



洲光源
CHAULIGHT

产品规格书 SPECIFICATION

客户名称: _____
Customer Name
产品类型: _____ 光电耦合器
Product Name
产品型号: _____ ZSPC-817-Z2
Part No.

☐ 技术参考 Technical Reference		☐ 样品 Sample		☐ 量产供货 Mass Product	
客户审核 (加盖公章) Client approval (Stamp)		洲光源审核 Chaulight approval			
核准 Approval	确认 Checked	核准 Approval	确认 Checked	制作 Edited	
			王乐	苏高伟	
☐ 接收 Qualified		☐ 不接收 Disqualified		日期 Date: 2021/2/23	

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ZSPC-817-Z2 是一款 DIP-4 引脚封装的光电耦合器, 产品由一个红外发光二极管和一个光电晶体管组成; 光耦器件可实现不同电路之间的电气隔离和信号传输, 产品广泛应用于电源设备上, 例如手机充电器, 家电产品电源供应器等。 ZSPC-817-Z2 is a DIP photocoupler-in-4 pin package, Consisting of an infrared light-emitting diode and a phototransistor; The devices can realize electrical isolation and signal transmission between different circuits, The products are widely used in power supply equipment, such as mobile phone charger, home appliance product power supply device, etc.



特性 Feature

- 电流转换比(CTR: 50%-600% @IF=5mA, VCE=5V) Current transfer ratio (CTR: 50%-600% @IF=5mA, VCE=5V)
- 输入-输出隔离电压: (VISO=5,000Vrms) High isolation voltage between input and output(VISO=5,000Vrms)
- 爬电距离>7.62mm Creepage distance > 7.62mm
- 工作温度最高可达+ 110°C Operating temperature up to +110° C
- 集电极-发射极击穿电压 BVCEO≥80V Collector-Emitter voltage BVCEO≥80V
- 产品符合 RoHS、REACH 及 HF 等环保法规要求; The products comply with RoHS, REACH and HF;

最大额定值 Absolute Maximum Ratings

测试项目 Parameter (Ta=25℃)		符合 Symbol	范围 Ratings	单位 Unit
输入端发射极 Input Emitter	最大功率 Power Dissipation	Pd	70	mW
	最大反向电压 Reverse Voltage	V _R	6	V
	最大持续正向电流 Forward Current	I _F	50	mA
输出端接收极 Output Detector	最大功率 Power Dissipation *1	Pc	180	mW
	集电极-发射极电压 Collector-Emitter Voltage	V _{CEO}	80	V
	发射极-集电极电压 Emitter-Collector Voltage	V _{ECO}	6	V
	集电极电流 Collector Current	I _{C(ON)}	50	mA
工作温度 Operating Temperature		Topr	-55 to + 110	℃
储存温度 Storage Temperature		Tstg	-55 to + 125	℃
焊接温度 Lead Soldering Temperature*2		Tsol	260	℃
总功率消耗 Total Power Dissipation		P _{tot}	200	mW
*1 隔离电压 *1 Isolation Voltage		V _{iso}	5000	Vms

* 注:

*1.交流测试, 时间 1 分钟, 湿度. =40~60%;

*1.AC For 1 Minute, R.H. = 40 ~ 60%;

隔离电压测试的方法如下:

Isolation voltage shall be measured using the following method:

- (1) 将产品的两端短路;
- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side;
- (2) 测试隔离电压时无电流通过;
- (2) The isolation voltage tester with zero-cross circuit shall be used;
- (3) 测试时加正弦波形电压。
- (3) The waveform of applied voltage shall be a sine wave.

*2.锡焊时间为 10 秒

*2. Soldering time is 10 seconds

光电特性 Electro-Optical Characteristics

电性参数 (温度=25℃) Parameter (Ta=25℃)		符号 Symbol	条件 Condition	最小 值 Min.	典型 值 Typ.	最大值 Max.	单位 Units
输入端 Input	正向电压 Forward Voltage	V_F	$I_F=20\text{mA}$	--	1.2	1.4	V
	终端电容 Terminal Capacitance	C_t	$V=0, f=1\text{MHz}$	--	30	250	pF
	反向电流 Reverse Current	I_R	$V_R=4\text{V}$	--	--	10	μA
输出端 Output	暗电流 Dark Current	I_{CEO}	$E_e=0\text{mW/cm}^2$ $V_{CE}=20\text{V}$	--	--	100	nA
	集电极-发射极击穿电压 C-E breakdown Voltage	BV_{CEO}	$I_C=0.1\text{mA}$ $I_F=0$	80	--	--	V
	发射极-集电极击穿电压 E-C breakdown voltage	BV_{ECO}	$I_E=10\mu\text{A}$ $I_F=0$	6	--	--	V
转换特性 Transfer Characteristics	上升时间 Rise Time	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$ $R_L=100\Omega$	--	4	18	μs
	下降时间 Fall Time	t_f		--	3	18	
	集电极电流 Collector Current	I_C	$I_F=5\text{mA}$ $V_{CE}=5\text{V}$	2.5	--	30	mA
	*1 电流转换比 *1 Current conversion ratio	CTR		50	--	600	%
	绝缘电阻 Isolation resistance	R_{iso}	DC500V 40~60%R.H	1×10^{12}	--	--	Ω
	隔离电容 Floating Capacitance	C_f	$V=0, f=1\text{MHz}$	--	0.6	1	pF
	转换频率 Cut-off Frequency	f_c	$V_{CE}=5\text{V}, I_C=2\text{mA}$ $R_L=100\Omega, -3\text{dB}$	--	80	--	KHz
	集电极-发射极饱和电压 Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=20\text{mA}$ $I_C=1\text{mA}$	--	0.1	0.2	V

注: *1 电流转换比 = $I_C / I_F \times 100\%$, 公差 $\pm 3\%$ 。

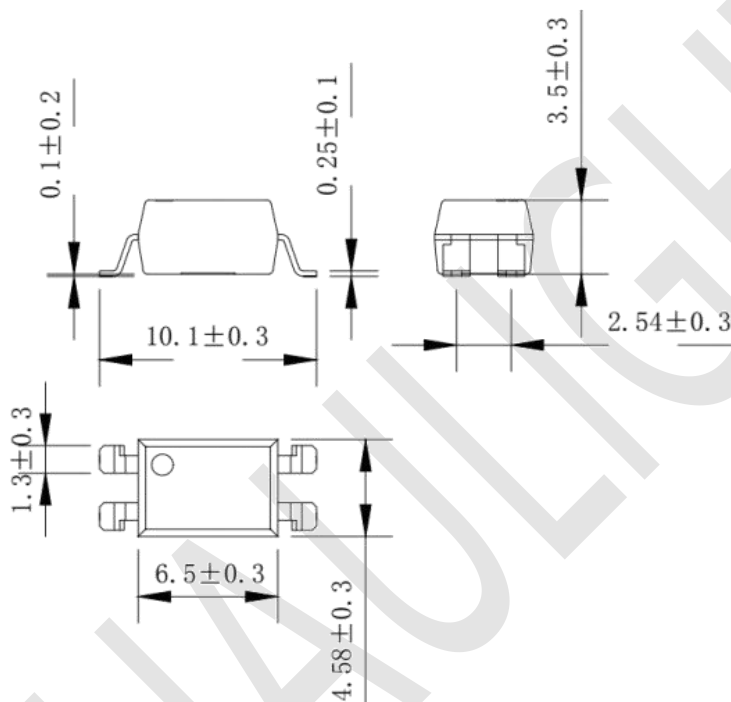
*1 Current Conversion Ratio = $I_C / I_F \times 100\%$, Tolerance: $\pm 3\%$ 。

电流转换比等级表(温度=25℃):

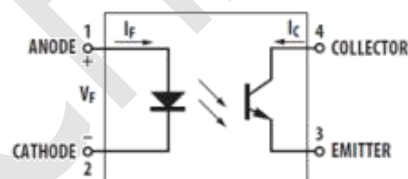
Rank Table of Current Transfer Ratio(Temperature=25℃)

等级标识 Grade Sign	最小.Min (%)	最大.Max (%)
L	50	100
A	80	160
B	130	260
C	200	400
D	300	600
L or A or B or C or D	50	600

产品尺寸 Package Dimension

未注公差: $\pm 0.1\text{mm}$ The Tolerances Unless Mentioned is : $\pm 0.1\text{mm}$

Schematic



引脚排列 Pin Configuration

1. 正极 Anode
2. 负极 Cathode
3. 发射极 Emitter
4. 集电极 Collector

备注 Notes:

--所有尺寸为毫米标识

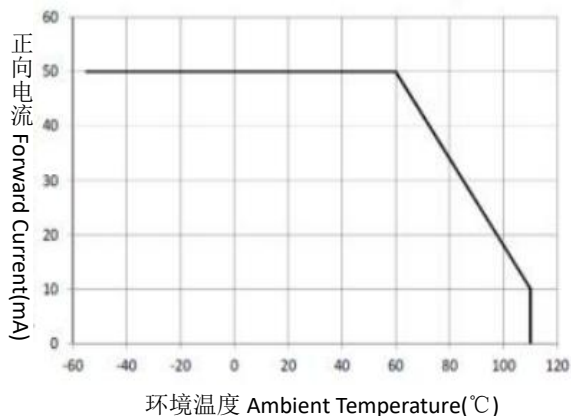
All dimensions are in millimeters

--未标识尺寸正负公差为 0.1mm Tolerances unless dimensions $\pm 0.1\text{mm}$

特性曲线图 Typical Electro-Optical Characteristics Curves

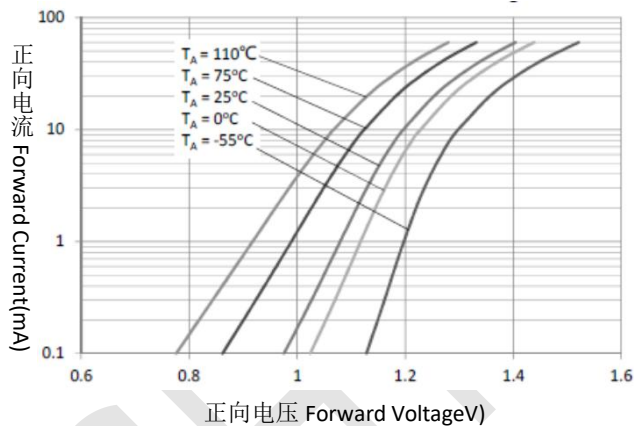
正向电流与环境温度的关系

Forward Current vs. Ambient Temperature



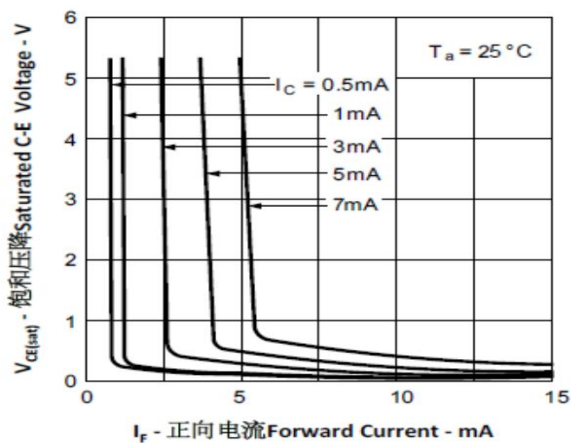
正向电流与正向电压的关系

Forward Current vs. Forward Voltage



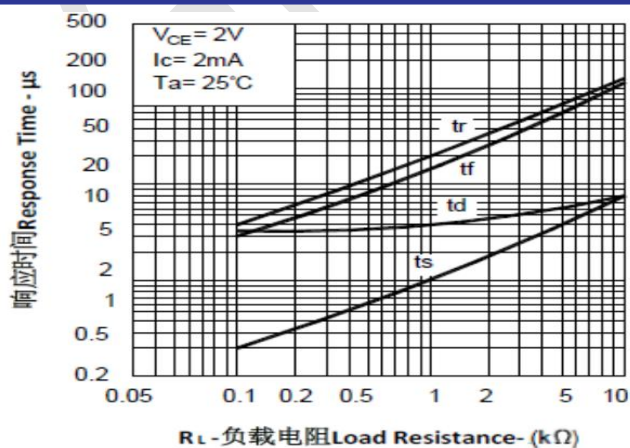
集电极-发射极电压与正向电流的关系

Collector-Emitter Voltage vs. Forward Current



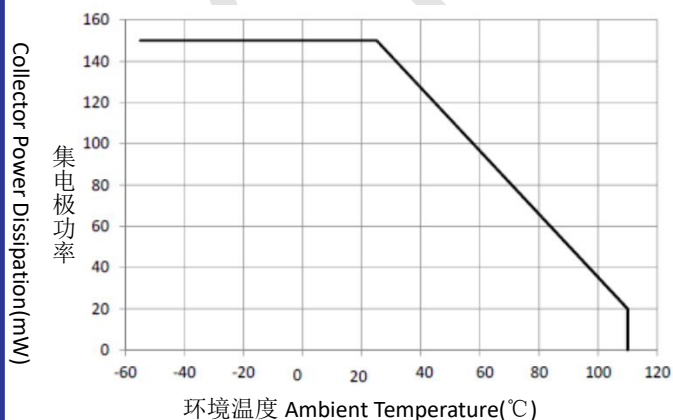
响应时间与负载电阻的关系

Response Time vs. Load Resistance



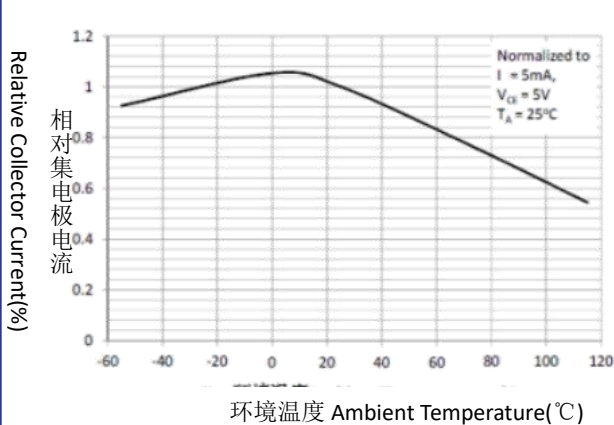
集电极功率与环境温度的关系

Collector Power Dissipation vs. Ambient Temperature



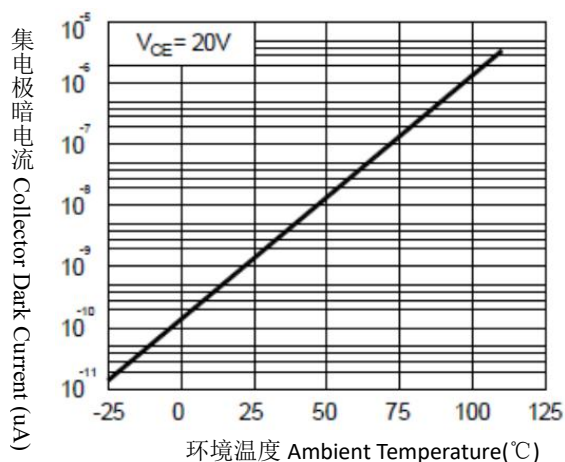
相对集电极电流与环境温度的关系

Relative Collector Current vs. Ambient Temperature



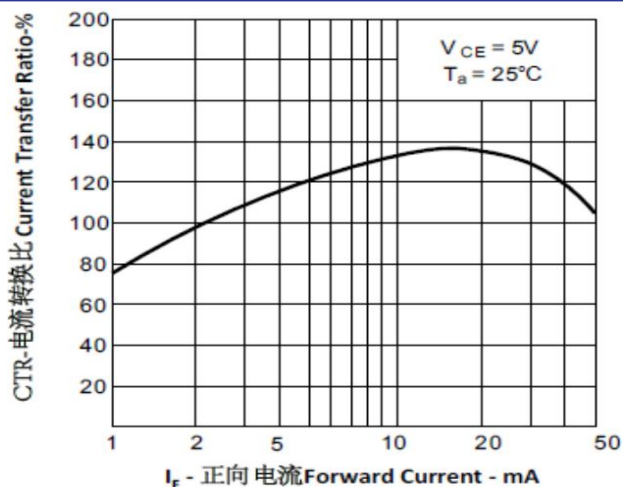
集电极暗电流与环境温度的关系

Collector Dark Current vs. Ambient Temperature



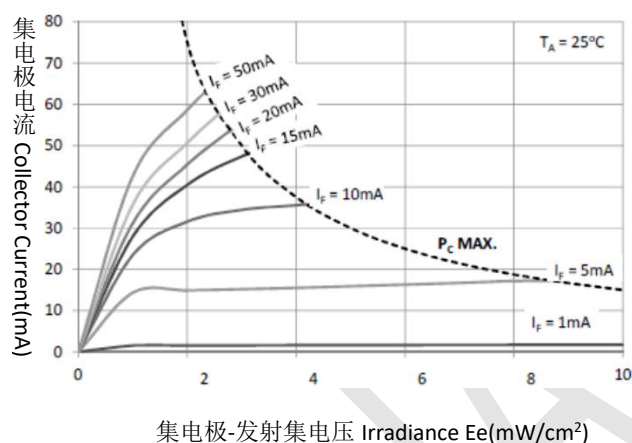
电流转换比与正向电流曲线

Spectral Sensitivity



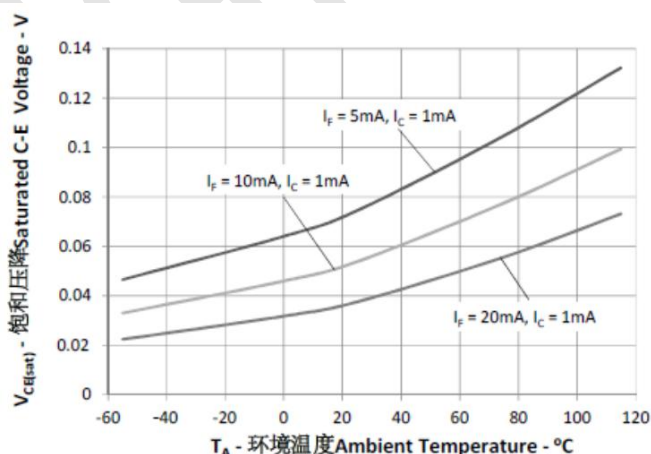
集电极电流与集电极-发射极电压特性曲线图

Collector Current vs. Irradiance

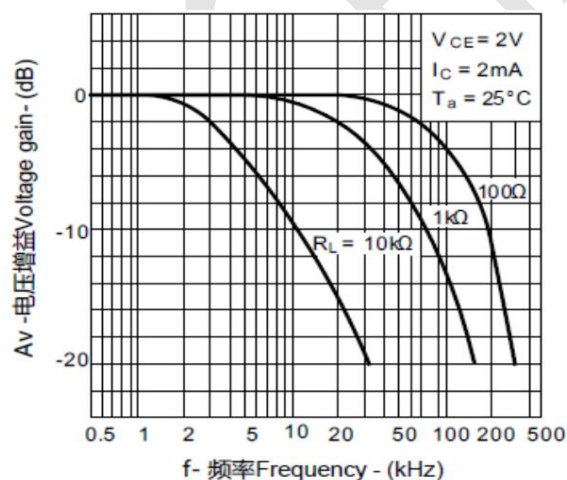


集电极-发射极电压与环境温度的关系

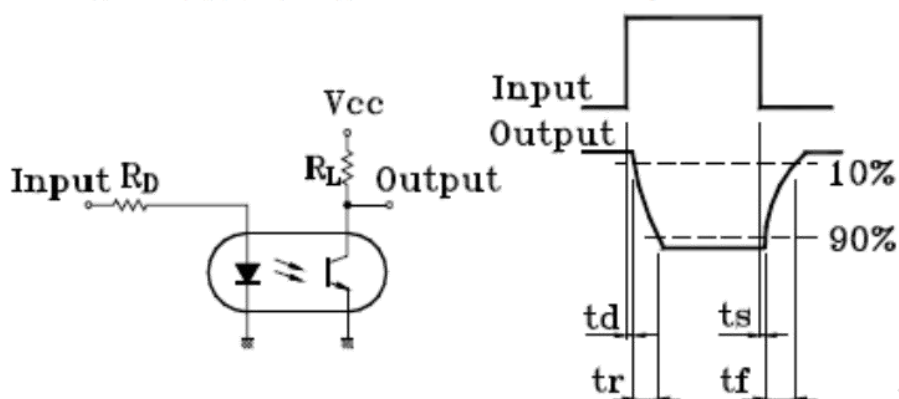
Collector-Emitter Voltage vs. Ambient Temperature



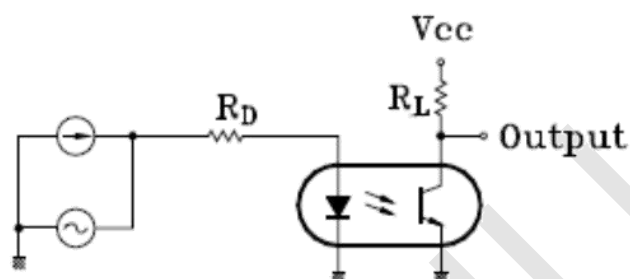
频率响应特性曲线图 Frequency Response



响应时间测试电路 Test Circuit for Response Time

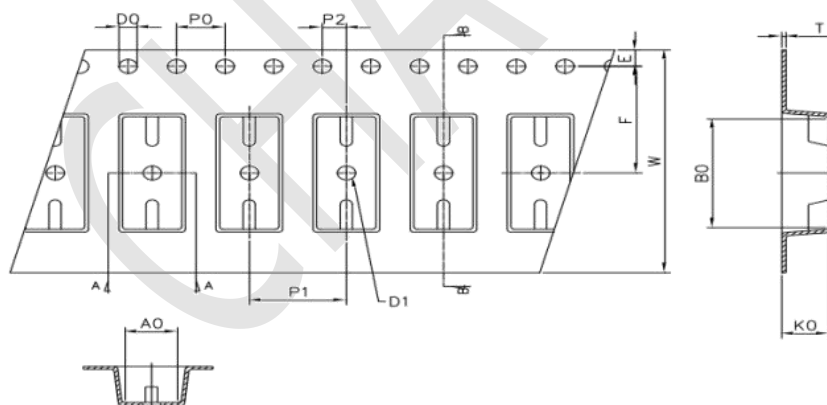


频率响应测试电路 Test Circuit for Frequency Response



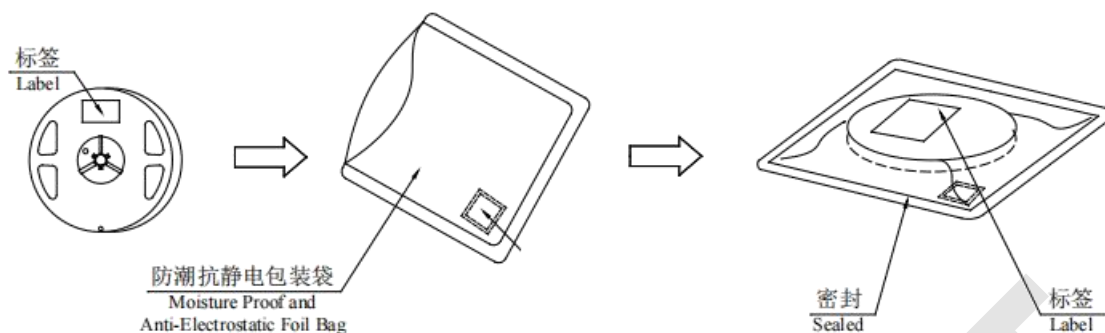
包装规格 Packing Specification

--SMD Packaging



Dimension No.	Ao +0.10 -0.10	Bo +0.10 -0.10	Do +0.10 -0.00	D1 +0.10 -0.00	Po +0.10 -0.10	P1 +0.10 -0.10	P2 +0.10 -0.10	E +0.10 -0.10	F +0.10 -0.10	T +0.05 -0.05	W +0.30 -0.10	Ko +0.10 -0.10
Dimension (mm)	5.00	10.40	1.50	1.50	4.00	8.00	2.00	1.75	7.50	0.35	16.00	4.20

--包装外箱 Cardboard Box



► 注意事项 Note

--波峰焊接条件 Wave soldering Condition

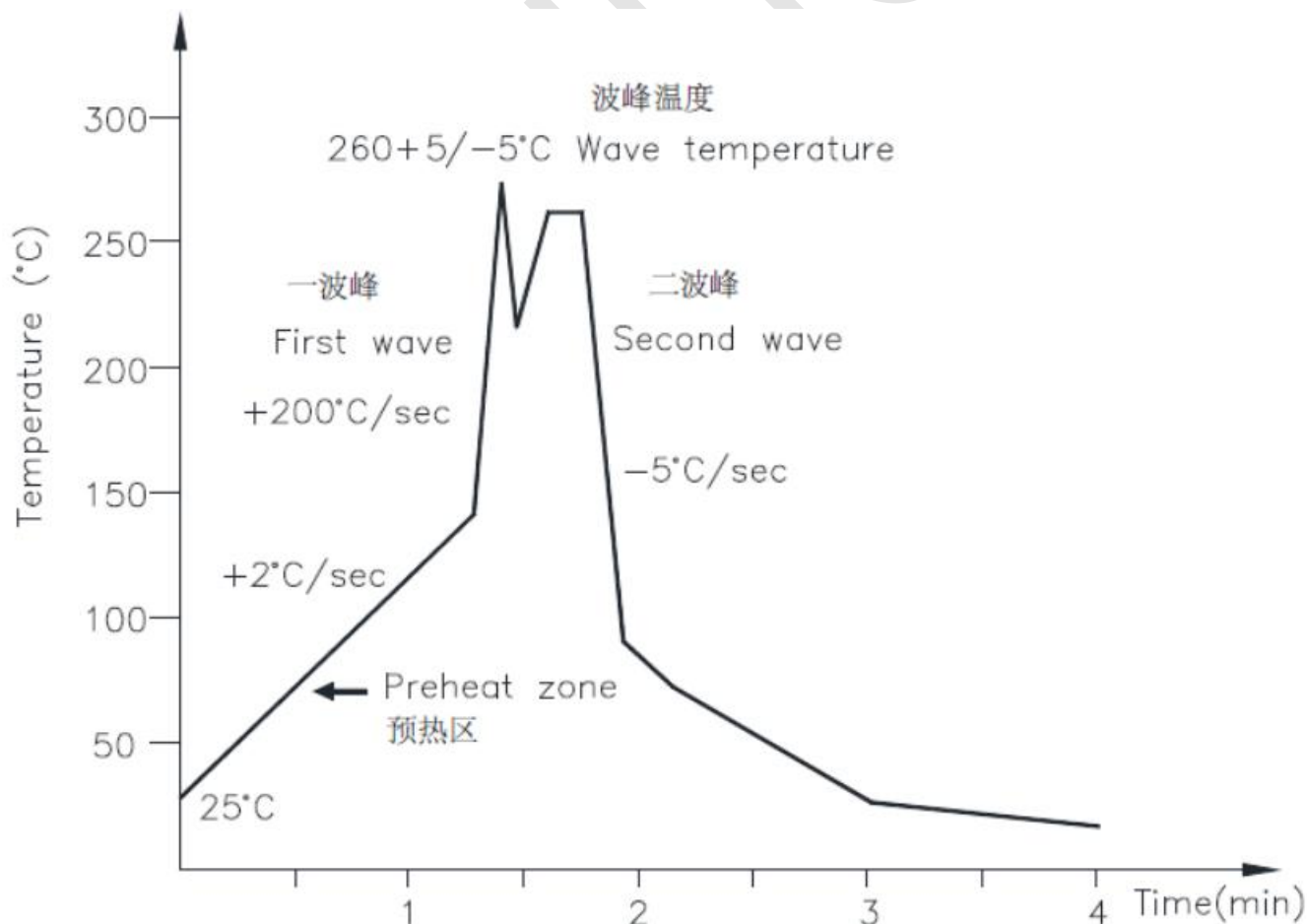
建议在以下温度条件下进行一次性焊接: One time soldering is recommended within the condition of temperature:

温度 Temperature: $260 \pm 5 / -5^{\circ}\text{C}$

时间 Time: 10 sec

预热温度 Preheat temperature: 25 to 140°C

预热时间 Preheat time: 30 to 80 sec



--手工焊接条件 Hand soldering Condition

用电烙铁一次性手工性焊接条件: Hand soldering by soldering iron, One time soldering is recommended:

温度 Temperature: $380 \pm 5 / -5^{\circ}\text{C}$

时间 Time: 3 sec max

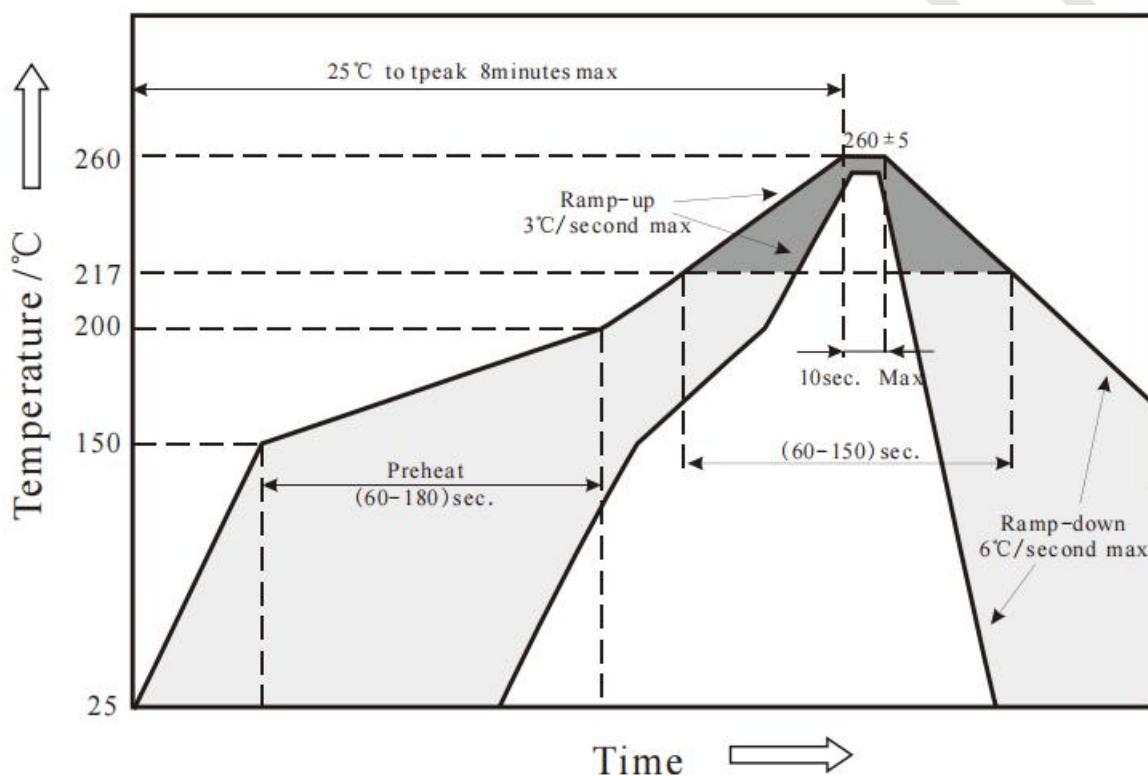
--回流焊焊接 Reflow Soldering

在回流焊升温过程中, 请不要对器件施加任何压力。

Stress on the product should be avoided during heating in soldering process.

在焊接完成后, 待产品温度下降到室温之后, 再进行其他处理。

After soldering, do not deal with the product before its temperature drop down to room temperature.

**--其他 Other**

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 更改记录表 Engineering Change Notice-Record

版本 Edition	更改日期 Date	主要更改内容 Main Content	拟 制 Prepared	确 认 Checked
1.0	2020-12-31	新版本发布 New Edition	黄瑞良	游宝琼