. ) |
|----------------|-------------------------------------------|-------------------------------------------|
| 5B             | 2.70 V                                    | 2.90 V                                    |
| 6A             | 2.90 V                                    | 3.10 V                                    |
| 6B             | 3.10 V                                    | 3.40 V                                    |
| 7A             | 3.40 V                                    | 3.70 V                                    |

颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 50\text{ mA}$ )

|     |        |        |     |        |        |     |        |        |
|-----|--------|--------|-----|--------|--------|-----|--------|--------|
| WY1 | 0. 525 | 0. 428 | WY3 | 0. 541 | 0. 412 | WY5 | 0. 559 | 0. 395 |
|     | 0. 542 | 0. 436 |     | 0. 559 | 0. 419 |     | 0. 578 | 0. 400 |
|     | 0. 559 | 0. 419 |     | 0. 578 | 0. 400 |     | 0. 597 | 0. 381 |
|     | 0. 541 | 0. 412 |     | 0. 559 | 0. 395 |     | 0. 578 | 0. 377 |
|     | 0. 525 | 0. 428 |     | 0. 541 | 0. 412 |     | 0. 559 | 0. 395 |
| WY2 | 0. 542 | 0. 436 | WY4 | 0. 559 | 0. 419 | WY6 | 0. 578 | 0. 400 |
|     | 0. 556 | 0. 443 |     | 0. 574 | 0. 425 |     | 0. 595 | 0. 404 |
|     | 0. 574 | 0. 425 |     | 0. 595 | 0. 404 |     | 0. 615 | 0. 385 |
|     | 0. 559 | 0. 419 |     | 0. 578 | 0. 400 |     | 0. 597 | 0. 381 |
|     | 0. 542 | 0. 436 |     | 0. 559 | 0. 419 |     | 0. 578 | 0. 400 |
| 5E  | 0. 554 | 0. 422 |     |        |        |     |        |        |
|     | 0. 571 | 0. 429 |     |        |        |     |        |        |
|     | 0. 588 | 0. 411 |     |        |        |     |        |        |
|     | 0. 576 | 0. 408 |     |        |        |     |        |        |
|     | 0. 555 | 0. 422 |     |        |        |     |        |        |

标签信息 / Information on Label

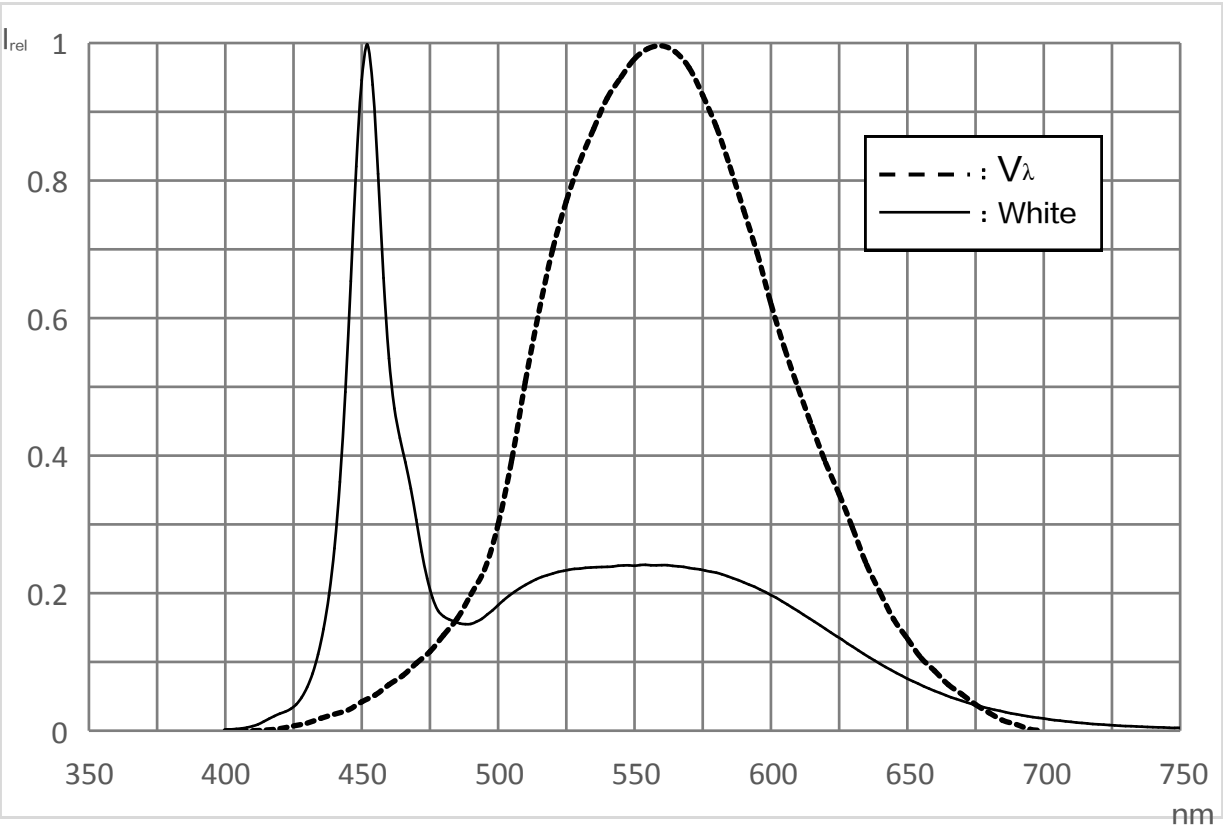
例 / E.g.: V1-P2-6A

| 亮度档 / Brightness | 颜色 / Color | 正向电压 / Forward Voltage |
|------------------|------------|------------------------|
| V1               | P2         | 6A                     |

相对发射光谱 -  $V(\lambda)$  = 标准人眼视觉曲线

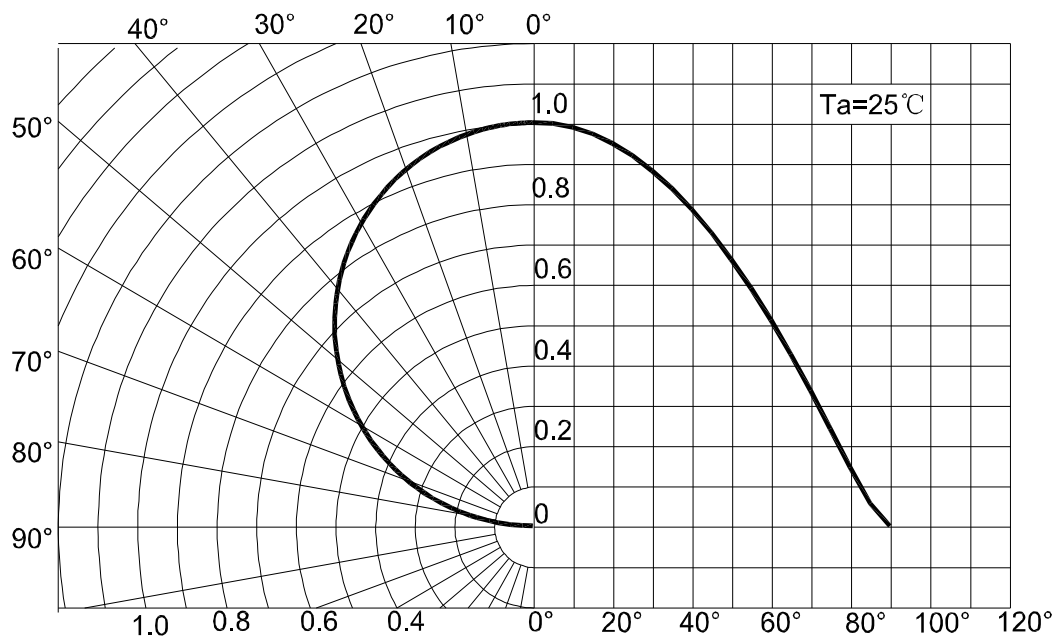
Relative Spectral Emission -  $V(\lambda)$  = Standard Eye Response Curve

$I_{rel} = f(\lambda)$ ;  $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 50\text{mA}$



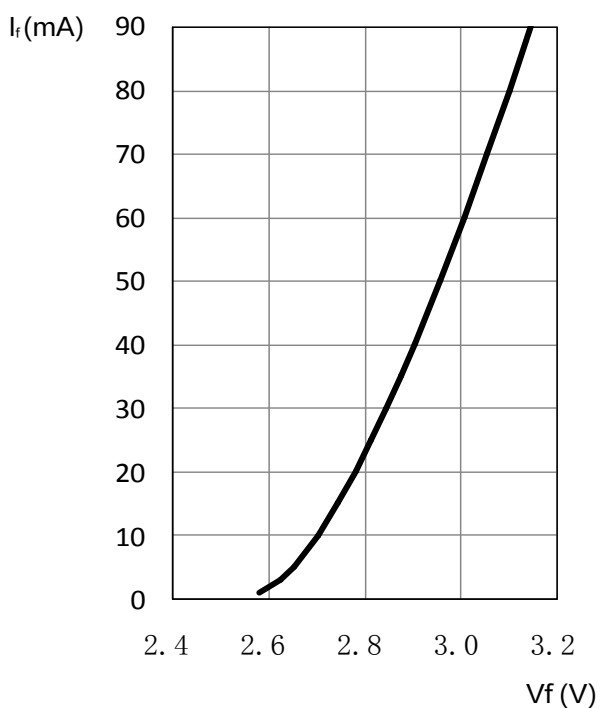
## 辐射特性 / Radiation Characteristics

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



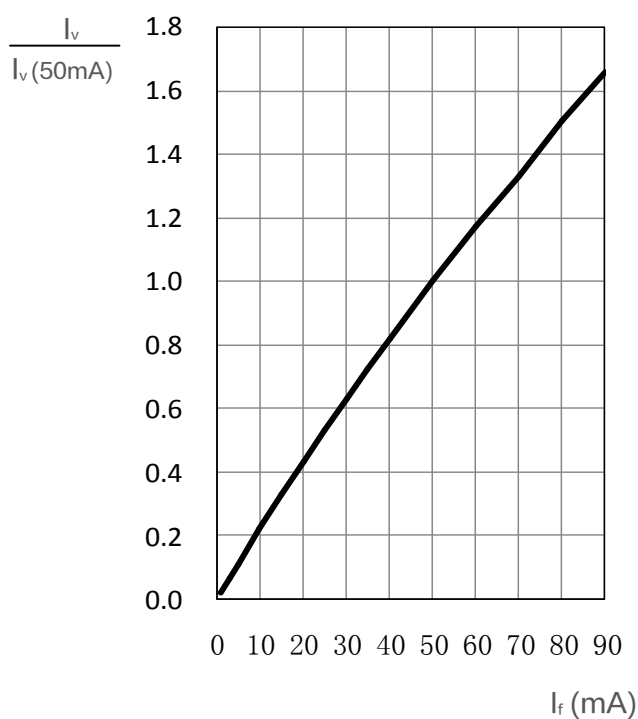
## 正向电流 / Forward Current

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

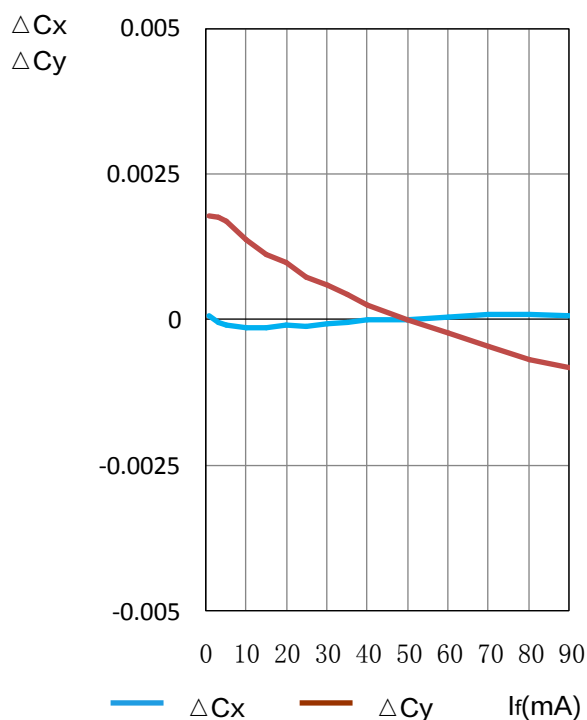


## 相对亮度特性曲线 / Relative Luminous Intensity

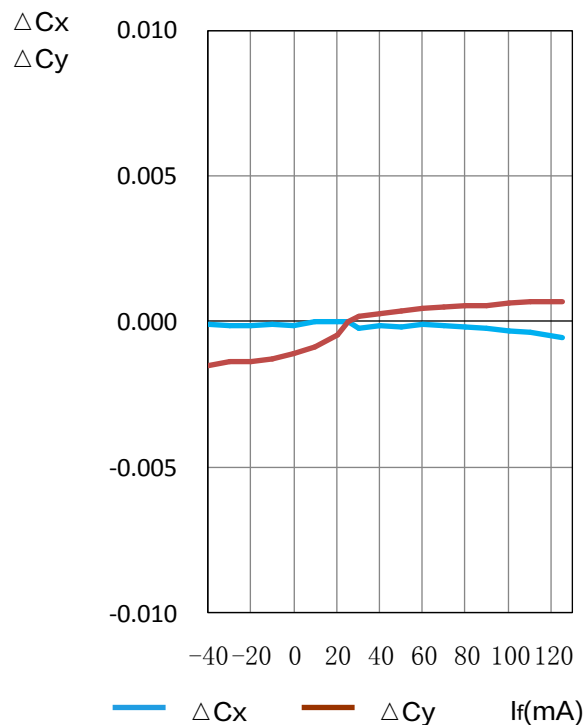
$$I_v/I_v(50\text{mA}) = f(I_f); T_a = 25\text{ }^{\circ}\text{C}$$



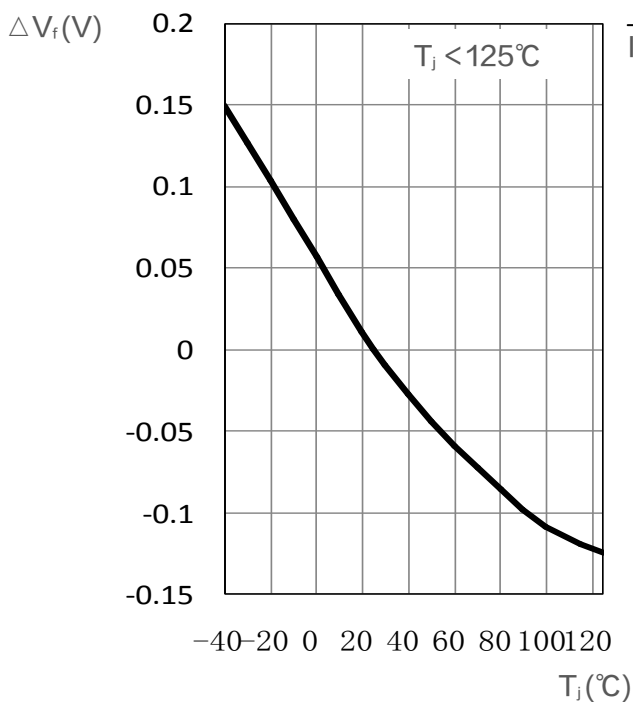
色坐标数据表/Chromaticity coordinate shift  
 $\Delta Cx, \Delta Cy = f(I_f); T_s = 25^\circ\text{C}$



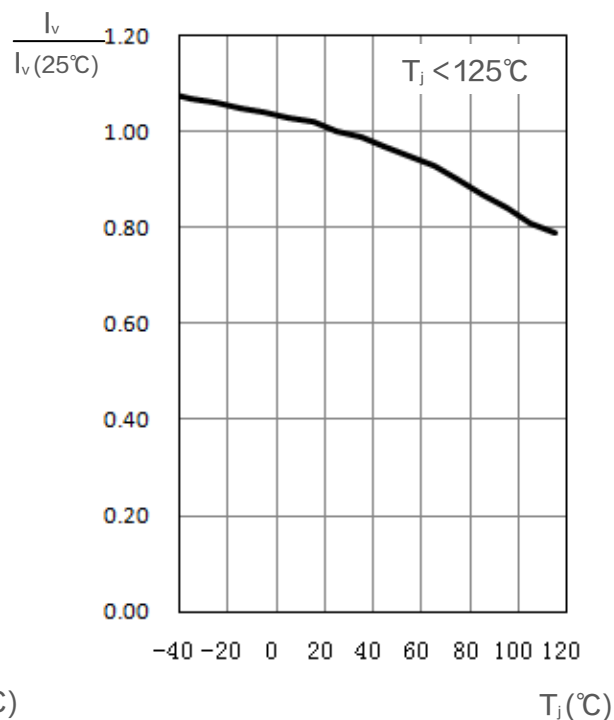
色坐标数据表/Chromaticity coordinate shift  
 $\Delta Cx, \Delta Cy = f(I_f); I_f = 50\text{mA}$



相对正向电压 / Relative Forward Voltage  
 $\Delta V_f = V_f - V_f(25^\circ\text{C}) = f(T_j); I_f = 50\text{ mA}$



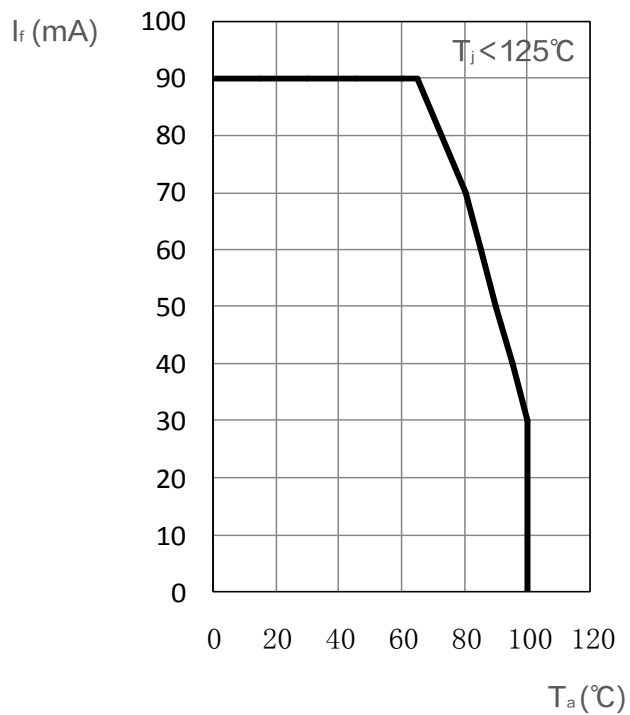
相对发光强度 / Relative Luminous Intensity  
 $I_v / I_v(25^\circ\text{C}) = f(T_j); I_f = 50\text{ mA}$



## 环境温度与正向电流

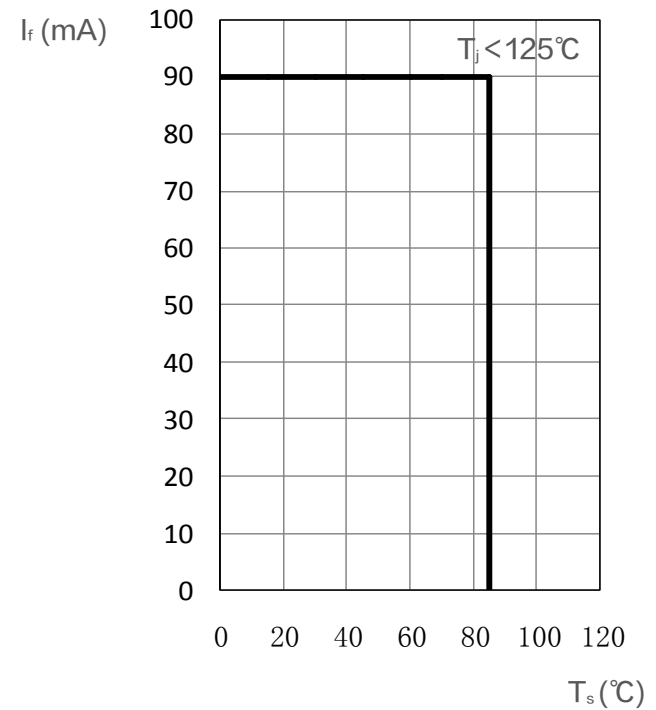
Ambient Temperature vs. Forward Current

$$I_f = f(T_a)$$

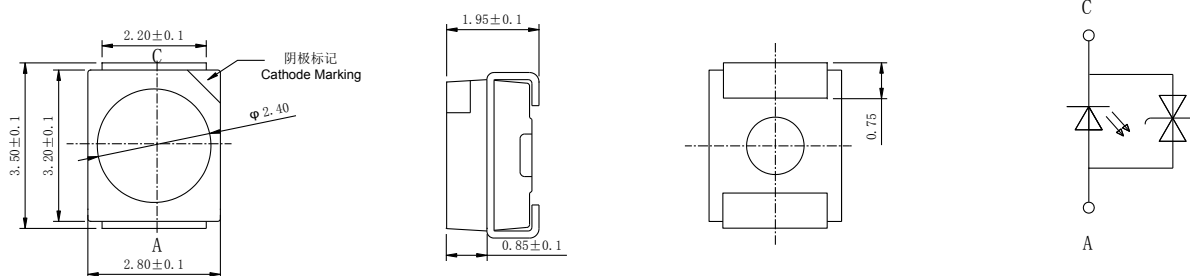


## 焊点温度与正向电流 / Solder Point Temperature vs. Forward Current

$$I_f = f(T_s)$$



## 产品尺寸 / Package Outline



## 备注

■ 统计质量: 30mg

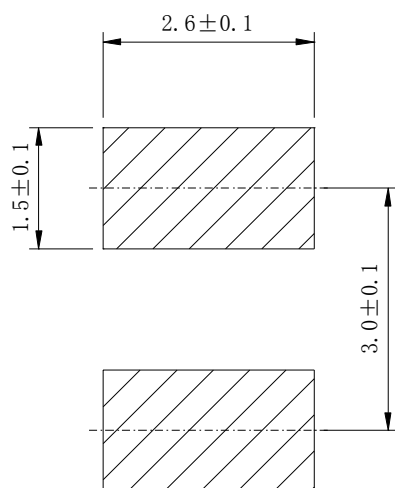
■ 标 记: 负极

## NOTE

■ Approximate Weight: 30mg

■ Mark: Cathode

## 推荐焊盘 / Recommended Solder Pad



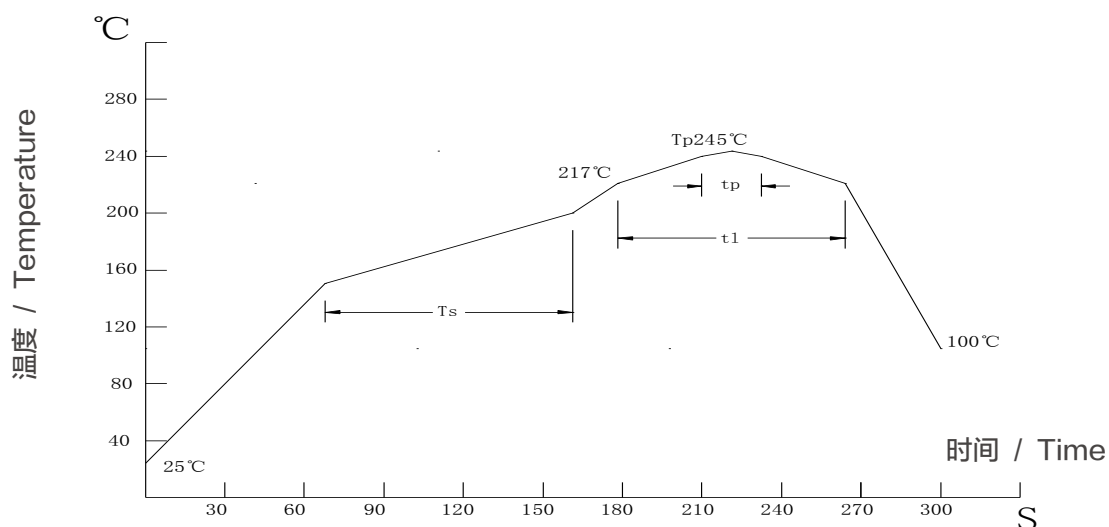
## 注释

■ 不适合超声波清洗的封装

## NOTE

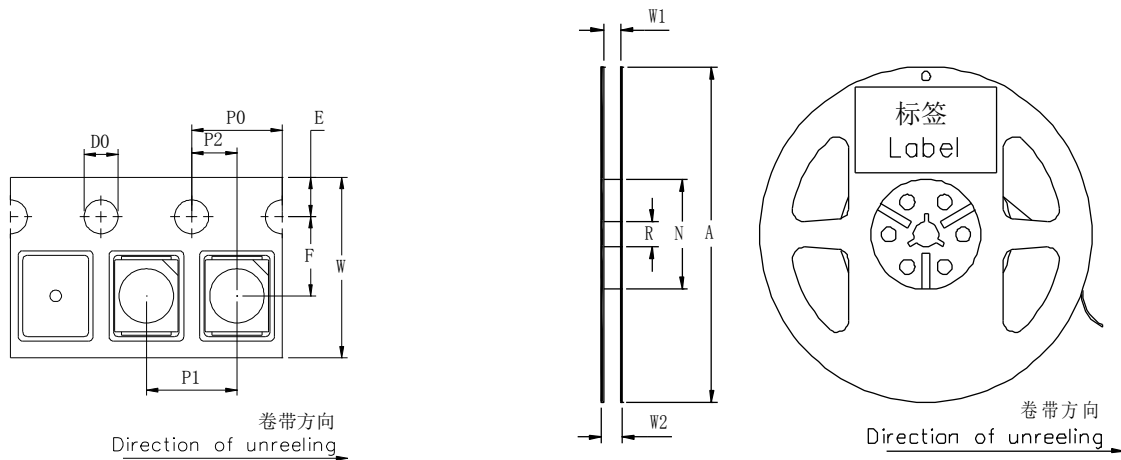
■ Package not suitable for ultrasonic cleaning

## 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 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 $\pm 5^\circ\text{C}$ 以内的时间<br>Time within $5^\circ\text{C}$ of the<br>Specified Peak Temperature | $t_p$        | 10                       | 20   | 30   | s          |
| 降温速率 / Ramp-down Rate<br>( $T_p$ to $100^\circ\text{C}$ )                                                 | —            | —                        | 3    | 6    | °C/s       |
| 时间 / Time<br>( $25^\circ\text{C}$ 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

## 卷带尺寸 / Tape Dimensions ( mm )

| W     | P0    | P1    | P2     | D0      | E        | F        |
|-------|-------|-------|--------|---------|----------|----------|
| 8±0.1 | 4±0.1 | 4±0.1 | 2±0.05 | 1.5±0.1 | 1.75±0.1 | 3.5±0.05 |

## 卷盘尺寸 / Reel Dimensions ( mm )

| A     | W1      | W2       | N        | R        |
|-------|---------|----------|----------|----------|
| 177.8 | 9.3±0.3 | 11.2±0.3 | 58.5±0.2 | 13.5±0.2 |

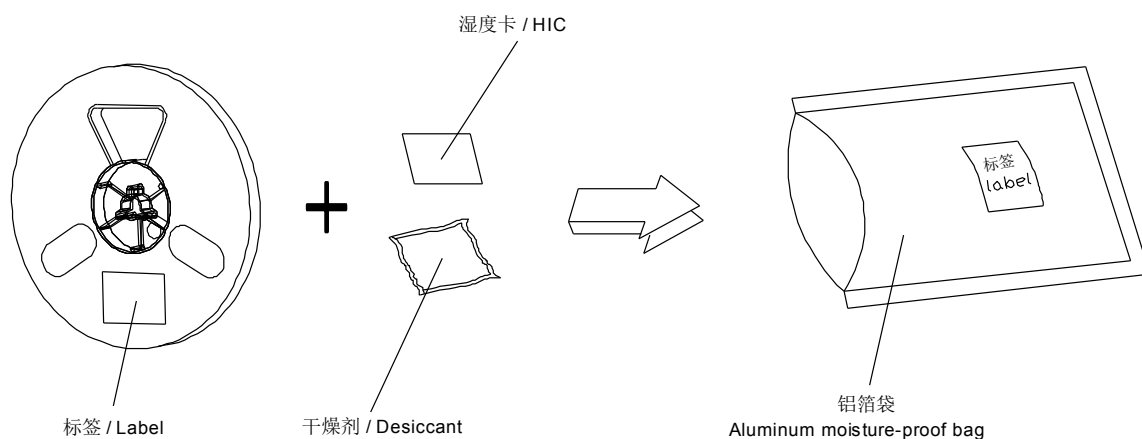
## 数量 (颗/卷) / Quantity ( pcs/reel )

2000

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



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



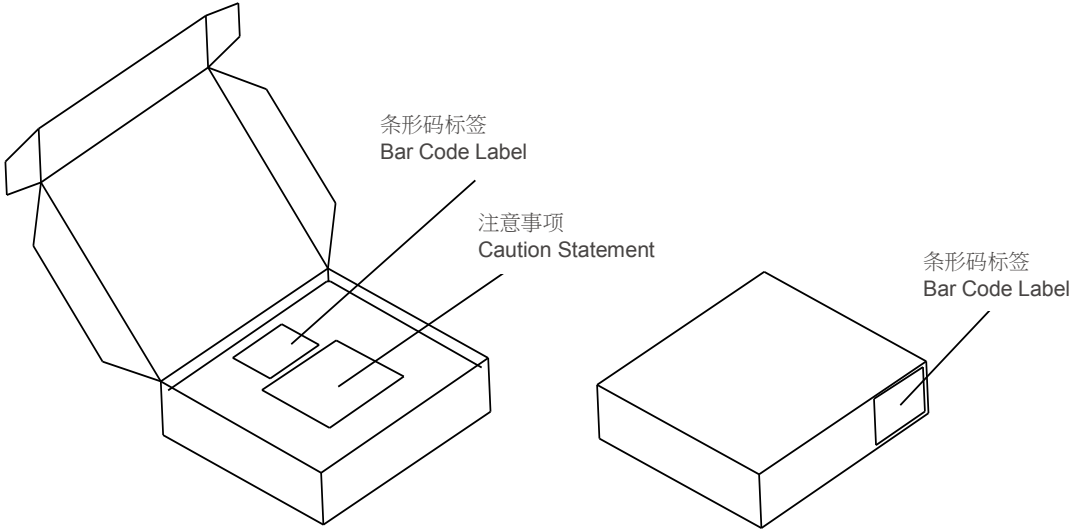
### 备注

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  $\pm 0.1 \text{ mm}$ 。

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

**色度坐标:** 色度坐标是在25ms脉冲电流并且内部在线性为  $\pm 0.005$  和一个  $\pm 0.01$  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  $\pm 0.1\text{mm}$ .

**Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms, with an internal reproducibility of  $\pm 0.05 \text{ V}$  and an expanded uncertainty of  $\pm 0.1 \text{ V}$  (acc. to GUM with a coverage factor of  $k = 3$ ).

**Chromaticity coordinate groups:** Chromaticity coordinate groups is measured at a current pulse of typically 25 ms, with an internal reproducibility of  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (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 Honglitrionic, in the case of ambiguity, the Chinese version shall prevail.