

HVR-3528DER



3528 PLCC4 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，无色透明树脂封装
- 50% I_v 视角：120°
- 颜色：红色（625nm）
- 资格：通过了AEC-Q102 & IEC 60810可靠性测试

Features

- Package: Colorless clear resin in white PPA cup
- Viewing angle at 50% I_v: 120°
- Color: Red (625nm)
- Qualifications: Passed reliability test per AEC-Q102 & IEC 60810 requirement

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 Type | 发光强度 Luminous Intensity I _v @ I _f =50mA | 订单编号 Ordering Code |
|---|---|--------------------------|
| HVR-3528DER - XXXX - X - XXXX 亮度档 Brightness | 1.40 - 3.55 cd | XXXXXX |
| 颜色档 Color | | |
| 电压档 Forward 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-3528DER-ABCA-1-XXXX，单个卷盘中的产品只有AB、BA、BB、CA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-3528DER-XXXX-1-3A4B，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 one reel. Please refer to page #4 for details.

E.g.: HVR-3528DER-ABCA-1-XXXX, means only one bin of AB, BA, BB or CA is in one reel.

■ Color Grouping

Please refer to page #4 for details.

■ Forward Voltage Groups

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

E.g.: HVR-3528DER-XXXX-1-3A4B, means only one bin of 3A, 3B, 4A or 4B is in one reel.

极限参数 / Maximum Ratings

| 参数 Parameters | 符号 Symbol | 数值 Rating | 单位 Unit |
|---|--------------|--------------|------------|
| 结温 / Junction Temperature | T_j | 125 | °C |
| 正向电流 / Forward Current ($T_s=25^\circ\text{C}$) | I_f | 70 | mA |
| 峰值正向电流 Peak Forward Current ($t \leq 10\mu\text{s}$; $D=0.005$; $T_s=25^\circ\text{C}$) | I_{fp} | 100 | mA |
| 反向电压 / Reverse Voltage ($T_s=25^\circ\text{C}$) | V_r | 12 | V |
| 抗静电能力 Electrostatic Discharge (HBM) | V_{ESD} | 2000 | V |
| 操作温度 / Operating Temperature | T_{opr} | -40 ~ +100 | °C |
| 储存温度 / Storage Temperature | T_{stg} | -40 ~ +100 | °C |

特性 / Characteristics ($T_s = 25^\circ\text{C}$; $I_f = 50\text{ mA}$)

| 参数 Parameters | | 符号 Symbol | 数值 Rating | 单位 Unit |
|--|------|--------------------|--------------|------------|
| 峰值波长 / Wavelength at Peak Emission | typ. | λ_{peak} | 634 | nm |
| 主波长 / Dominant Wavelength | min. | λ_{dom} | 620 | nm |
| | typ. | λ_{dom} | 625 | nm |
| | max. | λ_{dom} | 630 | nm |
| 半波宽 / Spectral Bandwidth at 50% I_{rel} max | typ. | $\Delta\lambda$ | 19 | nm |
| 50 % I_v 下的视角 / Viewing Angle at 50 % I_v | typ. | 2Φ | 120 | ° |
| 正向电压 / Forward Voltage | min. | V_f | 1.90 | V |
| | typ. | V_f | 2.15 | V |
| | max | V_f | 2.50 | V |
| 反向电流 / Reverse Current ($V_R=12\text{V}$) | 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. | $R_{th JA_{real}}$ | 300 | K/W |
| 实际热阻值 (PN结-焊点) / Real Thermal Resistance (Junction / Solder Point) | max. | $R_{th JS_{real}}$ | 130 | K/W |

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

| 档次 Grouping | 发光强度 Luminous Intensity I_v (min.) | 发光强度 Luminous Intensity I_v (max.) | 光通量 Luminous Flux Φ_v (typ.) |
|----------------|--|--|---|
| AB | 1.40 cd | 1.80 cd | 4.80 lm |
| BA | 1.80 cd | 2.24 cd | 6.10 lm |
| BB | 2.24 cd | 2.80 cd | 7.60 lm |
| CA | 2.80 cd | 3.55 cd | 9.50 lm |

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

| 档次 Grouping | 正向电压 Forward Voltage V_f (min.) | 正向电压 Forward Voltage 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 ($T_s = 25\text{ }^\circ\text{C}$; $I_f = 50\text{ mA}$)

| 档次 Grouping | 主波长 Dominant Wavelength λ_{dom} (min.) | 主波长 Dominant Wavelength λ_{dom} (max.) |
|----------------|---|---|
| 1 | 620 nm | 630 nm |

标签信息 / Information on Label

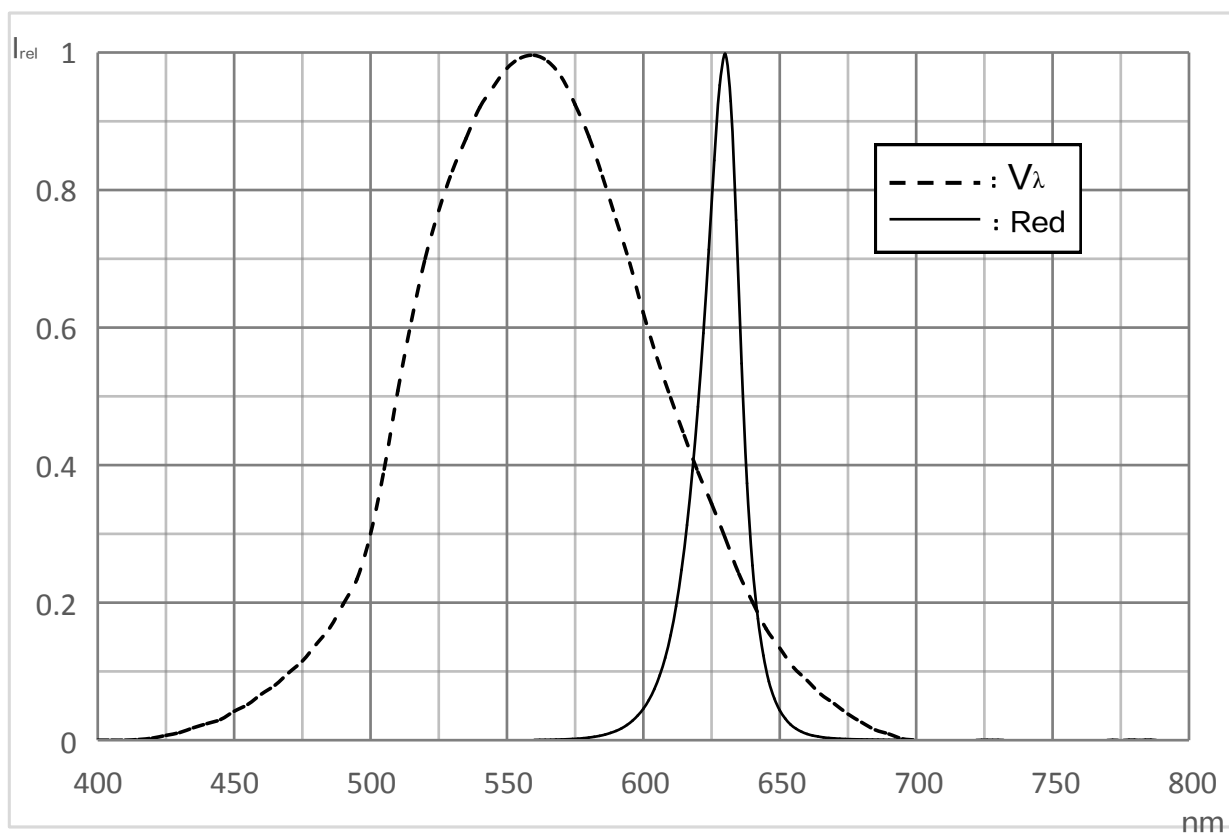
例 / E.g.: BA-1-3A

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

相对发射光谱 - $V(\lambda)$ = 标准人眼视觉曲线

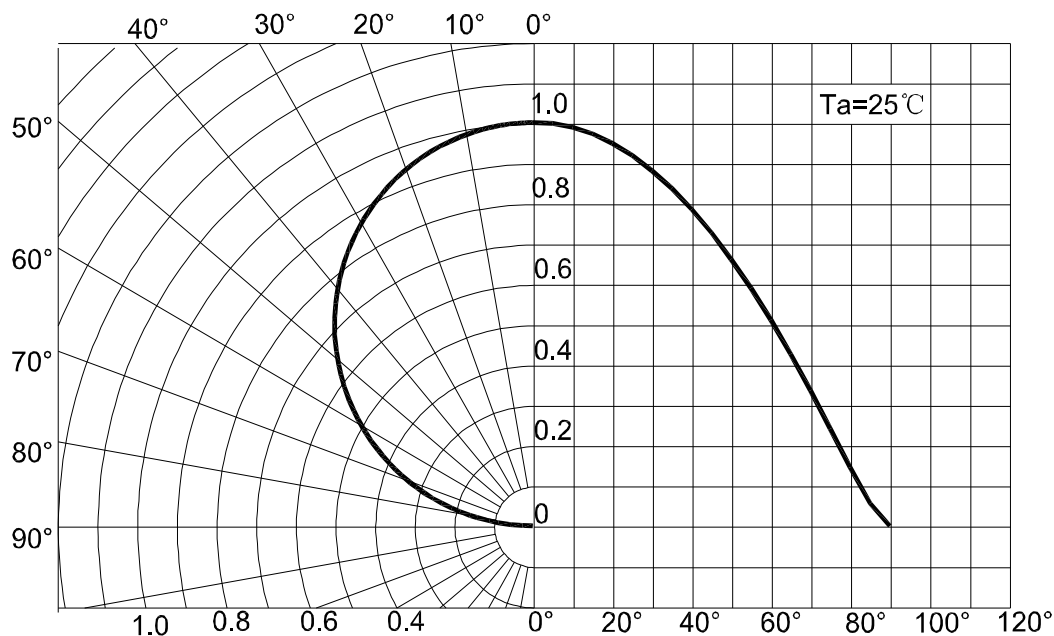
Relative Spectral Emission - $V(\lambda)$ = Standard Eye Response Curve

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



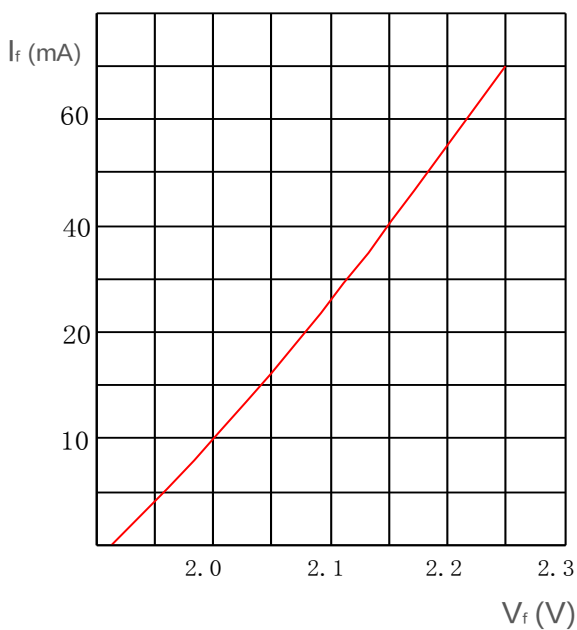
辐射特性 / Radiation Characteristics

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



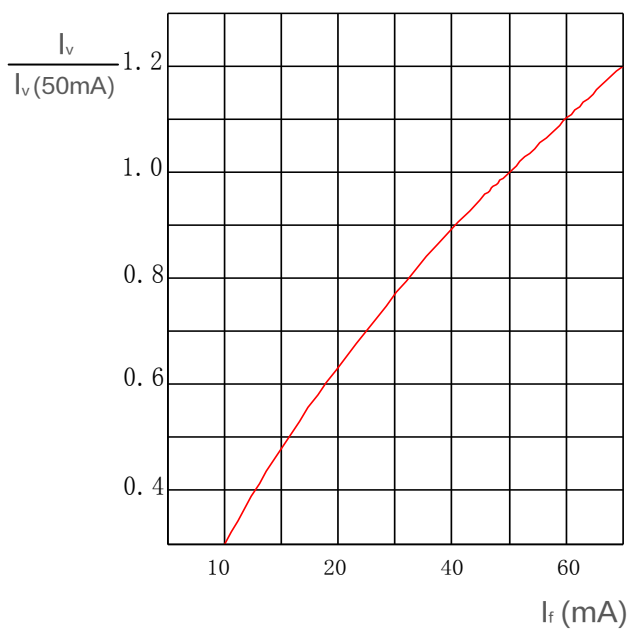
正向电流 / Forward Current

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

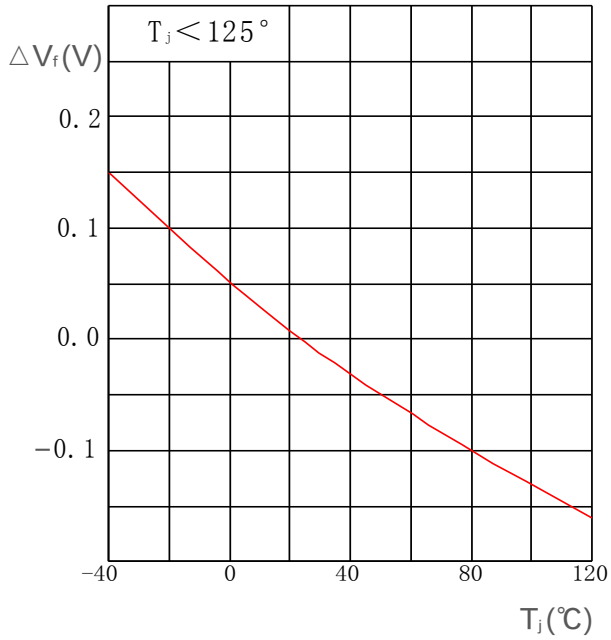


相对亮度特性曲线 / Relative Luminous Intensity

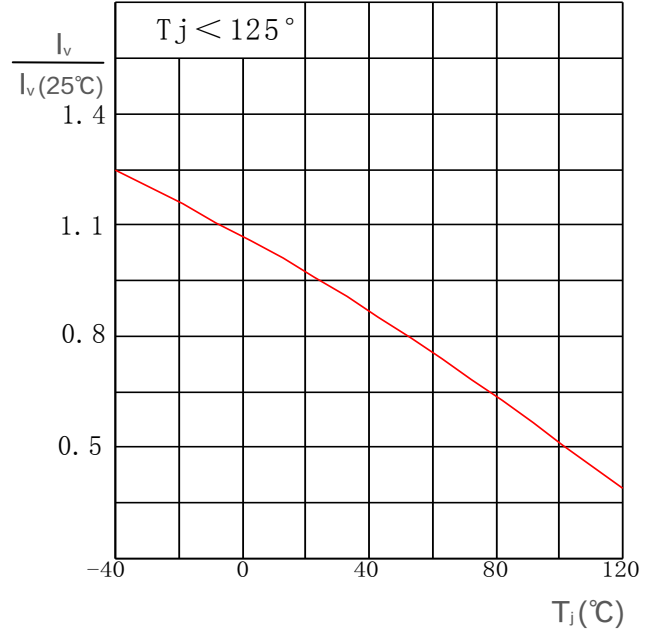
$I_v/I_v(50\text{ mA}) = f(I_f); T_a = 25\text{ }^\circ\text{C}$



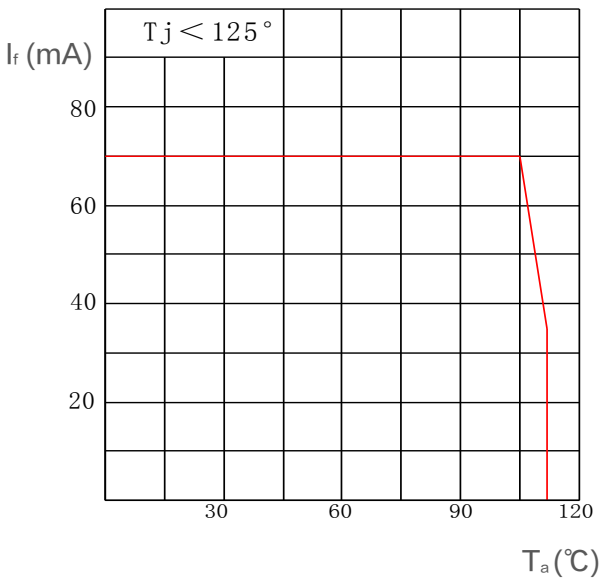
相对正向电压 / Relative Forward Voltage
 $\Delta V_f = V_f - V_f(25^\circ\text{C}) = f(T_j); I_f = 50\text{ mA}$



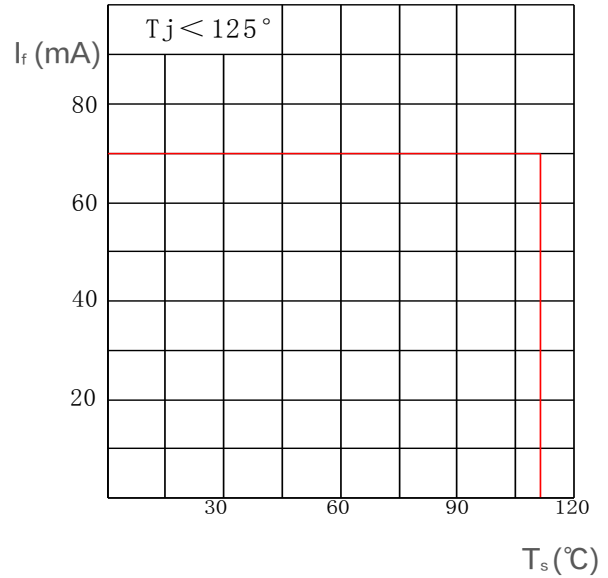
相对发光强度 / Relative Luminous Intensity
 $I_v/I_v(25^\circ\text{C}) = f(T_j); I_f = 50\text{ mA}$



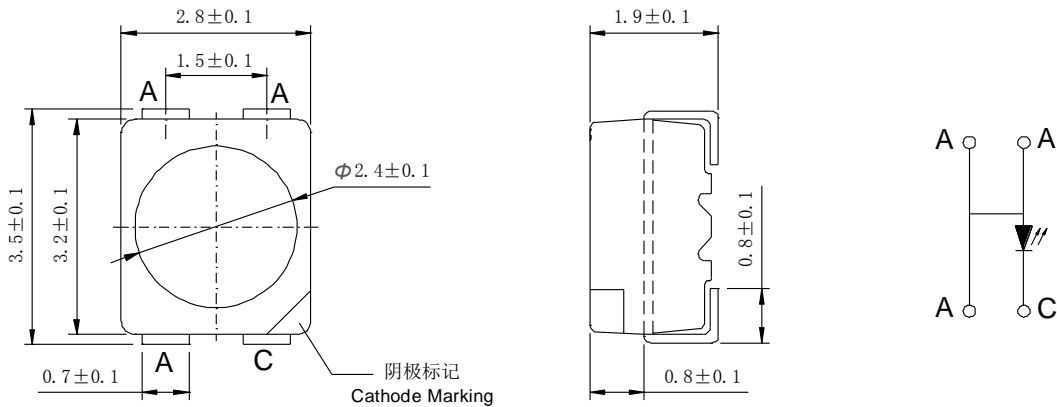
环境温度与正向电流
 Ambient Temperature vs. Forward Current
 $I_f = f(T_a)$



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



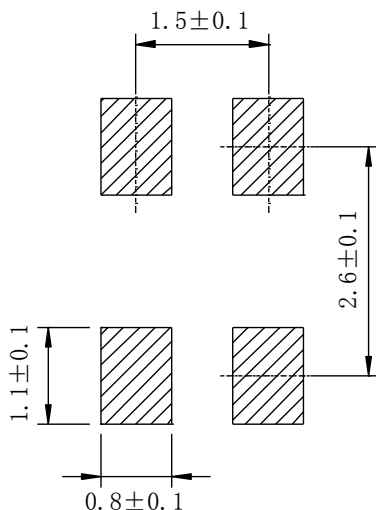
备注

- 统计质量: 30mg
- 标 记: 阴极
- 腐蚀试验: Class 3B
 测试条件: 1) H₂S 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 H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

NOTE

- Approximate Weight: 30mg
- Mark: Cathode
- Corrosion test: Class 3B
 Test conditions: 1) H₂S 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 H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

推荐焊盘 / Recommended Solder Pad



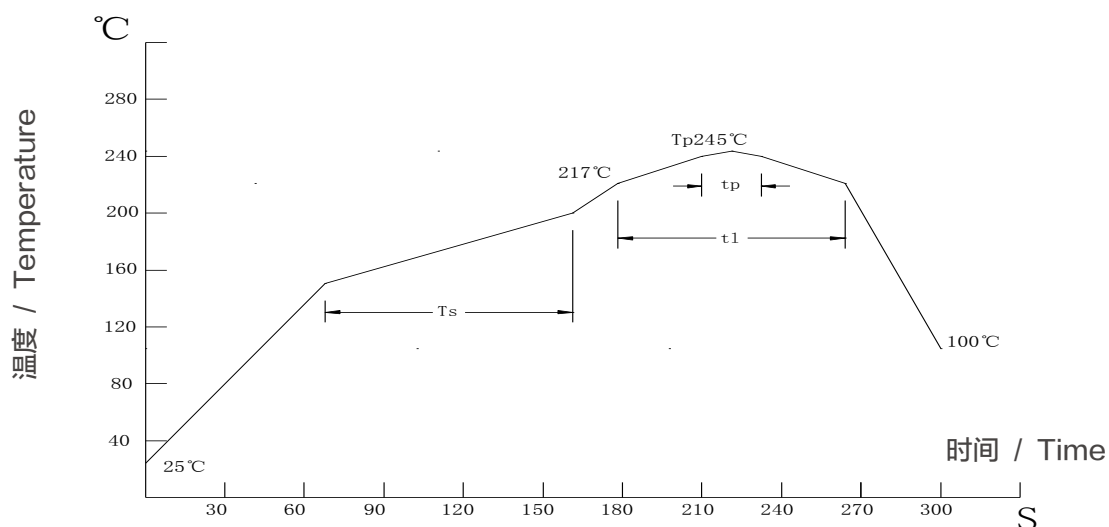
注释

- 不适合超声波清洗的封装

NOTE

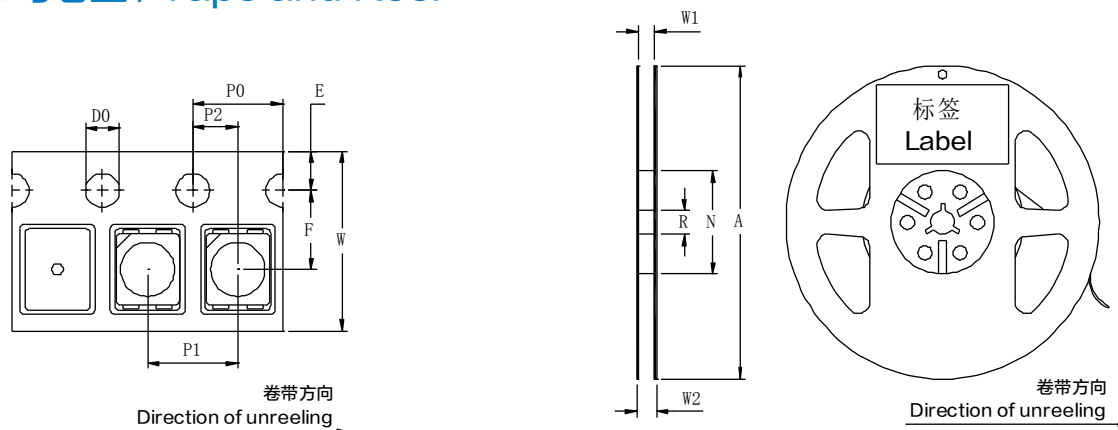
- Package not suitable for ultrasonic cleaning

回流焊要求 / Reflow Soldering Profile



| 主要特性 Profile Feature | 符号 Symbol | 无铅焊接 Pb-Free (SnAgCu) 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 | - | 245 | 260 | °C |
| 规定的峰值温度 $\pm 5^\circ\text{C}$ 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 |

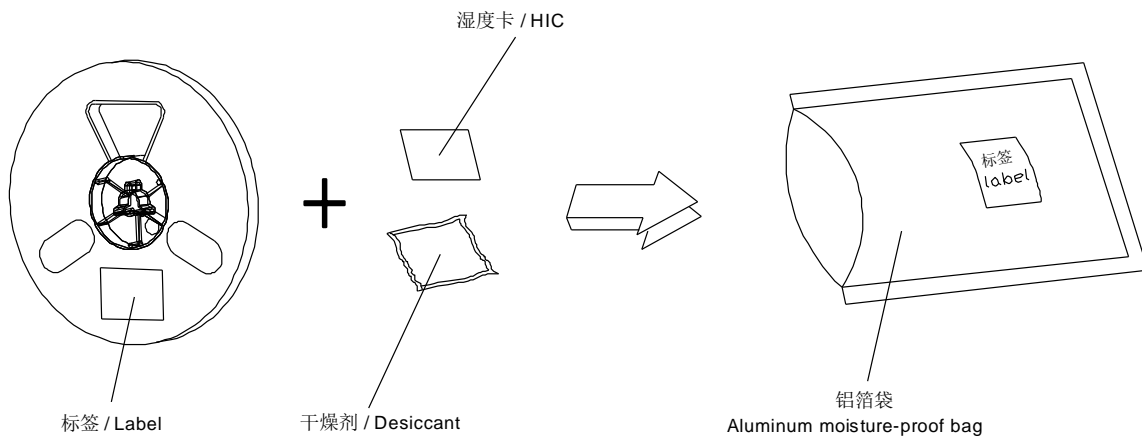
卷盘尺寸 / Reel Dimensions (mm)

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

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。

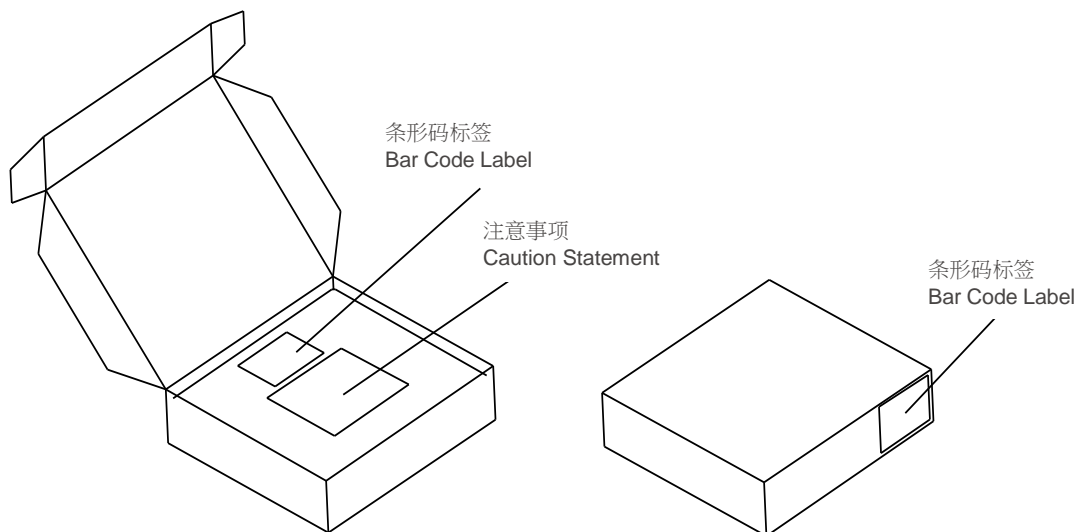
对于干燥包装，您可以从网络或JEDEC标准里获取。

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 ± 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。

波长: 波长是在25ms脉冲电流并且内部在线性为 ± 0.5 nm和一个 ± 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 $+/-0.1$ 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 $k = 3$).

Wavelength: The wavelength is measured at a current pulse of typically 25 ms, with an internal reproducibility of ± 0.5 nm and an expanded uncertainty of ± 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.