

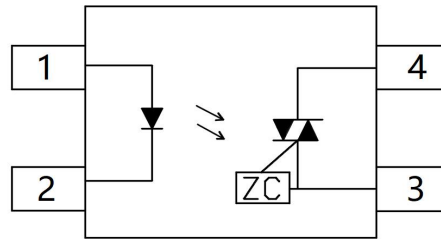


**可控硅光耦**  
**Thyristor optocoupler**

**ATM3063-W**

**Product Data Sheet**

**AOTE DCC**  
**RELEASE**



## Pin Configuration

1. Anode
2. Cathode
3. Terminal
4. Terminal

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

ATM303X, ATM304X, ATM306X, ATM308X 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 ATM303X, ATM304X, ATM306X, ATM308X 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  $V_{ios}=3750V_{rms}$   
Input output isolation voltage:  $V_{ios}=3750 V_{rms}$
- 断态输出端电压  $V_{DRM}=250,400,600,800$ ; Off-state output terminal voltage  $V_{DRM}=250,400,600,800$ ;
- 峰值重复浪涌电流  $I_{TSM}=1A$ ; Peak repetitive surge current  $I_{TSM}=1A$
- 爬电距离  $>5.0mm$ ; Creepage distance  $> 5.0mm$ ;
- 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

- 工业自动化与控制 Industrial Automation and Control;  
PLC与变频器, 伺服驱动系统, 工业机器人PLC and frequency converter, servo drive system, industrial robot 过零型产品用于交流调压Zero crossing products are used for AC voltage regulation
- 家用电器与消费电子: Household appliances and consumer electronics 电机正反转、加热控制、调速等 Motor forward and reverse heating control, speed regulation, etc 智能照明系统中用于调光控制Used for dimming control in lighting systems
- 电力系统与能源管理: Power System and Energy Management 用于整流、变压器保护和电网监测Used for rectification, transformer protection, and power grid monitoring 应用于不间断电源 (UPS) 和电源保护设备Applied to uninterruptible power supply (UPS) and power protection equipment
- 医疗与特殊场景: Medical and Special Scenarios 用于心率监测仪、X光机等设备隔离与电路保护Used for isolation and circuit protection of devices such as heart rate monitors and X-ray machines



**◆ 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 |
|-------------------------------|-------------------------------------------------------------------------------------|---------|--------------|---------------|------------|
| 发射端<br>Input                  | 正向电流<br>Forward Current                                                             |         | IF           | 60            | mA         |
|                               | 结温<br>Junction Temperature                                                          |         | Tj           | 125           | ℃          |
|                               | 反向电压<br>Backward Voltage                                                            |         | VR           | 6             | V          |
|                               | 功耗<br>Power Dissipation                                                             |         | PD           | 100           | mW         |
| 接收端<br>Output                 | 断态输出端电压<br>Off-state output terminal voltage                                        | ATM303X | VDRM         | 250           | V          |
|                               |                                                                                     | ATM304X |              | 400           |            |
|                               |                                                                                     | ATM306X |              | 600           |            |
|                               |                                                                                     | ATM308X |              | 800           |            |
|                               | 峰 值 重 复 浪 涌 电 流 (pw=100 μ s,120pps) Peak repetitive surge current (pw=100μs,120pps) |         | ITSM         | 1             | A          |
|                               | 开启态电流 （均方根值）<br>On-state current (root mean square value)                           |         | IT(RMS)      | 100           | mA         |
|                               | 结温<br>Junction Temperature                                                          |         | Tj           | 125           | ℃          |
|                               | 功耗<br>Power Dissipation                                                             |         | PC           | 300           | mW         |
| 隔离电压<br>Isolation Voltage     |                                                                                     |         | Viso         | 3750          | Vrms       |
| 工作温度<br>Operating Temperature |                                                                                     |         | Topr         | -40 ~+100     | ℃          |
| 存储温度<br>Storage Temperature   |                                                                                     |         | Tstg         | -55 ~+150     | ℃          |
| 焊接温度<br>Soldering Temperature |                                                                                     |         | Tsol         | 260           | ℃          |

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

| 参数<br>Parameter                                                                 | 符号<br>Symbd | 最小值<br>Min | 最大值<br>Max | 单位<br>unit |
|---------------------------------------------------------------------------------|-------------|------------|------------|------------|
| 正向电流<br>Forward Current                                                         | IF          | 5          | 15         | mA         |
| 峰值重复浪涌电流 (pw=100 μ s,120pps) Peak<br>repetitive surge current (pw=100μs,120pps) | ITSM        | -          | 1          | A          |
| 开启态电流 (均方根值)<br>On-state current (root mean square value)                       | IT(RMS)     | -          | 100        | mA         |

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

| 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 |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------|---------|--------------|---------------------------------------------------|--------------------|------------|------------|------------|
| 发射端<br>Input                     | 正向电压<br>Forward Voltage                                                                                            |         | VF           | IF =10mA                                          | -                  | 1.24       | 1.4        | V          |
|                                  | 反向电流<br>Back current                                                                                               |         | IR           | VR =6V                                            | -                  | -          | 10         | uA         |
|                                  | 输入电容<br>Terminal Capacitance                                                                                       |         | Cin          | V=0, f=1kHz                                       | -                  | 8.5        | 250        | pF         |
| 接收端<br>Output                    | 断态峰值电流<br>Off-state peak current                                                                                   | ATM303X | IDRM1        | VDRM =Rated<br>VDRM IF = 0mA                      | -                  | -          | 100        | nA         |
|                                  |                                                                                                                    | ATM304X |              |                                                   | -                  | -          | 500        |            |
|                                  |                                                                                                                    | ATM306X |              |                                                   | -                  | -          | 500        |            |
|                                  |                                                                                                                    | ATM308X |              |                                                   | -                  | -          | 500        |            |
|                                  | 通态峰值电压<br>On-state peak voltage                                                                                    |         | VTM          | ITM=100mA peak<br>IF = Rated IFT                  | -                  | 1.59       | 2.5        | V          |
|                                  | 断态电压临界上升率<br>Critical rise rate of off-state voltage                                                               | ATM303X | dv/dt        | VPEAK =Rated<br>VDRM, IF =0                       | 1000               | -          | -          | V/μs       |
|                                  |                                                                                                                    | ATM304X |              |                                                   | 600                | -          | -          |            |
|                                  |                                                                                                                    | ATM306X |              |                                                   | 600                | -          | -          |            |
|                                  |                                                                                                                    | ATM308X |              |                                                   | 600                | -          | -          |            |
|                                  | 抑制电压 （MT1-MT2 高于多少电压不会触发）<br>Suppression voltage (MT1-MT2 will not be triggered if it is higher than this voltage) |         | VInh         | IF = Rated IFT                                    | -                  | -          | 20         | V          |
|                                  | 抑制状态的漏电流<br>Leakage current in suppression state                                                                   |         | IDRM2        | IF = Rated IFT ,<br>VDRM=Rated<br>VDRM, Off state | -                  | -          | 500        | uA         |
| 传输特性<br>Transfer Characteristics | LED 触发电流<br>LED trigger current                                                                                    | ATM3031 | IFT          | 主端电压<br>Main terminal Voltage=3V                  | -                  | -          | 15         | mA         |
|                                  |                                                                                                                    | ATM3041 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3061 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3081 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3032 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3042 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3062 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3082 |              |                                                   | -                  | -          | 10         |            |
|                                  |                                                                                                                    | ATM3033 |              |                                                   | -                  | -          | 5          |            |
|                                  |                                                                                                                    | ATM3043 |              |                                                   | -                  | -          | 5          |            |
|                                  |                                                                                                                    | ATM3063 |              |                                                   | -                  | -          | 5          |            |
|                                  |                                                                                                                    | ATM3083 |              |                                                   | -                  | -          | 5          |            |
|                                  | 维持电流<br>Maintain current                                                                                           |         | IH           | -                                                 | -                  | 280        | -          | uA         |
|                                  | 隔离电阻<br>Isolation Resistance                                                                                       |         | RISO         | DC500V,<br>40 ~60%R.H.                            | 5x10 <sup>10</sup> | -          | -          | Ω          |
| 隔离电容<br>Isolation capacitance    |                                                                                                                    | CISO    | Vio=0,f=1MHz | -                                                 | 0.4                | 1.0        | pF         |            |

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

Fig.1 Forward current vs. Forward voltage

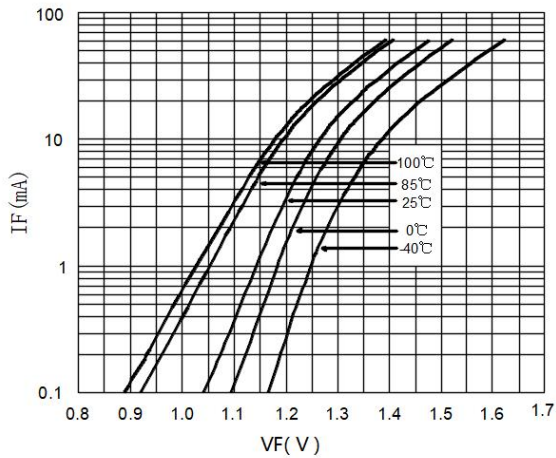


Fig.2 Forward Current VS Ambient Temperature

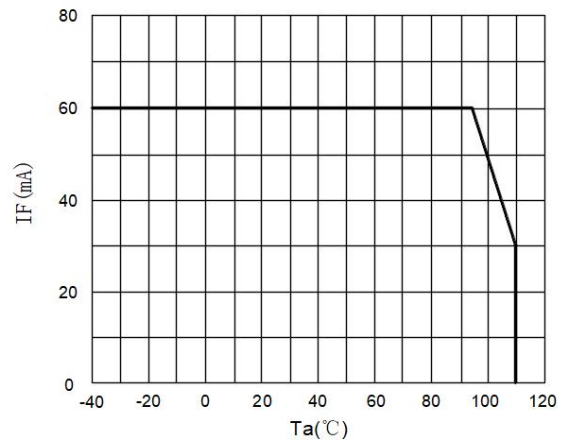


Fig.3 On-state Terminal Current vs. Ambient Temperature

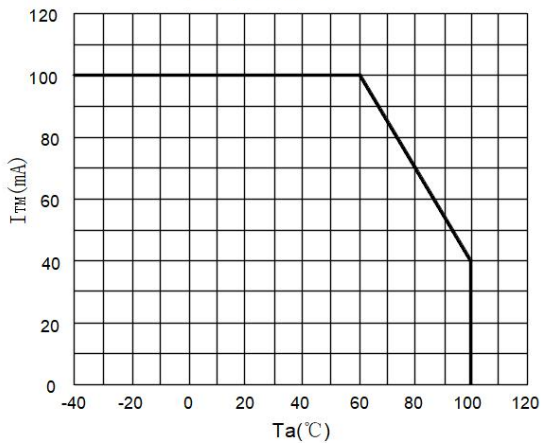


Fig.4 Off-state Terminal Current vs. Ambient Temperature

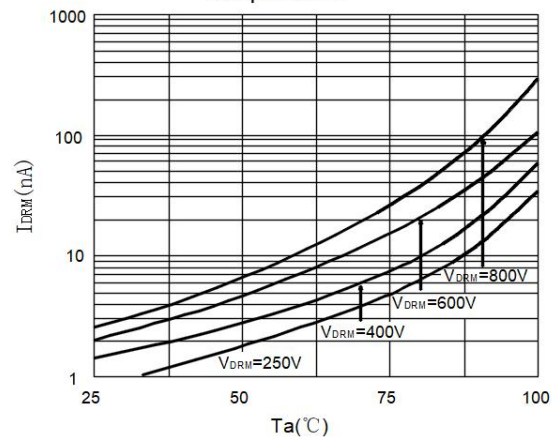


Fig.5 Normalized off-state Terminal Voltage vs. Ambient Temperature

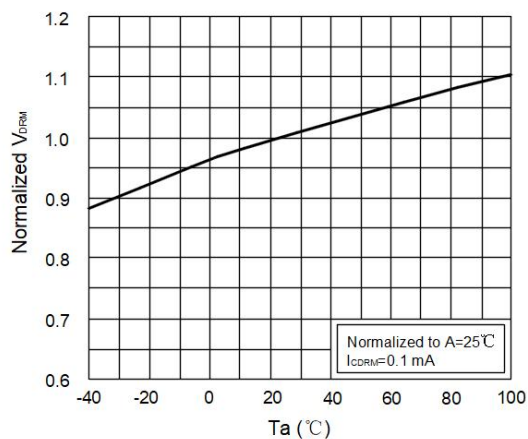


Fig.6 Normalized Trigger Current vs. LED Trigger Pulse Width

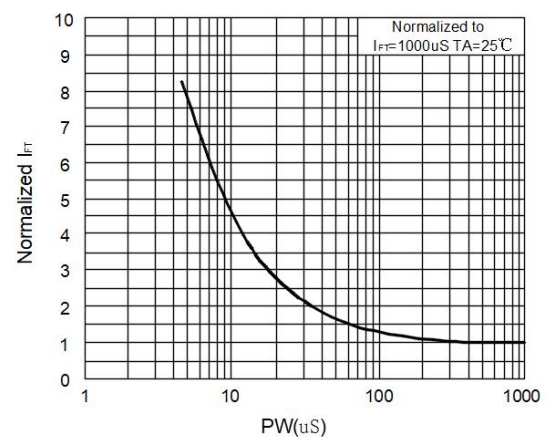


Fig.7 Normalized Trigger Current vs. Ambient Temperature

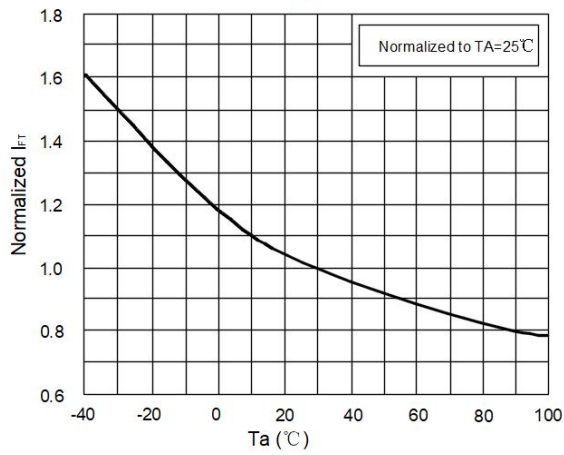


Fig.8 On-state Terminal Voltage vs. Ambient Temperature

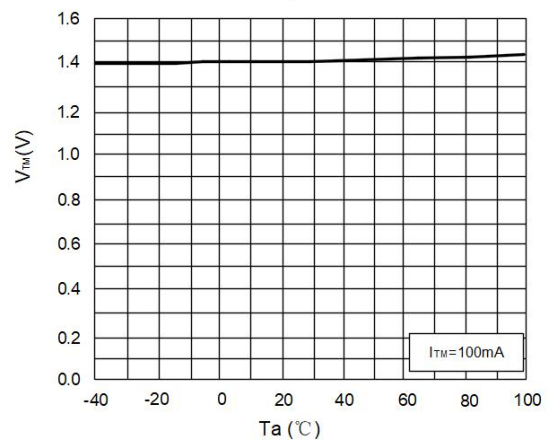


Fig.9 On-state Terminal Voltage vs. On-state Terminal Current

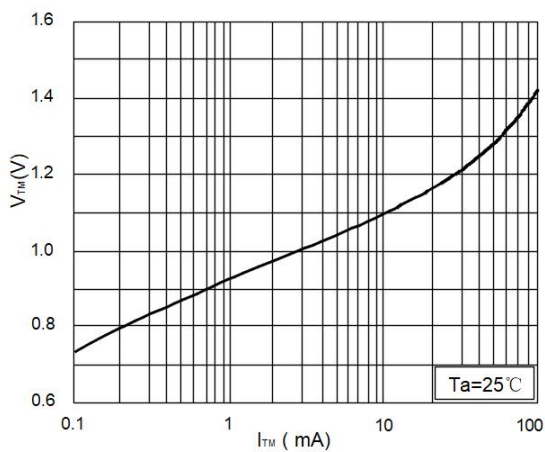


Fig.10 Holding Current vs. Ambient Temperature

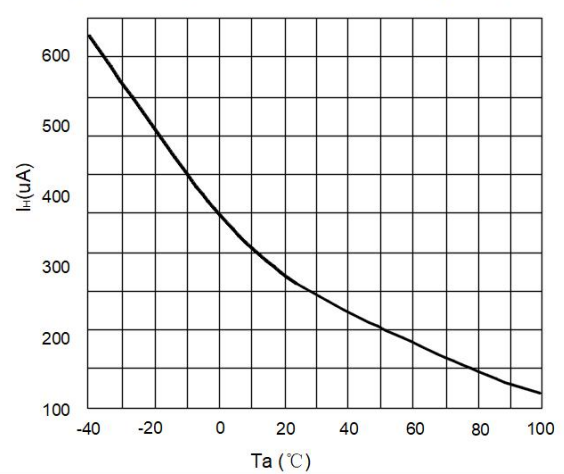


Fig.11 Normalized Inhibit Voltage vs. Ambient Temperature

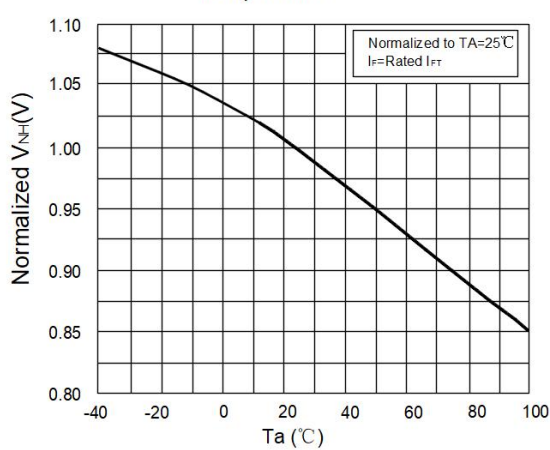


Fig.12 Normalized Leakage in Inhibit state vs. Ambient Temperature

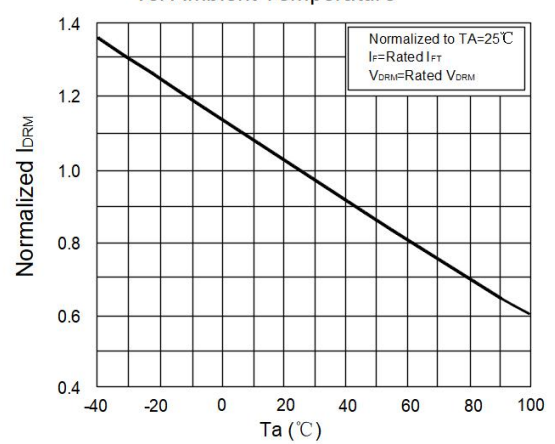




Fig.13 Tun On Time vs. Forward Current

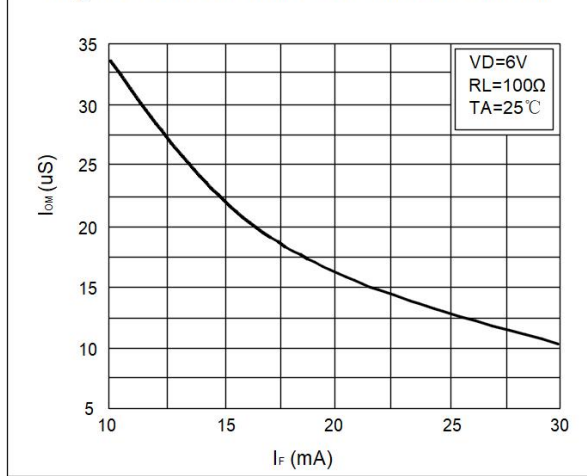


Fig.14 Tun On Time vs. Ambient Temperature

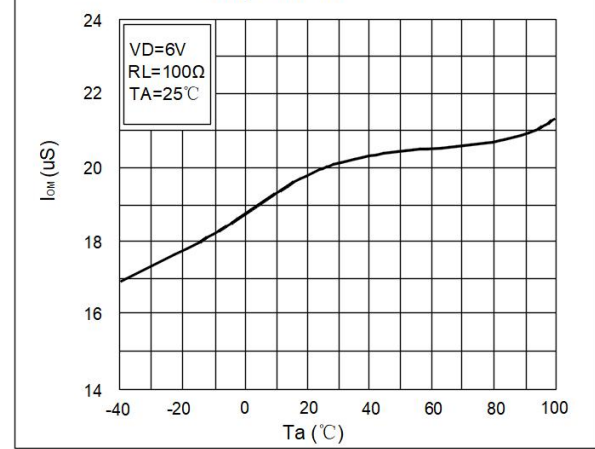


Fig.15 Test Circuits of Turn On Time

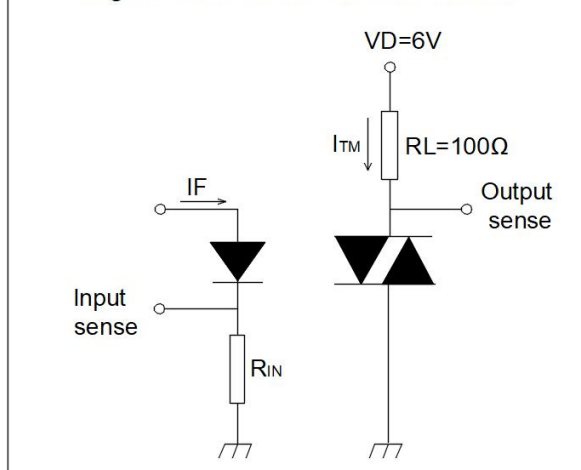


Fig.16 Waveforms of Turn On Time

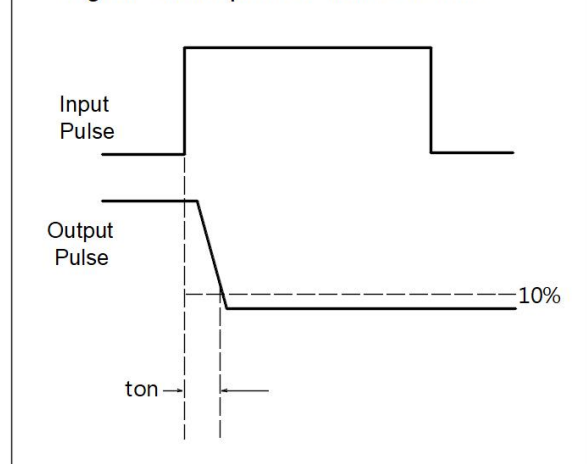


Fig.17 Test Circuits of dv/dt

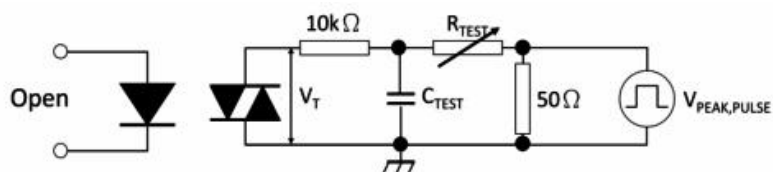
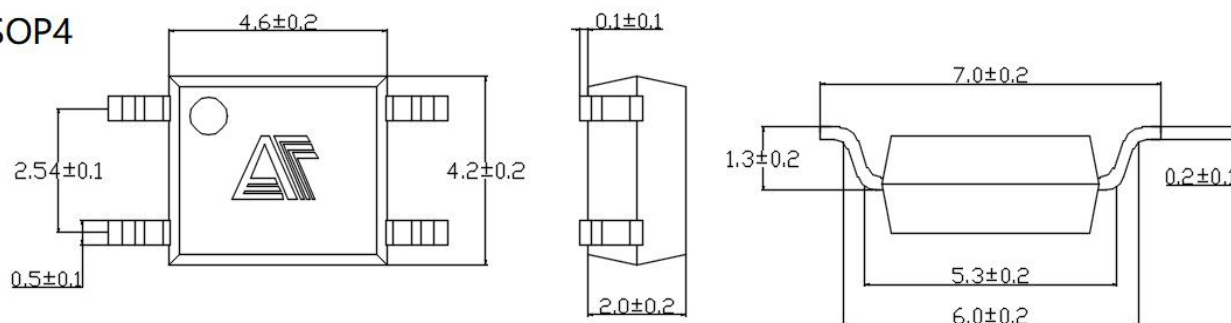


Fig.16 Waveforms of dv/dt



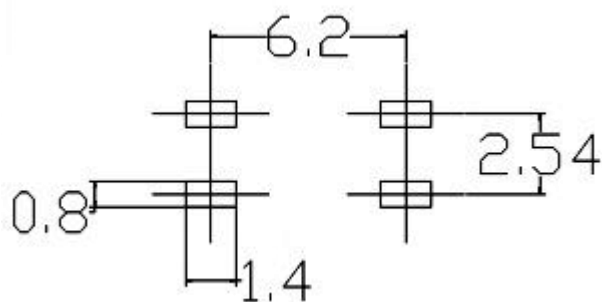
◆ 外形尺寸Overall dimension

SOP4



推荐焊盘:

Recommended



单位: mm



## ◆ 产品型号命名规则 Order Code

# AT M30VX - 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 (30VX: ATM303X, ATM304X, ATM306X, ATM308X)
- ③ 框架类型 Lead Frame (Cu: 铜框架 Copper)
- ④ 树脂类型 Epoxy Type (H: 无卤 Halogen-free)
- ⑤ 封装形式 Package (D: DIP, S: SMD, W: 白色)
- 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



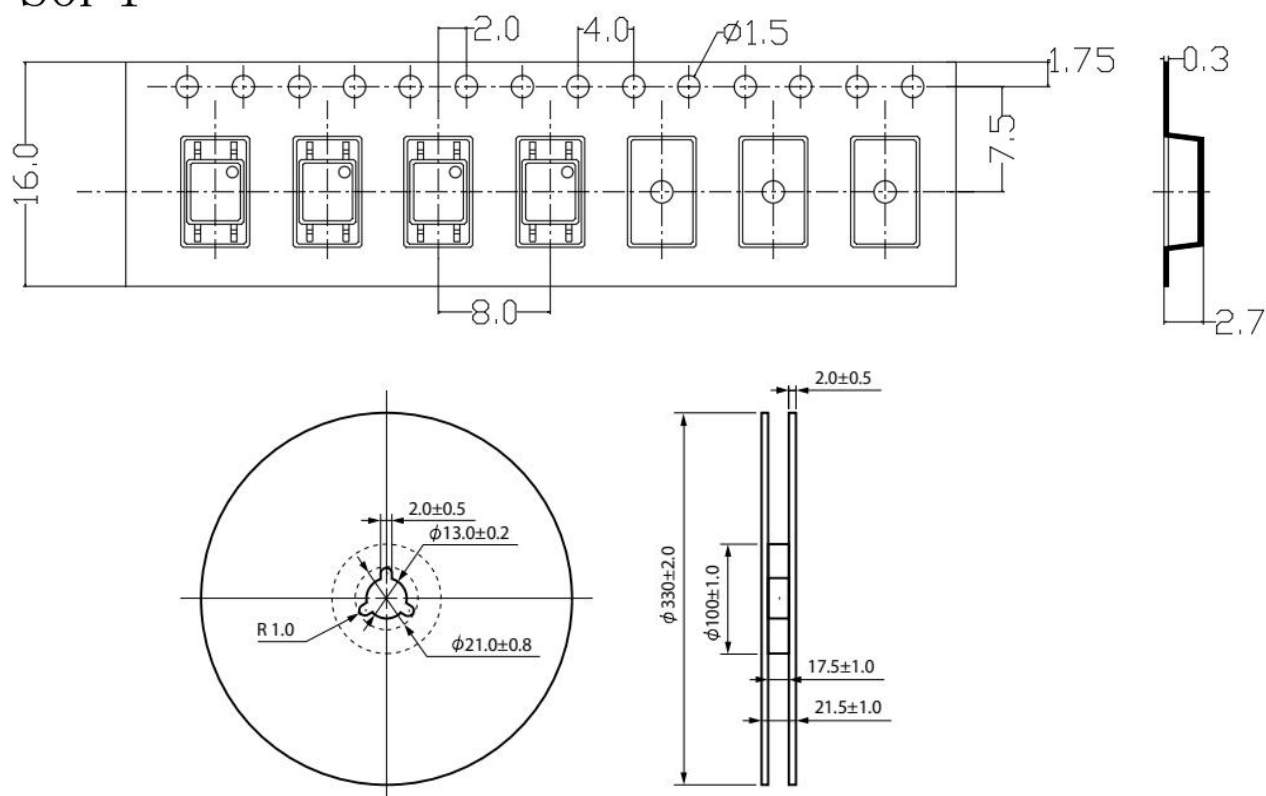
# ◆ 包装packing

| 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                                               |
|--------------|-------------------------------|-------------------|------------------|---------------------|------------------------------|-------------------|----------------------|--------------------------------------------------|
| SOP4         | 卷盘<br>( $\phi 330$ mm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<br>( $\phi 330$ mm 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:

SOP4

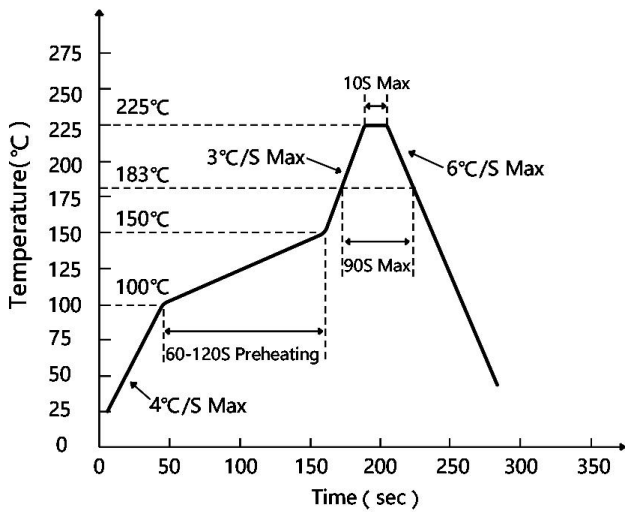


单位: mm

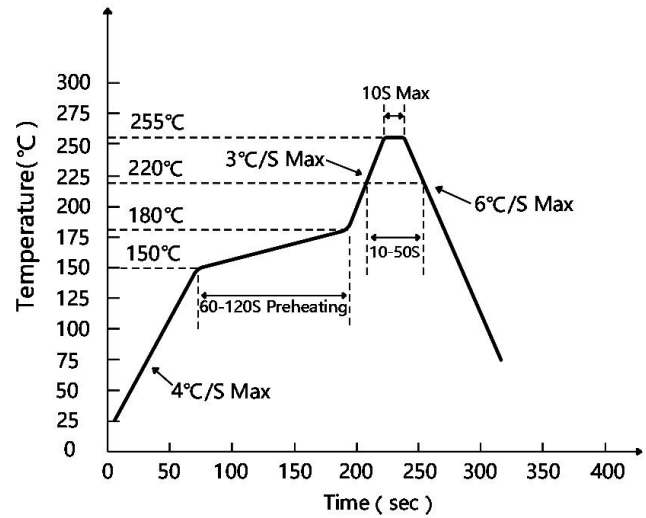
**◆ 可靠性测试 Reliability Test Items And Conditions**

| 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

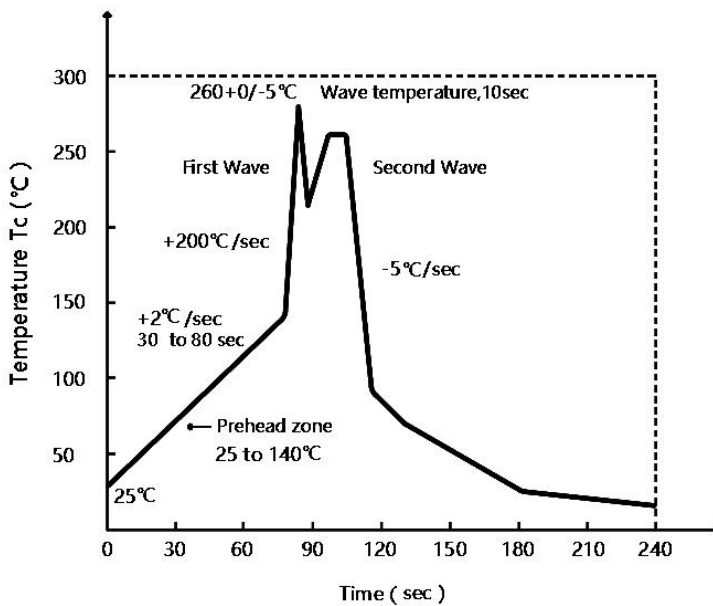


有铅制程 Lead Process



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: