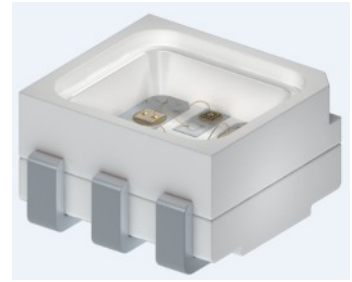


HVRTB-3433EPX



3433 PLCC6 RTB 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，硅树脂封装
- 50% I_v 视角：120°
- 颜色：625 nm（红），528 nm（绿），460 nm（蓝）
- 资格：通过了AEC-Q102 & IEC 60810可靠性测试
- 潮湿敏感等级-2

Features

- Package: Silicone resin in white PPA cup
- Viewing angle at 50% I_v: 120°
- Color: 625nm (Red), 528 nm (Ture Green), 460 nm (Blue)
- Qualifications: Passed reliability test per AEC-Q102 & IEC 60810 requirement
- MSL-2

应用

- 汽车内外部照明应用

Applications

- Interior and exterior lighting for automotive

订购信息 / Ordering Information

| 型号 Type | 订购编号 Ordering Code |
|---------------------------------------|--------------------|
| HVRTB-3433EPX-UEVE-24+AMAQ-29+SCUC-HR | XXXXXX |

订购信息 / Ordering Information

| 型号 Type | 发光颜色 Luminous Emission | 发光强度 Luminous Intensity $I_f=20mA$ I_v (mcd) | | |
|---------------|---------------------------------|--|-----------------|------------|
| | | 红 Red | 绿 True Green | 蓝 Blue |
| HVRTB-3433EPX | 红/Red 绿/True Green 蓝/Blue | 500 ...1000 | 1250 ...2010 | 180 ...560 |

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：HVRTB-3433EPX-UEVE-XX+AMAQ-XX+SCUC-XX，单个卷盘中的产品只有UE、VE、AM、AQ、SC、UC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：HVRTB-3433EPX-XXXX-24+XXXX-29+XXXX-HR，单个卷盘中的产品只有2、4、2、9、H、R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.: HVRTB-3433EPX-UEVE-XX+AMAQ-XX+SCUC-XX, means only one bin of UE, VE, AM, AQ, SC or UC 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.: HVRTB-3433EPX-XXXX-24+XXXX-29+XXXX-HR, means only one bin of 2, 4, 2, 9, H or R is in one reel.

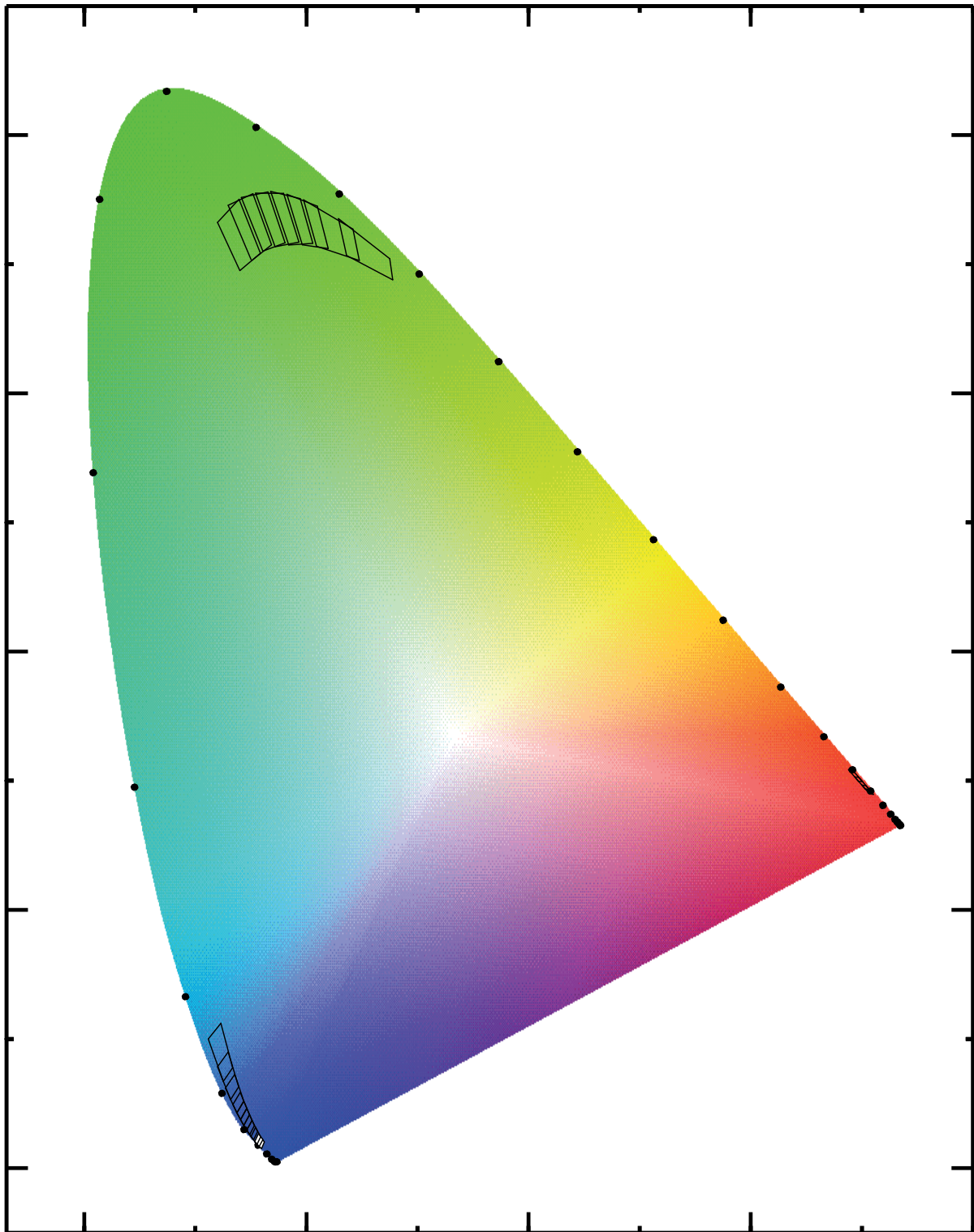
极限参数 / Maximum Ratings

| 参数 Parameters | 符号 Symbol | 数值 Rating | | | 单位 Unit |
|--|--------------|---|-----------------|-----------|------------|
| | | 红 Red | 绿 Ture Green | 蓝 Blue | |
| 结温 / Junction Temperature | T_j | 125 | 125 | 125 | °C |
| 正向电流 / Forward Current ($T_s=25^\circ\text{C}$) | I_f | 50 | 50 | 50 | mA |
| 反向电压 / Reverse Voltage ($T_s=25^\circ\text{C}$) | V_r | 不能反向操作/not designed for reverse operation | | | V |
| 抗静电能力 Electrostatic Discharge (HBM) | V_{ESD} | 2000 | 8000 | 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 Parameters | 符号 Symbol | 数值 Rating | | | 单位 Unit |
|--|------------------------------|---|-----------------|-----------|------------|
| | | 红 Red | 绿 Ture Green | 蓝 Blue | |
| 发光强度 / Luminous Intensity | min. I_v | 500 | 1250 | 180 | mcd |
| | max. I_v | 1000 | 2010 | 560 | |
| 主波长 / Dominant Wavelength | min. λ_{dom} | 620 | 519 | 447 | nm |
| | typ. λ_{dom} | 625 | 528 | 460 | nm |
| | max. λ_{dom} | 632 | 546 | 476 | nm |
| 半波宽 / Spectral Bandwidth at 50% I_{rel} max | typ. $\Delta\lambda$ | 18 | 33 | 25 | nm |
| 50 % I_v 下的视角 / Viewing Angle at 50 % I_v | typ. 2Φ | 120 | 120 | 120 | ° |
| 正向电压 / Forward Voltage | min. V_f | 1.80 | 2.50 | 2.70 | V |
| | typ. V_f | 2.05 | 2.85 | 2.85 | V |
| | Max. V_f | 2.40 | 3.50 | 3.40 | V |
| 反向电流 / Reverse Current | max. I_r | 不能反向操作/not designed for reverse operation | | | uA |
| 实际热阻值 (PN结-焊点) / Real thermal resistance (junction / solder point) | max. R_{th} JS_{real} | 120 | 180 | 180 | K/W |

颜色色度分档/Colour Chromaticity Groups 1 ($T_s = 25\text{ }^\circ\text{C}$; $I_f = 20\text{ mA}$)



| 红 Red | | | | | |
|----------------|--------|--------|----------------|--------|--------|
| 档次 Grouping | Cx | Cy | 档次 Grouping | Cx | Cy |
| 2 | 0.6880 | 0.3085 | 3 | 0.6936 | 0.3030 |
| | 0.6915 | 0.3083 | | 0.6972 | 0.3027 |
| | 0.7006 | 0.2993 | | 0.7065 | 0.2934 |
| | 0.6969 | 0.2997 | | 0.7028 | 0.2938 |
| 4 | 0.7000 | 0.2966 | | | |
| | 0.7037 | 0.2962 | | | |
| | 0.7104 | 0.2895 | | | |
| | 0.7068 | 0.2899 | | | |

| 绿 Ture Green | | | | | |
|-----------------|--------|--------|----------------|--------|--------|
| 档次 Grouping | Cx | Cy | 档次 Grouping | Cx | Cy |
| 2 | 0.1507 | 0.6751 | 6 | 0.1875 | 0.7064 |
| | 0.1201 | 0.7325 | | 0.1678 | 0.7565 |
| | 0.1392 | 0.7504 | | 0.1944 | 0.7509 |
| | 0.1661 | 0.6927 | | 0.2079 | 0.7099 |
| 3 | 0.1592 | 0.6856 | 7 | 0.1983 | 0.7096 |
| | 0.1295 | 0.7456 | | 0.1824 | 0.7542 |
| | 0.1517 | 0.7547 | | 0.2098 | 0.7449 |
| | 0.1753 | 0.6999 | | 0.2203 | 0.7099 |
| 4 | 0.1681 | 0.6938 | 8 | 0.2103 | 0.7105 |
| | 0.1415 | 0.7518 | | 0.1974 | 0.7500 |
| | 0.1652 | 0.7560 | | 0.2419 | 0.7273 |
| | 0.1854 | 0.7052 | | 0.2474 | 0.7029 |
| 5 | 0.1773 | 0.7009 | 9 | 0.2363 | 0.7063 |
| | 0.1543 | 0.7551 | | 0.2288 | 0.7353 |
| | 0.1795 | 0.7549 | | 0.2751 | 0.7042 |
| | 0.1961 | 0.7091 | | 0.2777 | 0.6880 |

HVRTB-3433EPX

| 蓝 Blue | | | | | |
|----------------|--------|--------|----------------|--------|--------|
| 档次 Grouping | Cx | Cy | 档次 Grouping | Cx | Cy |
| H | 0.1622 | 0.0203 | N | 0.1487 | 0.0414 |
| | 0.1595 | 0.0152 | | 0.1436 | 0.0332 |
| | 0.1556 | 0.0186 | | 0.1375 | 0.0428 |
| | 0.1588 | 0.0243 | | 0.1436 | 0.0519 |
| I | 0.1606 | 0.0222 | O | 0.1463 | 0.0463 |
| | 0.1576 | 0.0168 | | 0.1407 | 0.0376 |
| | 0.1534 | 0.0206 | | 0.1338 | 0.0493 |
| | 0.1570 | 0.0268 | | 0.1404 | 0.0588 |
| J | 0.1588 | 0.0243 | P | 0.1436 | 0.0519 |
| | 0.1556 | 0.0186 | | 0.1375 | 0.0428 |
| | 0.1500 | 0.0246 | | 0.1272 | 0.0620 |
| | 0.1543 | 0.0317 | | 0.1354 | 0.0727 |
| K | 0.1562 | 0.0285 | Q | 0.1389 | 0.0631 |
| | 0.1524 | 0.0219 | | 0.1317 | 0.0532 |
| | 0.1462 | 0.0293 | | 0.1199 | 0.0785 |
| | 0.1509 | 0.0370 | | 0.1295 | 0.0899 |
| L | 0.1532 | 0.0332 | R | 0.1335 | 0.0779 |
| | 0.1489 | 0.0262 | | 0.1251 | 0.0672 |
| | 0.1436 | 0.0332 | | 0.1115 | 0.1000 |
| | 0.1487 | 0.0414 | | 0.1231 | 0.1122 |
| M | 0.1509 | 0.0370 | | | |
| | 0.1462 | 0.0293 | | | |
| | 0.1407 | 0.0376 | | | |
| | 0.1463 | 0.0463 | | | |

亮度分档 / Brightness Grouping 1 ($T_s = 25\text{ }^\circ\text{C}$; $I_f = 20\text{ mA}$)

| 红 Red | | | 绿 Ture Green | | | 蓝 Blue | | |
|----------------|---------------|---------------|-----------------|---------------|---------------|----------------|---------------|---------------|
| 档次 Grouping | Min. (mcd) | Max. (mcd) | 档次 Grouping | Min. (mcd) | Max. (mcd) | 档次 Grouping | Min. (mcd) | Max. (mcd) |
| UE | 500 | 630 | AM | 1250 | 1590 | SB | 150 | 180 |
| UF | 529 | 669 | AN | 1323 | 1692 | SC | 180 | 224 |
| UG | 560 | 710 | AO | 1400 | 1800 | SD | 190 | 237 |
| UH | 594 | 754 | AP | 1492 | 1902 | SE | 201 | 250 |
| UI | 630 | 800 | AQ | 1590 | 2010 | SF | 212 | 265 |
| UJ | 669 | 849 | AR | 2010 | 2400 | SG | 224 | 280 |
| VC | 710 | 900 | | | | SH | 237 | 297 |
| VD | 754 | 949 | | | | SI | 250 | 315 |
| VE | 800 | 1000 | | | | SJ | 265 | 334 |
| | | | | | | TC | 280 | 355 |
| | | | | | | TD | 297 | 377 |
| | | | | | | TE | 315 | 400 |
| | | | | | | TF | 334 | 424 |
| | | | | | | TG | 355 | 450 |
| | | | | | | TH | 377 | 474 |
| | | | | | | TI | 400 | 500 |
| | | | | | | TJ | 424 | 529 |
| | | | | | | UC | 450 | 560 |

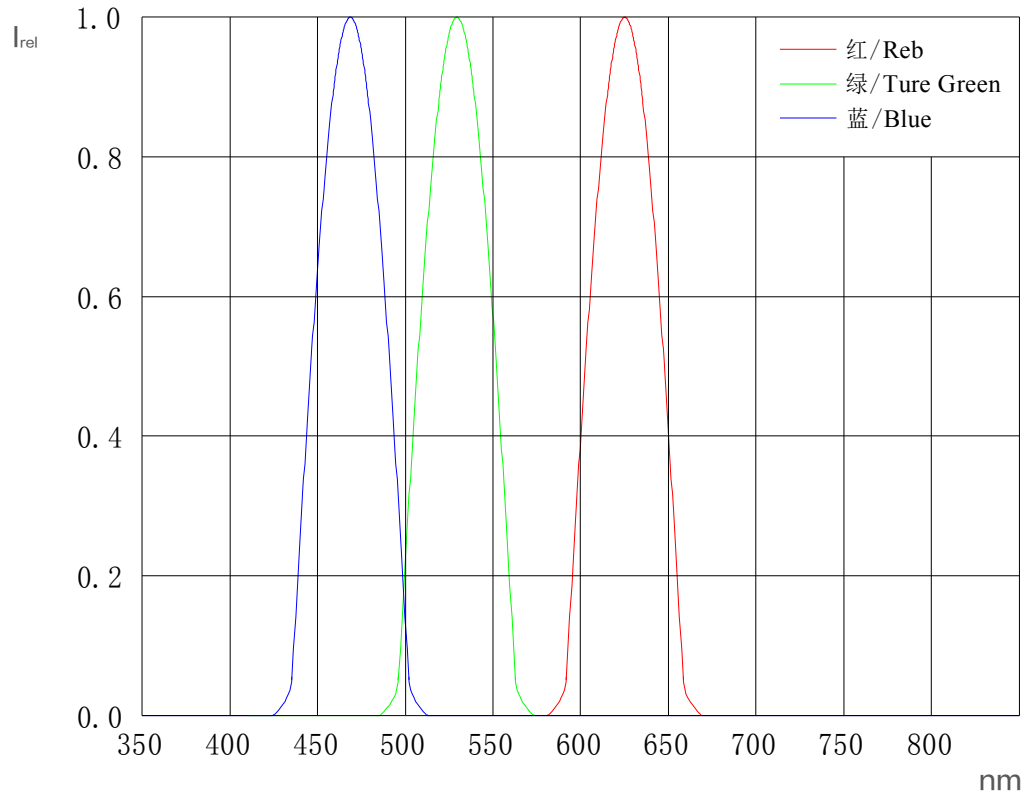
主波长分档 / Dominant Wavelength Grouping 1 ($T_s = 25\text{ }^\circ\text{C}$; $I_f = 20\text{ mA}$)

| 红 Red | | | 绿 True Green | | | 蓝 Blue | | |
|----------------|--------------|--------------|-----------------|--------------|--------------|----------------|--------------|--------------|
| 档次 Grouping | Min. (nm) | Max. (nm) | 档次 Grouping | Min. (nm) | Max. (nm) | 档次 Grouping | Min. (nm) | Max. (nm) |
| 2 | 620 | 625 | 2 | 519.0 | 523.5 | H | 447 | 451 |
| 3 | 623 | 629 | 3 | 521.5 | 526.0 | I | 449 | 453 |
| 4 | 627 | 632 | 4 | 524.0 | 528.5 | J | 451 | 456 |
| | | | 5 | 526.5 | 531.0 | K | 454 | 459 |
| | | | 6 | 529.0 | 533.5 | L | 457 | 461 |
| | | | 7 | 531.5 | 536.0 | M | 459 | 463 |
| | | | 8 | 534.0 | 541.0 | N | 461 | 465 |
| | | | 9 | 539.0 | 546.0 | O | 463 | 467 |
| | | | | | | P | 465 | 470 |
| | | | | | | Q | 468 | 473 |
| | | | | | | R | 471 | 476 |

相对发射光谱 - $V(\lambda)$ = 标准人眼视觉曲线

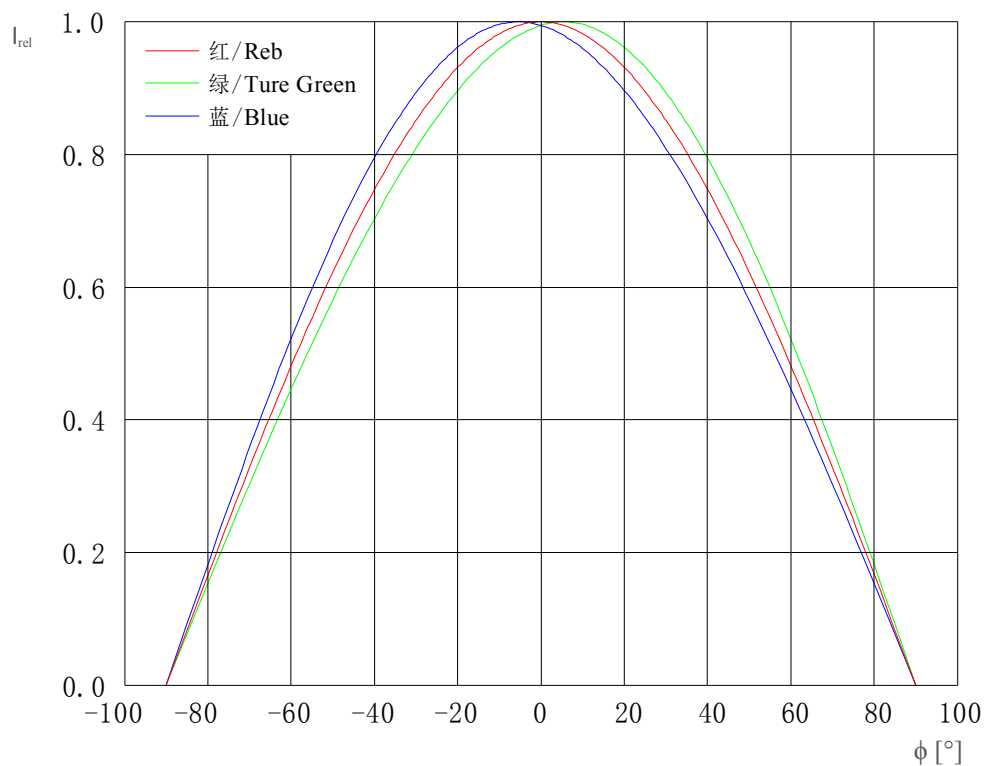
Relative Spectral Emission - $V(\lambda)$ = Standard Eye Response Curve

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



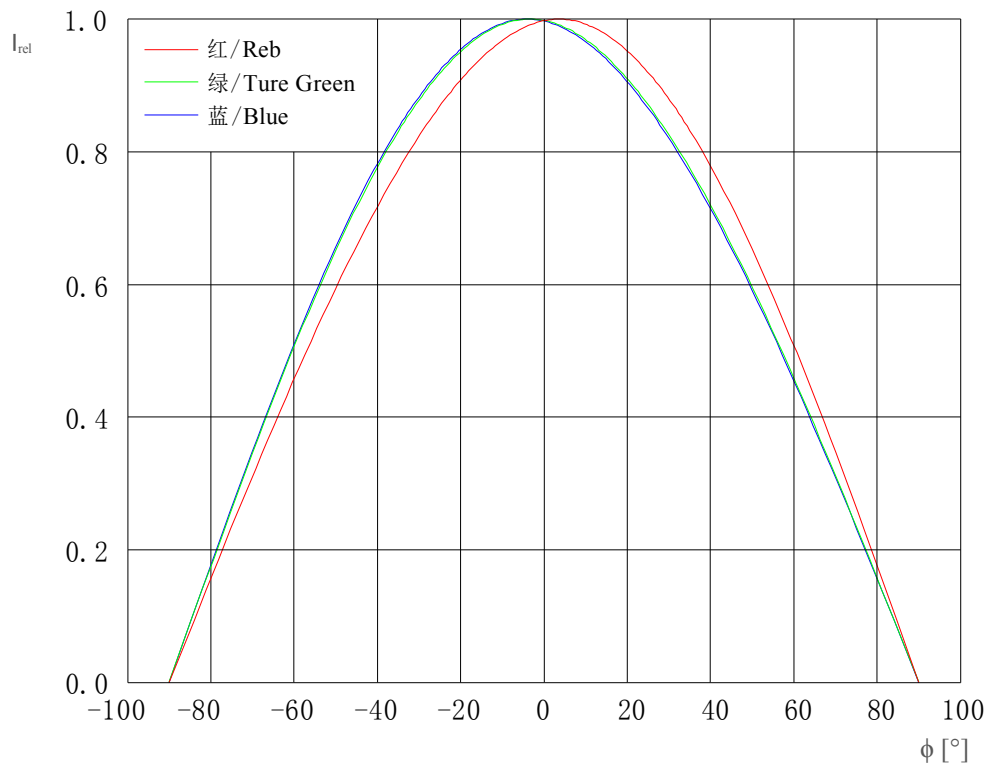
辐射特性 (垂直) / Radiation Characteristics (vertical)

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



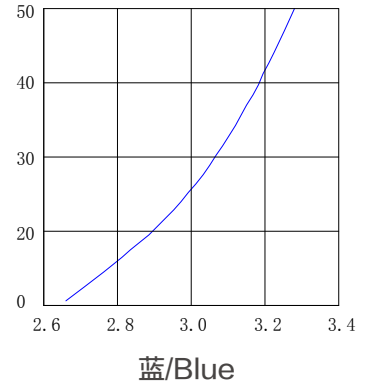
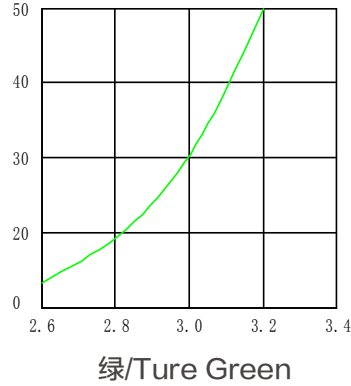
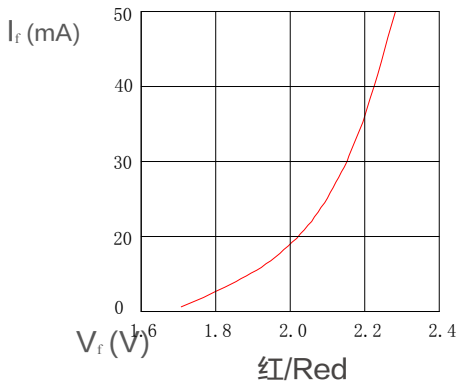
辐射特性 (水平) / Radiation Characteristics (horizontal)

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



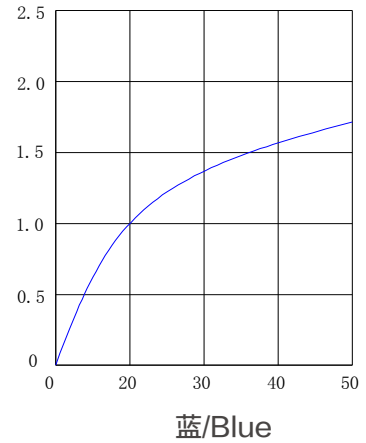
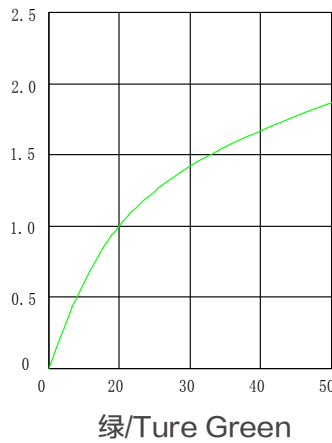
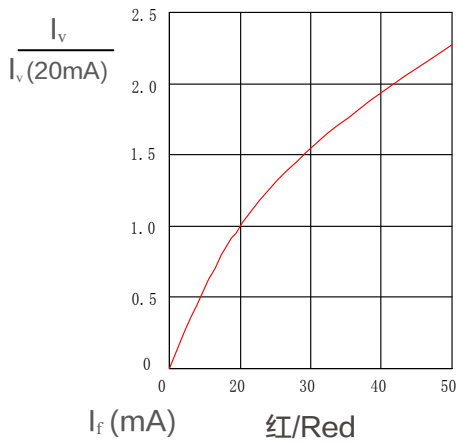
正向电流 / Forward Current

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



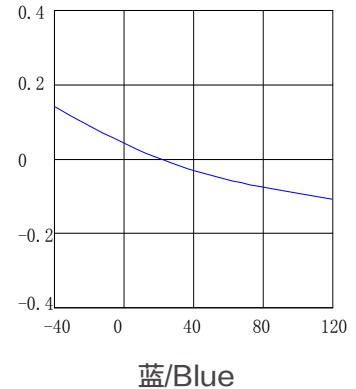
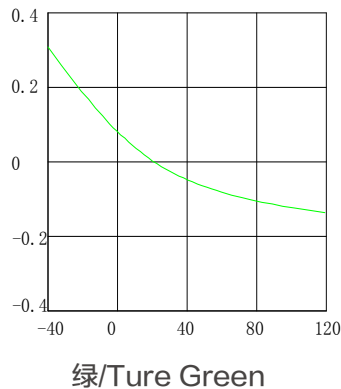
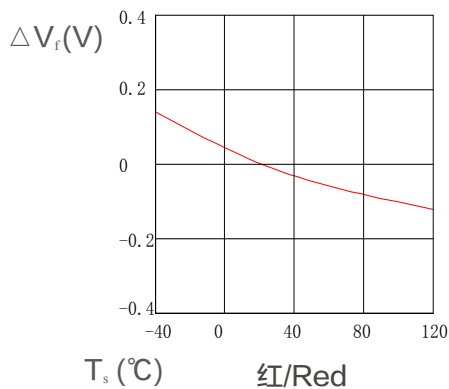
相对亮度特性曲线 / Relative Luminous Intensity

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



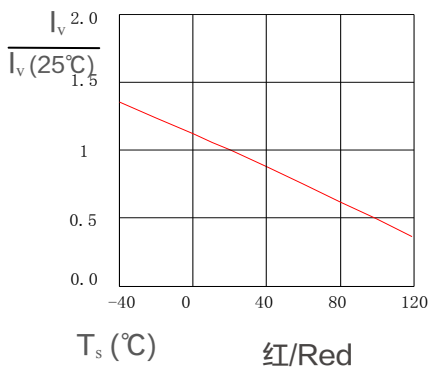
相对正向电压 / Relative Forward Voltage

$$\Delta V_f = V_f - V_f(25\text{ }^\circ\text{C}) = f(T_j); I_f = 20\text{ mA}$$

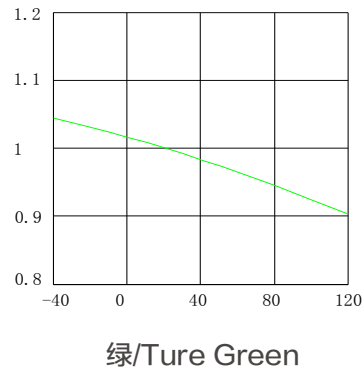


相对发光强度 / Relative Luminous Intensity

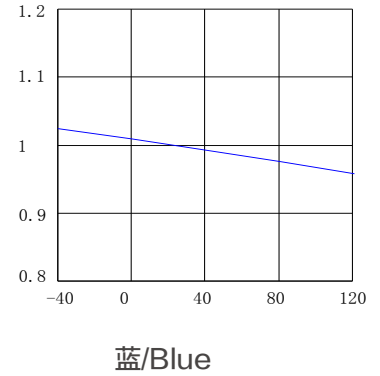
$I_v/I_v(25^\circ\text{C}) = f(T_j); I_f = 20 \text{ mA}$



红/Red



绿/True Green

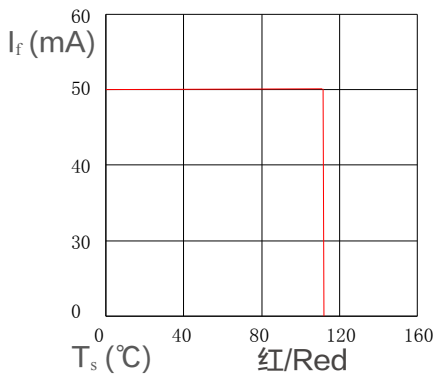


蓝/Blue

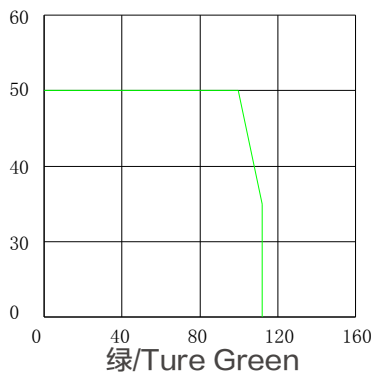
焊点温度与正向电流 / Solder Point Temperature vs. Forward Current

vs. Forward Current

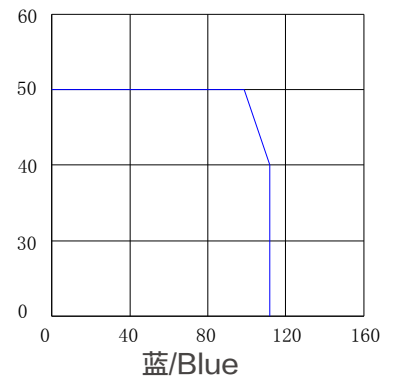
$I_f = f(T_s)$



红/Red

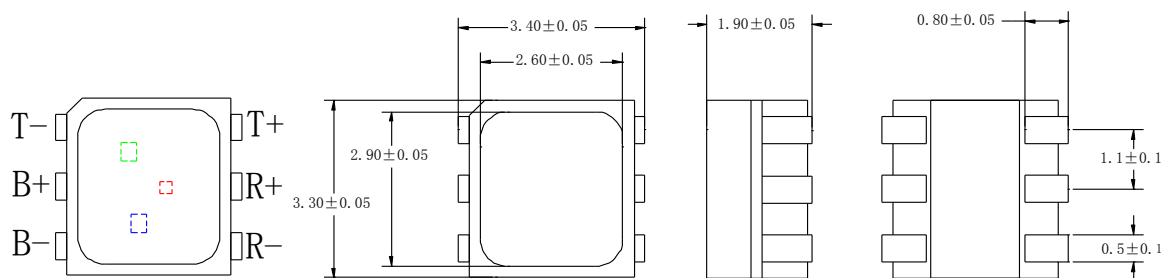


绿/True Green



蓝/Blue

产品尺寸 / Package Outline



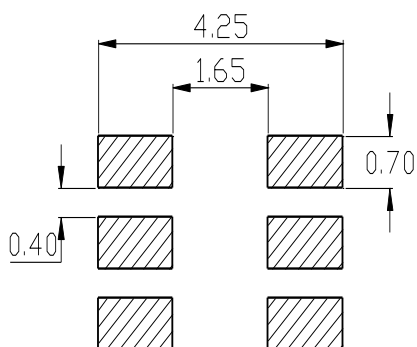
备注

- 统计质量: 40mg
- 标 记: 方向识别

NOTE

- Approximate Weight: 40mg
- Mark: orientation identification

推荐焊盘 / Recommended Solder Pad



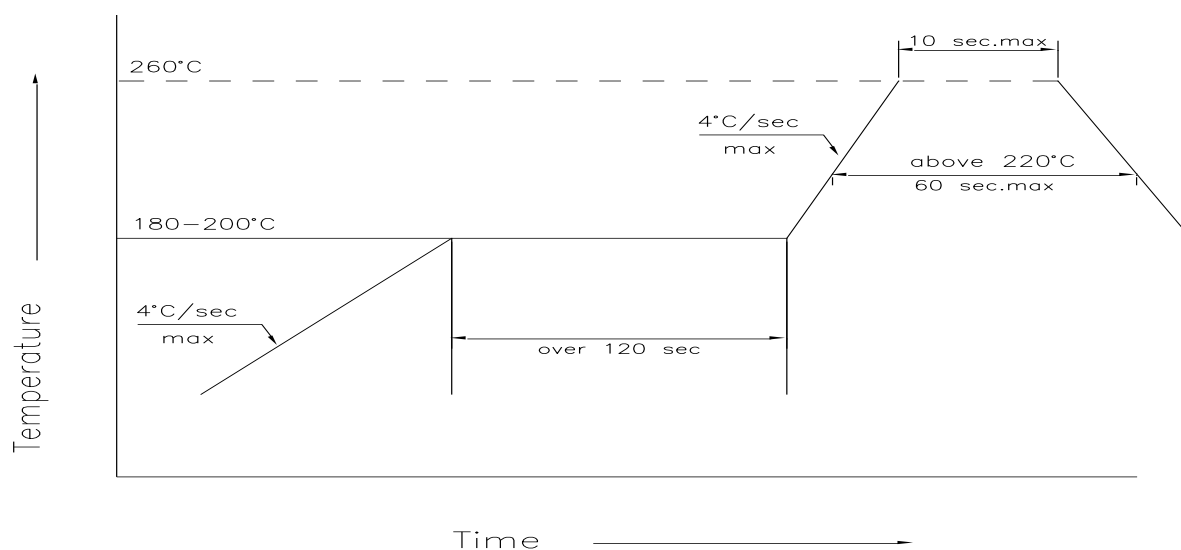
注释

- 不适合超声波清洗的封装

NOTE

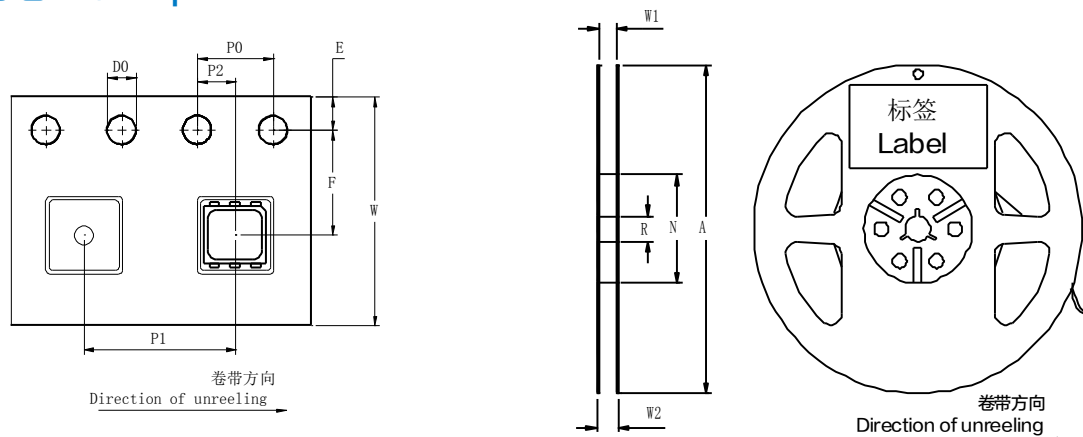
- Package not suitable for ultrasonic cleaning

回流焊要求 / Reflow Soldering Profile



| 主要特性 Profile Feature | 符号 Symbol | 无铅焊接 Pb-Free Assembly | | | 单位 Unit |
|---|--------------|--------------------------|------|------|------------|
| | | min. | rec. | max. | |
| 预热升温速率 Ramp-up Rate to Preheat 25°C–150°C | - | - | 2 | 3 | °C/s |
| 时间 / Time (T_{smin} to T_{smax}) | T_s | 60 | 100 | 120 | s |
| 峰值升温速率 Ramp-up Rate to Peak (T_{smax} to T_p) | - | - | 2 | 3 | °C/s |
| 熔点温度 Liquidus Temperature | T_l | | 217 | | °C |
| 高于熔点温度的时间 Time above Liquidus Temperature | t_l | - | 80 | 100 | s |
| 峰值温度 / Peak Temperature | T_p | - | 255 | 260 | °C |
| 规定的峰值温度 ± 5°C 以内的时间 Time within 5°C of the Specified Peak Temperature | t_p | 10 | 20 | 30 | s |
| 降温速率 / Ramp-down Rate (T_p to 100°C) | - | - | 3 | 6 | °C/s |
| 时间 / Time (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 |
|-------|-------|-------|--------|---------|----------|----------|
| 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)

1000

条形码标签 / Barcode-Product-Label (BPL)

HONGLI TRONIC
鸿利光电

RoHS

Device No: HVRTB-3433XXX BIN: XX-X+XX-X+XX-X

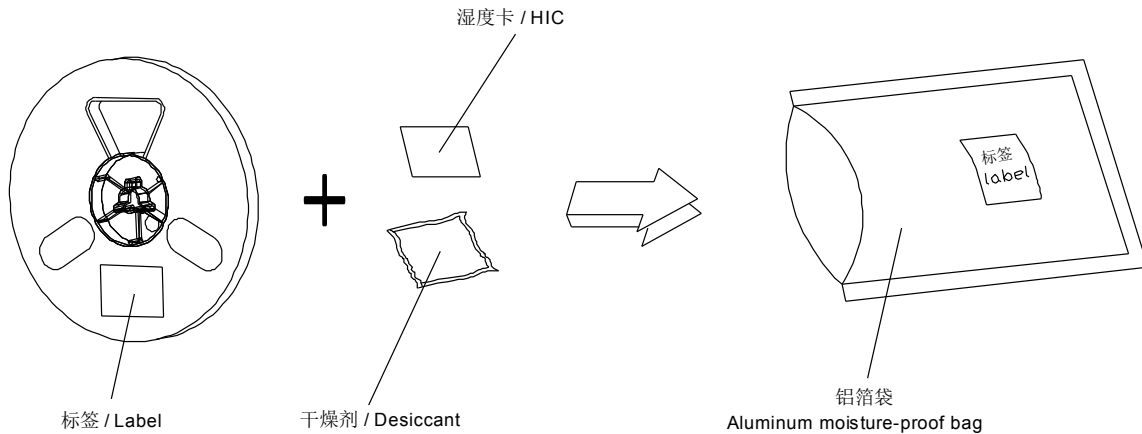
Lot No: XXXX-XXXXXXXX R: IV: XXXX-XXXX mcd
WLD: XXX-XXX nm

Product No: XXXXXXXXXXXXX T: IV: XXXX-XXXX mcd
WLD: XXX-XXX nm

Qty: XXXXPCS D/C: XXXX B: IV: XXXX-XXXX mcd
WLD: XXX-XXX nm

MSL:2

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



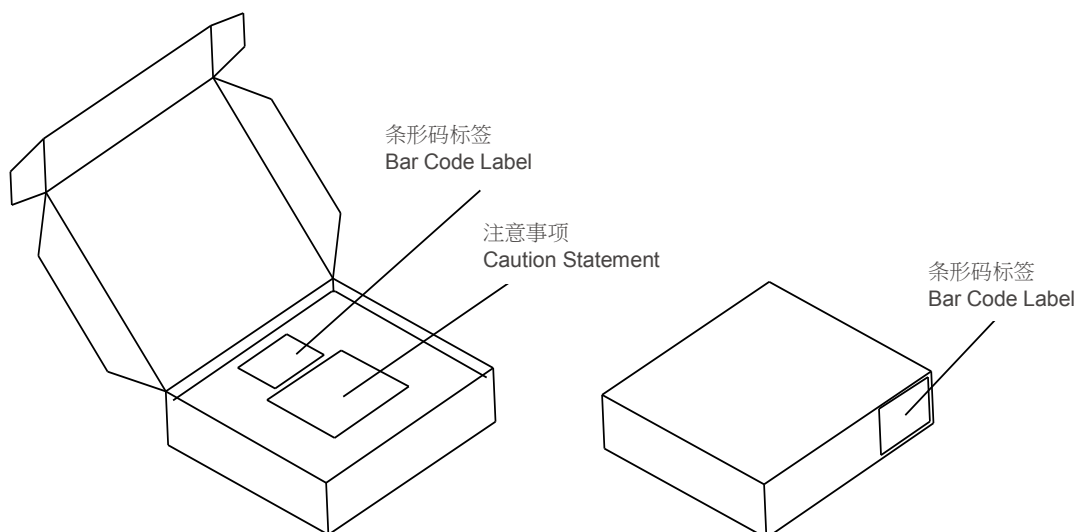
备注

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 ± 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 ± 0.05 V 和一个 ± 0.1 V 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 ± 0.05 V and an expanded uncertainty of ± 0.1 V (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.

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