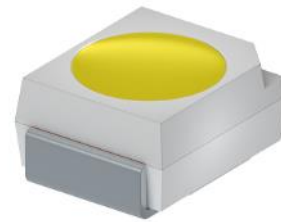


# HVCW-3528CPX



## 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，荧光硅树脂封装
- 50%  $I_v$  视角：120°
- 颜色：Cx=0.33,Cy=0.33 ( 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 Silicone resin in white PPA cup
- Viewing angle at 50%  $I_v$ : 120°
- Color: Cx=0.33,Cy=0.33 ( acc.to CIE1931 )
- 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> =20mA | 订购编号<br>Ordering<br>Code |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------|
| HVCW-3528CPX - XXXX - XXXX - XXXX                                                                                                |                                                                     |                          |
| <div> <div>亮度档<br/>Brightness</div> <div>色坐标<br/>Chromaticity<br/>Coordinate</div> <div>电压档<br/>Forward<br/>Voltage</div> </div> | 1120 - 3300 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：HVCW-3528CPX-AXCX-XX-XXXX，单个卷盘中的产品只有AX、AY、AZ、BX、BY、BZ、CX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 6 7页

例如：HVCW-3528CPX-XXXX-FK0PN0-XXXX，单个卷盘中的产品只有FK0、FL0、GK0、GL0、HK0、HL0……PN0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：HVCW-3528CPX-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.: HVCW-3528CPX-AXCX-XX-XXXX, means only one bin ofAX 、AY、AZ、BX、BY BZ or CX is in one reel.

### Color Groups

Only one color group will be packed in one reel. Please refer to page 5 6 7 for details.

E.g.: HVCW-3528CPX-XXXX-FK0PK0-XXXX, means only one bin of FK0、FL0、GK0、GL0、HK0、HL0、……PK0 is 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.: HVCW-3528CPX-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>( $t \leq 10\mu\text{s}$ ; $D=0.005$ ; $T_s=25^{\circ}\text{C}$ ) | $I_{fp}$     | 300                                               | 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 ( $T_s = 25^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )

| 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.                | $C_x$<br>$C_y$          | 0.33<br>0.33                                                 | —           |
| 50 % $I_v$ 下的视角 / Viewing Angle at 50 %<br>$I_v$                      | typ.                | $2\Phi$                 | 120                                                          | °           |
| 正向电压 / Forward Voltage                                                | min.<br>typ.<br>max | $V_f$<br>$V_f$<br>$V_f$ | 2.70<br>2.81<br>3.40                                         | V<br>V<br>V |
| 反向电流 / Reverse Current<br>( $V_R=12\text{V}$ )                        | max.                | $I_r$                   | 不可施加反向<br>电压 / not de-<br>signed for<br>reverse<br>operation | uA          |
| 实际热阻值 (PN结-焊点) / Real Thermal<br>Resistance (Junction / Solder Point) | max.                | $R_{th\text{ JS real}}$ | 180                                                          | K/W         |

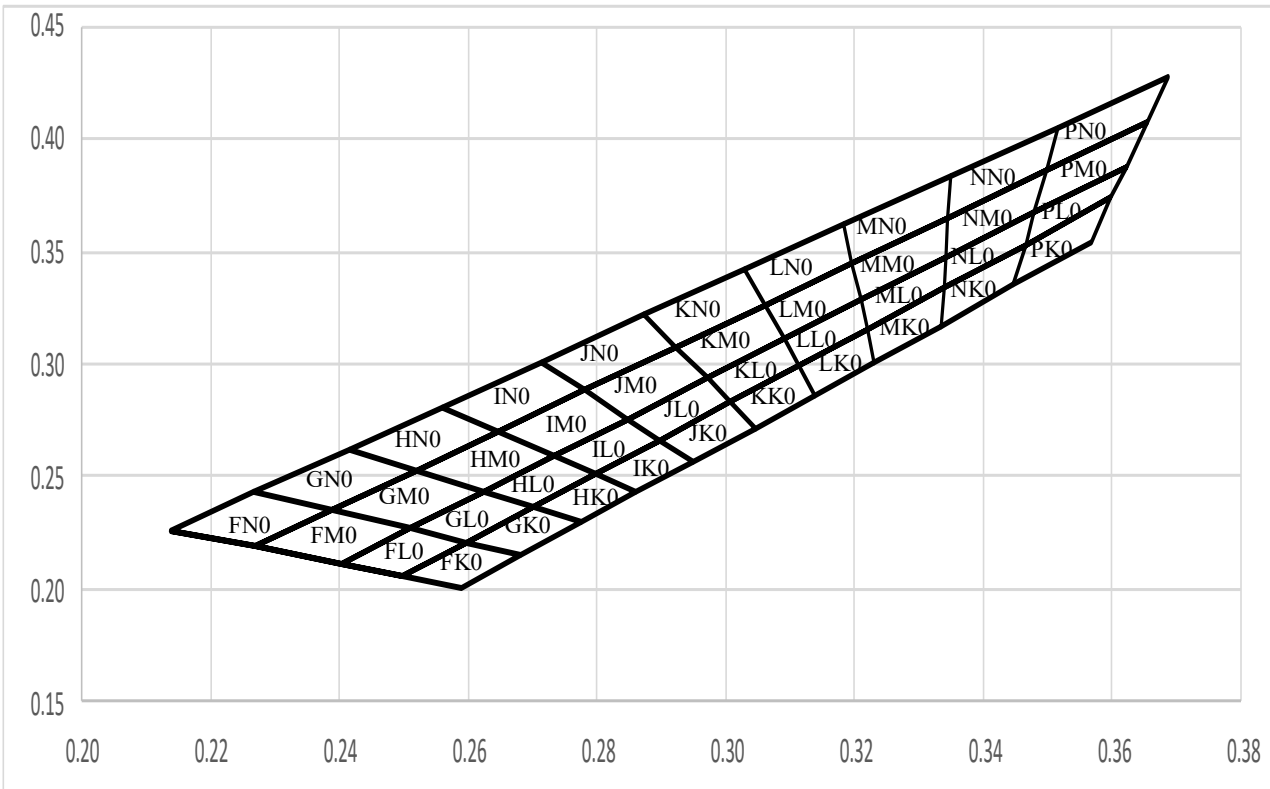
亮度分档 / Brightness Grouping ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )

| 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. ) |
|----------------|----------------------------------------------|----------------------------------------------|-------------------------------------------|
| AX             | 1120 mcd                                     | 1300 mcd                                     | 3.57 lm                                   |
| AY             | 1300 mcd                                     | 1500 mcd                                     | 4.30 lm                                   |
| AZ             | 1500 mcd                                     | 1800 mcd                                     | 5.20 lm                                   |
| BX             | 1800 mcd                                     | 2100 mcd                                     | 6.50 lm                                   |
| BY             | 2100 mcd                                     | 2400 mcd                                     | 7.50 lm                                   |
| BZ             | 2400 mcd                                     | 2800 mcd                                     | 8.50 lm                                   |
| CX             | 2800 mcd                                     | 3300 mcd                                     | 9.80 lm                                   |

正向电压分档 1/ Forward Voltage Grouping ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )

| 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                                    |

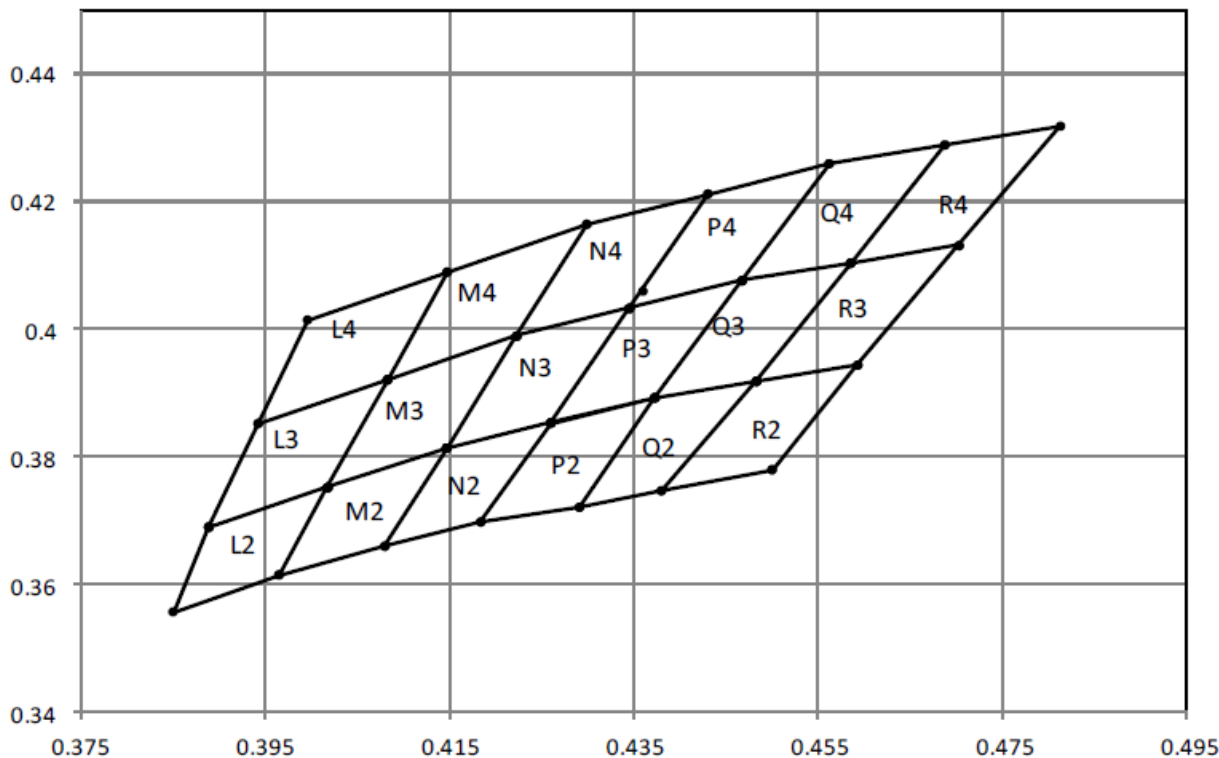
颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )



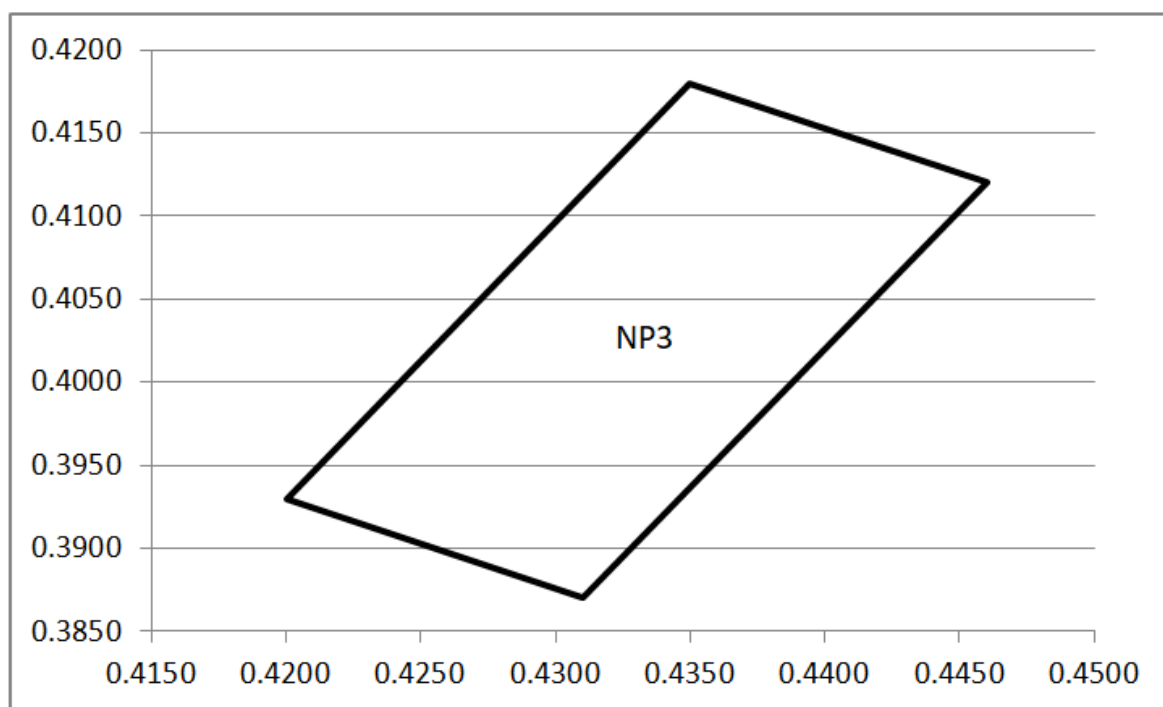
|     |        |        |     |        |        |     |        |        |
|-----|--------|--------|-----|--------|--------|-----|--------|--------|
| FK0 | 0.2498 | 0.2053 | HK0 | 0.2700 | 0.2361 | JK0 | 0.2898 | 0.2664 |
|     | 0.2597 | 0.2204 |     | 0.2797 | 0.2509 |     | 0.3007 | 0.2830 |
|     | 0.2682 | 0.2146 |     | 0.2861 | 0.2427 |     | 0.3045 | 0.2717 |
|     | 0.2589 | 0.2000 |     | 0.2775 | 0.2292 |     | 0.2950 | 0.2568 |
| FL0 | 0.2402 | 0.2108 | HL0 | 0.2624 | 0.2431 | JL0 | 0.2848 | 0.2757 |
|     | 0.2509 | 0.2264 |     | 0.2733 | 0.2590 |     | 0.2971 | 0.2935 |
|     | 0.2597 | 0.2204 |     | 0.2797 | 0.2509 |     | 0.3007 | 0.2830 |
|     | 0.2498 | 0.2053 |     | 0.2700 | 0.2361 |     | 0.2898 | 0.2664 |
| FM0 | 0.2269 | 0.2185 | HMO | 0.2520 | 0.2527 | JMO | 0.2780 | 0.2883 |
|     | 0.2388 | 0.2348 |     | 0.2646 | 0.2700 |     | 0.2922 | 0.3077 |
|     | 0.2509 | 0.2264 |     | 0.2733 | 0.2590 |     | 0.2971 | 0.2935 |
|     | 0.2402 | 0.2108 |     | 0.2624 | 0.2431 |     | 0.2848 | 0.2757 |
| FN0 | 0.2136 | 0.2262 | HNO | 0.2416 | 0.2623 | JNO | 0.2712 | 0.3009 |
|     | 0.2267 | 0.2432 |     | 0.2559 | 0.2810 |     | 0.2873 | 0.3219 |
|     | 0.2388 | 0.2348 |     | 0.2646 | 0.2700 |     | 0.2922 | 0.3077 |
|     | 0.2269 | 0.2185 |     | 0.2520 | 0.2527 |     | 0.2780 | 0.2883 |

|     |        |        |     |        |        |     |        |        |
|-----|--------|--------|-----|--------|--------|-----|--------|--------|
| GK0 | 0.2597 | 0.2204 | IK0 | 0.2797 | 0.2509 | KK0 | 0.3007 | 0.2830 |
|     | 0.2700 | 0.2361 |     | 0.2898 | 0.2664 |     | 0.3113 | 0.2992 |
|     | 0.2775 | 0.2292 |     | 0.2950 | 0.2568 |     | 0.3138 | 0.2862 |
|     | 0.2682 | 0.2146 |     | 0.2861 | 0.2427 |     | 0.3045 | 0.2717 |
| GL0 | 0.2509 | 0.2264 | ILO | 0.2733 | 0.2590 | KLO | 0.2971 | 0.2935 |
|     | 0.2624 | 0.2431 |     | 0.2848 | 0.2757 |     | 0.3090 | 0.3108 |
|     | 0.2700 | 0.2361 |     | 0.2898 | 0.2664 |     | 0.3113 | 0.2992 |
|     | 0.2597 | 0.2204 |     | 0.2797 | 0.2509 |     | 0.3007 | 0.2830 |
| GM0 | 0.2388 | 0.2348 | IMO | 0.2646 | 0.2700 | KMO | 0.2922 | 0.3077 |
|     | 0.2520 | 0.2527 |     | 0.2780 | 0.2883 |     | 0.3060 | 0.3266 |
|     | 0.2624 | 0.2431 |     | 0.2848 | 0.2757 |     | 0.3090 | 0.3108 |
|     | 0.2509 | 0.2264 |     | 0.2733 | 0.2590 |     | 0.2971 | 0.2935 |
| GN0 | 0.2267 | 0.2432 | INO | 0.2559 | 0.2810 | KNO | 0.2873 | 0.3219 |
|     | 0.2416 | 0.2623 |     | 0.2712 | 0.3009 |     | 0.3030 | 0.3424 |
|     | 0.2520 | 0.2527 |     | 0.2780 | 0.2883 |     | 0.3060 | 0.3266 |
|     | 0.2388 | 0.2348 |     | 0.2464 | 0.2700 |     | 0.2922 | 0.3077 |
| LK0 | 0.3113 | 0.2992 | MMO | 0.3196 | 0.3451 | PKO | 0.3465 | 0.3530 |
|     | 0.3219 | 0.3154 |     | 0.3345 | 0.3654 |     | 0.3599 | 0.3735 |
|     | 0.3231 | 0.3008 |     | 0.3341 | 0.3472 |     | 0.3567 | 0.3535 |
|     | 0.3138 | 0.2862 |     | 0.3209 | 0.3281 |     | 0.3447 | 0.3347 |
| LLO | 0.3090 | 0.3108 | MNO | 0.3183 | 0.3621 | PLO | 0.3479 | 0.3673 |
|     | 0.3209 | 0.3281 |     | 0.3349 | 0.3830 |     | 0.3623 | 0.3882 |
|     | 0.3219 | 0.3154 |     | 0.3345 | 0.3654 |     | 0.3599 | 0.3735 |
|     | 0.3113 | 0.2992 |     | 0.3196 | 0.3451 |     | 0.3465 | 0.3530 |
| LMO | 0.3060 | 0.3266 | NKO | 0.3339 | 0.3336 | PMO | 0.3498 | 0.3863 |
|     | 0.3196 | 0.3451 |     | 0.3465 | 0.3530 |     | 0.3655 | 0.4079 |
|     | 0.3209 | 0.3281 |     | 0.3447 | 0.3347 |     | 0.3623 | 0.3882 |
|     | 0.3090 | 0.3108 |     | 0.3335 | 0.3172 |     | 0.3479 | 0.3673 |
| LNO | 0.3030 | 0.3424 | NLO | 0.3341 | 0.3472 | PNO | 0.3517 | 0.4053 |
|     | 0.3183 | 0.3621 |     | 0.3479 | 0.3673 |     | 0.3687 | 0.4276 |
|     | 0.3196 | 0.3451 |     | 0.3465 | 0.3530 |     | 0.3655 | 0.4079 |
|     | 0.3060 | 0.3266 |     | 0.3339 | 0.3336 |     | 0.3498 | 0.3863 |
| MK0 | 0.3219 | 0.3154 | NMO | 0.3345 | 0.3654 |     |        |        |
|     | 0.3339 | 0.3336 |     | 0.3498 | 0.3863 |     |        |        |
|     | 0.3335 | 0.3172 |     | 0.3479 | 0.3673 |     |        |        |
|     | 0.3231 | 0.3008 |     | 0.3341 | 0.3472 |     |        |        |
| ML0 | 0.3209 | 0.3281 | NNO | 0.3349 | 0.3830 |     |        |        |
|     | 0.3341 | 0.3472 |     | 0.3517 | 0.4053 |     |        |        |
|     | 0.3339 | 0.3336 |     | 0.3498 | 0.3863 |     |        |        |
|     | 0.3219 | 0.3154 |     | 0.3345 | 0.3654 |     |        |        |

颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )

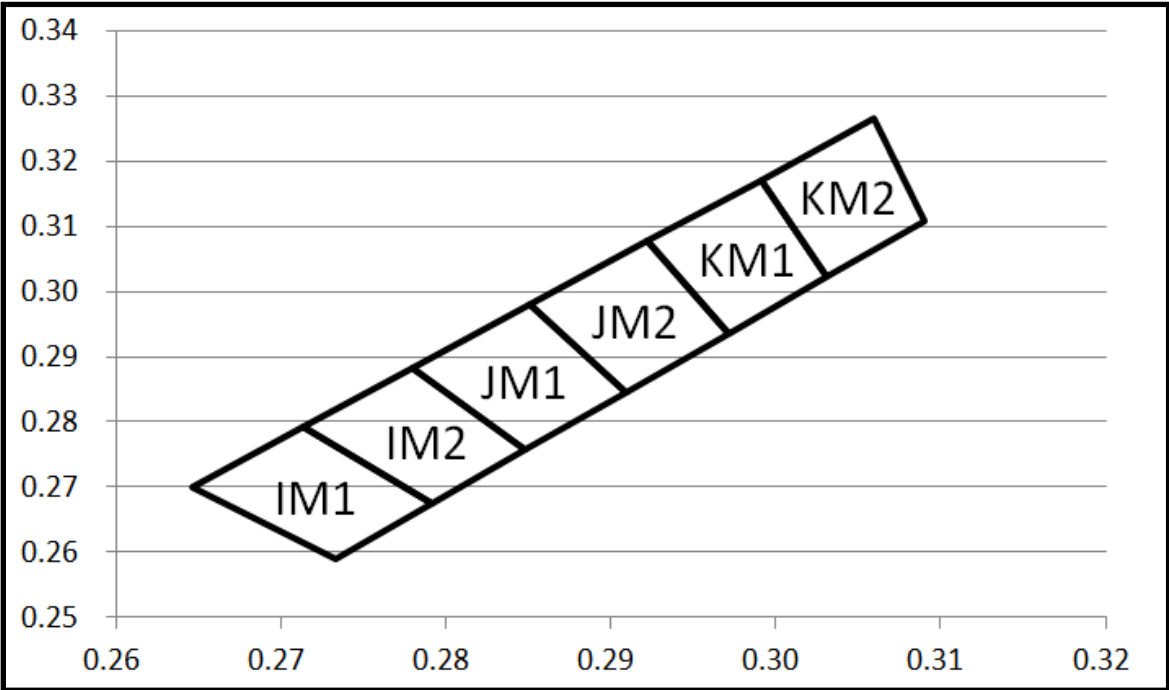


|    | X      | Y      |    | X      | Y      |    | X      | Y      |
|----|--------|--------|----|--------|--------|----|--------|--------|
| N3 | 0.4147 | 0.3814 | P3 | 0.4260 | 0.3854 | L3 | 0.3889 | 0.3690 |
|    | 0.4223 | 0.3990 |    | 0.4345 | 0.4033 |    | 0.3943 | 0.3853 |
|    | 0.4345 | 0.4033 |    | 0.4468 | 0.4077 |    | 0.4083 | 0.3921 |
|    | 0.4260 | 0.3854 |    | 0.4373 | 0.3893 |    | 0.4018 | 0.3752 |
| N4 | 0.4223 | 0.3990 | P4 | 0.4345 | 0.4033 | L4 | 0.3943 | 0.3853 |
|    | 0.4299 | 0.4165 |    | 0.4431 | 0.4213 |    | 0.3996 | 0.4015 |
|    | 0.4431 | 0.4213 |    | 0.4562 | 0.4260 |    | 0.4148 | 0.4090 |
|    | 0.4345 | 0.4033 |    | 0.4468 | 0.4077 |    | 0.4083 | 0.3921 |
| M3 | 0.4018 | 0.3752 | Q3 | 0.4373 | 0.3893 | R3 | 0.4483 | 0.3919 |
|    | 0.4083 | 0.3921 |    | 0.4468 | 0.4077 |    | 0.4585 | 0.4104 |
|    | 0.4223 | 0.3990 |    | 0.4585 | 0.4104 |    | 0.4703 | 0.4132 |
|    | 0.4147 | 0.3814 |    | 0.4483 | 0.3919 |    | 0.4593 | 0.3944 |
| M4 | 0.4083 | 0.3921 | Q4 | 0.4468 | 0.4077 | R4 | 0.4585 | 0.4104 |
|    | 0.4148 | 0.4090 |    | 0.4562 | 0.4260 |    | 0.4688 | 0.4290 |
|    | 0.4299 | 0.4165 |    | 0.4688 | 0.4290 |    | 0.4813 | 0.4319 |
|    | 0.4223 | 0.3990 |    | 0.4585 | 0.4104 |    | 0.4703 | 0.4132 |
| L2 | 0.3889 | 0.3690 | N2 | 0.4260 | 0.3853 | Q2 | 0.4373 | 0.3893 |
|    | 0.4018 | 0.3752 |    | 0.4184 | 0.3698 |    | 0.4483 | 0.3919 |
|    | 0.3965 | 0.3615 |    | 0.4080 | 0.3660 |    | 0.4380 | 0.3747 |
|    | 0.3850 | 0.3557 |    | 0.4147 | 0.3814 |    | 0.4291 | 0.3721 |
| M2 | 0.4018 | 0.3752 | P2 | 0.4260 | 0.3853 | R2 | 0.4593 | 0.3944 |
|    | 0.4147 | 0.3814 |    | 0.4373 | 0.3893 |    | 0.4500 | 0.3780 |
|    | 0.4080 | 0.3660 |    | 0.4291 | 0.3721 |    | 0.4380 | 0.3747 |
|    | 0.3965 | 0.3615 |    | 0.4184 | 0.3698 |    | 0.4483 | 0.3919 |

颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )

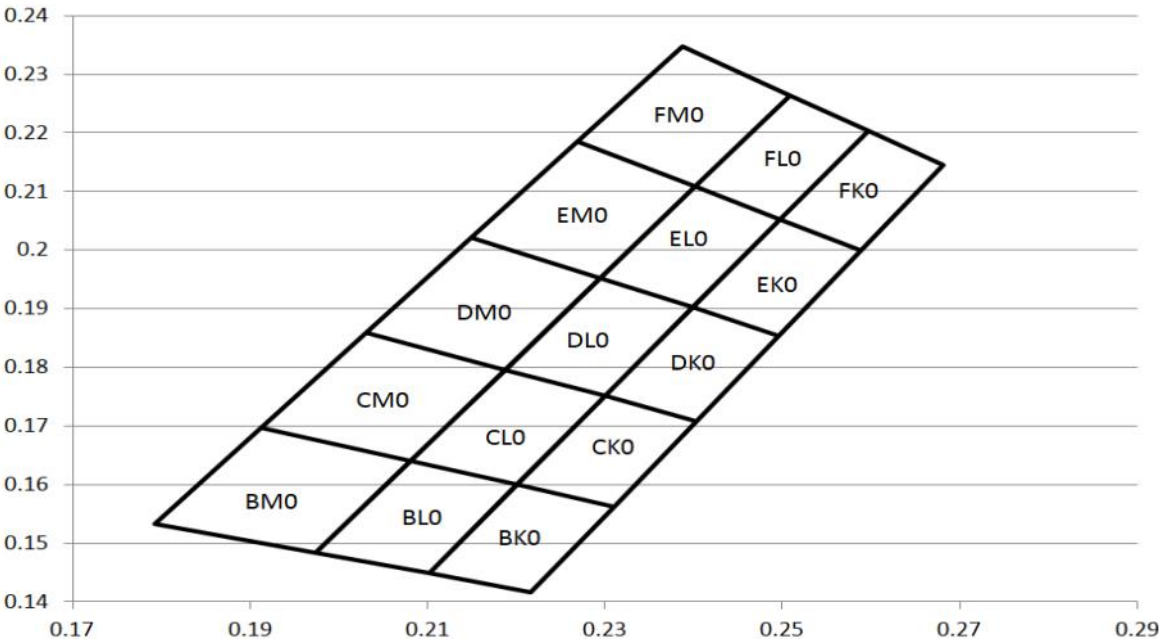
|     |        |        |
|-----|--------|--------|
| NP3 | X      | Y      |
|     | 0.4460 | 0.4120 |
|     | 0.4350 | 0.4180 |
|     | 0.4200 | 0.3930 |
|     | 0.4310 | 0.3870 |

颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )



|     |        |        |     |        |        |
|-----|--------|--------|-----|--------|--------|
| IM1 | X      | Y      | JM1 | X      | Y      |
|     | 0.2646 | 0.2700 |     | 0.2780 | 0.2883 |
|     | 0.2713 | 0.2792 |     | 0.2848 | 0.2757 |
|     | 0.2791 | 0.2674 |     | 0.2910 | 0.2846 |
|     | 0.2733 | 0.2590 |     | 0.2851 | 0.2980 |
| IM2 | X      | Y      | JM2 | X      | Y      |
|     | 0.2713 | 0.2792 |     | 0.2910 | 0.2846 |
|     | 0.2791 | 0.2674 |     | 0.2851 | 0.2980 |
|     | 0.2848 | 0.2757 |     | 0.2922 | 0.3077 |
|     | 0.2780 | 0.2883 |     | 0.2971 | 0.2935 |
| KM1 | X      | Y      | KM2 | X      | Y      |
|     | 0.2922 | 0.3077 |     | 0.3031 | 0.3022 |
|     | 0.2971 | 0.2935 |     | 0.2991 | 0.3172 |
|     | 0.3031 | 0.3022 |     | 0.3060 | 0.3266 |
|     | 0.2991 | 0.3172 |     | 0.3090 | 0.3108 |

颜色色度分档/Colour Chromaticity Groups ( $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{ mA}$ )



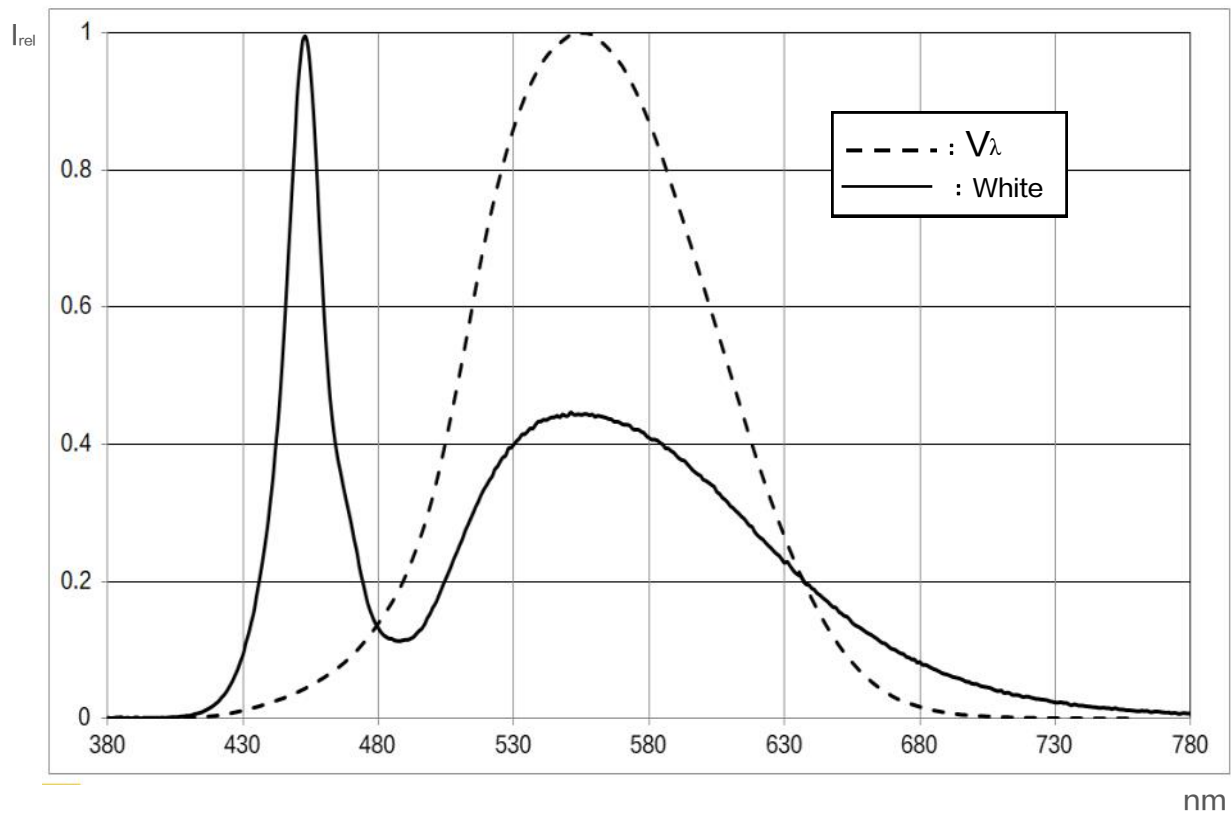
| BMO | X      | Y      | BLO | X      | Y      | BKO | X      | Y      |
|-----|--------|--------|-----|--------|--------|-----|--------|--------|
|     | 0.1793 | 0.1533 |     | 0.1974 | 0.1484 |     | 0.2102 | 0.1449 |
|     | 0.1912 | 0.1696 |     | 0.2081 | 0.1640 |     | 0.2201 | 0.1600 |
|     | 0.2081 | 0.1640 |     | 0.2201 | 0.1600 |     | 0.2310 | 0.1562 |
|     | 0.1974 | 0.1484 |     | 0.2102 | 0.1449 |     | 0.2217 | 0.1416 |
| CMO | X      | Y      | CLO | X      | Y      | CKO | X      | Y      |
|     | 0.1912 | 0.1696 |     | 0.2081 | 0.1640 |     | 0.2300 | 0.1751 |
|     | 0.2031 | 0.1859 |     | 0.2188 | 0.1796 |     | 0.2403 | 0.1708 |
|     | 0.2188 | 0.1796 |     | 0.2300 | 0.1751 |     | 0.2310 | 0.1562 |
|     | 0.2081 | 0.1640 |     | 0.2201 | 0.1600 |     | 0.2201 | 0.1600 |
| DMO | X      | Y      | DLO | X      | Y      | DKO | X      | Y      |
|     | 0.2031 | 0.1859 |     | 0.2188 | 0.1796 |     | 0.2300 | 0.1751 |
|     | 0.2150 | 0.2022 |     | 0.2295 | 0.1952 |     | 0.2399 | 0.1902 |
|     | 0.2295 | 0.1952 |     | 0.2399 | 0.1902 |     | 0.2496 | 0.1854 |
|     | 0.2188 | 0.1796 |     | 0.2300 | 0.1751 |     | 0.2403 | 0.1708 |
| EMO | X      | Y      | ELO | X      | Y      | EKO | X      | Y      |
|     | 0.2150 | 0.2022 |     | 0.2295 | 0.1952 |     | 0.2399 | 0.1902 |
|     | 0.2269 | 0.2185 |     | 0.2402 | 0.2108 |     | 0.2498 | 0.2053 |
|     | 0.2402 | 0.2108 |     | 0.2498 | 0.2053 |     | 0.2589 | 0.2000 |
|     | 0.2295 | 0.1952 |     | 0.2399 | 0.1902 |     | 0.2496 | 0.1854 |
| FMO | X      | Y      | FLO | X      | Y      | FKO | X      | Y      |
|     | 0.2269 | 0.2185 |     | 0.2402 | 0.2108 |     | 0.2498 | 0.2053 |
|     | 0.2388 | 0.2348 |     | 0.2509 | 0.2264 |     | 0.2597 | 0.2204 |
|     | 0.2509 | 0.2264 |     | 0.2597 | 0.2204 |     | 0.2682 | 0.2146 |
|     | 0.2402 | 0.2108 |     | 0.2498 | 0.2053 |     | 0.2589 | 0.2000 |

标签信息 / Information on Label

例 / E.g.: AZ-HL0-6A

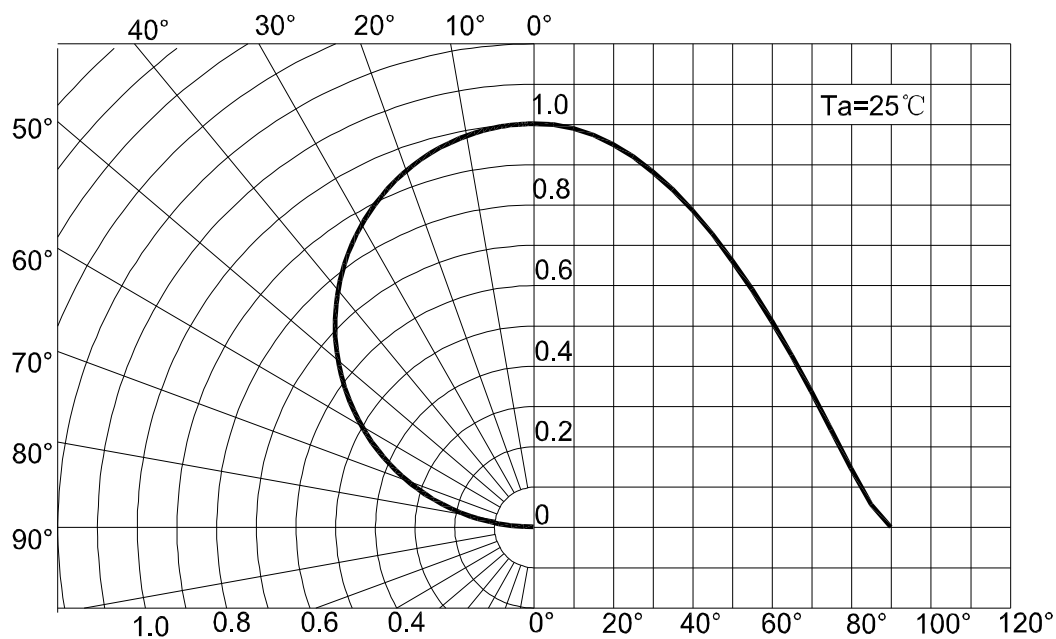
| 亮度档 / Brightness | 颜色 / Color | 正向电压 / Forward Voltage |
|------------------|------------|------------------------|
| AZ               | HL0        | 6A                     |

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  
 $I_{rel} = f(\lambda)$ ;  $T_s = 25\text{ }^{\circ}\text{C}$ ;  $I_f = 20\text{mA}$



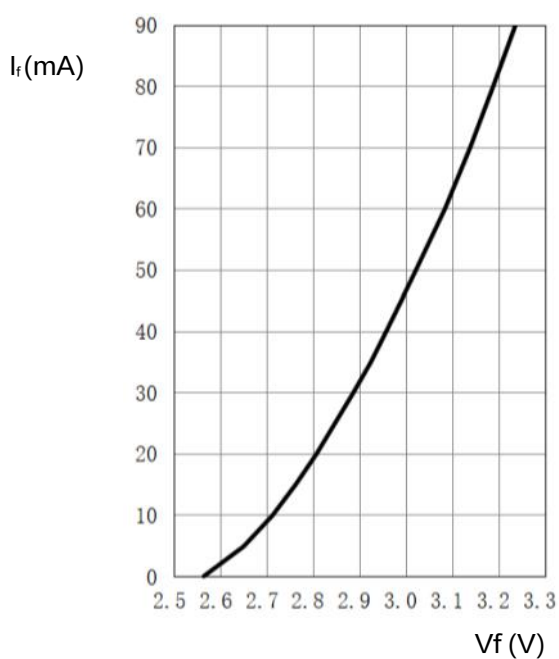
## 辐射特性 / Radiation Characteristics

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



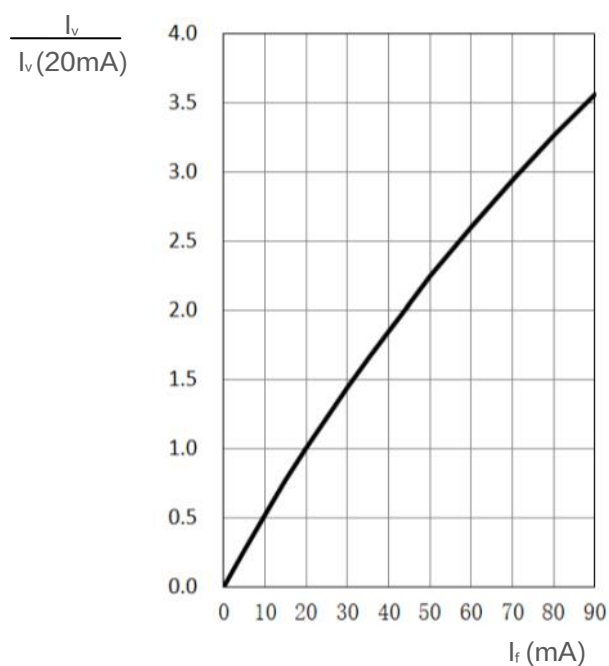
## 正向电流 / Forward Current

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

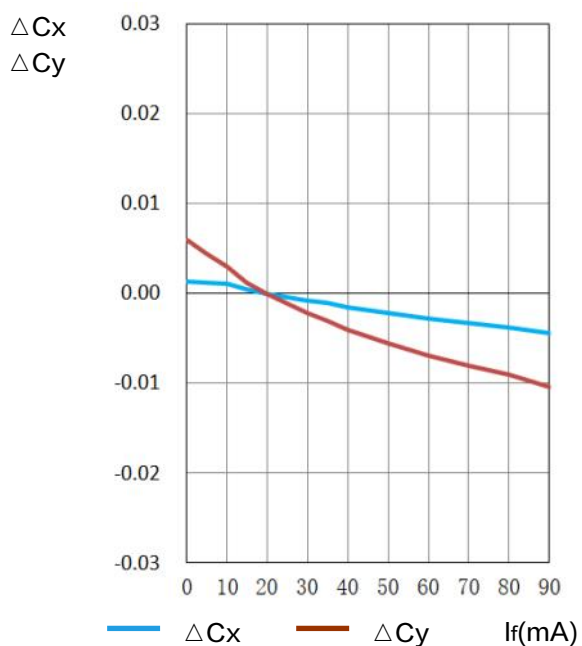


## 相对亮度特性曲线 / Relative Luminous Intensity

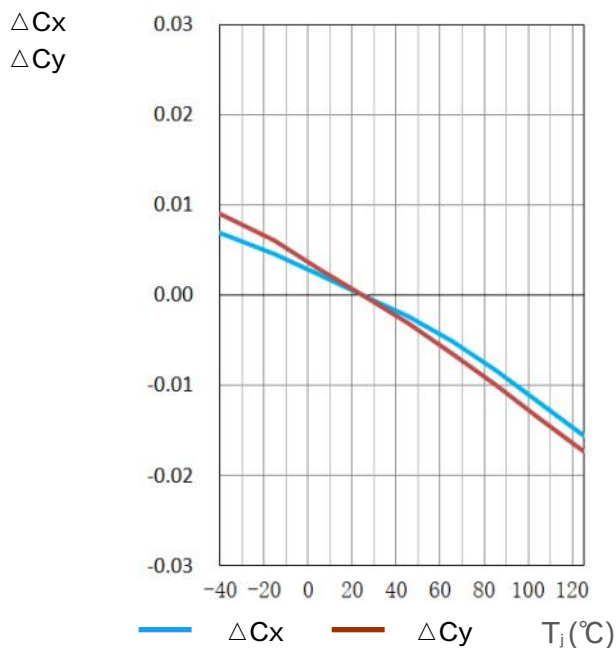
$$I_v/I_v(20\text{mA}) = f(I_f); T_a = 25^\circ\text{C}$$



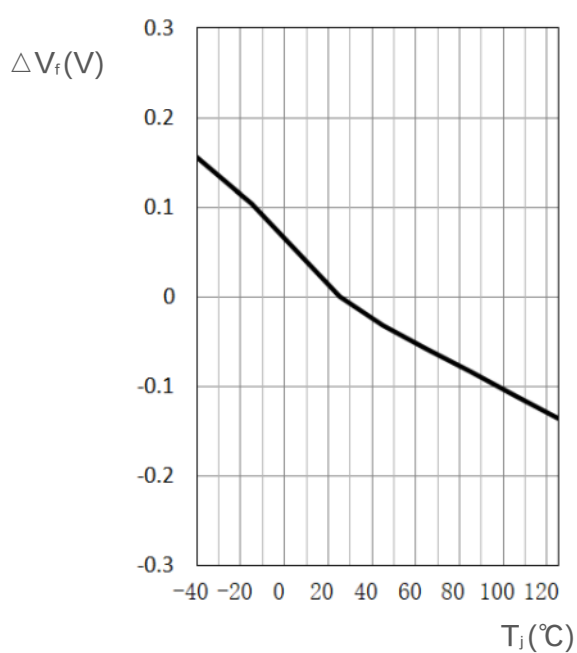
色坐标数据表/Chromaticity coordinate shift  
 $\Delta Cx, \Delta Cy = f(I_f); T_s = 25^\circ\text{C}$



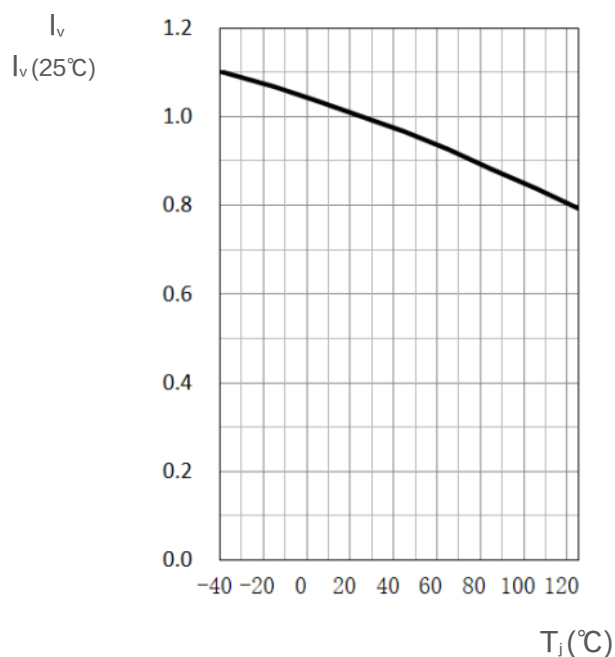
色坐标数据表/Chromaticity coordinate shift  
 $\Delta Cx, \Delta Cy = f(I_f); I_f = 20\text{mA}$



相对正向电压 / Relative Forward Voltage  
 $\Delta V_f = V_f - V_f(25^\circ\text{C}) = f(T_j); I_f = 20\text{ mA}$

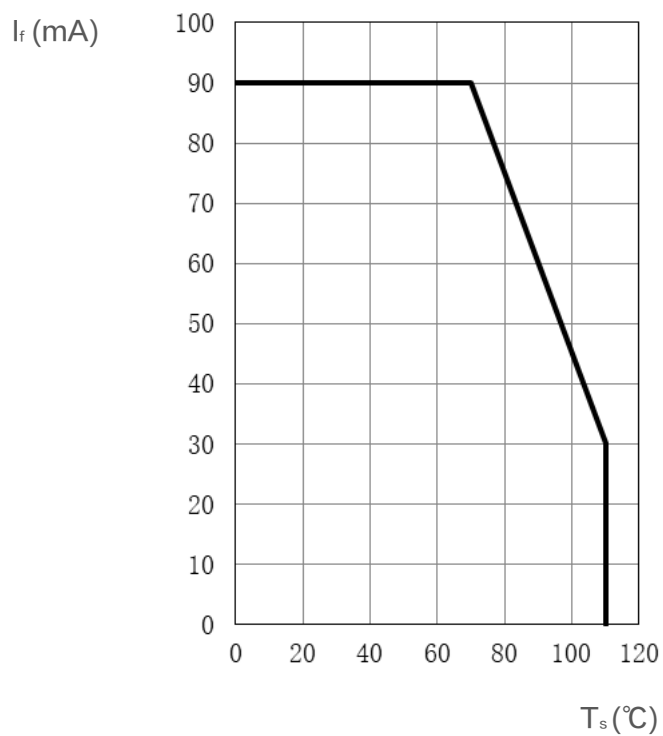


相对发光强度 / Relative Luminous Intensity  
 $I_v/I_v(25^\circ\text{C}) = f(T_j); I_f = 20\text{ mA}$

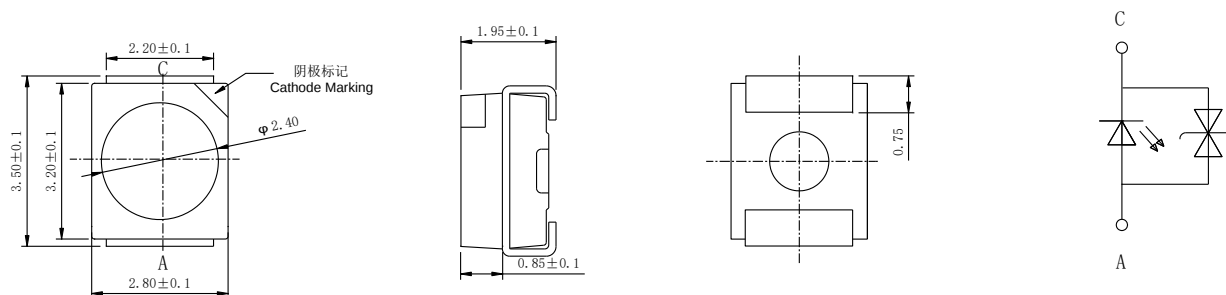


焊点温度与正向电流 / Solder Point Temperature  
vs. Forward Current

$$I_f = f(T_s)$$



## 产品尺寸 / Package Outline



## 备注

■ 统计质量: 30mg

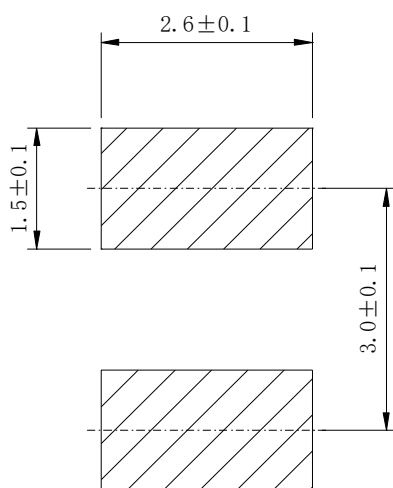
■ 标 记: 负极

## NOTE

■ Approximate Weight: 30mg

■ Mark: Cathode

## 推荐焊盘 / Recommended Solder Pad



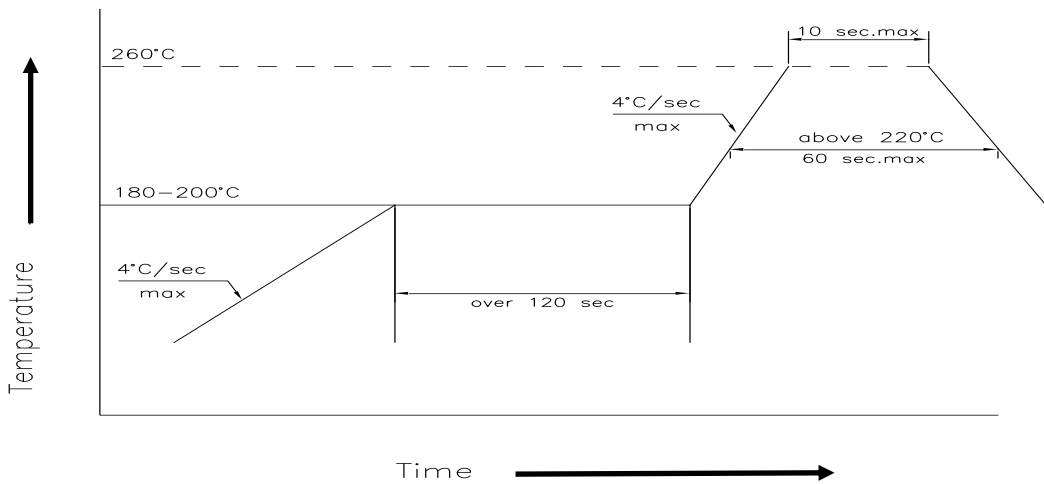
## 注释

■ 不适合超声波清洗的封装

## NOTE

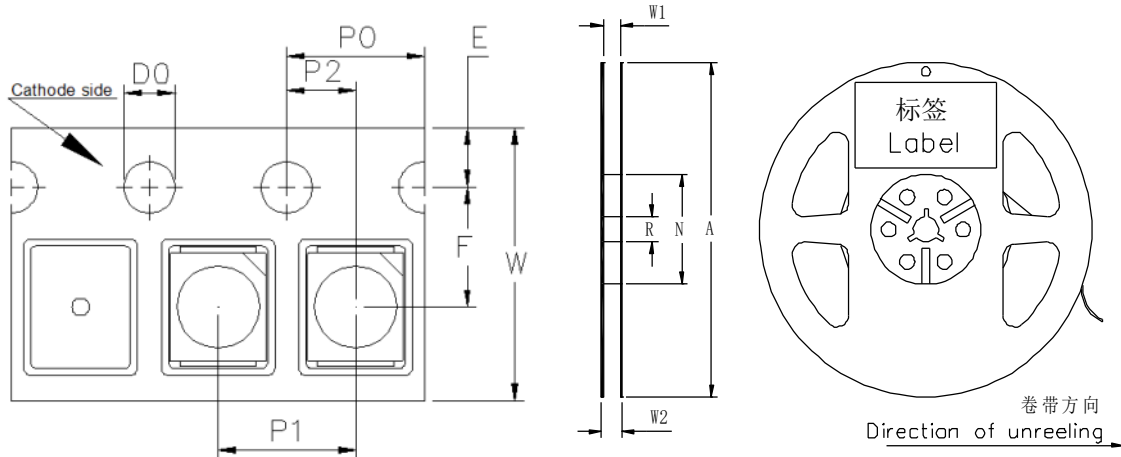
■ Package not suitable for ultrasonic cleaning

# 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    | 4    | °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    | 4    | °C/s       |
| 熔点温度<br>Liquidus Temperature                                                                              | $T_l$        |                          | 220  |      | °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                                                                                   | $T_p$        | -                        | 260  | 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 |

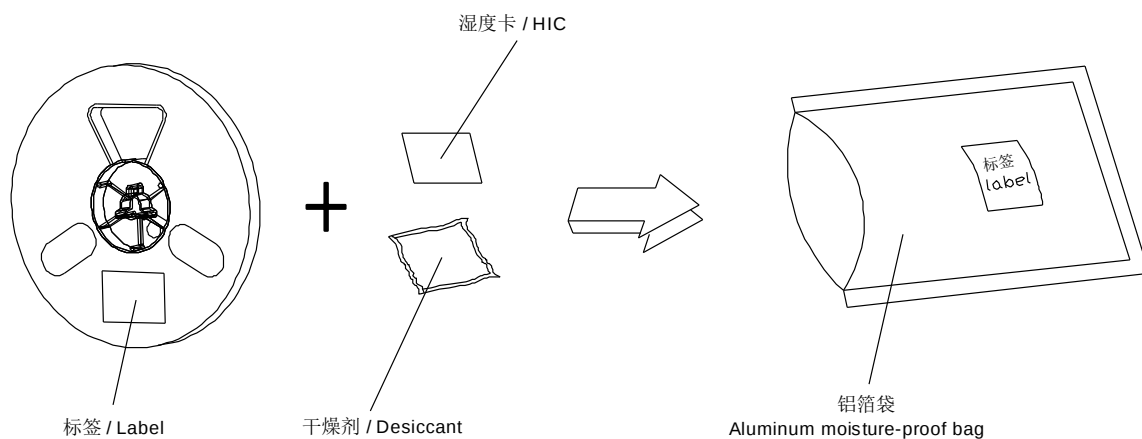
数量 (颗/卷) / Quantity ( pcs/reel )

2000

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



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



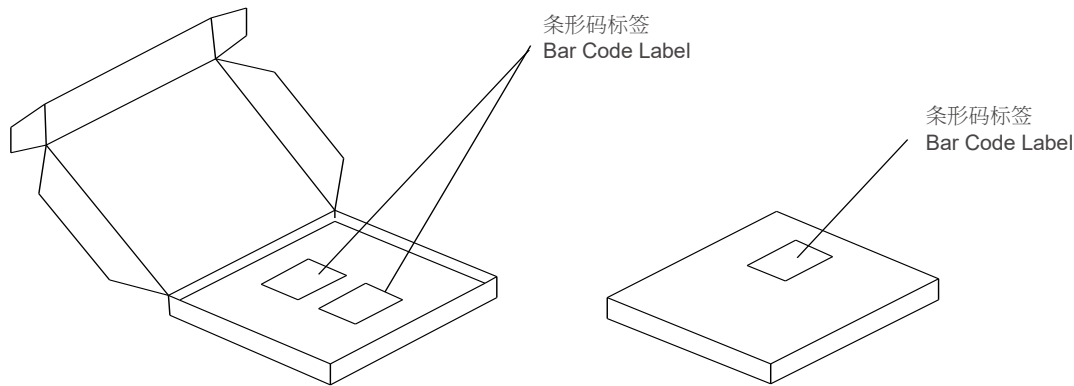
## 备注

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        | 223         | 23          |

## 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脉冲电流并且内部再现性为  $\pm 0.05$  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。

**色度坐标:** 色度坐标是在25ms脉冲电流并且内部再现性为  $\pm 0.005$  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脉冲电流并且内部再现性为  $\pm 8\%$  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  $+/-0.1$ mm.

**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  $k = 3$ ).

**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 Honglitronic, in the case of ambiguity, the Chinese version shall prevail.