

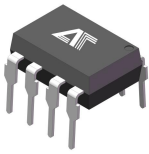
**栅极驱动光耦**  
**Gate driven optocoupler**

**AT3150-CUH-S**

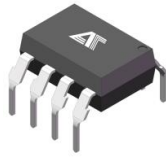
**Product Data Sheet**

**AOTE DCC**  
**RELEASE**

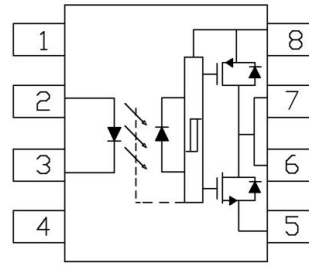
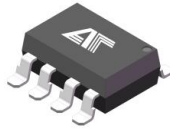
DIP8



DIP8-M



SMD8



Pin Configuration

- 1. NC
- 2. Anode
- 3. Cathode
- 5. VEE
- 6. VO2
- 7. VO1
- 8. VCC

## ◆ 封装逻辑原理图 Encapsulation logic schematic

AT3150 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DIP8-M、SMD8两种封装形式，适配多样化场景需求。

The AT3150 optocoupler adopts high-efficiency photoelectric conversion technology and advanced packaging processes, providing reliable input-output isolation. It supports Two package types (DIP8-M、SMD8) to meet diverse application requirements.

## ◆ 产品特征Product features

- 输入-输出隔离电压Vios=5000Vrms  
Input output isolation voltage: Vios=5000Vrms
- 15 kV/μs最小共模抑制;15 kV/μs minimum Common Mode Rejection
- 10V 至 30V 宽工作电压范围; 10V ~ 30V Wide operating VCC Range
- 最大峰值输出电流0.6A ; Maximum peak output current 0.6A
- 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

- 工业自动化和电子电力: Industrial automation and electronic power; 用于变频器、伺服驱动器等设备的栅极隔离驱动; Gate isolation drive for devices such as frequency converters and servo drives;
- 新能源与电力系统: New Energy and Power Systems车载充电桩(OBC)、电机控制器驱动功率器件; Vehicle mounted charging station (OBC), motor controller drives power devices;
- 电力控制与保护装置: Power control and protection device 固态继电器(SSR)、断路器驱动电路中隔离控制端与功率端; Solid state relay (SSR), isolation control terminal and power terminal in circuit breaker drive circuit
- 噪声环境设备和精密医疗仪器: Noise environment equipment and precision medical instruments适用于电磁干扰严重的工业场景 (如电焊机、电磁炉) ; Suitable for industrial scenarios with severe electromagnetic interference, such as welding machines and induction cookers



**◆ 极限参数 Absolute Maximum Ratings (Ta =25°C)**

| 参数<br>Parameter                |                                                               | 符号<br>Symbol | 额定值<br>Rating | 单位<br>Unit |
|--------------------------------|---------------------------------------------------------------|--------------|---------------|------------|
| 输入<br>Input                    | 平均输入电流<br>Average Input Current                               | IF(AVG)      | 25            | mA         |
|                                | 峰值瞬态输入电流 (<1μs pulse, 300pps)<br>Peak Transient Input Current | IF(TRAN)     | 1             | A          |
|                                | 输入反向电压<br>Reverse Input Voltage                               | VR           | 5             | V          |
| 输出<br>Output                   | 高电平峰值输出电流<br>“High” Peak Output Current                       | IOH(PEAK)    | -0.6          | A          |
|                                | 低电平峰值输出电流<br>“Low” Peak Output Current                        | IOL(PEAK)    | 0.6           | A          |
|                                | 电源电压<br>Supply Voltage                                        | VCC-VEE      | 0~35          | V          |
|                                | 输出电压<br>Output Voltage                                        | VO(PEAK)     | 0 ~VCC        | V          |
| 隔离电压<br>Isolation Voltage      |                                                               | VISO         | 5000          | Vrms       |
| 总功耗<br>Total Power Consumption |                                                               | Ptot         | 200           | mW         |
| 工作温度<br>Operating Temperature  |                                                               | Topr         | -40 ~+110     | °C         |
| 存储温度<br>Storage Temperature    |                                                               | Tstg         | -55 ~+125     | °C         |
| 焊接温度<br>Soldering Temperature  |                                                               | Tsol         | 260°C         | °C         |

**◆ 推荐操作条件 Recommended Operating Conditions**

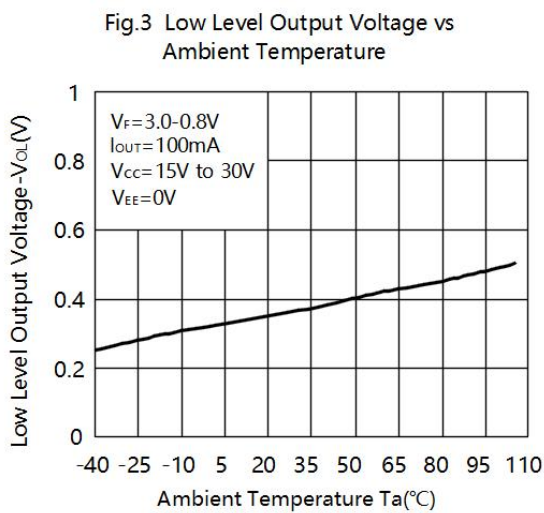
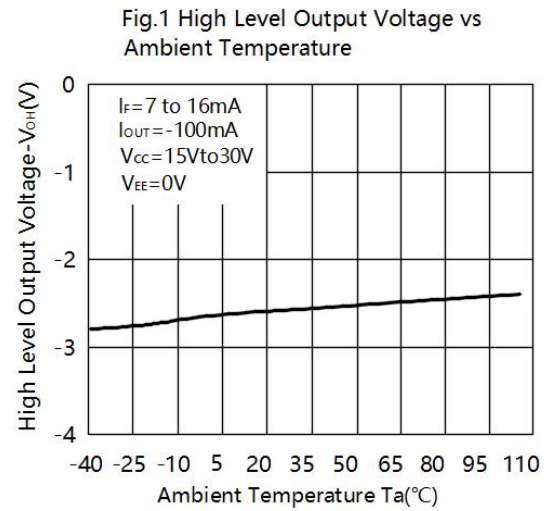
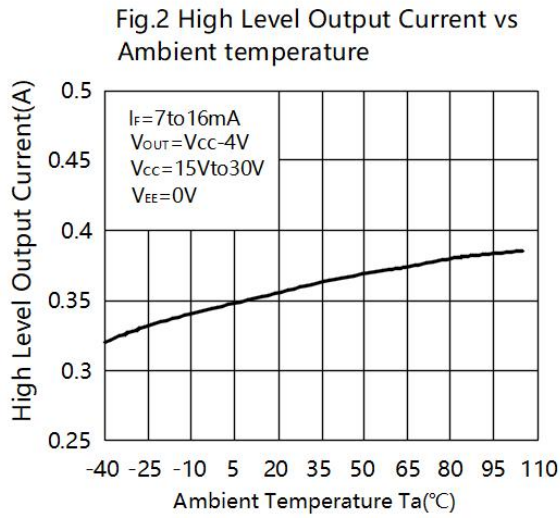
| 参数<br>Parameter                 | 符号<br>Symbol | 最小值<br>Min | 最大值<br>Max. | 单位<br>Unit |
|---------------------------------|--------------|------------|-------------|------------|
| 电源电压<br>Supply Voltage          | VCC-VEE      | 10         | 30          | V          |
| 输入电流(ON)<br>Input Current(ON)   | IFON)        | 7          | 16          | mA         |
| 输入电压(OFF)<br>Input Voltage(OFF) | VF(OFF)      | 0          | 0.8         | V          |

**◆ 产品特性参数Product characteristic parameters (Ta =25°C)**

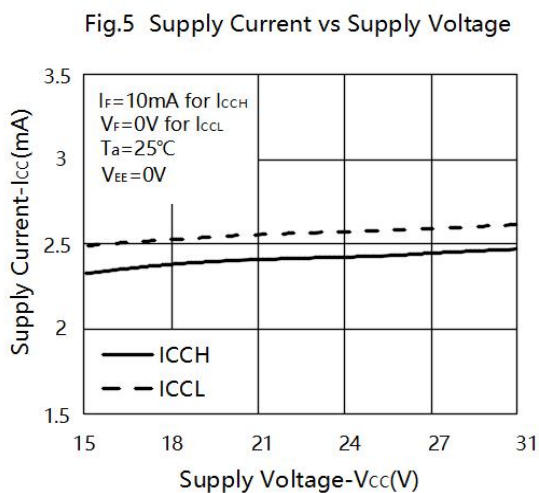
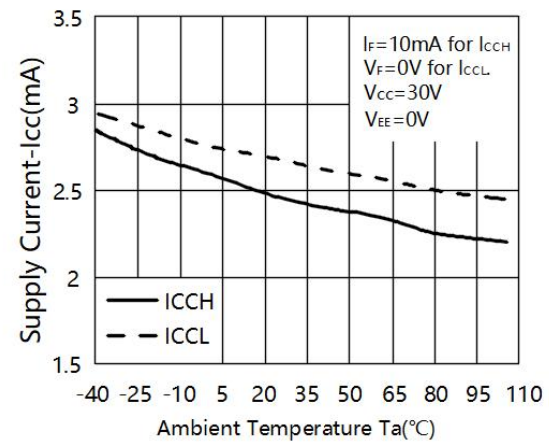
| 参数<br>Parameter |                                            | 符号<br>Symbol | 条件<br>Condition            | 最小<br>Min. | 典型<br>Typ. | 最大<br>Max. | 单位<br>Unit |
|-----------------|--------------------------------------------|--------------|----------------------------|------------|------------|------------|------------|
| 输入端<br>Input    | 正向电压<br>Forward Voltage                    | VF           | IF =10mA                   | 1.2        | 1.5        | 1.8        | V          |
|                 | 反向电流<br>Reverse Current                    | IR           | VR =5V                     | -          | -          | 10         | μA         |
|                 | 输入开启电流<br>Input Turn On Current            | IFLH         | Io =0mA,<br>VO >5V         | -          | 2.2        | 5.0        | mA         |
|                 | 输入关闭电压<br>Input Turn Off Voltage           | VFHL         | Io =0mA,<br>VO <5V         | 0.8        | -          | -          | V          |
|                 | 低电压锁定阈值 UVLO Threshold                     | VUVLO+       | VO >5V                     | 6.9        | 7.8        | 8.7        | V          |
|                 |                                            | VUVLO-       | IF =10mA                   | 5.9        | 6.7        | 7.5        | V          |
|                 | 低电压锁定阈值迟滞 UVLO Hysteresis                  | UVLOHYS      | -                          | -          | 1.6        | -          | V          |
| 输出端<br>Output   | 高电平输出电流<br>High Level Output Current       | IOH          | VO =VCC-4V                 | -          | -0.4       | -0.1       | A          |
|                 |                                            |              | VO =VCC-15V                | -          | -          | -0.5       |            |
|                 | 低电平输出电流<br>Low Level Output Current        | IOL          | VO =VEE+2.5V               | 0.1        | 0.6        | -          | A          |
|                 |                                            |              | VO =VEE+12V                | 0.5        | -          | -          |            |
|                 | 高电平输出电压<br>High Level Output Voltage       | VOH          | Io =-100mA                 | VDD-6      | VDD-4      | -          | V          |
|                 | 低电平输出电压<br>Low Level Output Voltage        | VOL          | Io =100mA                  | VDD-0.6    | VDD-0.35   | -          | V          |
|                 | 高电平电源电流<br>High Level Power Supply Current | ICCH         | Vo=Open,<br>IF =7 to 16mA  | -          | 2.5        | 5          | mA         |
|                 | 低电平电源电流<br>Low Level Power Supply Current  | ICCL         | Vo=Open,<br>VF =-3 to 0.8V | -          | 2.7        | 5          | mA         |

| 参数<br>Parameter                     |                                                                  | 符号<br>Symbol | 条件<br>Condition                                                      | 最小<br>Min. | 典型<br>Typ.       | 最大<br>Max. | 单位<br>Unit |
|-------------------------------------|------------------------------------------------------------------|--------------|----------------------------------------------------------------------|------------|------------------|------------|------------|
| 传输特性<br>Transfer<br>Characteristics | 隔离电阻<br>Isolation Resistance                                     | RISO         | VI-O ≤500V                                                           | -          | 10 <sup>11</sup> | -          | Ω          |
|                                     | 隔离电容<br>Isolation Capacitance                                    | CISO         | VI-O =0V,<br>Freq=1.0MHz                                             | -          | 1                | -          | pF         |
|                                     | 低电平传输延迟<br>Propagation Delay Time to Low<br>Output Level         | TPHL         | IF =7mA<br>to 16mA<br>Rg =47Ω ,<br>Cg =3nF,<br>f=10kHz,<br>占空比=50%   | 100        | 300              | 500        | ns         |
|                                     | 高电平传输延迟<br>Propagation Delay Time to High<br>Output Level        | TPLH         |                                                                      | 100        | 300              | 500        | ns         |
|                                     | 脉冲失真<br>Pulse Width Distortion                                   | PWD          |                                                                      | -          | -                | 300        | ns         |
|                                     | 传播延迟差<br>Propagation Delay Difference<br>Between Any Two Parts   | PDD          |                                                                      | -350       | -                | 350        | ns         |
|                                     | 输出上升时间(10% ~90%)<br>Output Rise Time (10% ~90%)                  | TR           | IF =7mA<br>to 16mA,<br>Rg =10Ω ,<br>Cg=10nF,<br>F =10kHz,<br>占空比=50% | -          | 100              | -          | ns         |
|                                     | 输出下降时间(90% ~10%)<br>Output Drop Time (90% ~10%)                  | TF           |                                                                      | -          | 100              | -          | ns         |
|                                     | UVLO 开启延迟<br>UVLO Turn On Delay                                  | TUVLO ON     | IF =10mA,<br>VO >5V                                                  | -          | 0.8              | -          | μs         |
|                                     | UVLO 关闭延迟<br>UVLO Turn Off Delay                                 | TUVLO OFF    | IF =10mA,<br>VO <5V                                                  | -          | 0.6              | -          | μs         |
|                                     | 输出高电平共模抑制<br>Output High Level Common<br>Mode Transient Immunity | CMH          | TA =25°C<br>VDD =30V<br>VCM =1500V<br>IF =10 ~ 16mA                  | 15         | 30               | -          | kV/μs      |
|                                     | 输出低电平共模抑制<br>Output Low Level Common Mode<br>Transient Immunity  | CML          |                                                                      | 15         | 30               | -          | kV/μs      |

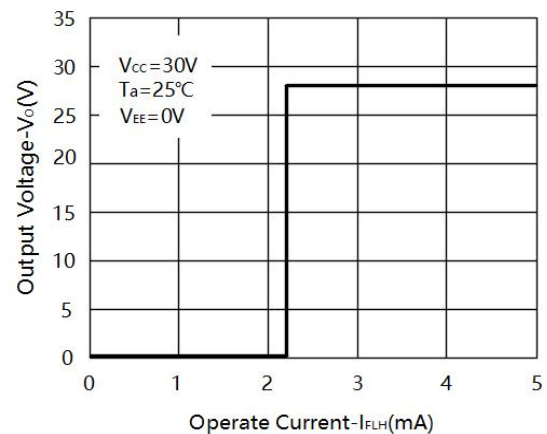
◆ 电性特性曲线Electrical characteristic curve( $T_a = 25^\circ\text{C}$ )



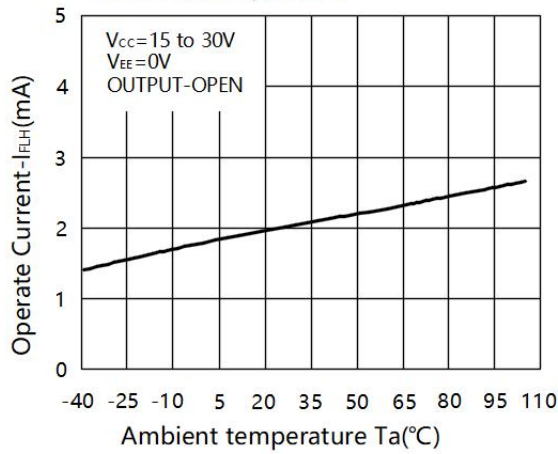
**Fig.4 Supply Current vs Ambient temperature**



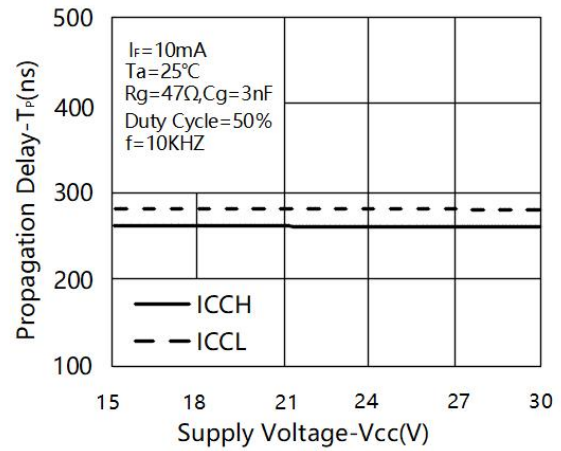
**Fig.6 Output Voltage vs Threshold Input Current Low to Higt**



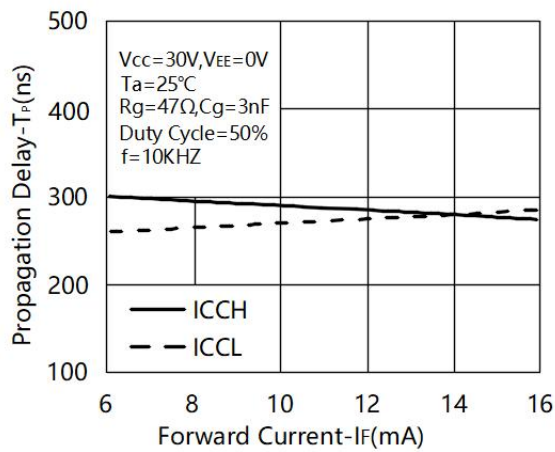
**Fig.7 Threshold Input Current Low to High vs Ambient Temperature**



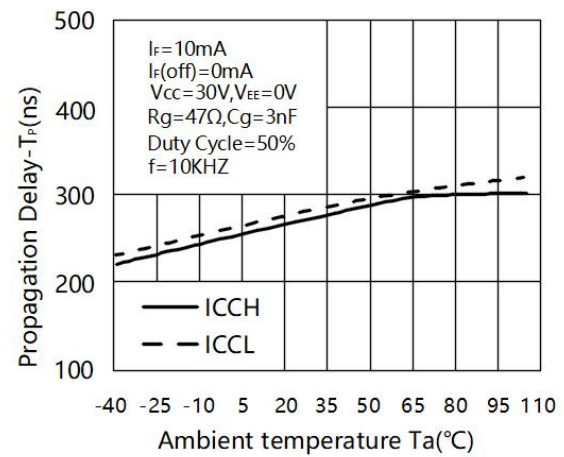
**Fig.8 Propagation Delay vs Supply Voltage**



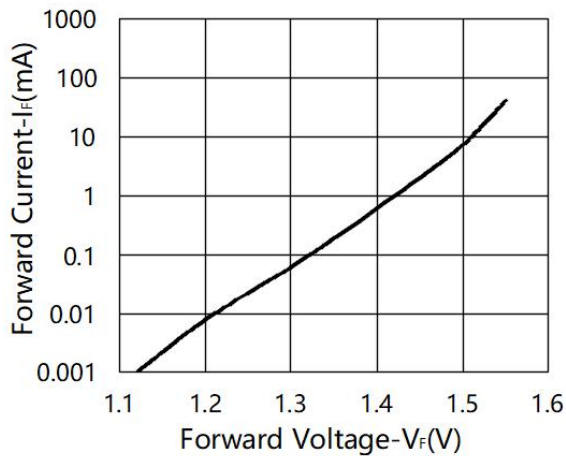
**Fig.9 Propagation Delay vs Forward Current**



**Fig.10 Propagation Delay vs Ambient Temperature**



**Fig.11 Forward Current vs Forward Voltage**



◆ 测试电路图 Test Circuits Diagrams

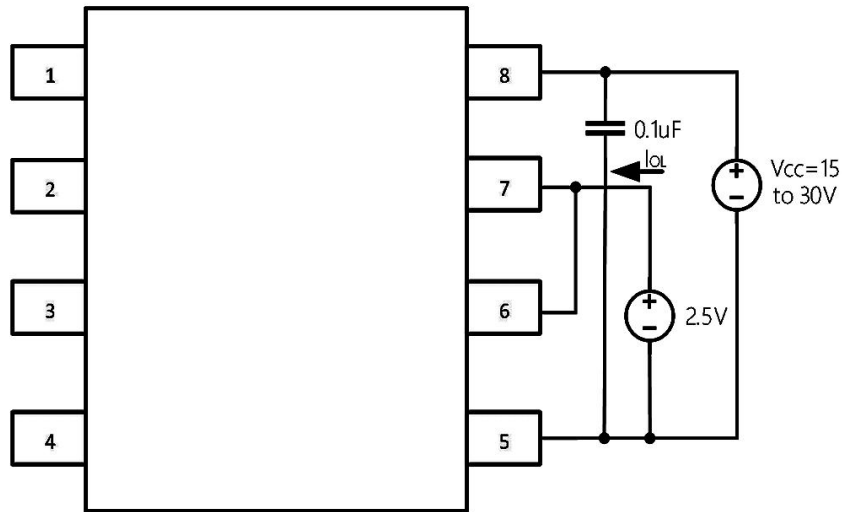


Fig.12  $I_{OL}$  Pulsed Test Circuit

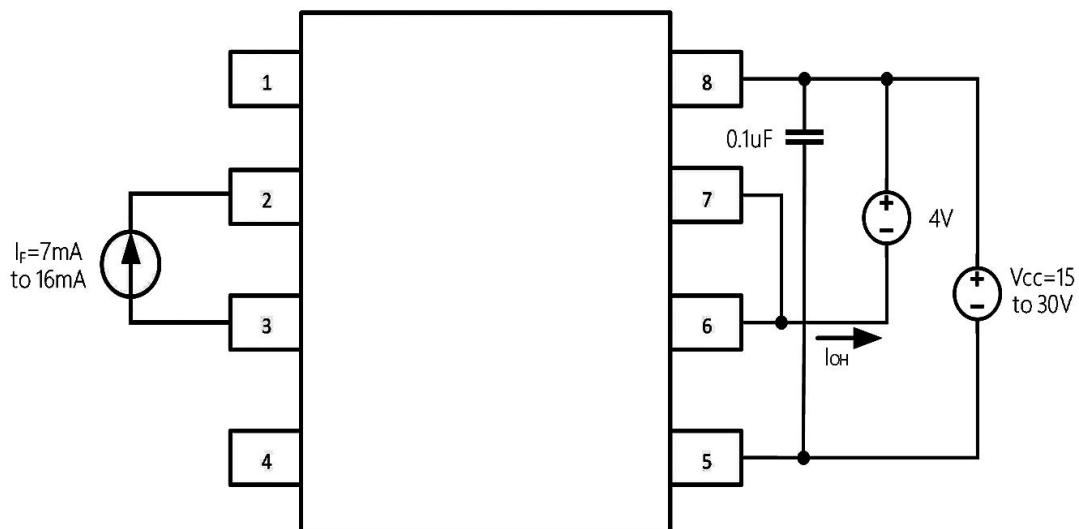


Fig.13  $I_{OH}$  Pulsed Test Circuit

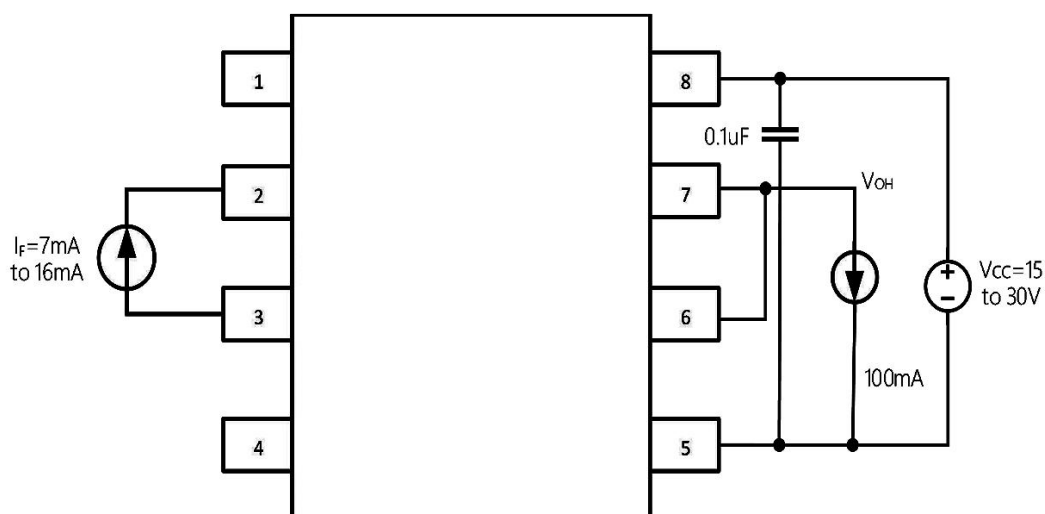


Fig.14  $V_{OH}$  Pulsed Test Circuit

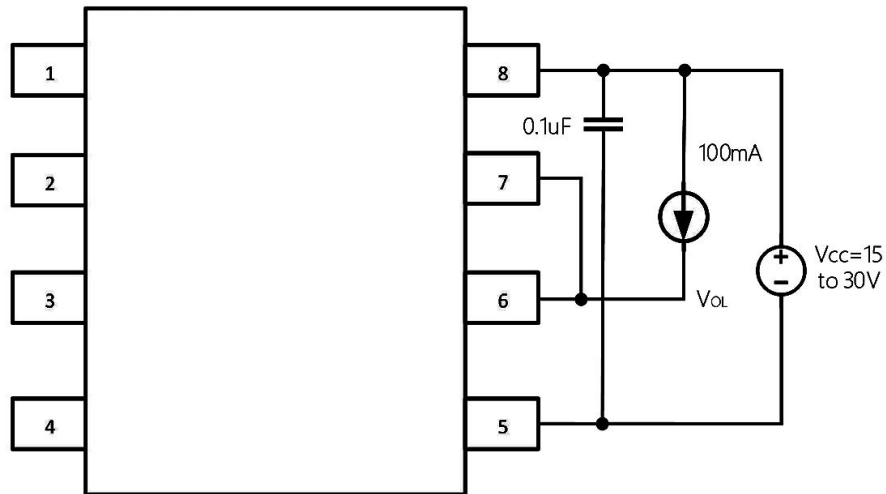


Fig.15 VoL Pulsed Test Circuit

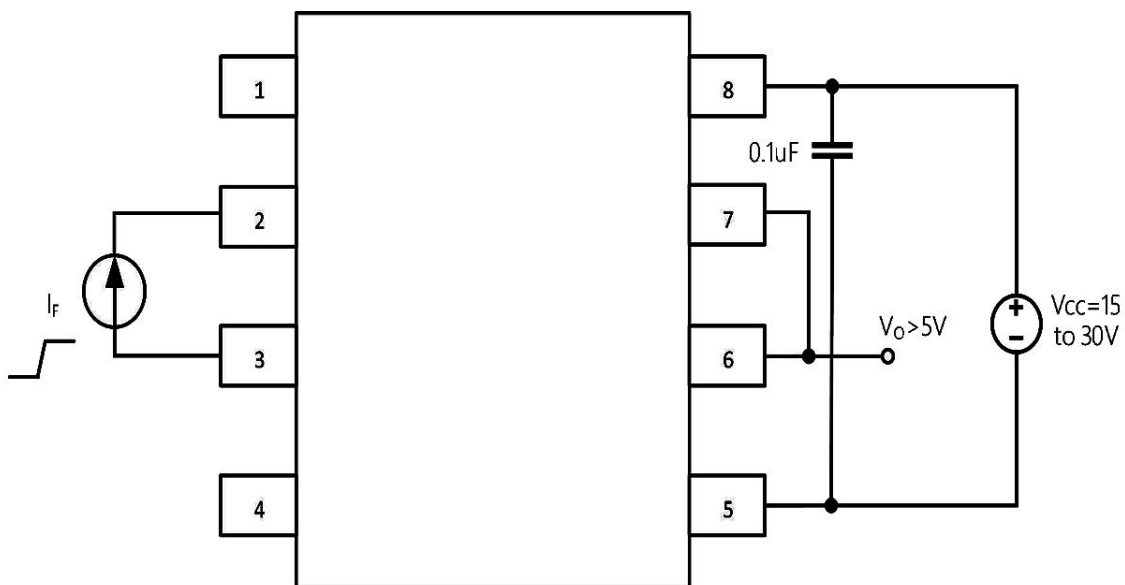


Fig.16 IFLH Pulsed Test Circuit

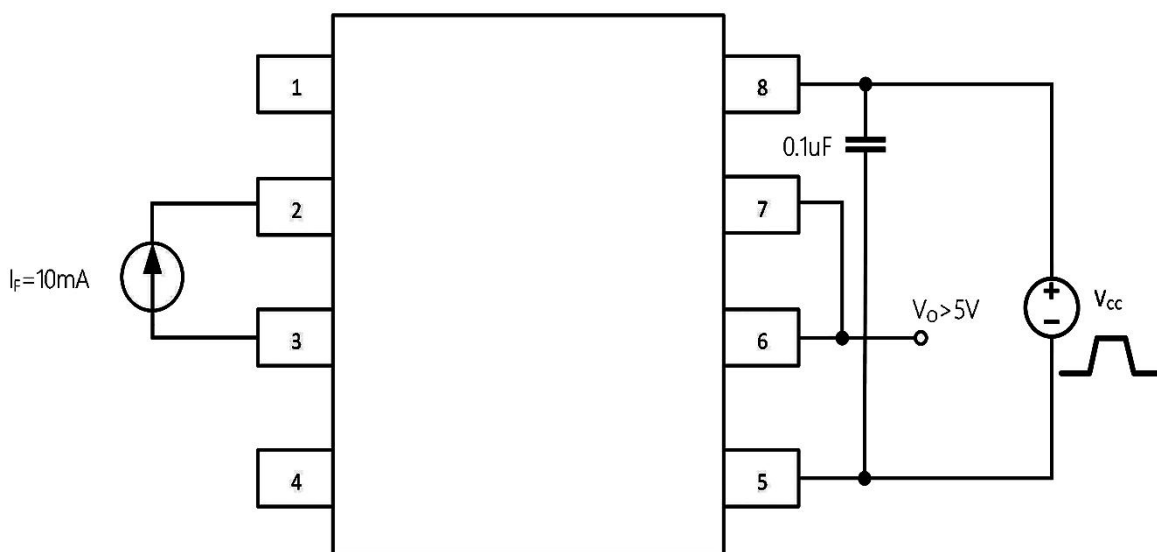


Fig.17 UVLO Test Circuit

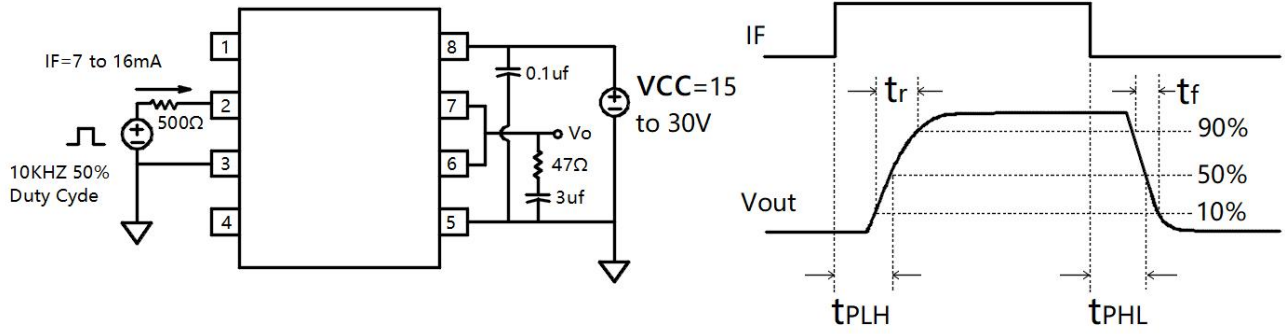


Fig.18  $T_{PHL}$ 、 $T_{PLH}$ 、 $T_R$ 、 $T_F$  Test Circuit

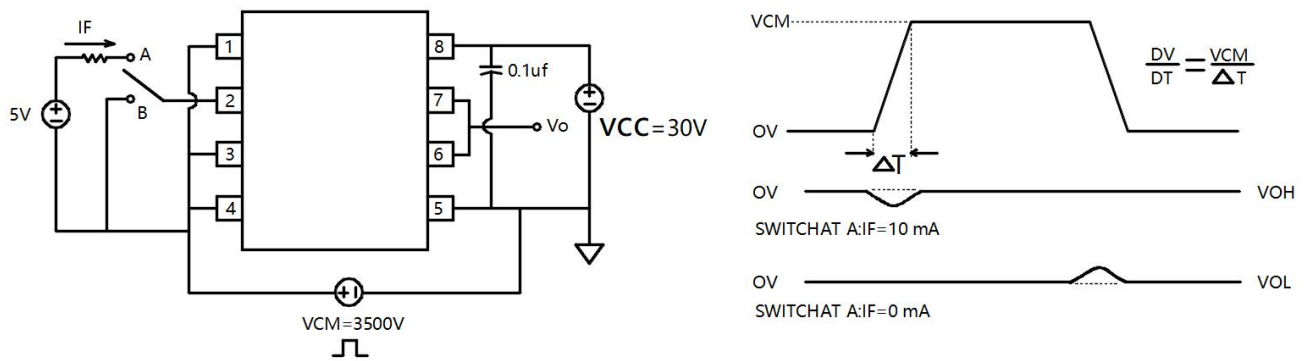
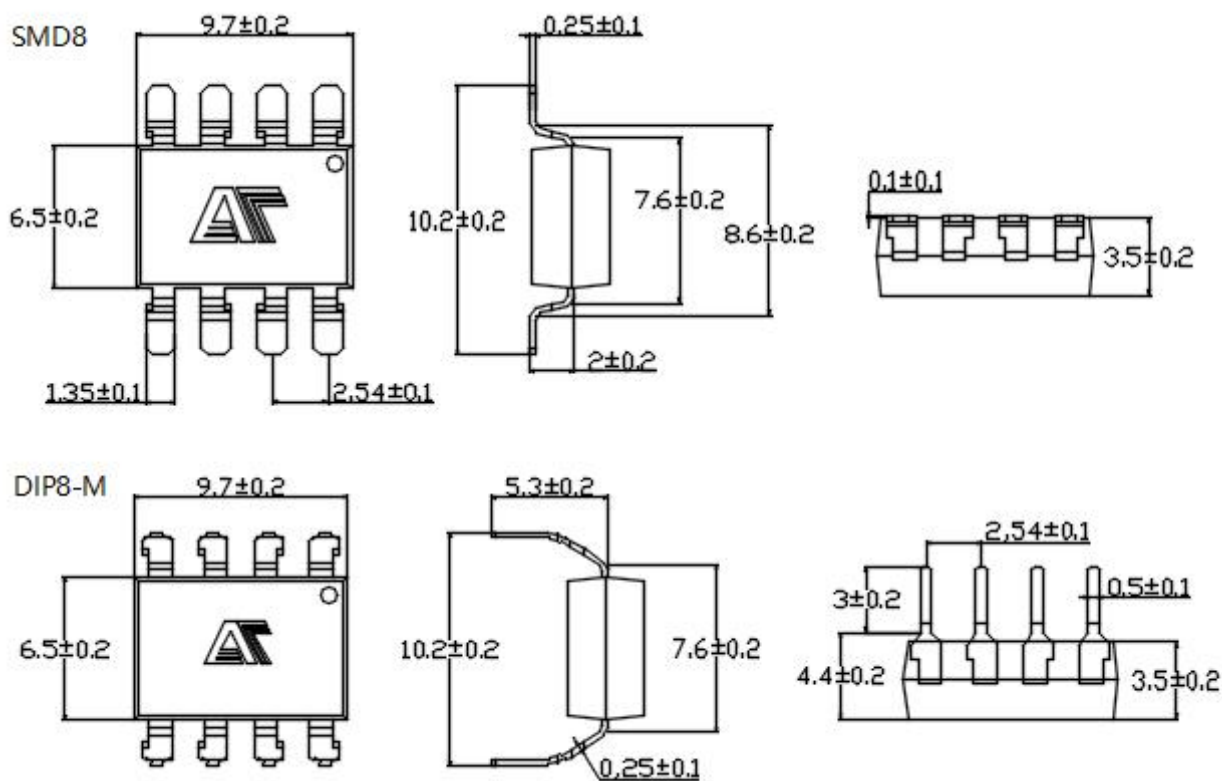


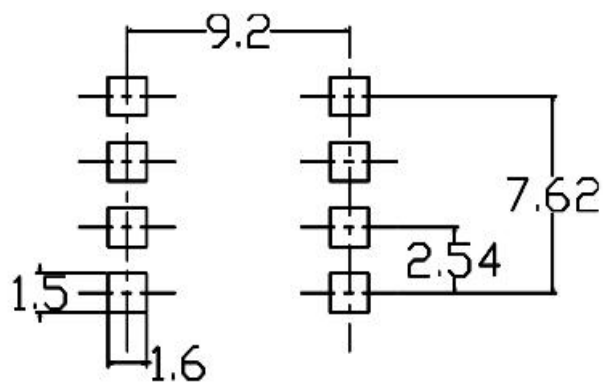
Fig.19 CMR Test Circuit

◆ 外形尺寸Overall dimension



推荐焊盘:

Recommended



单位: mm

## ◆ 产品型号命名规则 Order code

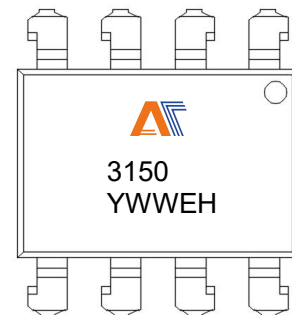
# AT 3150 - UN Y - W (V) (ZZ)

①      ②      ③      ④      ⑤      ⑥      ⑦

- ① 公司代码 Company Code (AT: 奥特 Aote)
- ② 产品系列 Product Series (3150)
- ③ 框架类型 Lead Frame (Cu: 铜框架 Copper, Fe: 铁框架 Ferrum)
- ④ 树脂类型 Epoxy Type (H: 无卤 Halogen-free)
- ⑤ 封装形式 Package (D:DIP, S:SMD)
- ⑥ 器件工作温度范围 Device Operating Temperature Range (特殊范围需填或者空白 Special Range need to be filled in or left blank)
- ⑦ 内部补充代码 Internal Supplementary Code (数字或者空白 Number or None)

## ◆ 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

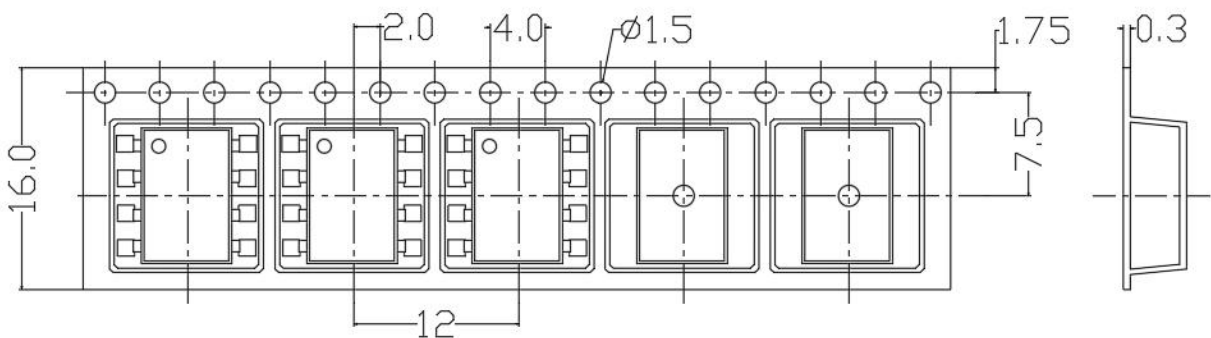
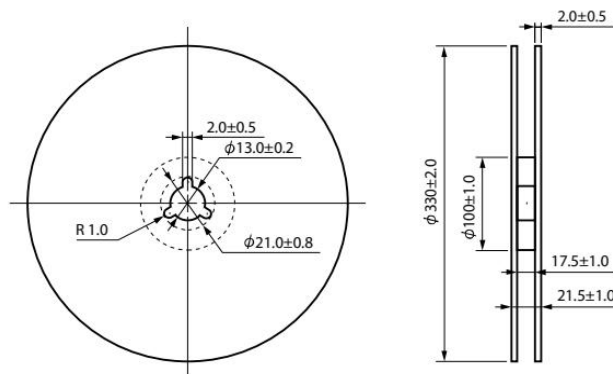


### ◆ 包装packing

| 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                                                                  |
|--------------|-------------------------------|-------------------|------------------|---------------------|------------------------------|-------------------|----------------------|---------------------------------------------------------------------|
| SMD8         | 卷盘<br>( $\phi 330$ mm蓝盘)      | 1000 只/盘          | 2 盘/盒            | 10 盒/箱              | 450*390*0.1mm                | 340*60*340 mm     | 620*360*365mm        | 首尾端空至少200mm                                                         |
| DIP8         | 管装<br>(500*12*11mm)           | 45 只/管            | 50 管/盒           | 10 盒/箱              | 不适用                          | 525*128*56 mm     | 535*275*300mm        | 每管使用蓝白胶塞，方向须一致                                                      |
| Package Type | Packing Form                  | Quantity per Reel | Quantity per Box | Quantity per Carton | Antistatic Bag Specification | Box Specification | Carton Specification | Note                                                                |
| SMD8         | Reel<br>( $\phi 330$ mm Blue) | 1000 pcs/reel     | 2 reels/box      | 10 boxes/ctn        | 450*390*0.1mm                | 340*60*340 mm     | 620*360*365mm        | Leave at least 200mm of blank space at both ends                    |
| DIP8         | Tube<br>(500*12*11mm)         | 45 pcs/tube       | 50 tubes/box     | 10 boxes/ctn        | NA                           | 525*128*56 mm     | 535*275*300mm        | Use blue and white rubber plugs for each tube in the same direction |

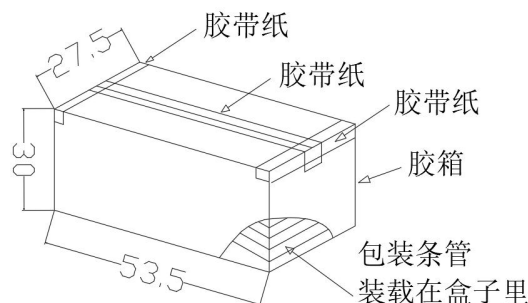
### • 编带包装 Tape & Reel

- 1) 每卷数量: 2000 只;  
Qty/reel: 2000 pcs;
- 2) 每箱数量: 40000 只;  
Qty/ctn: 40000 pcs;
- 3) 内包装: 每盒 2 盘;  
Inner packing: 2 reels/box;
- 4) 示意图 Schematic:



### • 管条包装Tape&Tube

- 1) 每管数量: 45 只。  
Qty/Tube : 45 pcs.
- 2) 每箱数量: 22500 只。  
Qty/ctn: 22500 pcs.
- 3) 内包装: 每盒 50 管。  
Inner packing: 50 Tube/box.
- 4) 示意图 Schematic

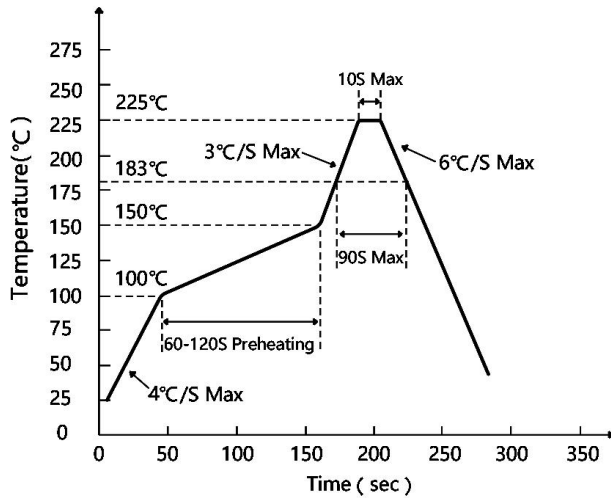


单位: mm

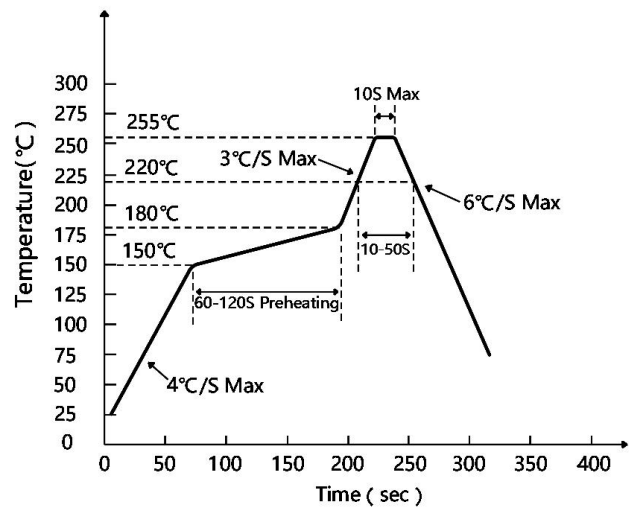
**◆ 可靠性测试 Reliability Test Items And Conditions**

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

◆ 回流焊温度曲线图 Solder Reflow Profile

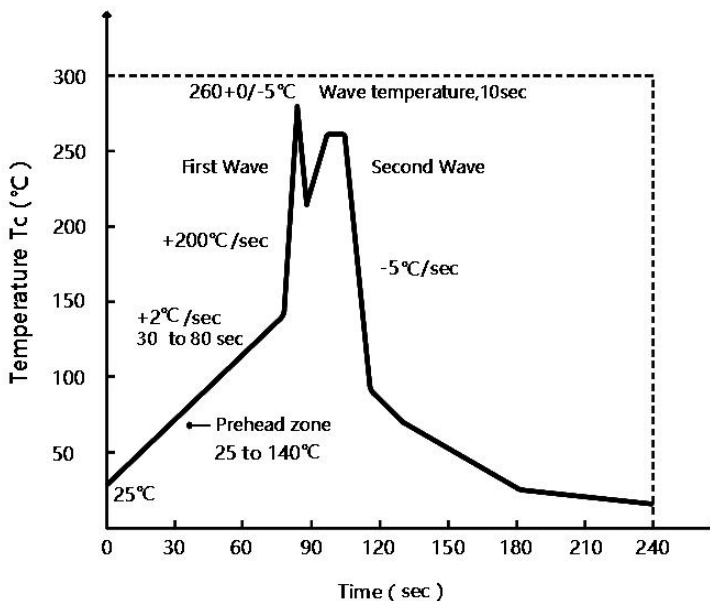


有铅制程 Lead Process



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  $350^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , 时间  $\leq 3\text{s}$ .

Hand soldering iron requirements: Temperature:  $350^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , 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: