硅耐光电
SILICON NICE OPTOELECTRONIC

光电耦合器
OPTOCOUPLER

产品规格书
Product Data Sheet

Si-RY258 系列
Si-RY258 Series

Si DCC
Release

贵州硅耐光电有限公司
GuiZhou Silicon Nice Optoelectronic Co., Ltd.

描述 Description

Si-RY258 是由一个红外发光二极管和光电发生器、MOSFET 组成的光继电器

The Si-RY258 is a photo-relay composed of infrared light-emitting diodes, photoelectric generators and MOSFETs.

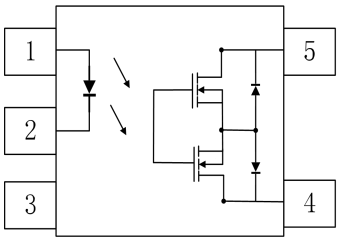
典型应用 Typical Applications

- 电源设备
  Power supply equipment
- 工业自动化设备
  Industrial automation equipment
- 测量设备
  Testing equipment
- 通讯设备
  Communication equipment

特性 Features

- 工作温度：-40℃ ~ +85℃
  Operating Temperature: -40℃ ~ +85℃
- 1500V 输出耐压
  1500V Output withstand voltage
- 低导通电阻
  Low on resistance
- 输入-输出隔离电压最小 5000 V_{RMS}
  Input-output Isolation Voltage 5000 V_{RMS}(min)

封装与功能图 Package and Functional Diagram

封装 Package	内部连接图 Internal Connection Diagram	引脚分配 Pin Assignment
 DIP  SMD		1: Anode 2: Cathode 3.NC 5: Drain 1 4: Drain 2

安规与绝缘参数 Safety and Insulation Ratings

参数 Parameter		符号 Symbol	数值 Value	单位 Unit
最大额定隔离电压 Maximum Rated Withstanding Isolation Voltage	According to UL1577, t = 1 min	V_{ISO}	5000	V_{RMS}
最大瞬态隔离电压 Maximum Transient Isolation Voltage	According to DIN EN 60747-5-5	V_{IOTM}	7000	V_{peak}
最大峰值重复隔离电压 Maximum Repetitive Peak Isolation Voltage	According to DIN EN 60747-5-5	V_{IORM}	1500	V_{peak}
爬电距离 Creepage Distance	/	L	＞7.0	mm

极限参数 Absolute Maximum Ratings (T_{amb}=25℃)

参数 Parameter		符号 Symbol	极限值 Rating	单位 Unit
输入端 Input	正向电流 Forward Current	I_F	50	mA
	反向电压 Reverse Voltage	V_R	6	V
	功耗 Power Dissipation	P	75	mW
	峰值电流 Peak Forward Current (1us, pulse)	I_{FP}	1	A
输出端 Output	负载电压 Load Voltage	V_L	1500	V
	持续负载电流 Continuous Load Current	I_L	20	mA
	峰值负载电流 Peak Load Current	I_{PEAK}	60	mA
	输出功耗 Out Power Dissipation	P_O	360	mW
总功耗 Total Power Dissipation		P_{tot}	410	mW
工作温度 Operating Temperature		T_{amb}	-40~85	°C
存储温度 Storage Temperature		T_{stg}	-40~100	°C
焊接温度 Soldering Temperature		T_{sld}	260	°C

特性参数 Electro-optical Characteristics (T_{amb}=25℃)

参数 Parameter		测试条件 Test Conditions	符号 Symbol	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	I_F=5mA	V_F	-	1.33	1.5	V
	反向电流 Reverse current	V_R=6V	I_R	-	-	10	μA
	输入端电容 Input capacitance	V=0,f=1MHz	C_{IN}	-	60	250	pF
输出端 Output	关断漏电 Off State Leakage Current	I_F = 0mA V_L=Rated VL MAX	I_{LEAK}	-	-	10	μA
	导通电阻 On State Resistance	I_F = 5mA, I_L=Rated I_L MAX, t = 1s	R_{ON}	-	120	500	Ω
传输特性 Transfer Characteristics	LED 开启电流 LED Operate Current	I_L=Rated I_L MAX	I_{FON}	-	0.6	3	mA
	LED 关断电流 LED Turn Off Current		I_{FOFF}	0.05	0.5	-	
	开启时间 Turn On Time	I_F=5mA, I_L=Rated I_L MAX	Ton	-	0.35	1.8	ms
	关断时间 Turn Off Time		Toff	-	0.06	0.6	
	隔离电阻 Isolation Resistance	V_{I-O} = 500V DC	R_{ISO}	1000	-	-	MΩ
	隔离电容 Isolation Capacitance	f = 1 MHz,V_B =0V	C_{ISO}	-	-	3	pF

典型特性曲线 Typical Characteristics Curves

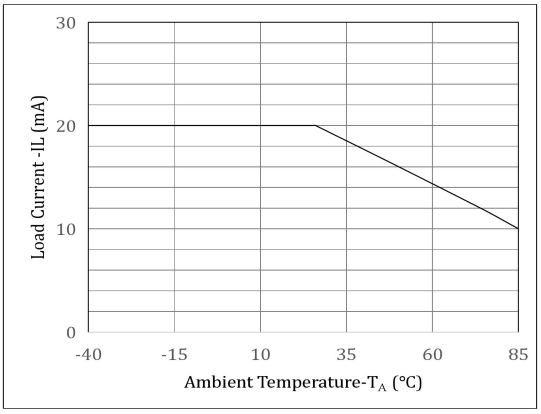


Fig.1 Load Current vs. Ambient Temperature

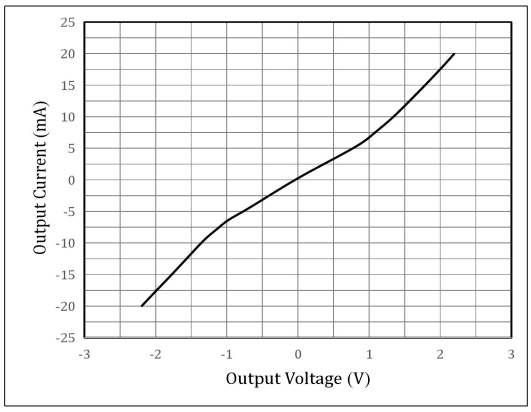


Fig.2 Output Current vs. Output Voltage

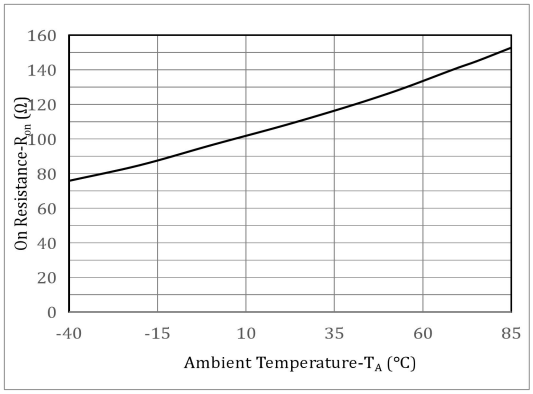


Fig.3 On Resistance vs. Ambient Temperature

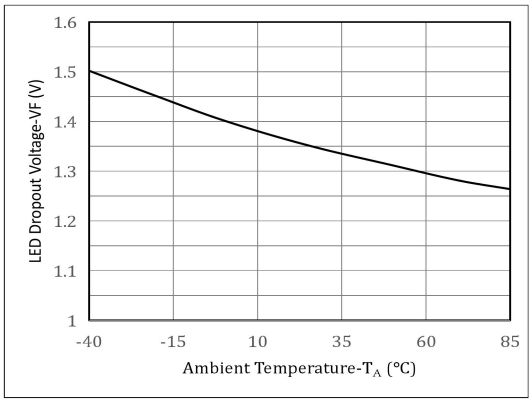


Fig.4 LED Dropout Voltage vs. Ambient Temperature

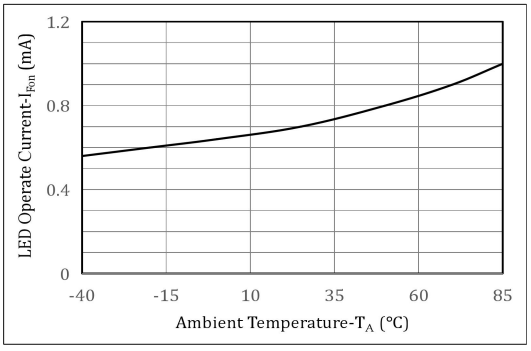


Fig.5 LED Operate Current vs. Ambient Temperature

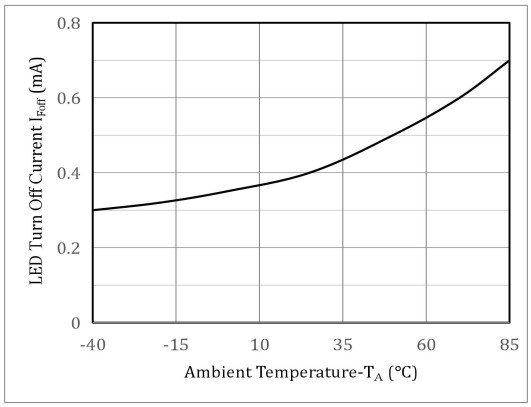


Fig.6 LED Turn Off Current vs. Ambient Temperature

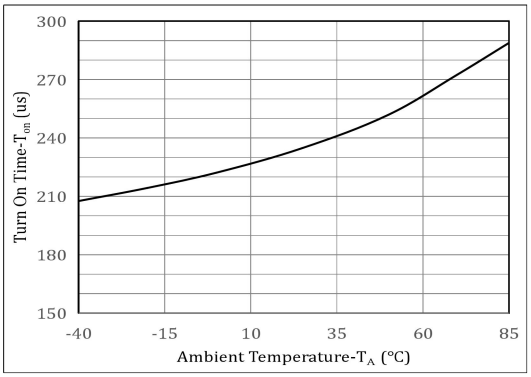


Fig.7 Turn On Time vs. Ambient Temperature

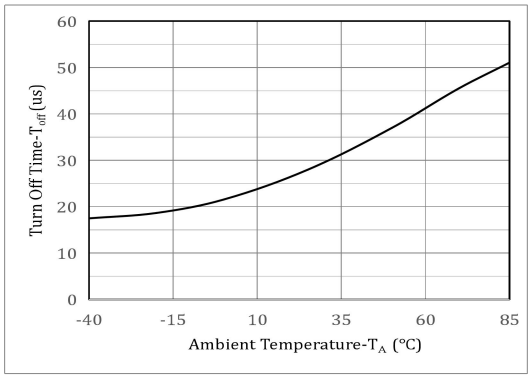


Fig.8 Turn Off Time vs. Ambient Temperature

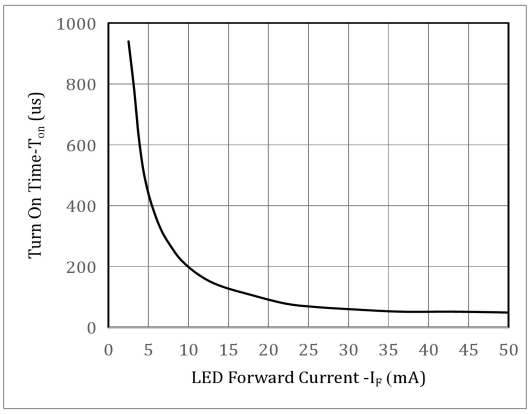


Fig.9 Turn On Time vs. LED Forward Current

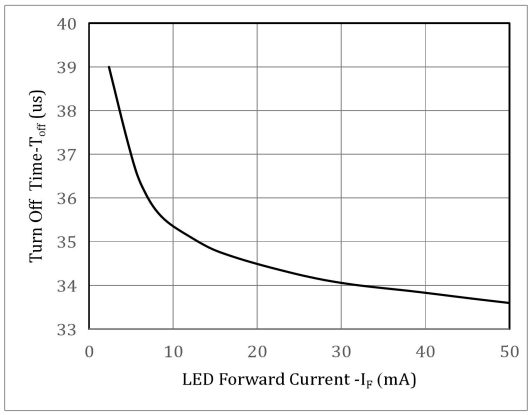
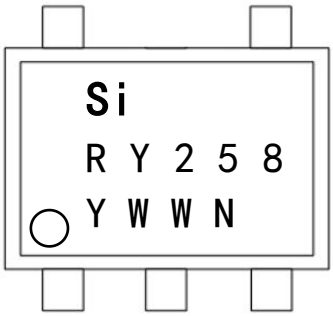


Fig.10 Turn Off Time vs. LED Forward Current

印字信息 Marking Information



- Si：生产商代码 Manufacturer’s Code Marking
- RY258：产品系列代码 Product Series Code
- Y：年代码 Last Digit of Year (ex: 4=2024,5=2025)
- WW： 周号代码 Week Code (01 to 53)
- N：特殊代码或无 Special code or None

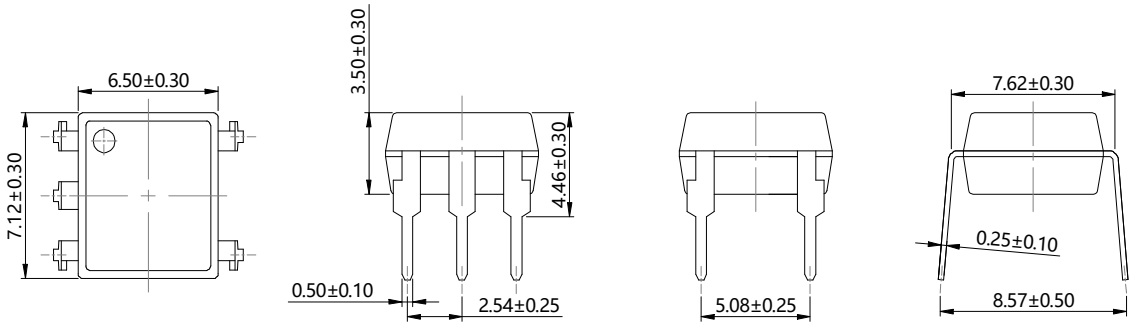
命名规则 Naming Rule

Si-RY258-WY-ZTT

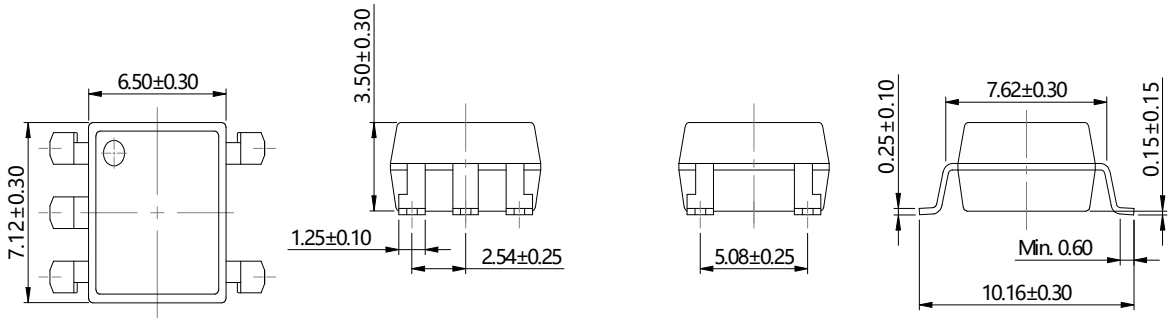
- Si: 生产商代码 Manufacturer’s Code Marking
- RY258: 产品型号代码 Product Model Code
- W：框架材质（C=铜）
- Y：G/None（G=环保 ， None =非环保）
- Z：封装（D：DIP，S：SMD）
- TT：补充码 A~Z or 0~9 or None

封装外形尺寸 Package Outline Dimensions

DIP5

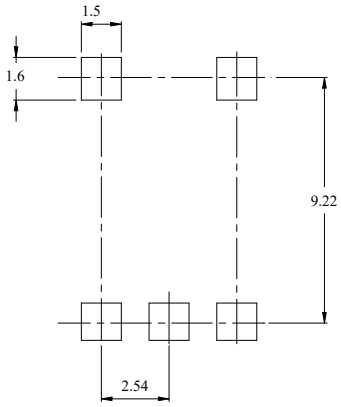


SMD5



单位：mm

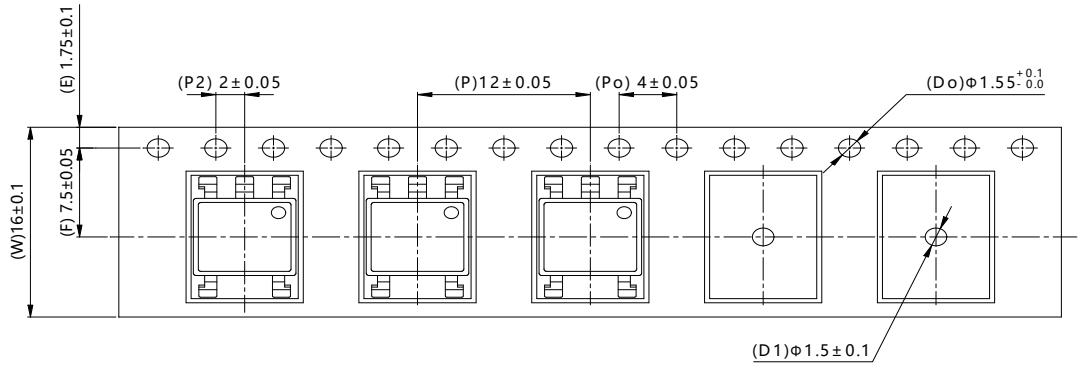
推荐焊盘尺寸 Recommended Footprint Patterns

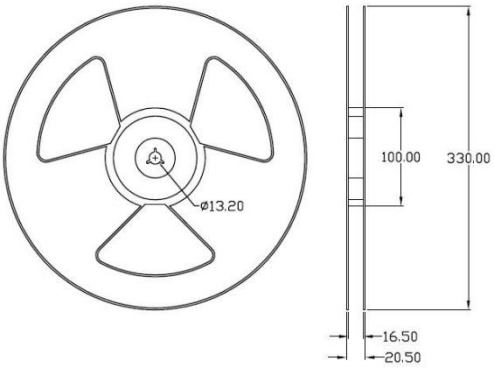


包装 Packing

封装 Package Type	包装方式 Packing Form	管/盘数 Quantity per Reel	内盒数量 Quantity per Inner Box	外箱数量 Quantity per Carton	内盒尺寸 Inner Box Dimensions	外箱尺寸 Carton Dimensions	备注 Note
DIP5	管装 Tube (500*12*11mm)	65 pcs /tube	50 tubes/box	10 boxes/ctn	525*130*57 mm	550*280*320 mm	管两端蓝白塞，方向一致 End plug (blue) and End plug (white) keep the direction
SMD5	卷盘 Reel (ϕ330mm Blue)	1000 pcs/reel	2 reels/box	10 boxes/ctn	353*340*60 mm	650*375*365 mm	首端空 50 格，末端空 100 格 Leave 50 Spaces at the beginning and 100 Spaces at the end

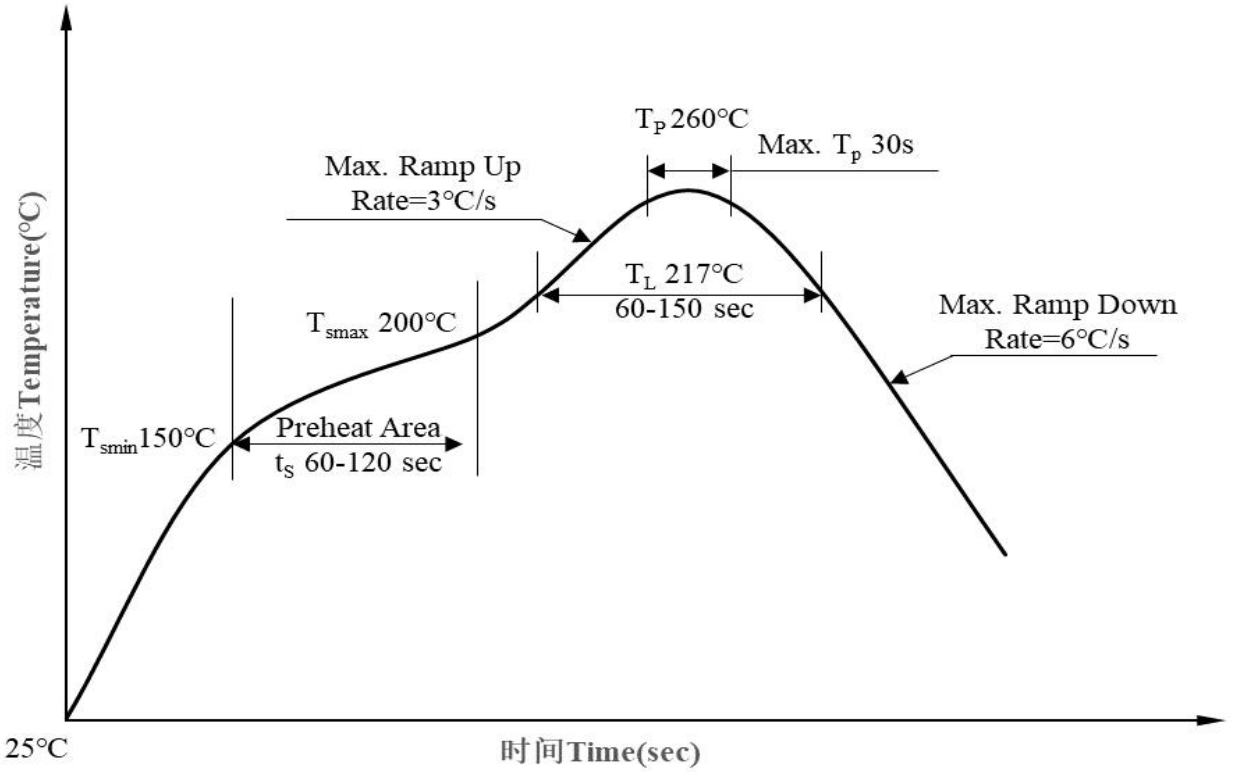
载带与卷盘 Tape and Reel

封装类型 Package Type	SMD5
载带 Dimensions	

包装方式 Packing Specifications	

单位：mm

回流焊温度曲线 Solder Reflow Temperature Profile



曲线项目 Profile Item		符号 Symbol	数值 Value	单位 Unit
预热区 Preheat Area	最低温度 Temperature Min.	T_{smin}	150	°C
	最高温度 Temperature Max.	T_{smax}	200	°C
	时间 Time (min. to max.)	ts	60~120	sec
焊接区 Soldering Area	温度 Temperature	T_L	217	°C
	时间 Time	t_L	60~150	sec
峰值温度 Peak Temperature		T_P	260	°C
峰值温度 T_P 至 T_P-5℃之间的时间 Time within 5 °C of Peak Temperature: T_P - 5°C		tp	30	sec max.
上升速率 Ramp-up rate		/	3	°C / sec max.
下降速率 Ramp-down rate		/	6	°C / sec max.

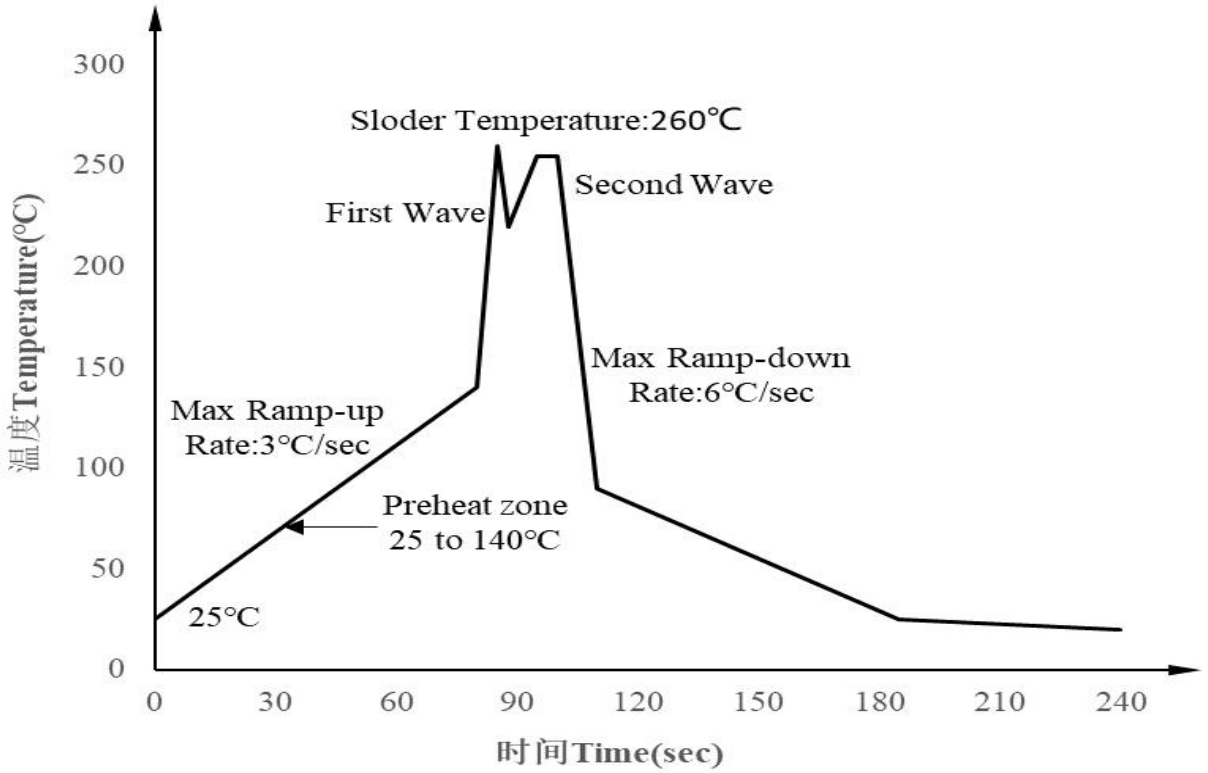
注：参考 IPC/JEDEC J-STD-020D 标准。

Note: Reference: IPC/JEDEC J-STD-020D.

建议在所示的温度和时间条件下进行回流焊，最多不能超过三次。

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

波峰焊温度曲线 Wave soldering Temperature Profile



详情请参考 JEDEC 标准 JESD22-A111

For more details,please refer to the JESD22-A111 of JEDEC standards.

手工烙铁焊接 Hand soldering by soldering iron

(1) 建议一次完成焊接。

One time soldering is recommended.

(2) 温度 360℃ ± 5℃，时间≤3s。

Temperature：360℃ ± 5℃, within 3s.

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