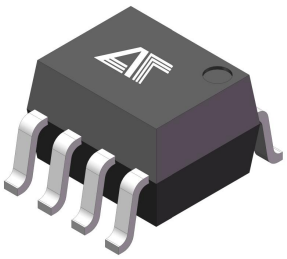
AOTE
SEMICONDUCTOR



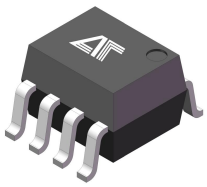
高速光耦
High speed optocoupler

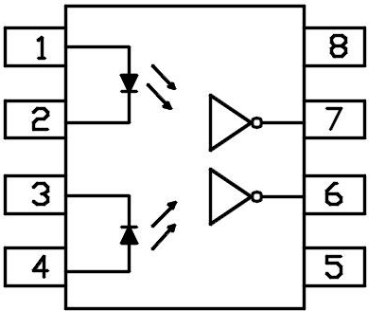
AT063X

Product Data Sheet

AOTE DCC
RELEASE

SOP8





Pin Configuration
1.Anode 1
2.Cathode 1
3.Cathode 2
4.Anode 2
5.GND
6.VO 2
7.VO 1
8.VCC

◆ 封装逻辑原理图 Encapsulation logic schematic

AT063X 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SOP8封装形式，适配多样化场景需求。

The AT063X Series optocoupler adopts high-efficiency photoelectric conversion technology and advanced packaging processes, providing reliable input-output isolation. It supports package types (SOP8) to meet diverse application requirements.

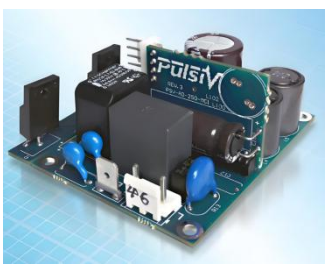
◆ 产品特征Product features

- 输入-输出隔离电压Vios=3750Vrms
  Input output isolation voltage：Vios=3750 Vrms
- 高传输比特率：10MBit/s；High transmission ratio 10MBit/s；
- 输出高电平共模瞬态抑制 5KV/US; Common Mode Transient Immunity at High Output Level 5KV/US
- 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

- 通信与网络Communications and Networking光纤通信，数据中心Fiber optic communication, data center
- 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
- 电机驱动与能源管理 Motor Drive and Energy Management；电机控制，电机保护，电力电子，消费电子
  Motor control, motor protection，Power electronics，Consumer Electronics
- 新兴技术领域Emerging technology fields
  智能交通系统，医疗设备，自动化生产线Intelligent Transportation System，medical equipment，Automatic production line





◆ 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	正向输入电流（平均） DC/Average Forward Input Current	IF	20	mA
	反向输入电压 Reverse Input Voltage	VR	5.0	V
	功耗 Power Dissipation	PI	70	mW
接收端 Output	电源电压 Supply Voltage	VCC	7.0	V
	输出电流 Output Current	IO	50	mA
	输出电压 Output Voltage	VO	7.0	V
	输出功率 Collector Output	PO	60	mW
总功率消耗 Total Power Dissipation		Ptot	120	mW
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 Symbd	最小值 Min	最大值 Max	单位 unit
低电平输入电流 Low Level Input Current	IFL	0	250	μA
高电平输入电流 High Level Input Current	IFH	5	15	mA
电源电压 Supply Voltage	VCC	3	5.5	V
低电平使能电压 Low Level Enable Voltage	VEL	0	0.8	V

注 1：初始切换阈值为 5mA 或以下。建议使用 6.3mA 至 10mA 以达到最佳性能

Note 1: The initial switching threshold is 5 mA or less. From 6.3 mA to 10 mA is recommended to achieve optimal performance

◆ 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 =10mA	1.2	1.35	1.8	V
	反向击穿电压 Reverse Breakdown Voltage	BVR	IR =10μA	5	-	-	V
	输入电容 Capacitance	Ct	V=0, f=1MHz	-	60	-	pF
接收端 Output	高电平输出电流 High Level Output Current	IOH	VO =5.5V IF =250uA, VCC =5.5V	-	5.5	100	uA
	启动电流 Turn on current	ITH	VO <0.6V IOL =13mA, VCC =5.5V	-	2.5	5	mA
	低电平输出电压 Low Level Output Voltage	VOL	IF =5mA IOL =13mA, VCC =5.5V	-	0.35	0.6	V
	高电平电源电流 High Level Supply Current	ICCH	VCC =5.5V, IF =0mA	-	10	15	mA
	低电平电源电流 Low Level Supply Current	ICCL	VCC =5.5V, IF =10mA	-	13	21	mA
隔离电阻① Isolation Resistance		RI-O	VI-I =500V, 40 ~60%R.H.	-	10^{12}	-	Ω
隔离电容① Isolation Capacitance		CI-O	V=0, f=1MHz	-	0.6	-	pF
输入隔离电阻② Input Isolation Resistance		RI-I	VI-I =500V, 40 ~60%R.H.	-	10^{11}	-	Ω
输入隔离电容② Input Isolatio Capacitance		CI-I	V=0, f=1MHz	-	0.25	-	pF

注： Note:

1. 测量时将 PIN1,2,3,4 短接， PIN5,6,7,8 短接。
   When measuring, short-circuit PIN1, 2, 3, and 4, and short-circuit PIN5, 6, 7, and 8.
2. 测量时将 PIN1,2 短接， PIN3,4 短接。
   When measuring, short-circuit PIN1, 2, and short-circuit PIN3, 4.

◆ 开关特性 Switching Specification

参数 Parameter		符号 Symbol	条件 Condition	最小 Min.	典型 Typ.	最大 Max.	单位 Unit
输出高电平传播延迟 Propagation Delay Time to High Output Level		TPLH	IF =7.5mA VCC =5V CL =15pF RL =350Ω TA =25°C	20	48	75	ns
输出低电平传播延迟 Propagation Delay Time to Low Output Level		TPHL		25	50	75	ns
脉宽失真 Pulse Width Distortion		|TPHL–TPLH|		-	3.5	35	ns
输出上升时间(10% – 90%) Output Rise Time (10 to 90%)		tr		-	24	-	ns
输出下降时间(90% - 10%) Output Fall Time (90 to 10%)		tf		-	10	-	ns
传播延迟偏斜 Propagation Delay Skew		tpsk		-	-	40	ns
输出高电平共模瞬态抑制 Common Mode Transient Immunity at High Output Level	0630	|CMH|	VCC =5V,IF =0mA VO(MIN) =2V, RL =350Ω TA =25℃ , |VCM|=1kV	5	-	-	kV/μs
	0631			10	-	-	
输出低电平共模瞬态抑制 Common Mode Transient Immunity at Low Output Level	0630	|CML |	VCC =5V,IF =7.5mA VO(MAX) =0.8V, RL =350Ω TA =25℃ , |VCM|=1kV	5	-	-	kV/μs
	0631			10	-	-	

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

Fig.1 Low-level output voltage vs.Ambient temperature

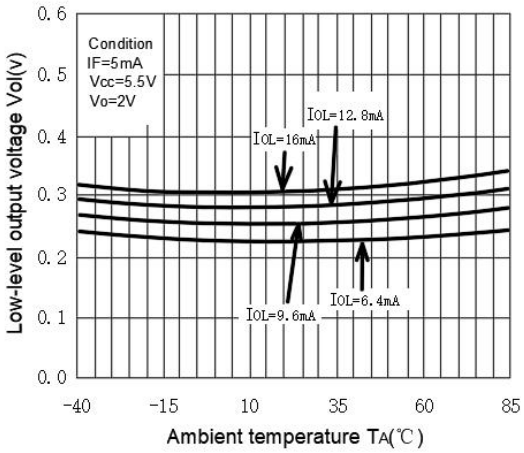


Fig.2 Forward current vs. Forward voltage

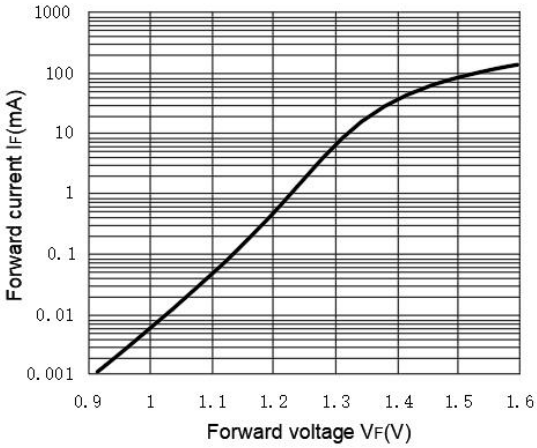


Fig.3 Propagation delay time vs. Forward current

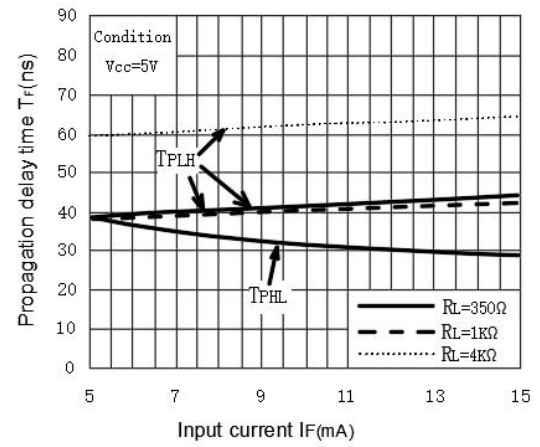


Fig.4 low-level output current vs. Ambient temperature

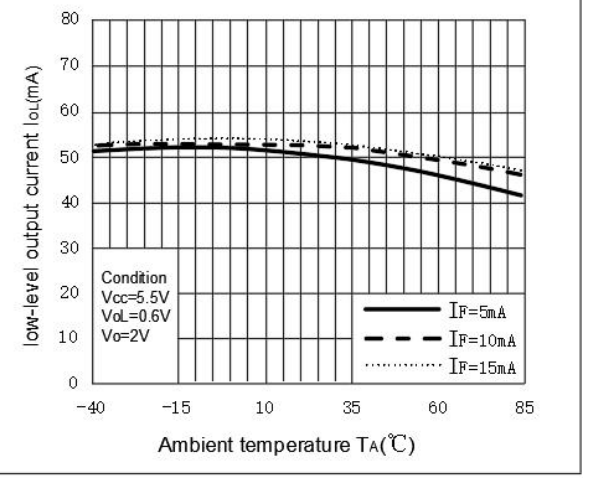


Fig.5 Input threshold current vs. Ambient temperature

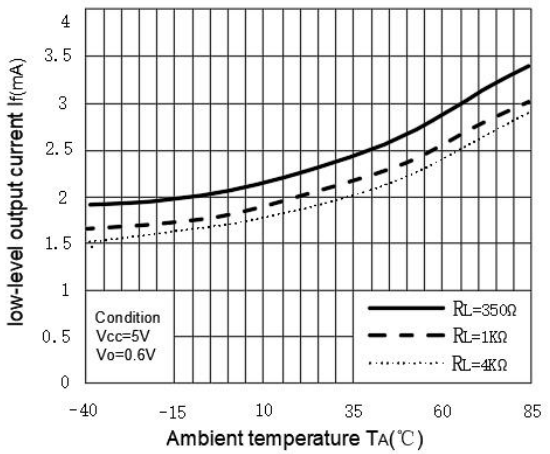


Fig.6 Output voltage vs. Forward current

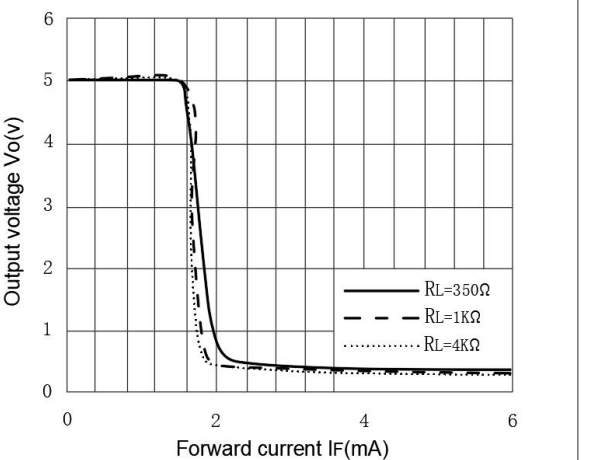


Fig.7 Pulse-width distortion vs. Ambient tempertature

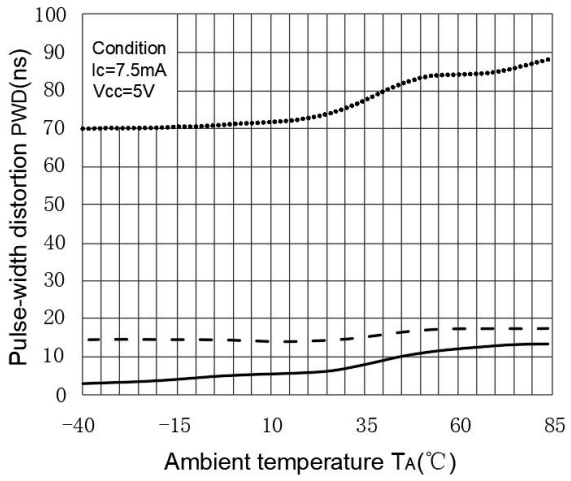


Fig.8 Switching time vs. Ambient tempertature

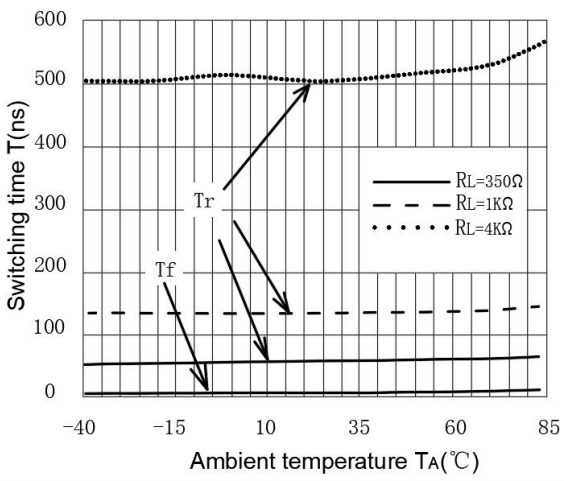


Fig.9 Propagation delay time vs. Ambient temperature

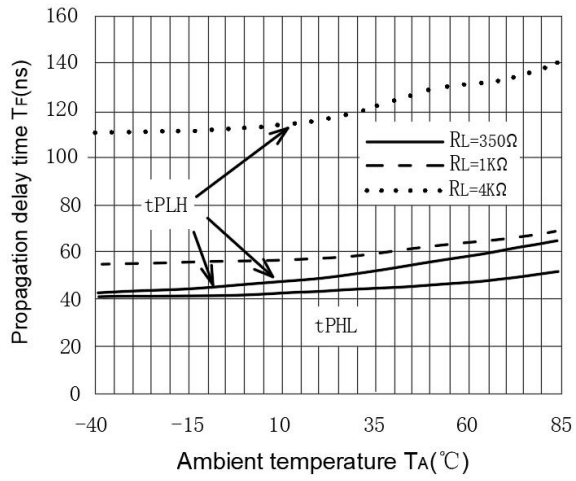
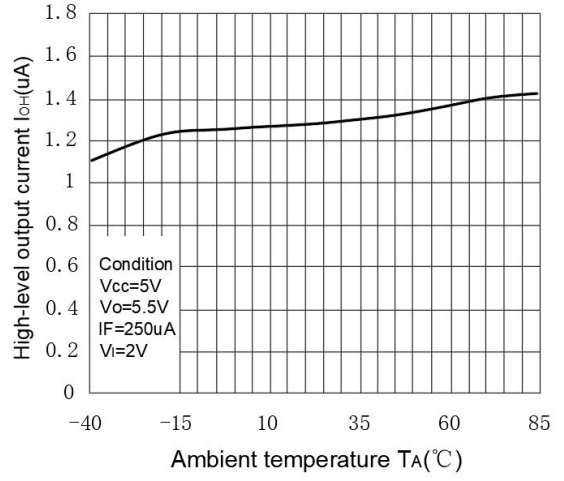
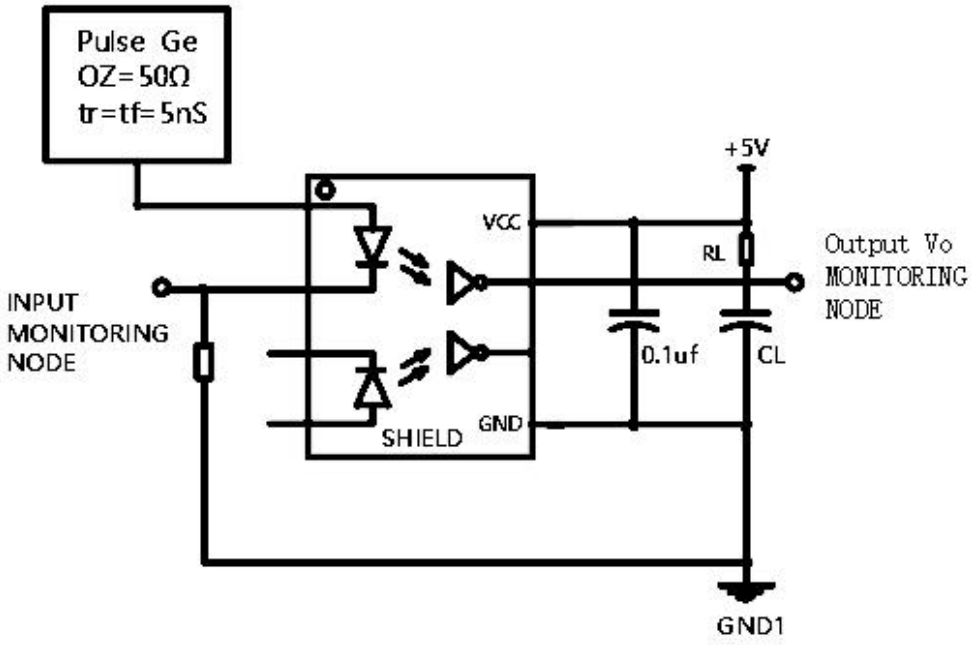
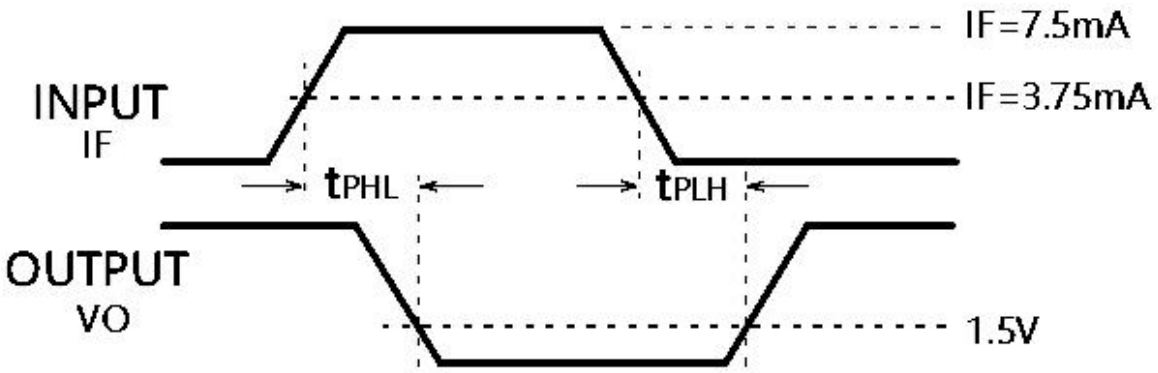


Fig.11 High-level output current vs.Ambient temperature

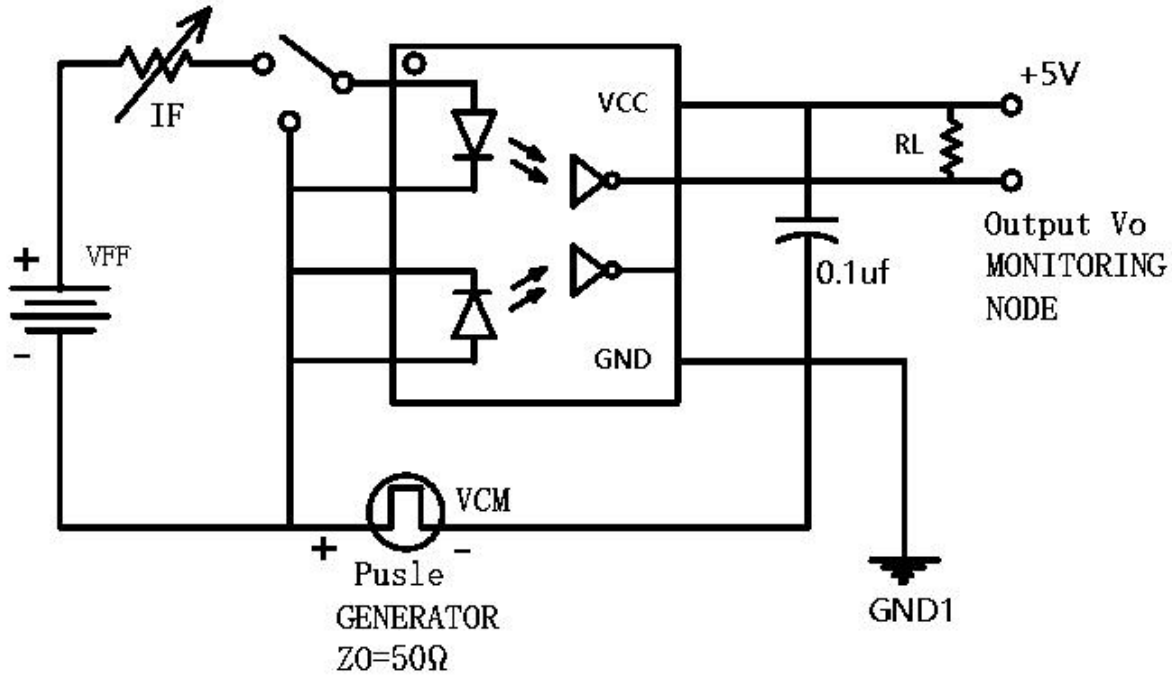


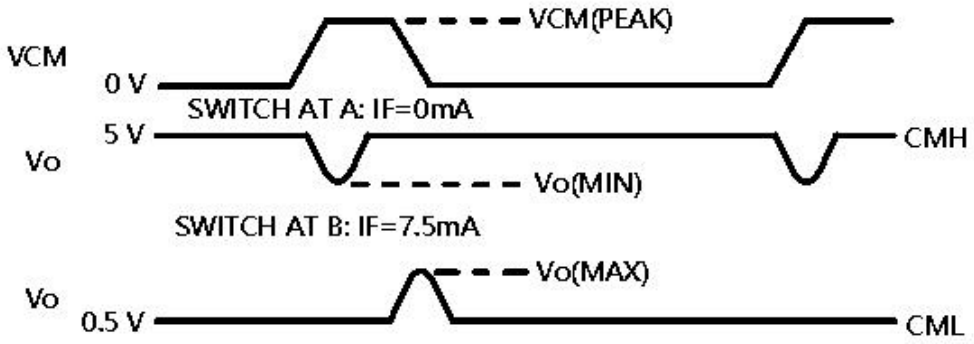
◆ **传输延迟时间测试电路 Test Circuit for Propagation Delay Time**



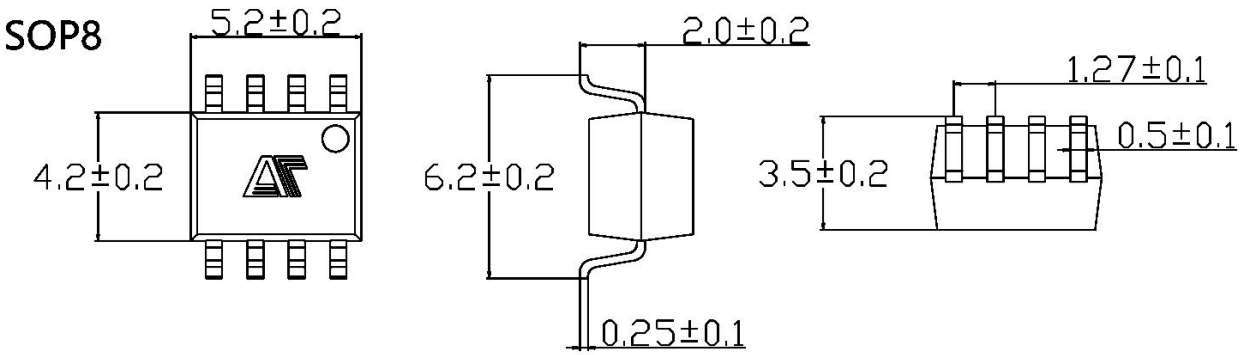


◆ **CMR 测试电路 Test Circuit for Common Mode Transient Immunity**

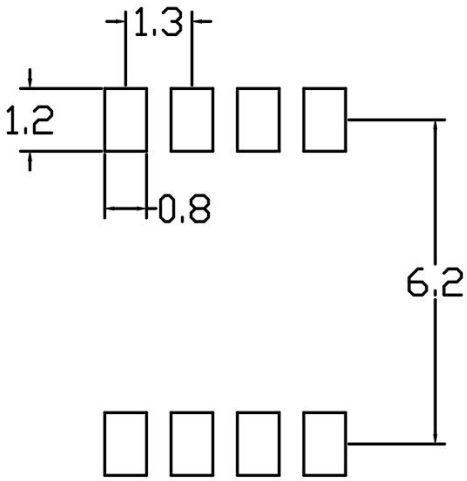




◆ 外形尺寸Overall dimension



推荐焊盘：
Recommended



单位：mm

◆ 产品型号命名规则 Order code

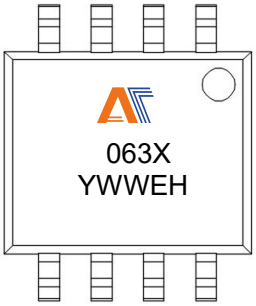
AT 063 X-UN Y-W(V)(ZZ)

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 公司代码 Company Code (AT: 奥特 Aote)
② 产品系列 Product Series (063X)
③ 产品序列号 serial number (0,1,2)
④ 框架类型 Lead Frame (Cu: 铜框架 Copper)
⑤ 树脂类型 Epoxy Type (H: 无卤 Halogen-free)
⑥ 封装形式 Package (S: SOP)
⑦ 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)
⑧ 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
- 印字中的“X”代表产品型号数字： 0、1 或空白
  “X”denotes the classification： 0、1 or None
- 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

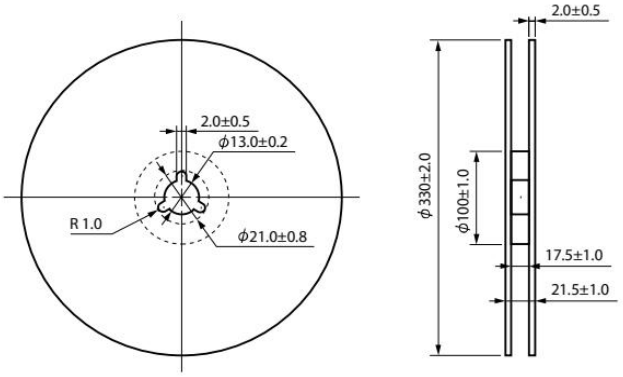


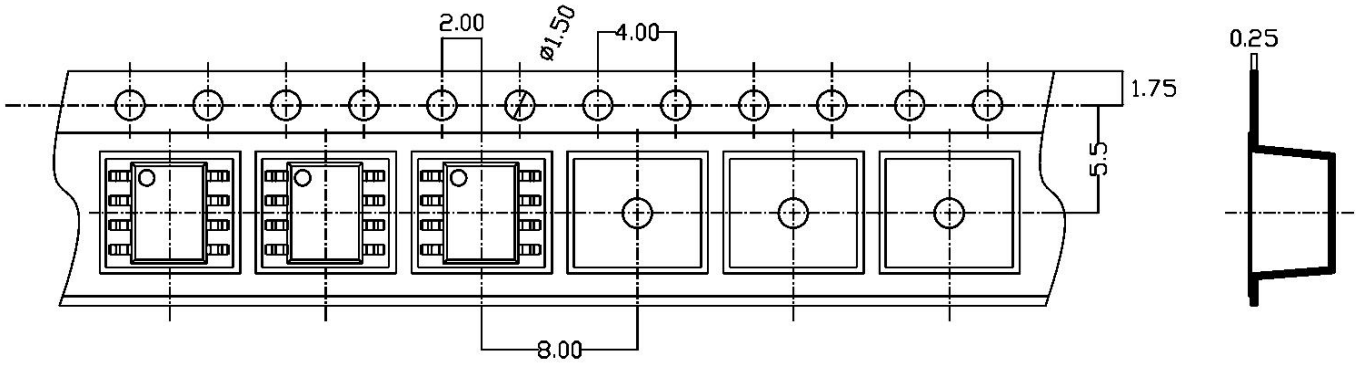
◆ 包装packing

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
SOP8	编带 (ϕ330mm 蓝盘)	2k /盘	2 盘/盒	10 盒/箱	450*390*0.1mm	340*60*340mm	620*360*365mm	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**
SOP8	Reel (ϕ330mm Blue)	2k pcs/reel	2 reels /box	10 boxes /ctn	450*390*0.1mm	340*60*340mm	620*360*365mm	Guard band 200mm min.

• 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: 2reels/box
4) 示意图 Schematic:



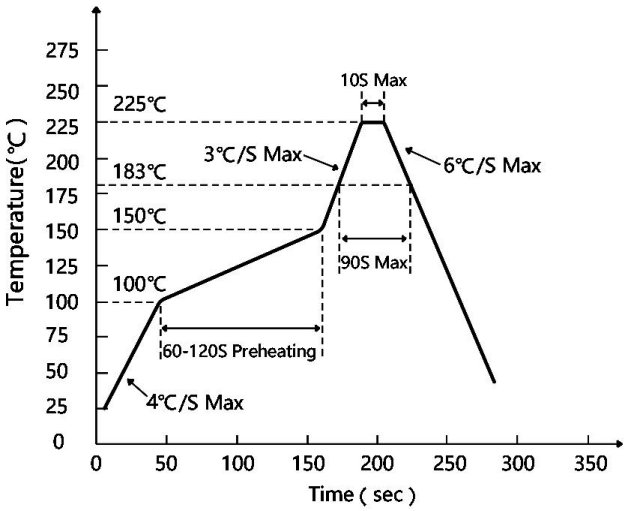


单位：mm

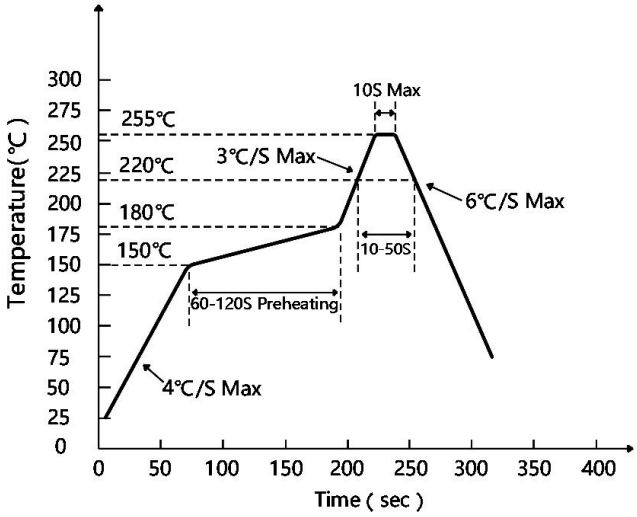
◆ 可靠性测试 Reliability Test Items And Conditions

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

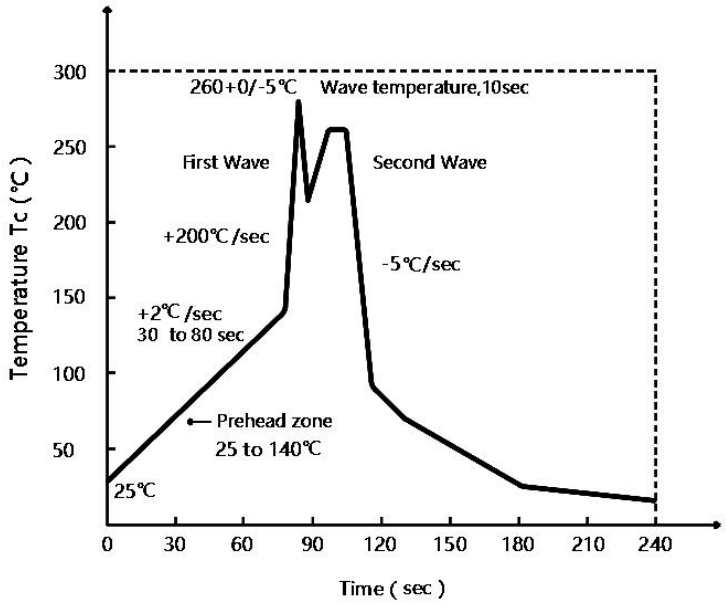


有铅制程 Lead Process



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: