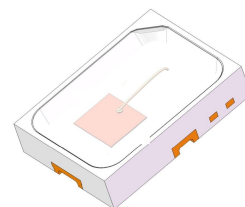


## LRE1FM



采用 SMD 环氧封装，便于集成，良好的散热性能；采用垂直结构芯片，亮度高，高温下颜色漂移小；硅胶密封，透过率高，抗紫外和高温性能好；  
SMD epoxy package, easy to be integrated, good heat dissipation; Vertical-chip technology, high optical output efficiency, small excursion of wave length at high temperature; Silicone sealed, high transmittance, excellent UV protection and thermal stability;

### 特点 | Features:

▲ 封装：SMD 环氧封装

Package: SMD epoxy package

▲ 视角：120°

Viewing angle: 120°

▲ 颜色： $\lambda_{\text{dom}} = 616 \text{ nm}$  (red)

Color:  $\lambda_{\text{dom}} = 616 \text{ nm}$  (red)

▲ ESD：2 千伏，HBM Class 2

ESD: 2 kV, HBM Class 2

▲ 认证：AEC-Q102

Qualifications: AEC-Q102

▲ MSL：等级 2

MSL: Level 2

### 应用 | Applications:

▲ 汽车信号灯

Automotive lights

▲ 电器指示灯

Signaling lamp of apparatus

▲ 灯具

Lanterns

▲ 仪器、仪表盘背光显示

Dashboard backlight

## 目录 | Table of Contents

器件最大允许值   Maximum Ratings .....	3
关键指标参数   Characteristics .....	4
亮度分档   Brightness Groups .....	5
电压分档   Forward Voltage Groups .....	5
色度分档   Chroma Groups .....	5
相对光谱分布曲线   Relative Spectral Emission Curve .....	6
辐射特性   Radiation Characteristics .....	6
正向电流-正向电压   Forward current-Forward Voltage .....	7
正向电流-相对光通量   Forward current-Relative Luminous Flux .....	7
正向电流-主波长   Forward current-Dominant Wavelength .....	8
结温-正向电压   Junction Temperature-Forward Voltage .....	8
结温-相对光通量   Junction Temperature-Relative Luminous Flux .....	9
结温-主波长   Junction Temperature-Dominant Wavelength .....	9
最大容许正向电流   Max. Permissible Forward Current .....	10
外形尺寸   Mechanical Dimensions .....	11
推荐焊盘   Recommended Solder Pad .....	12
回流焊曲线   Reflow Soldering Profile .....	13
编带   Taping .....	14
包装信息-产品标签   Packaging Information- Product Label .....	15

## 器件最大允许值 | Maximum Ratings

参数 Parameter	符号 Symbol	值 Values	单位 Unit
工作温度 Operating temperature	$T_{op}$	-40-110	°C
存储温度 Storage temperature	$T_{stg}$	-40-110	°C
结温 P/N junction temperature	$T_j$	125	°C
正向电流 Forward current	$I_f$	300	mA
脉冲峰值电流 Surge current ( $t \leq 10\mu S$ ; $D=0.005$ ; $T_s=25^\circ C$ )	$I_{fm}$	500	mA
反向击穿电压 Reverse voltage	$V_R$	12	V
抗静电电压 ESD withstand voltage (acc. To ANSI/ESDA/JEDEC JS-001-HBM, Class 2)	$V_{ESD}$	2	kV

## 关键指标参数 | Characteristics (Ts=25°C, If=140mA)

参数 Parameter	符号 Symbol	值 Values	单位 Unit
峰值波长 Peak wavelength	$\lambda_p$	typ. 625	nm
主波长 Dominant wavelength	$\lambda_d$	min. 612 typ. 616 max. 628	nm
发光角度 Viewing angle at 50% Iv	$2\theta$	typ. 120	deg. [ ° ]
正向电压 Forward voltage	$V_f$	min. 1.90 typ. 2.28 max. 2.50	V
反向漏电流 Reverse current (VR=10V)	$I_R$	max. 1	$\mu A$
光通量 Luminous flux	$\Phi$	typ. 30	lm
热阻 (P/N 结到焊接点) Thermal resistance (P/N junction to soldering point)	$R_{thJs\ ele}$	max. 30	K/W

## 亮度分档 | Brightness Groups (Ts=25°C, If=140mA)

组 Group	符号 Symbol	最小值 Min.	最大值 Max.	单位 Unit
B1	$\Phi_V$	13.8	17.8	lm
B2	$\Phi_V$	17.8	22.5	lm
B3	$\Phi_V$	22.5	28.3	lm
B4	$\Phi_V$	28.3	34.7	lm

\*Ts: soldering point temperature

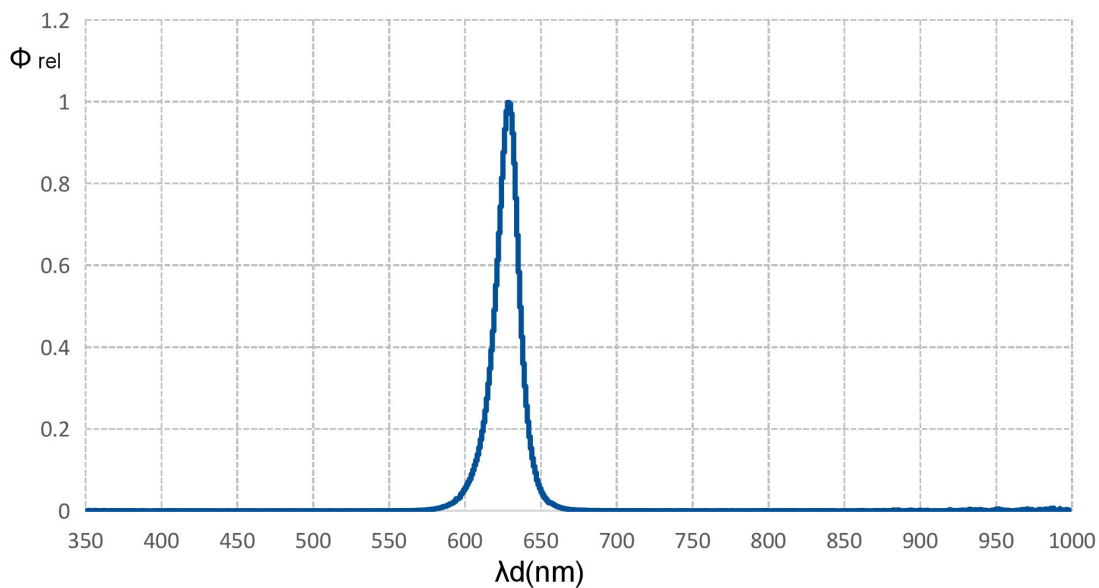
## 电压分档 | Forward Voltage Groups (Ts=25°C, If=140mA)

组 Group	符号 Symbol	最小值 Min.	最大值 Max.	单位 Unit
V1	Vf	1.90	2.05	V
V2	Vf	2.05	2.20	V
V3	Vf	2.20	2.35	V
V4	Vf	2.35	2.50	V

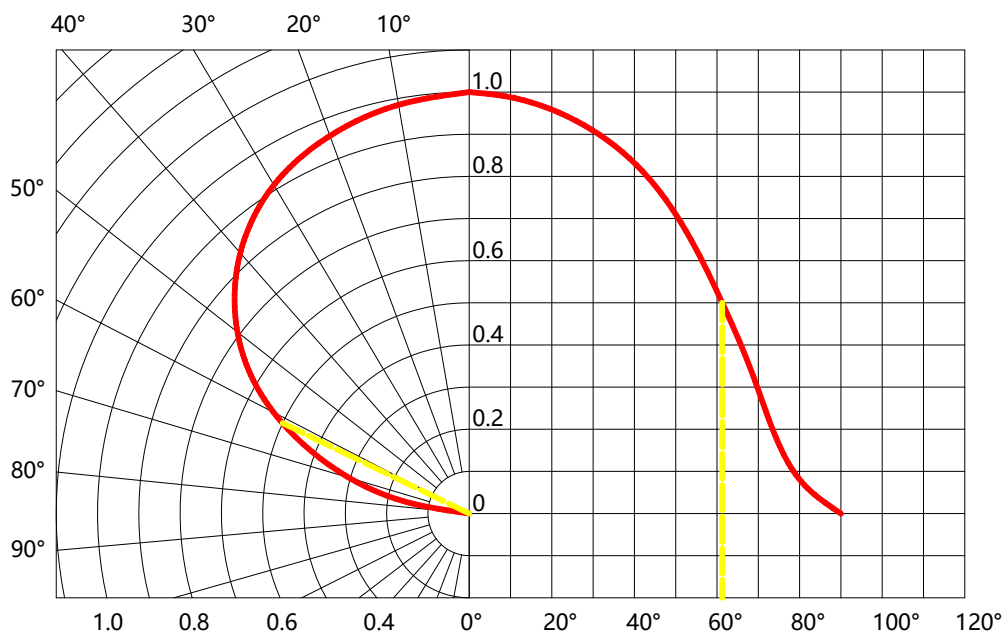
## 色度分档 | Chroma Groups (Ts=25°C, If=140mA)

组 Group	符号 Symbol	最小值 Min.	最大值 Max.	单位 Unit
W1	$\lambda_{dom}$	612	616	nm
W2	$\lambda_{dom}$	616	620	nm
W3	$\lambda_{dom}$	620	624	nm
W4	$\lambda_{dom}$	624	628	nm

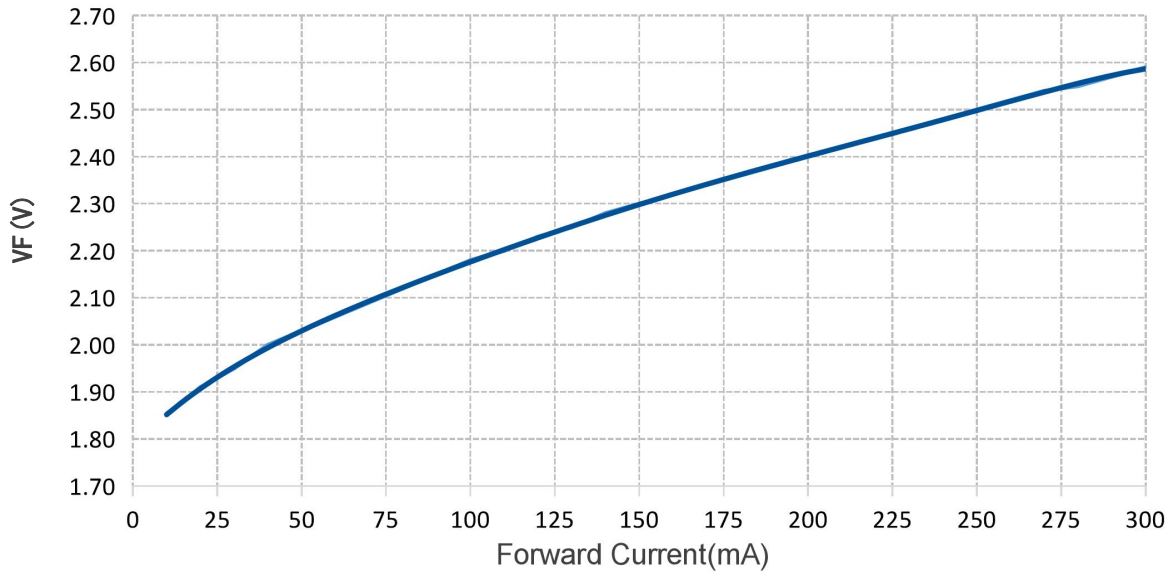
相对光谱分布曲线 | Relative Spectral Emission Curve (Ts=25°C, If=140mA)



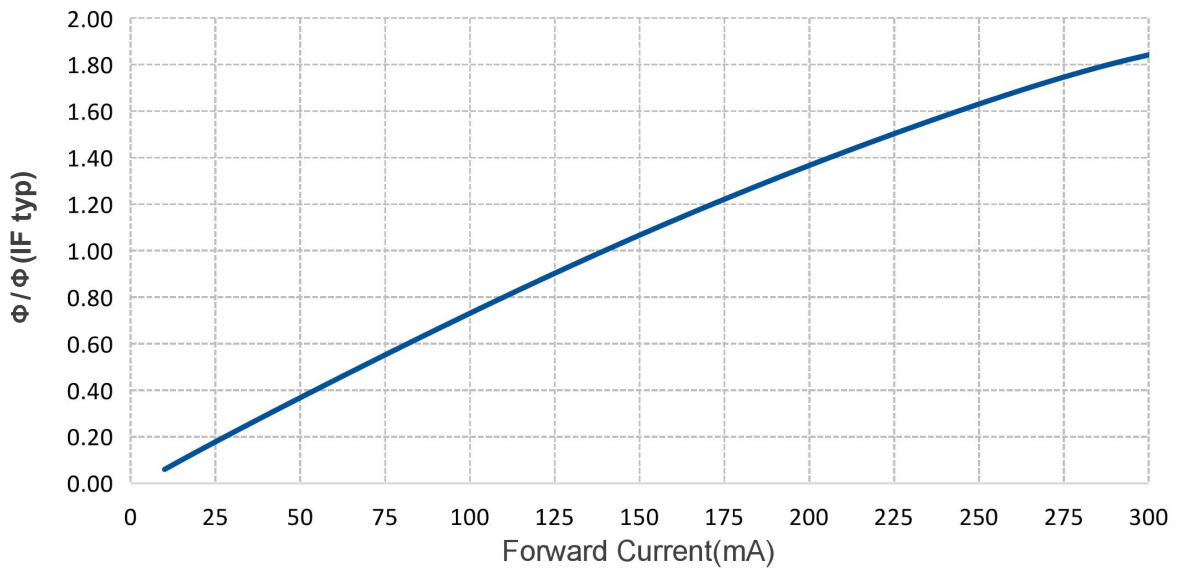
辐射特性 | Radiation Characteristics (Ts=25°C, If=140mA)



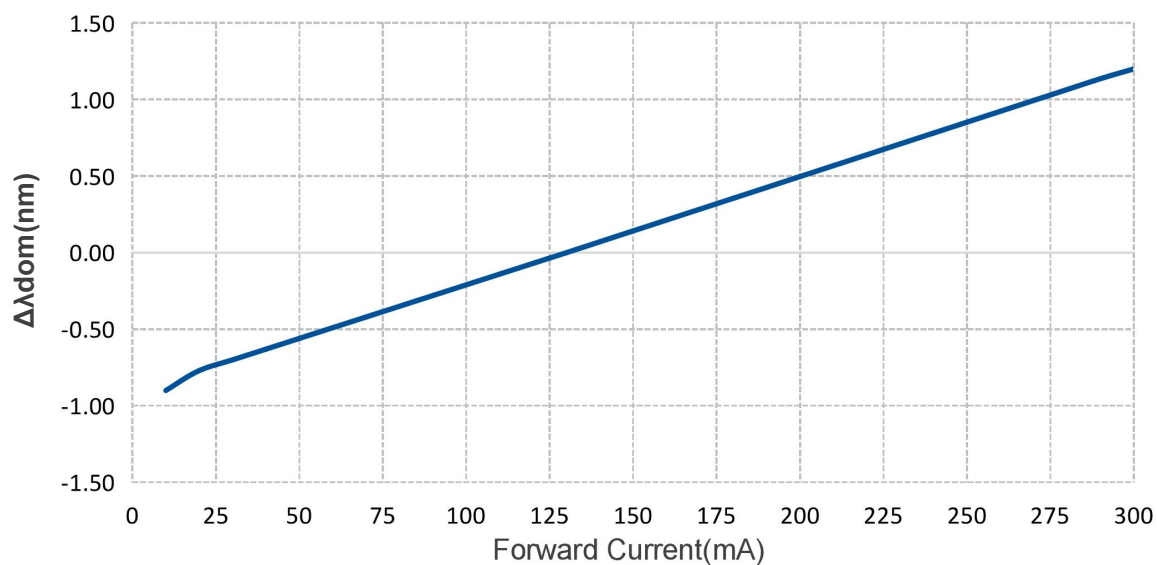
正向电流-正向电压 | Forward current-Forward Voltage (Ts=25°C)



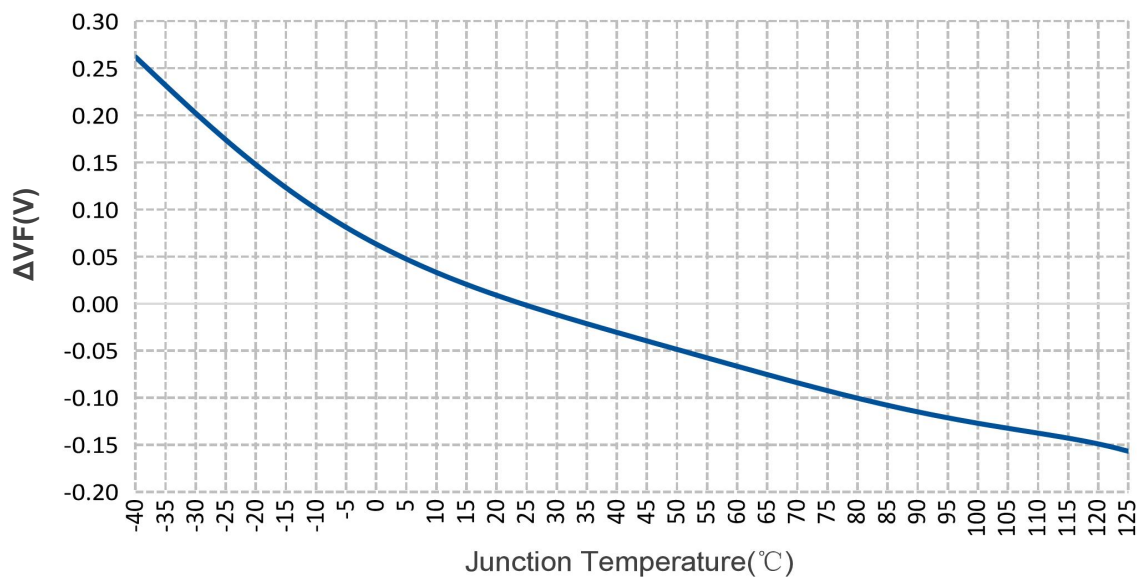
正向电流-相对光通量 | Forward current-Relative Luminous Flux (Ts=25°C)



正向电流-主波长 | Forward current-Dominant Wavelength ( $T_s=25^{\circ}\text{C}$ )

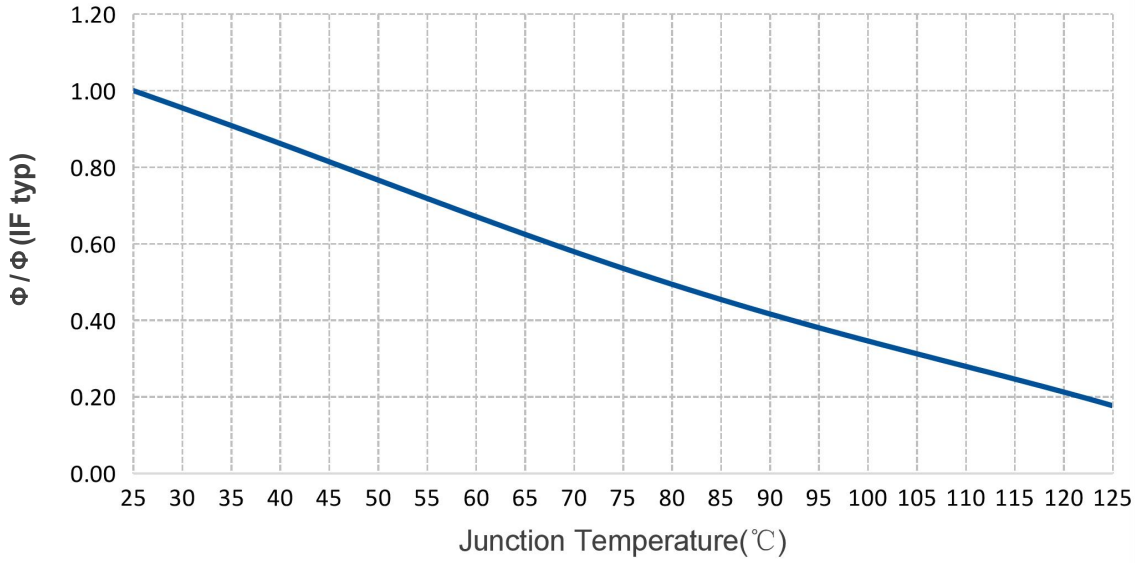


结温-正向电压 | Junction Temperature-Forward Voltage ( $I_f=140\text{mA}$ )

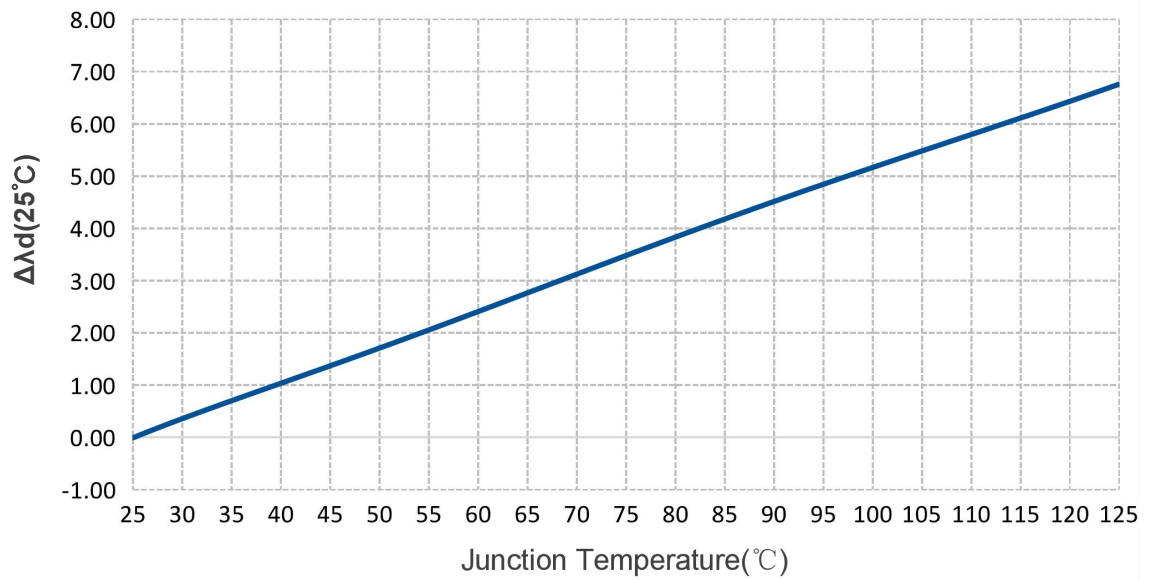




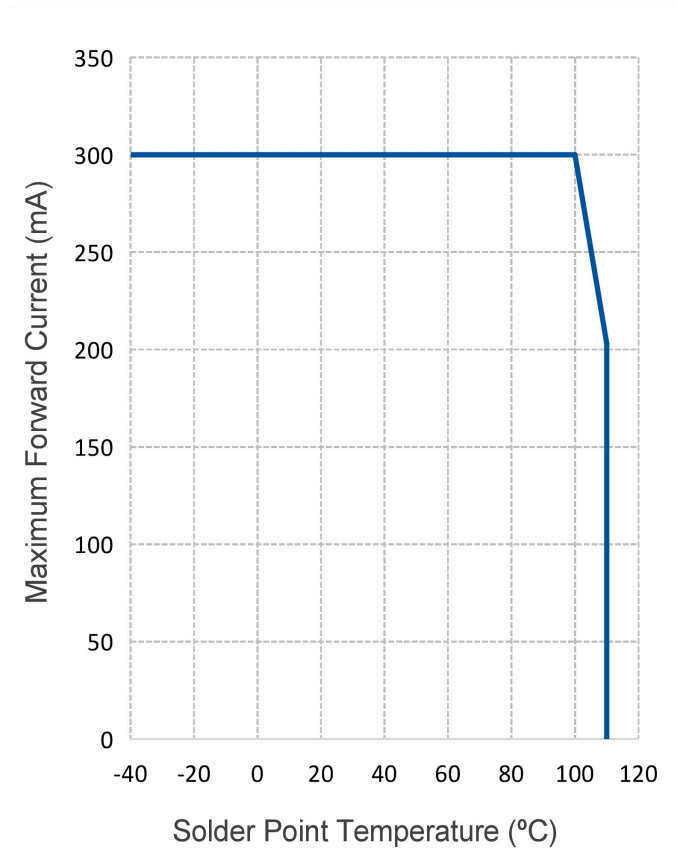
结温-相对光通量 | Junction Temperature-Relative Luminous Flux (If=140mA)



结温-主波长 | Junction Temperature-Dominant Wavelength (If=140mA)

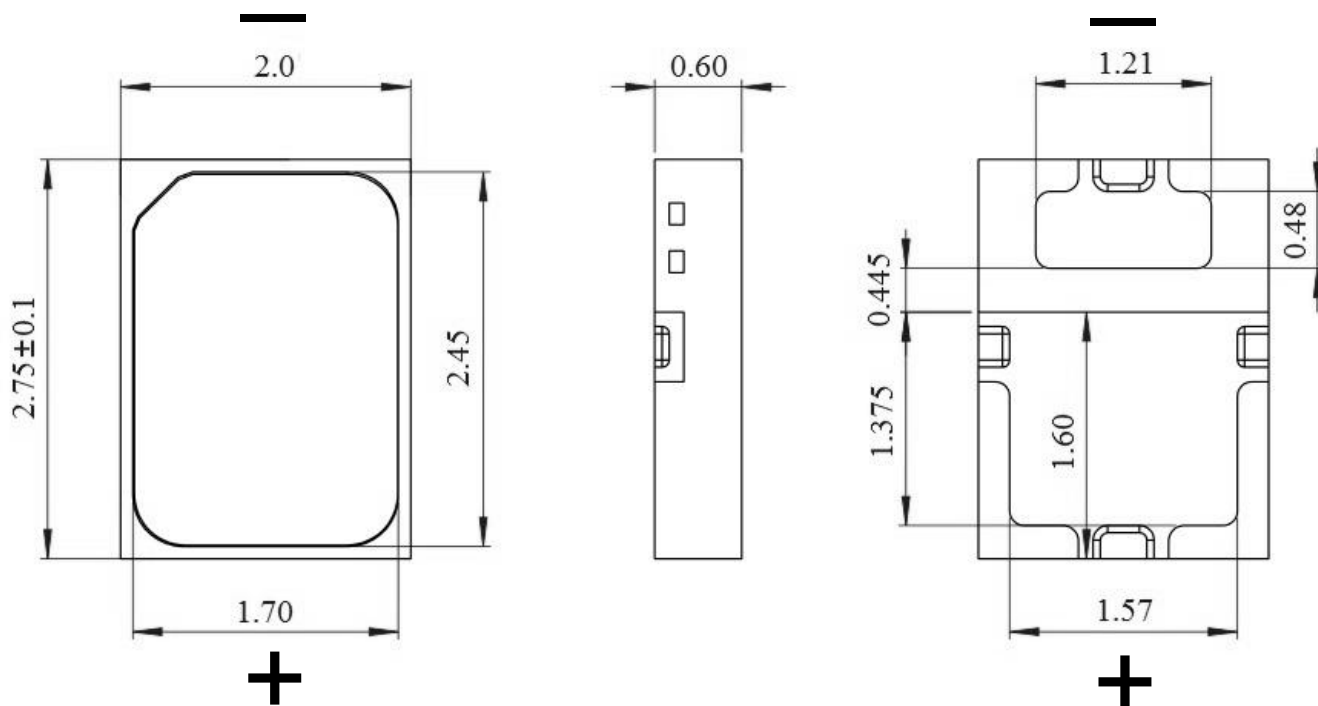


最大容许正向电流 | Max. Permissible Forward Current



外形尺寸 | Mechanical Dimensions

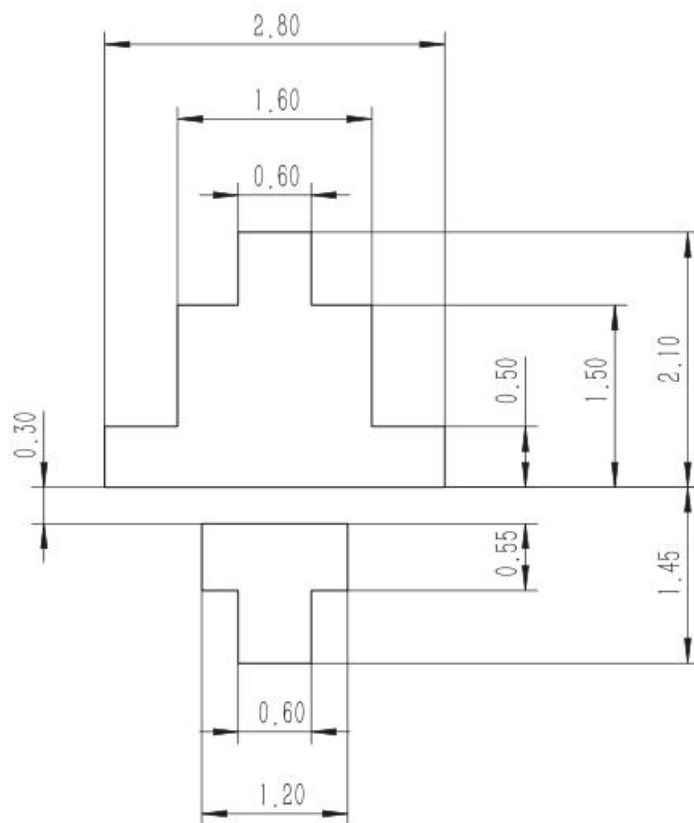
单位 | Unit: mm



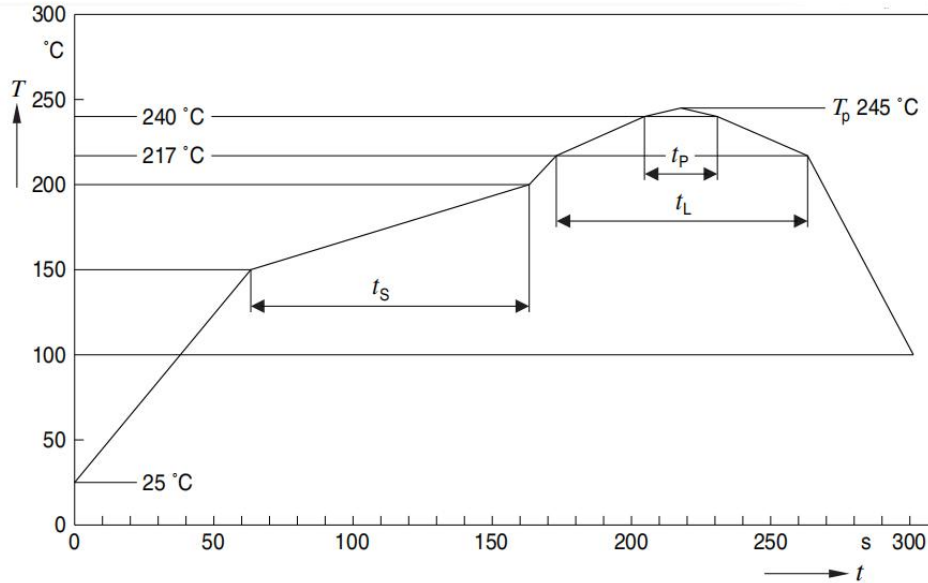
尺寸   Size	公差   Tolerance
*.*	±0.1mm
*.**	±0.05mm
*.***	±0.05mm

推荐焊盘 | Recommended Solder Pad

单位 | Unit: mm



## 回流焊曲线 | Reflow Soldering Profile

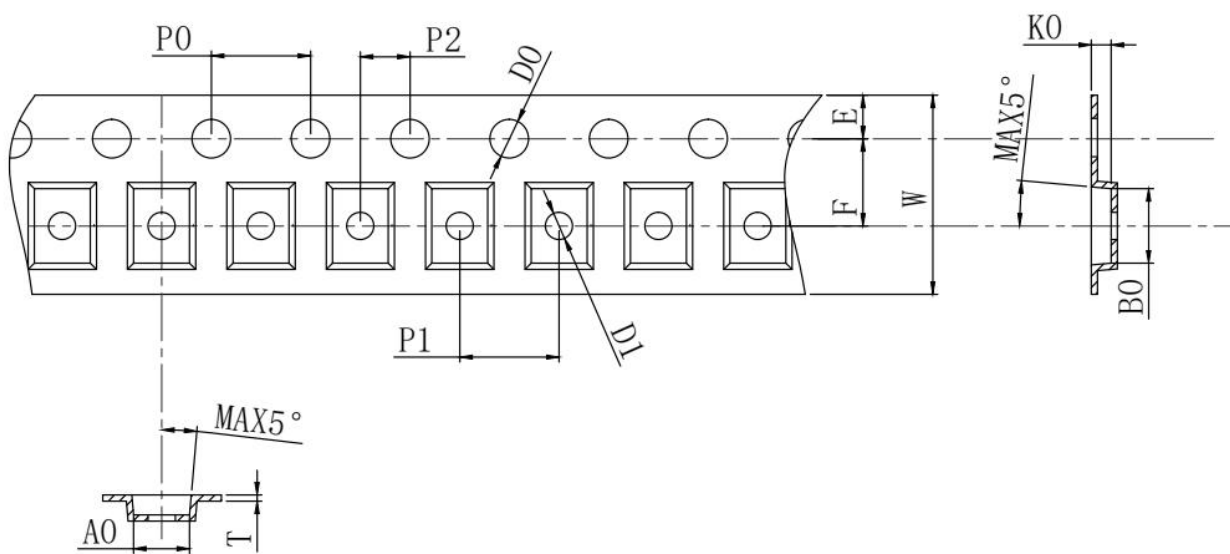
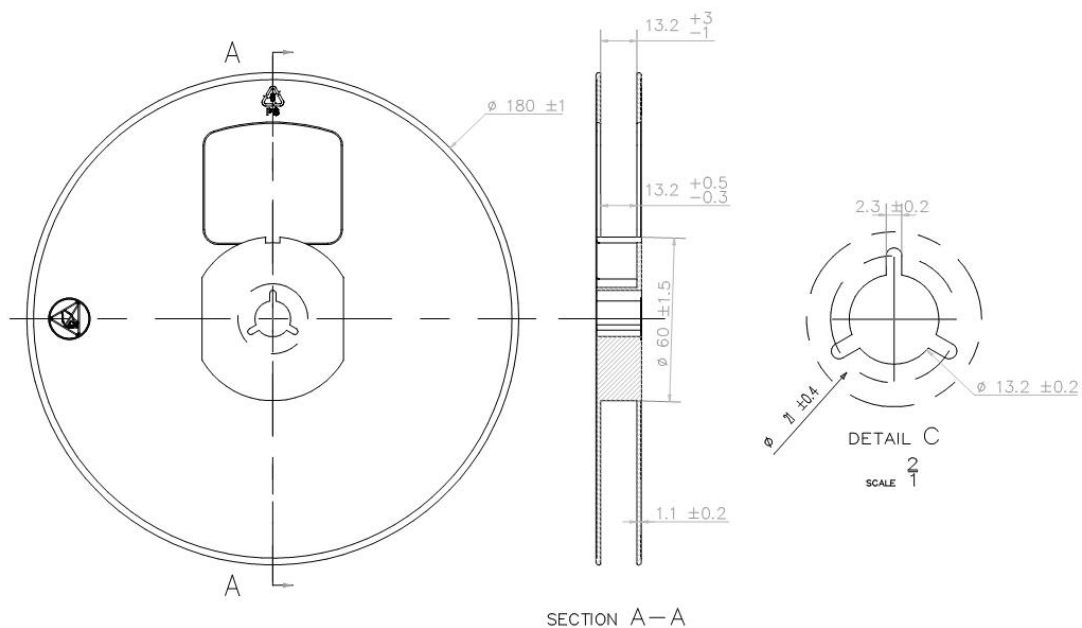


回流焊步骤 Profile Feature	符号 Symbol	无铅回流焊 (SnAgCu) Pb-Free (SnAgCu) Assembly			单位 Unit
		最小值 Min.	设定值 Reco.	最大值 Max.	
预热升温速率 25 °C to 150 °C Ramp-up rate to preheat			2	3	K/s
升温时间 (T <sub>smin</sub> -T <sub>smax</sub> )	t <sub>s</sub>	60	100	120	s
从 T <sub>smax</sub> 升温到最高温度的速率 Ramp-up rate to peak			2	3	K/s
达到液相的温度 Liquidus temperature			217		°C
在液相温度以上的时间 Time above liquidus temperature	t <sub>L</sub>		80	100	s
最高温度 Peak temperature	T <sub>p</sub>		245	260	°C
在高于最高温度 5°C 范围内停留的时间 Time within 5 °C of the specified peak temperature TP - 5 K	t <sub>p</sub>	10	20	30	s
降到 100°C 的速率 Ramp-down rate* TP to 100 °C			3	6	K/s
从最高温降到 25°C 的时间 Time 25 °C to TP				480	s

\*LED complies to MSL Level 2 (JEDEC J-STD-020E)

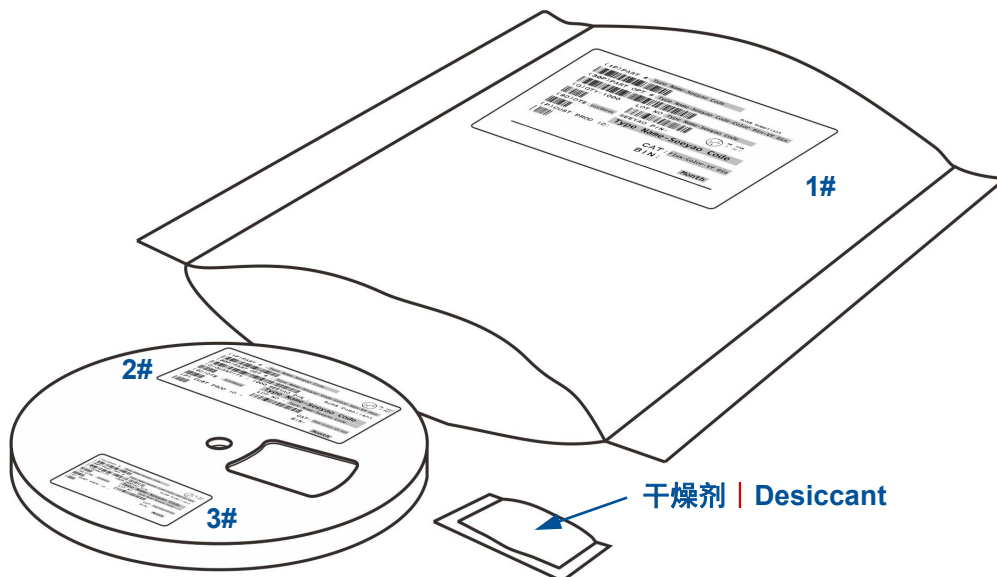
编带 | Taping

单位 | Unit: mm



SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	2.20 ± 0.05	2.95 ± 0.05	0.75 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10
SYMBOL	T	E	F	D0	D1	W
SPEC	0.20 ± 0.05	1.75 ± 0.10	3.50 ± 0.10	1.55 ± 0.05	1.10 ± 0.10	8.00 ± 0.10

包装信息-产品标签 | Packaging Information- Product Label



标签 1# | Label 1#

(1P)PART #: Type Name-Seeyao Code  
 RoHS Compliant  
 (30P)PART OPT #: Type Name-Seeyao Code-Color Bin-Vf Bin  
 (Q) QTY: 1000 LOT NO: Type Name-Seeyao Code  
 (9D)DTE: Year&Week SEEYAO P/N: Type Name-Seeyao Code  
 (P)CUST PROD ID: CAT: Flux-Color-Vf Bin  
 BIN: Month

标签 2# | Label 2#

(1P)PART #: Type Name-Seeyao Code MS TEMP  
 (30P)PART OPT #: Type Name-Seeyao Code-Color Bin-Vf Bin  
 (Q) QUANTITY: 1000 SEEYAO P/N: Type Name-Seeyao Code  
 (9D)DTE: Year&Week LOT NO: Type Name-Seeyao Code  
 (P) CUST PROD ID: CAT: Flux-Color-Vf Bin  
 BIN: Month

标签 3# | Label 3#

DT: 0123456789  
 Num: 1000  
 Bin: Bin012#  
 ABCDEF-GH0123456789  
 SALME0123456789  
 Bin0123456789012345