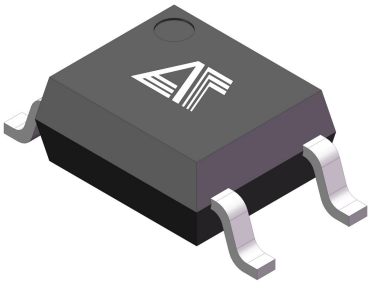
AOTE
SEMICONDUCTOR



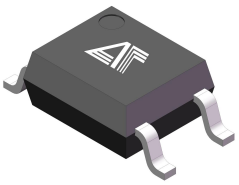
晶体管光耦
Photo Transistor

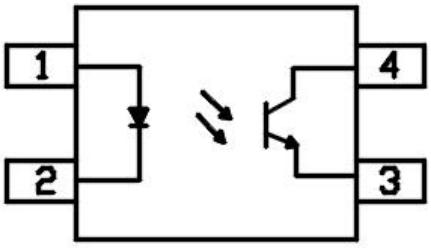
LTV-356T

Product Data Sheet

AOTE DCC
RELEASE

SOP4





Pin Configuration
1.Anode
2.Cathode
3.Emitter
4.Collector

◆ 封装逻辑原理图 Encapsulation logic schematic

LTV-356T 系列光耦采用高效光电转换技术，结合先进封装工艺，提供输入输出间的可靠隔离，支持SOP4封装形式，适配多样化场景需求。

The LTV-356T series optocoupler adopts high-efficiency photoelectric conversion technology and advanced packaging processes, providing reliable input-output isolation. It supports package types (SOP4) to meet diverse application requirements.

◆ 产品特征Product features

- 输入-输出隔离电压Vios=3750Vrms
  Input output isolation voltage：Vios=3750 Vrms
- 电流传输比CTR:80-600%范围：Current transmission ratio CTR: 80-600% range
- 集电极-发射极峰值击穿电压:BVCEO=80V; Collector emitter peak breakdown voltage BVCEO=80V
- 爬电距离>7.0mm ; Creepage distance > 7.0mm;
- 输入-输出绝缘距离 >0.4mm ; Input-Output insulation Thickness > 0.4mm
- 防潮等级 class1； MSL class1
- 产品符合 ROHS、REACH 及 HF 等环保法规要求;
  The products comply with ROHS, REACH and HF;

◆ 应用领域 Applications

- 工业控制 Industrial control
  工业自动化设备 (PLC模块、传感器接口) Industrial automation equipment (PLC module, sensor interface)
  测量仪器信号隔离Measurement instrument signal isolation
- 电源系统 Power Systems:
  智能电表、开关电源设计应用 Design and application of smart meters and switching power supplies
  光伏逆变器、储能系统应用 Photovoltaic inverters, energy storage system applications
- 消费电子 Consumer Electronics:
  家用电器主控电路（空调、冰箱、热水器）Main control circuit for household appliances (air conditioning, refrigerator, water heater);
  办公设备（复印机）Office equipment (copier)




◆ 极限参数 Absolute Maximum Ratings (Ta =25℃)

参数 Parameter		符号 Symbol	额定值 Rating	单位 Unit
发射端 Input	正向电流 Forward Current	IF	50	mA
	反向电压 Reverse Voltage	VR	6	V
	功耗 Power Dissipation	PD	70	mW
	额定值降低因子(在 Ta = 90°C 以上) Power dissipation Derating factor (above Ta = 90°C)	PDD	2.9	mW/°C
接收端 Output	集电极功耗 Collector Power Dissipation	PC	150	mW
	集电极电流 Collector Current	IC	50	mA
	集电极-发射极电压 Collector-Emitter Voltage	VCEO	80	V
	发射极-集电极电压 Emitter-Collector Voltage	VECO	6	V
隔离电压 Isolation Voltage		Viso	3750	Vrms
工作温度 Operating Temperature		Topr	-55 ~+110	℃
存储温度 Storage Temperature		Tstg	-55 ~+125	℃
焊接温度 Soldering Temperature		Tsol	260	℃

◆ 推荐操作条件 Recommended Operating Conditions

参数 Parameter	符号 Symbol	最小值 Min	最大值 Max.	单位 Unit
正向电流 Forward Current	IF	5	15	mA
集电极-发射极电压 Collector-Emitter Voltage	VCEO	5	80	V
集电极电流 Collector Current	IC	5	35	mA

◆ 产品特性参数Product characteristic parameters (Ta =25℃)

参数 Parameter		符号 Symbol	条件 Condition	最小 Min	典型 Typ	最大 Max	单位 Unit
发射端 Input	正向电压 Forward Voltage	VF	IF=20mA	-	1.2	1.4	V
	反向电流 Reverse Current	IR	VR =4V	-	-	10	uA
	输入电容 Terminal Capacitance	Ct	V=0V, F =1KHz	-	30	250	pF
接收端 Output	集电极暗电流 Collector Dark Current	ICEO	VCE =20V	-	-	100	nA
	集电极-发射极击穿电压 Collector-Emitter Breakdown Voltage	BVCEO	IC =0.1mA, IF =0mA	80	-	-	V
	发射极-集电极电压 Emitter-Collector Voltage	BVECO	IE =10μA, IF =0	7	-	-	V
传输特性 Transfer Characteristics	电流传输比 Current Transfer Ratio	CTR	IF =5mA , VCE=5V	80	-	600	%
	集电极-发射极饱和压降 Collector-Emitter Saturation Voltage	VCE(sat)	IF =20mA, IC =1mA	-	0.1	0.2	V
	隔离电阻 Isolation Resistance	RISO	DC500V, 40 ~60%R.H.	$5x10^{10}$	$1x10^{11}$	-	Ω
	隔离电容 Isolation capacitance	CISO	V=0,f=1MHz	-	0.6	1.0	pF
	截止频率 Cut-off Frequency	Fc	VCE=5V, IC =2mA, RL =100Ω,-3dB	-	80	-	kHz
	上升时间 Rise Time	Tr	VCE=2V, IC =2mA, RL =100Ω	-	4	18	μs
	下降时间 Fall Time	Tf	VCE=2V, IC =2mA, RL =100Ω	-	3	18	μs

注: 电流传输比=I_C/I_F x 100%。

Note*: CTR=I_C/I_F x 100%.

• 电流传输比分档表 CTR Classification Table (IF =1mA, VCE=5V, Ta =25℃)

代码Code	最小值min	最大值max
A	80	160
B	130	260
C	200	400
D	300	600

◆ 电性特性曲线Electrical characteristic curve(Ta =25℃)

Fig.1 Allowable Forward Current vs. Ambient Temperature

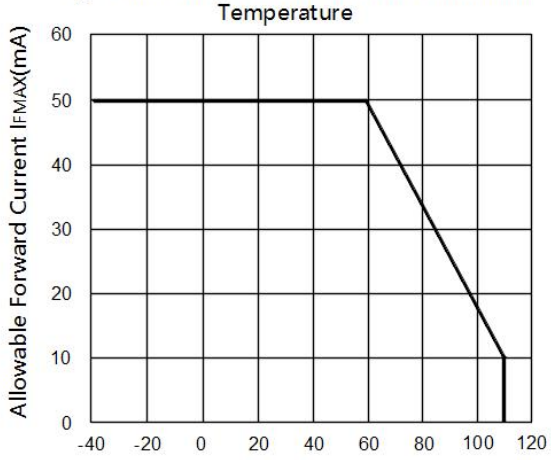


Fig.2 Allowable collector power disspation vs. Ambient Temperature

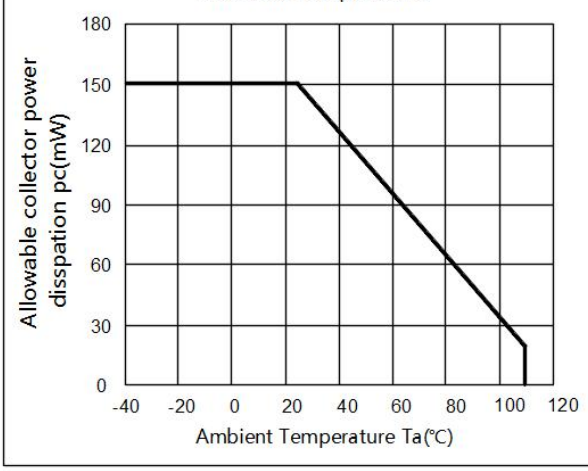


Fig.3 Current Transter Ratio vs. Forward Current

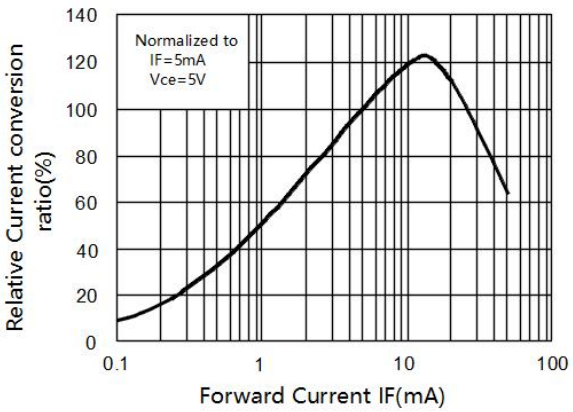


Fig.4 Forward Current vs. Forward Voltage

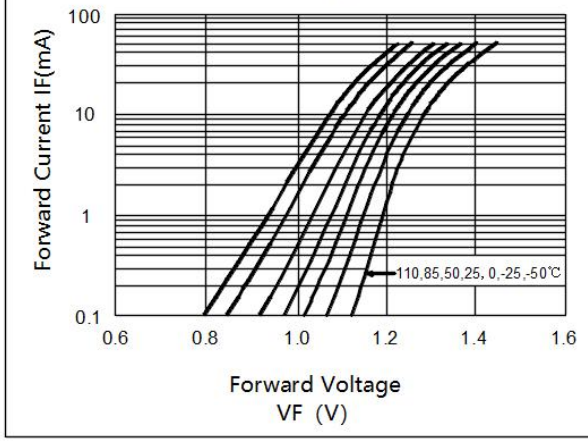


Fig.5 Collector Current vs. Collector-emitter Voltage

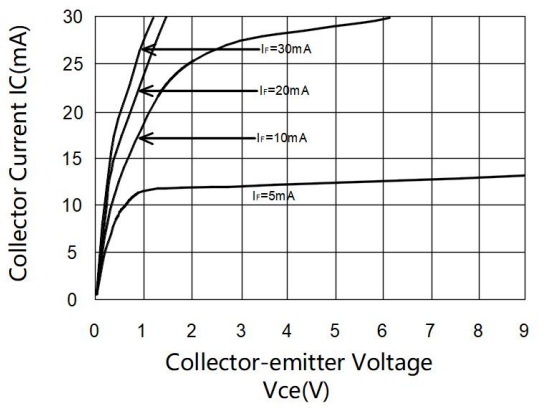


Fig.6 Relative Current Transte vs. Ambient Temperature

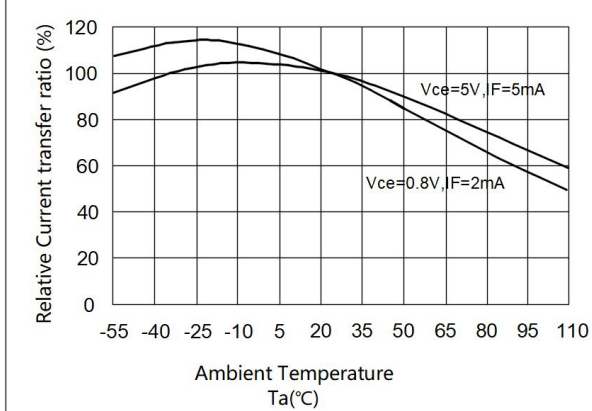


Fig.7 Collector-emitter Saturation Voltage vs. Ambient Temperature

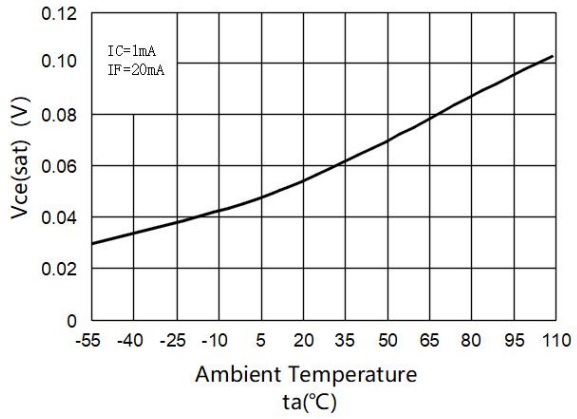


Fig.8 Collector Dark Current vs. Ambient Temperature

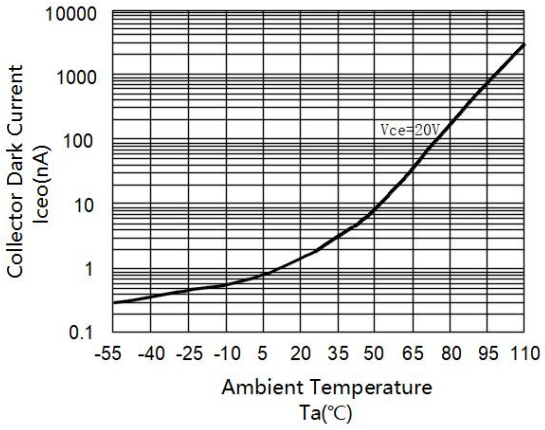


Fig.9 Response Time vs. Load Resistance

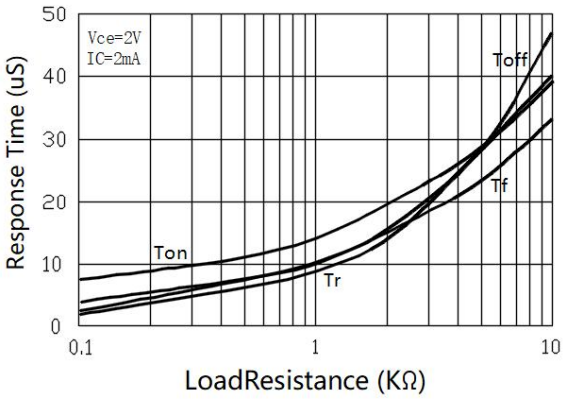


Fig.10 Frequency Response

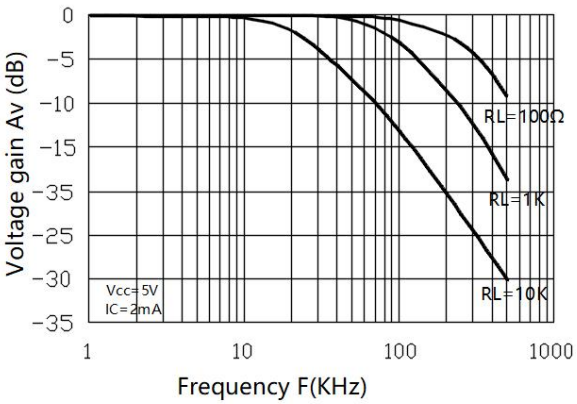


Fig.11 Collect-emitter Saturation Voltage vs. Forward Current

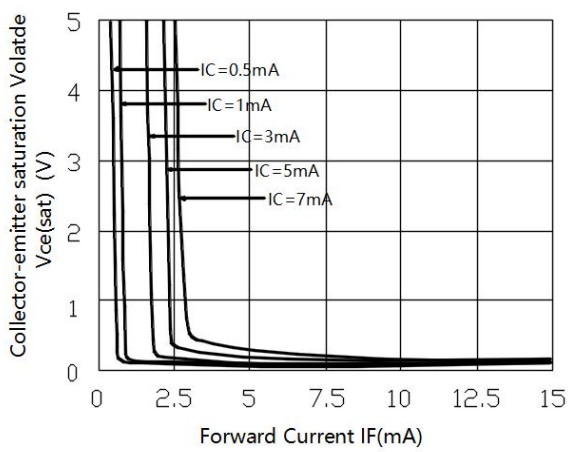
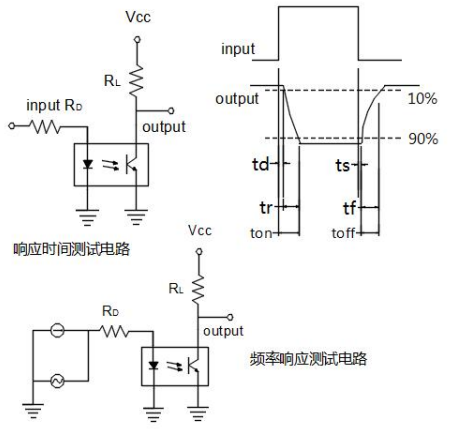
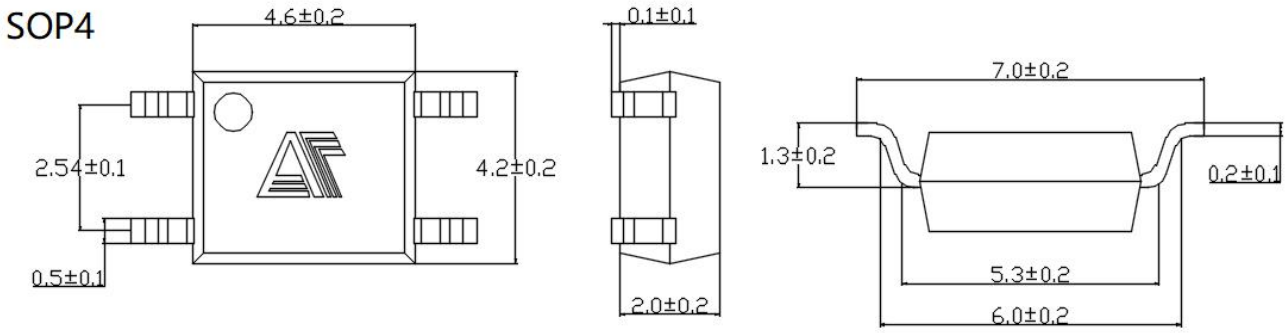


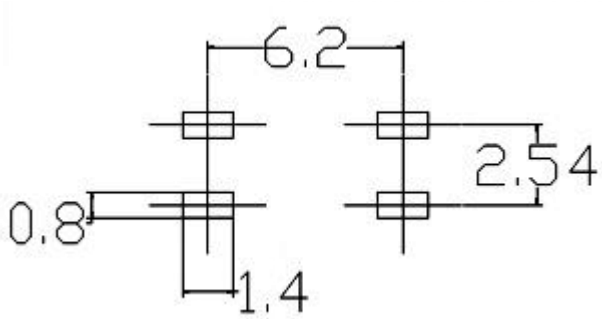
Fig.12 Switching Time Test Circuit & Waveforms



◆ 外形尺寸Overall dimension



推荐焊盘:
Recommended



单位：mm

◆ 印字信息 Marking Information

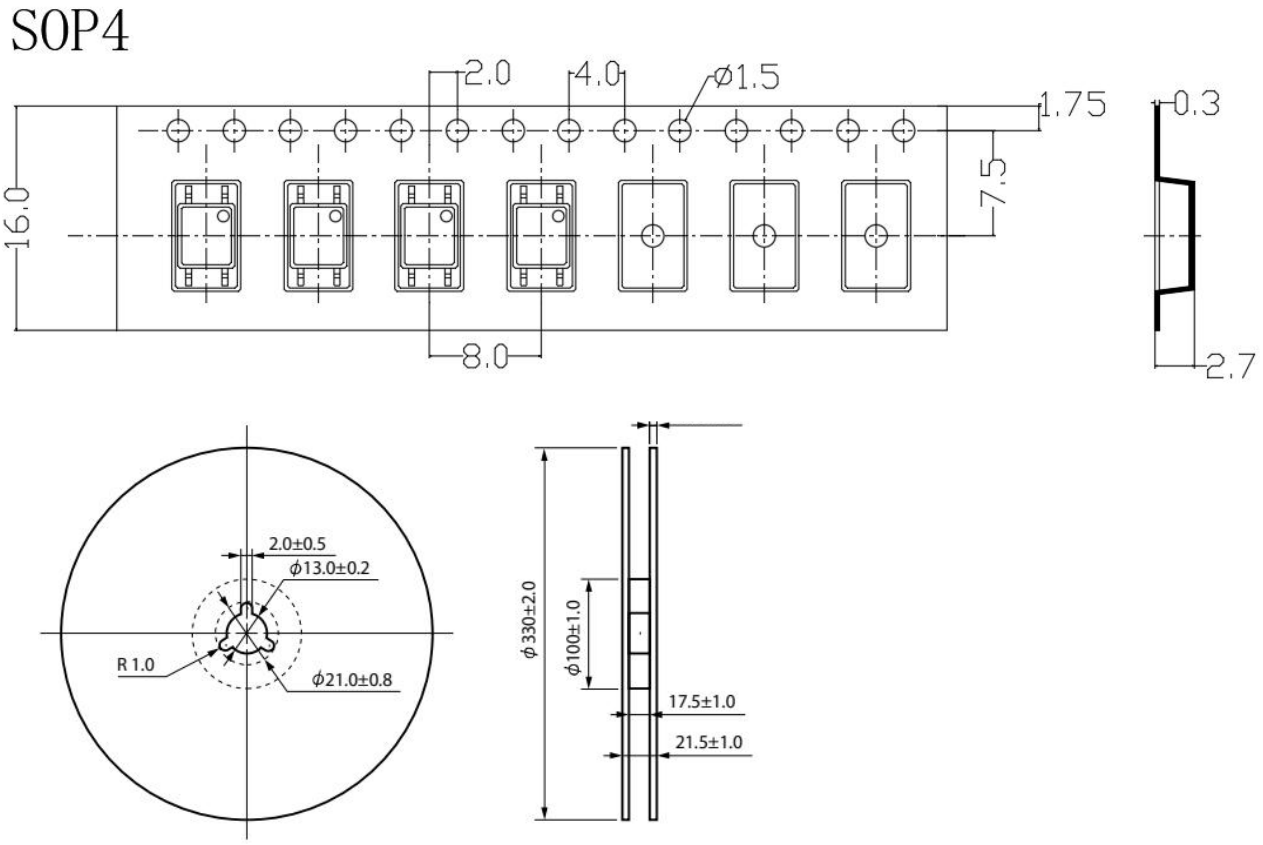
- 印字中“ ”为奥特品牌LOGO
  “ ”denotes LOGO
- 印字中“Y”代表年份； A(2018),B(2019),C(2020) … …
  “Y”denotes YEAR： A(2018), B(2019), C(2020) … …
- 印字中“WW”代表周号
  “WW”denotes Week’ s number
- 印字中“ E”代表内部代码
  “E”denotes Internal code
- 印字中的“H”代表无卤
  “H”denotes Halogen-free

◆ 包装packing

封装形式	包装方式	盘数量	盒数量	箱数量	静电袋规格	盒规格	箱(双瓦楞)规 格	备注
SOP4	卷盘 (ϕ330mm蓝盘)	3000 只/盘	2 盘/盒	10 盒/箱	450*390*0.1mm	34*6*34cm	62*36*36.5cm	首尾端空至少 200mm
Package Type	Packing Form	Quantity per Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SOP4	Reel (ϕ330mm Blue)	3000 pcs /reel	2 reels /box	10 boxes /ctn	450*390*0.1mm	34*6*34cm	62*36*36.5cm	Leave at least 200mm of blank space at both ends

▪ 编带包装 Tape & Reel

1) 每卷数量：3000 只；Qty/reel：3000 pcs；
2) 每箱数量：60000 只；Qty/ctn：60000 pcs；
3) 内包装：每盒 2 盘；Inner packing：2 reels/box；
4) 示意图 Schematic:

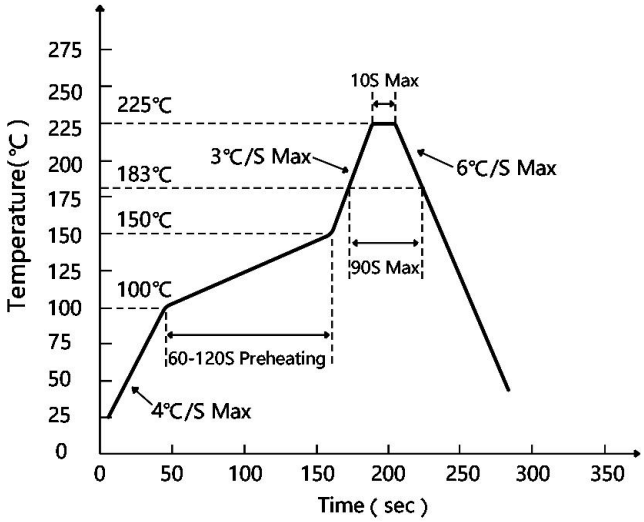


单位：mm

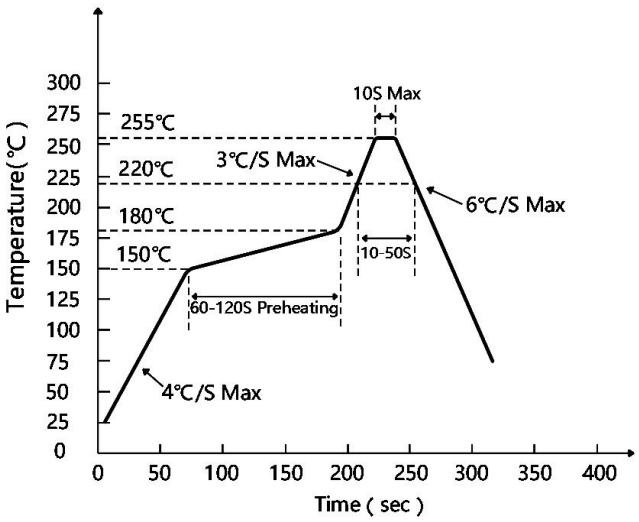
◆ 可靠性测试 Reliability Test Items And Conditions

实验项目 Test Items	参考标准 Reference	实验条件 Test Conditions	时间 Time	样品数 Quantity	判据 Criterion
可焊性 Solderability	JESD22-B102	Tsol=（245±5）℃, t=5s;	1 次1 times	22	0/22
耐焊接热Resistance to Soldering Heat	JESD22-A106	Tsol=（260±5）℃, t=10s	3 次3 times	22	0/22
静电放电 ESD-HBM	JESD22-A114	Ta=25℃, HBM (2000V)	正反各 3 次 P&N 3 times	10	0/10
高温贮存High emperature Storage	JESD22-A103	Ta=125℃	1000h	22	0/22
低温贮存 Low Temperature Storage	JESD22-A119	Ta= -55℃	1000h	22	0/22
冷热冲击 Thermal Shock	JESD22-A104	-55℃(15min)⟷ 125℃(15min)	循环 300 次 300 cycles	22	0/22
常温寿命试验 Lifespan Test	JESD22-A108	Ta=25℃, IF=50mA ， Vcc=5V	1000h	22	0/22
高温寿命试验 DC Operating Life	JESD22-A108	Ta=110℃, IF=20mA ， Vcc=5V	1000h	76	0/76
高温高湿偏压 High Temperature High Humidity bias Voltage	JESD22-A101	Ta =85℃ , RH=85% IF=0mA ， VCE=64V	1000h	22	0/22
高温偏压 High Temperature bias Voltage	JESD22-A108	Ta =110℃ , IF=0mA ， VCE=80V	1000h	22	0/22
高压蒸汽试验 High pressure steam test	JESD22-A102	P=15PSIG ， 121℃, 100%RH	96h	22	0/22

◆ 回流焊温度曲线图 Solder Reflow Profile

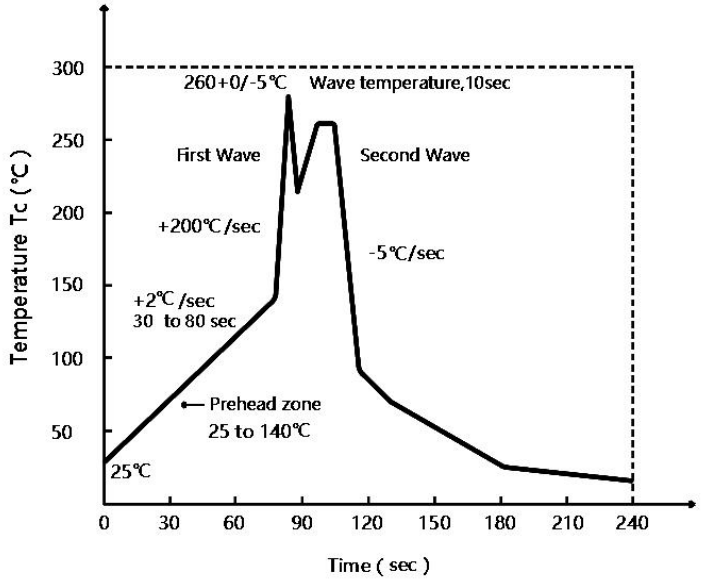


有铅制程 Lead Process



无铅制程 Lead Process

◆ 波峰焊温度曲线图 Wave Soldering Profile



◆ 手工烙铁焊接 Soldering with hand soldering iron

A. 手工烙铁焊仅用于产品返修或样品测试;

Hand soldering iron is only used for product rework or sample testing;

B. 手工烙铁焊要求: 温度 350℃ ± 5℃, 时间≤3s。

Hand soldering iron requirements: Temperature: 350℃ ± 5℃, within 3s.

◆ 注意 Attention

- 奥特半导体实施动态技术迭代机制，产品规格可能随工艺升级调整，最新技术参数以官网发布版本为准。

AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.

- 用户需严格遵循本规格书限定的操作条件，因超范围使用（包括但不限于过载、高温、非兼容电路设计）导致的器件失效，不在质量保证范围内。

Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.

- 医疗设备、工业控制等关键场景应用前，需联系技术支持获取定制化验证方案。

Contact technical support for customized validation in critical applications (medical devices, industrial control).

- 本文档有效期至2025年12月31日，后续更新将通过官网公告推送。

This document is valid until Dec 31, 2025. Updates will be notified on the official website.

- 如需对技术参数或应用方案进行进一步确认，欢迎通过以下渠道获取官方支持：

For further clarification on technical specifications or application solutions, please contact us through official channels: