

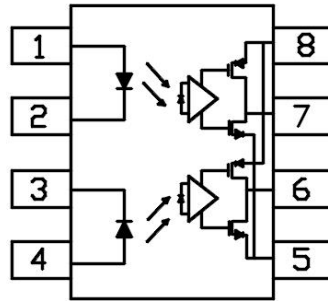
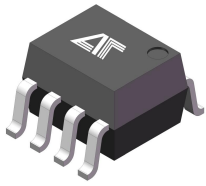
高速光耦
High speed optocoupler

AT074L

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

AT074L 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。

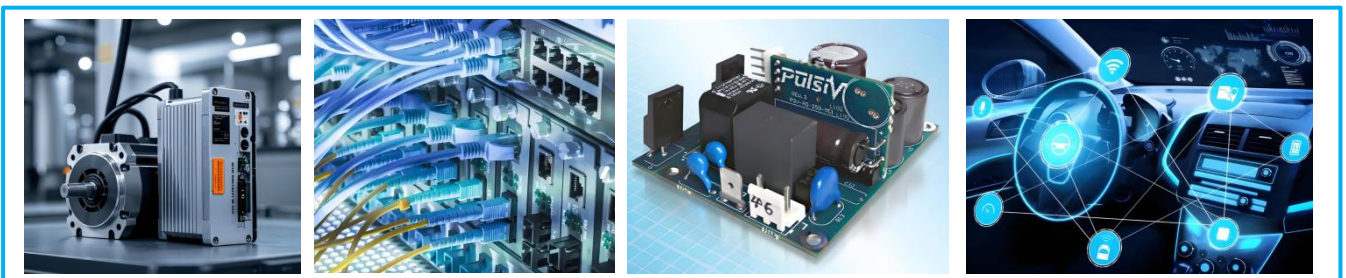
The AT074L optocoupler adopts high-efficiency photoelectric conversion technology and advanced packaging processes, providing reliable input-output isolation. It supports package types (SOP8) to meet diverse application requirements.

◆ 产品特征 Product features

- 输入-输出隔离电压 $V_{ios}=3750V_{rms}$
Input output isolation voltage: $V_{ios}=3750 V_{rms}$
- 高传输比特率: 15MBit/s; High transmission ratio 15MBit/s;
- 输出高电平共模瞬态抑制 10KV/US; Common Mode Transient Immunity at High Output Level 10KV/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°C)

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
	功耗 Power Dissipation	PI	70	mW
接收端 Output	电源电压 Supply Voltage	VCC	6	V
	输出电流 Output Current	IO	10	mA
	输出电压 Output Voltage	VDD	VDD+0.5	V
	输出功率 Collector Output	PO	100	mW
隔离电压 Isolation Voltage		Viso	3750	Vrms
工作温度 Operating Temperature		Topr	-55 ~ +110	°C
存储温度 Storage Temperature		Tstg	-55 ~ +125	°C
焊接温度 Soldering Temperature		Tsol	260	°C

◆ 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
输入电流(ON) Input Current (ON)	IF	12	18	mA
电源电压 Power Supply Voltage	VDD	4.5	5.5	V
		3	3.6	V
电压转化速率 Supply Voltage Slew Rate	SR	0.5	500	V/ms

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

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 =14mA	1.3	1.5	1.8	V
	反向击穿电压 Reverse Breakdown Voltage	BVR	IR =10μA	5	-	-	V
接收端 Output	高电平输出电压 High Level Output Voltage	VOH	IF= 0, IO=-4mA, VDD=5V	VDD-1	VDD-0.2	-	V
	低电平输出电压 Low Level Output Voltage	VOL	IF=14mA, IO= 4mA, VDD=5V	-	0.2	0.8	V
	输入阈值电流 Input Threshold Current	ITH	IOL= 20μA	-	8.8	10	mA
	高电平电源电流 High Output Supply Current	IDDH	IF= 0mA	-	7.6	12	mA
	低电平电源电流 Low Output Supply Current	IDDL	IF= 14mA	-	8.3	12	mA
传输特性 Transport characteristics	逻辑高电平传播延迟 Propagation Delay Time to Logic High Output Level	TPLH	IF=14mA,CL=15pF VDD=5V	-	-	50	ns
	逻辑低电平传播延迟 Propagation Delay Time to Logic Low Output Level	TPHL	IF =14mA,CL =15 pF, VDD=5V	-	-	50	ns
	脉冲宽度 Pulse Width	Tpw	-	66.7	-	-	ns
	脉宽失真 Pulse Width Distortion	TPLH- TPHL	IF =14mA,CL =15 pF, VDD=5V	-	-	30	ns
	上升时间 Rise Time	Tr	IF =14mA,CL=15 pF	-	20	-	ns
	下降时间 Fall Time	Tf	IF =14mA,CL=15 pF	-	25	-	ns
	传输延迟差 Propagation Delay Skew	TPSK	IF =14mA,CL=15 pF	-	-	30	ns
	输出高电平共模抑制 Logic High Common Mode Transient Immunity	CMH	IF =0mA TA =25°C, VCM =1kV	10	15	-	kV/us
	输出低电平共模抑制 Logic Low Common Mode Transient Immunity	CML	IF=14mA TA =25°C, VCM =1kV	10	15	-	kV/us
隔离电阻 Isolation resistance	RI-O	VI-I =500V, 40 ~60%R.H.	-	10 ¹²	-	Ω	
隔离电容 Isolation Capacitance	CI-O	V=0,F =1MHz	-	0.6	-	pf	

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

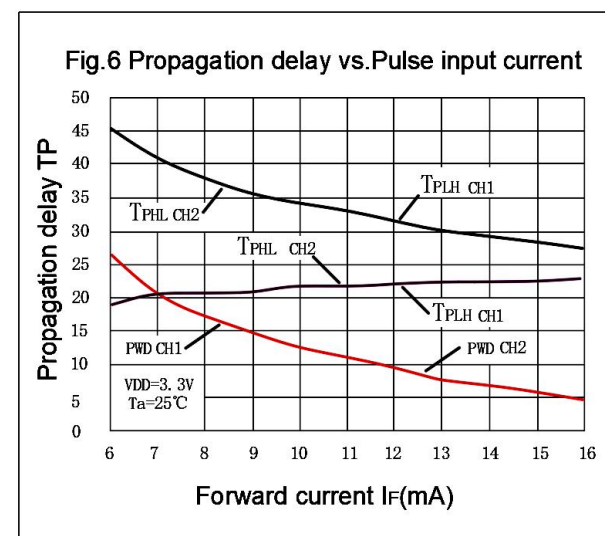
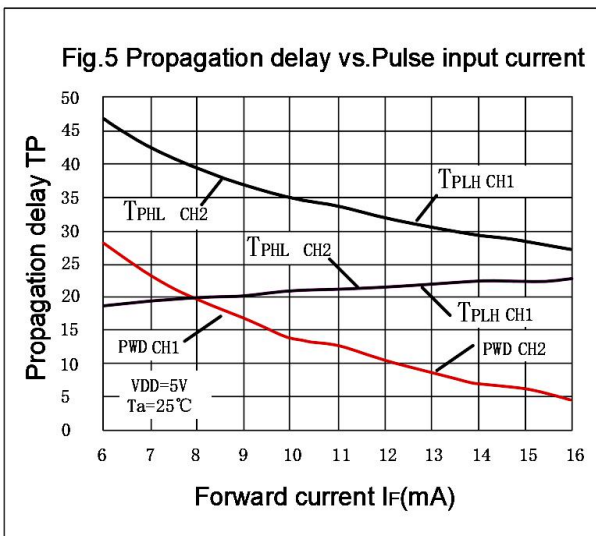
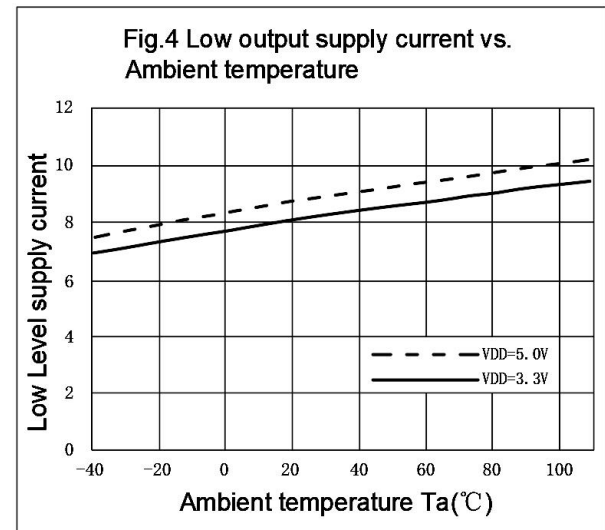
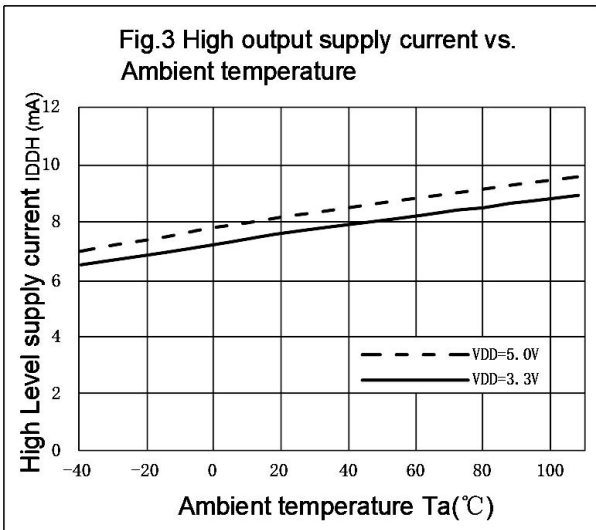
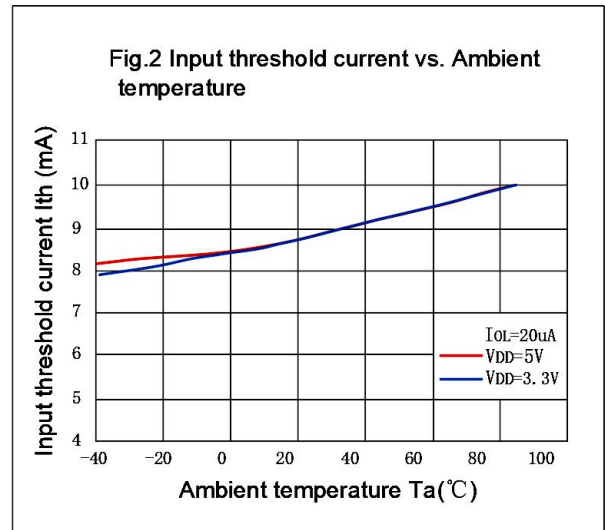
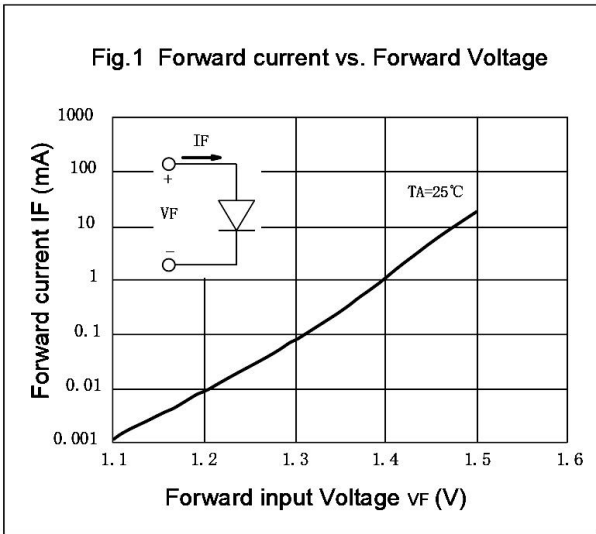


Fig.7 Forward voltage vs. Ambient temperature

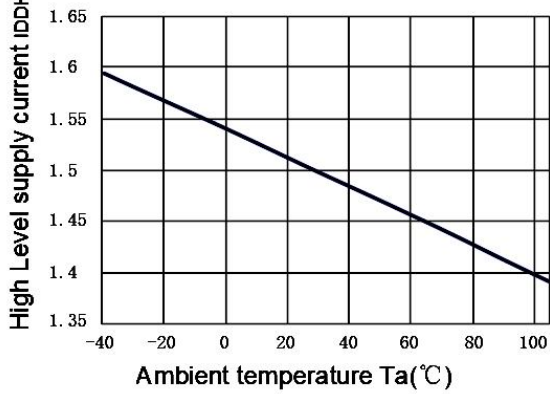


Fig.8 Propagation delay vs. Ambient temperature

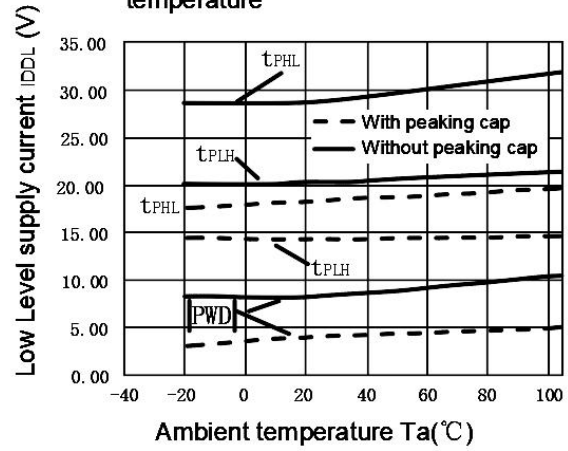
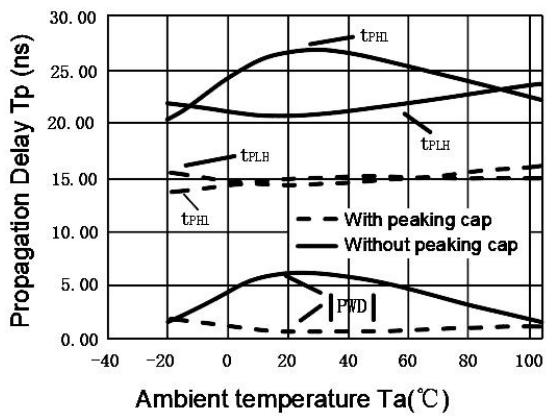


Fig.9 Propagation delay vs. Ambient temperature



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

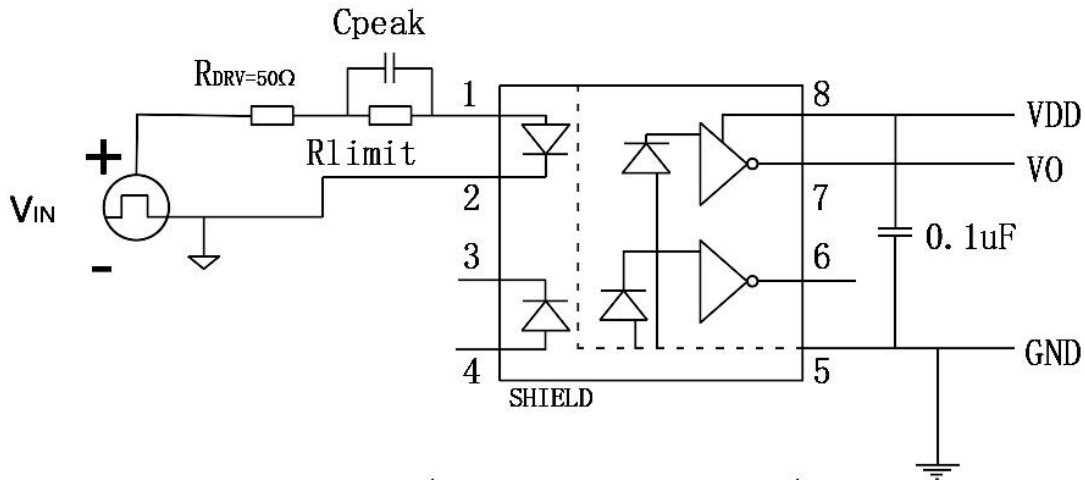
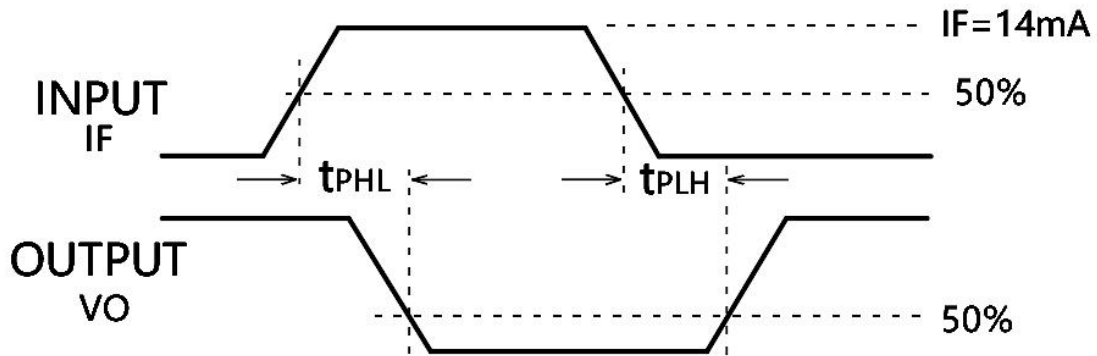
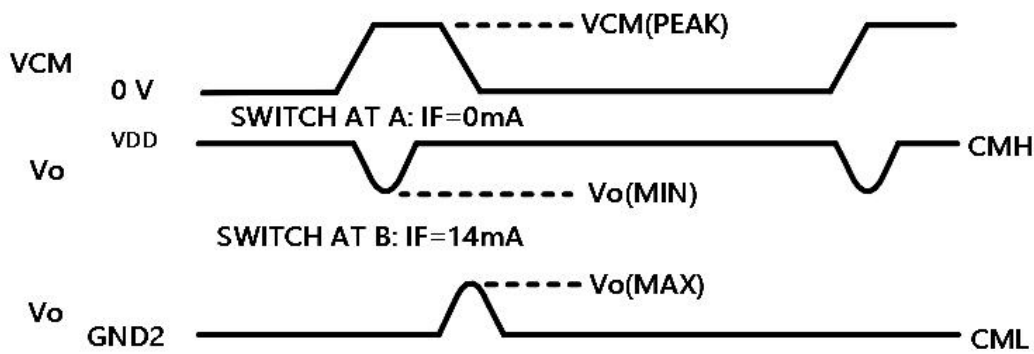
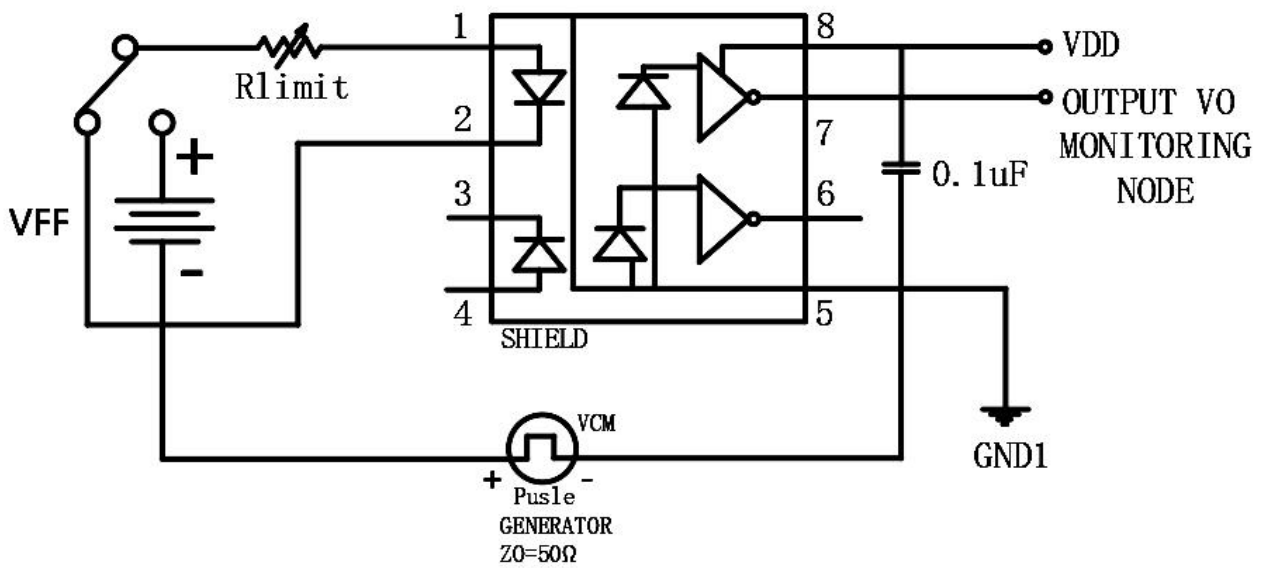


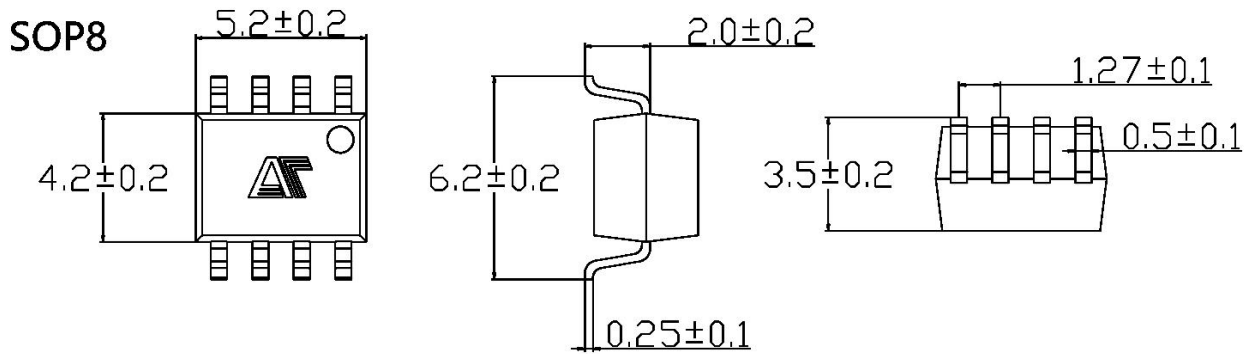
Fig. 10 VDD=3.3V/5V Cpeak=100pF Rlimit=80Ω/210Ω



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

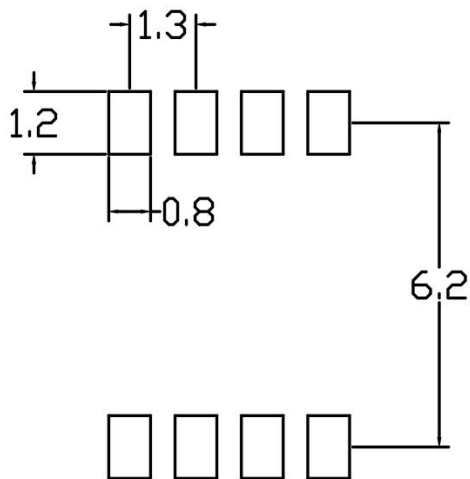


◆ 外形尺寸Overall dimension



推荐焊盘:

Recommended



单位: mm



◆ 产品型号命名规则 Order code

AT 074L-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 (074L)
- 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 (S: SOP)
- 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

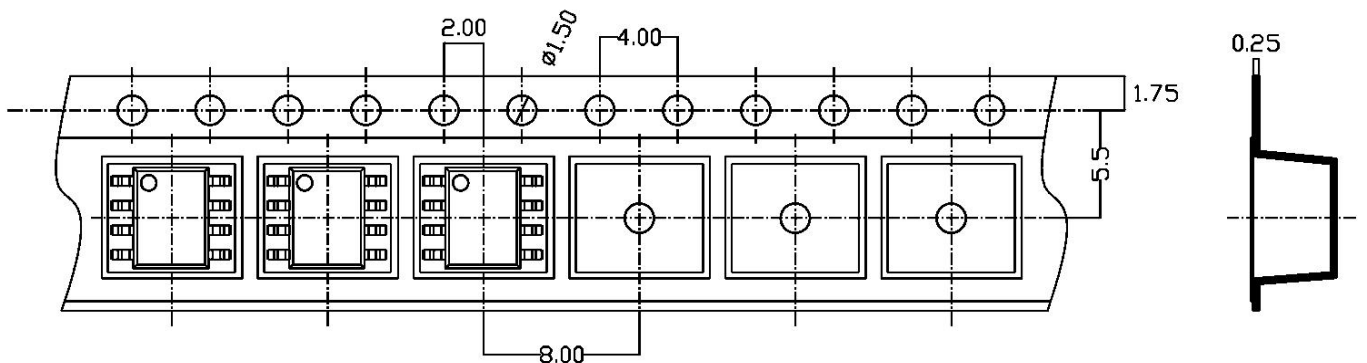
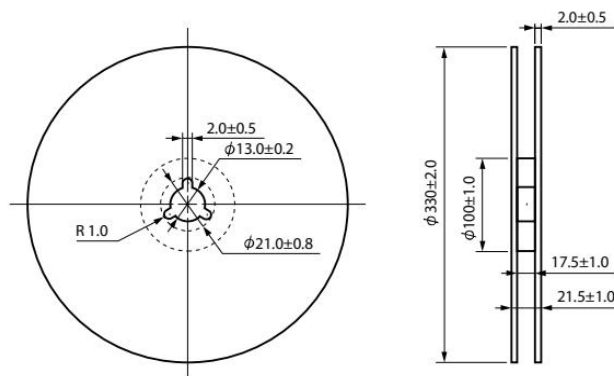


◆ **包装packing**

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
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:

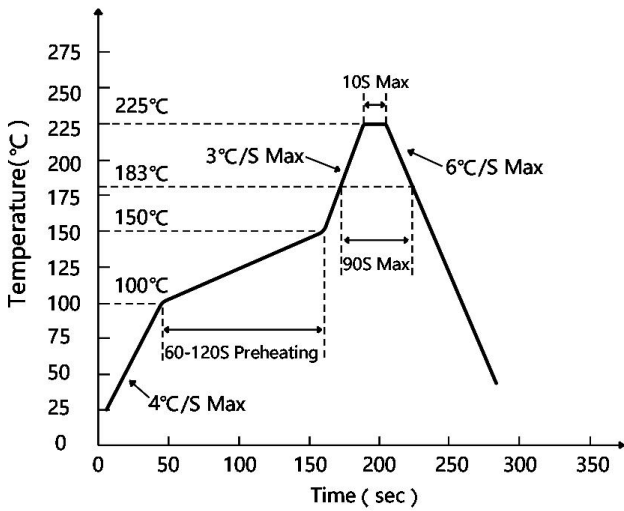


单位: mm

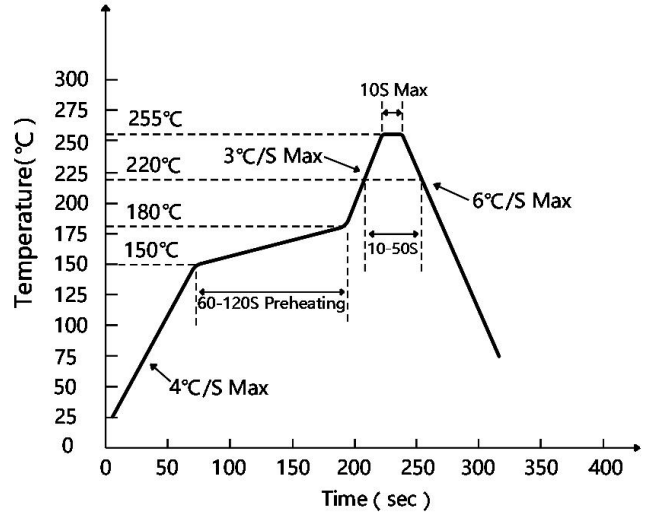
◆ 可靠性测试 Reliability Test Items And Conditions

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) °C, t=5s;	1 次1 times	22	0/22
耐焊接热 Resistance to Soldering Heat	JESD22-A106	Tsol= (260±5) °C, t=10s	3 次3 times	22	0/22
静电放电 ESD-HBM	JESD22-A114	Ta=25°C, 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°C	1000h	22	0/22
低温贮存 Low Temperature Storage	JESD22-A119	Ta= -55°C	1000h	22	0/22
冷热冲击 Thermal Shock	JESD22-A104	-55°C(15min)←→ 125°C(15min)	循环 300 次 300 cycles	22	0/22
常温寿命试验 Lifespan Test	JESD22-A108	Ta=25°C, IF=50mA , Vcc=5V	1000h	22	0/22
高温寿命试验 DC Operating Life	JESD22-A108	Ta=110°C, IF=20mA , Vcc=5V	1000h	76	0/76
高温高湿偏压 High Temperature High Humidity bias Voltage	JESD22-A101	Ta =85°C , RH=85% IF=0mA , VCE=64V	1000h	22	0/22
高温偏压 High Temperature bias Voltage	JESD22-A108	Ta =110°C , IF=0mA , VCE=80V	1000h	22	0/22
高压蒸汽试验 High pressure steam test	JESD22-A102	P=15PSIG , 121°C, 100%RH	96h	22	0/22

◆ **回流焊温度曲线图 Solder Reflow Profile**

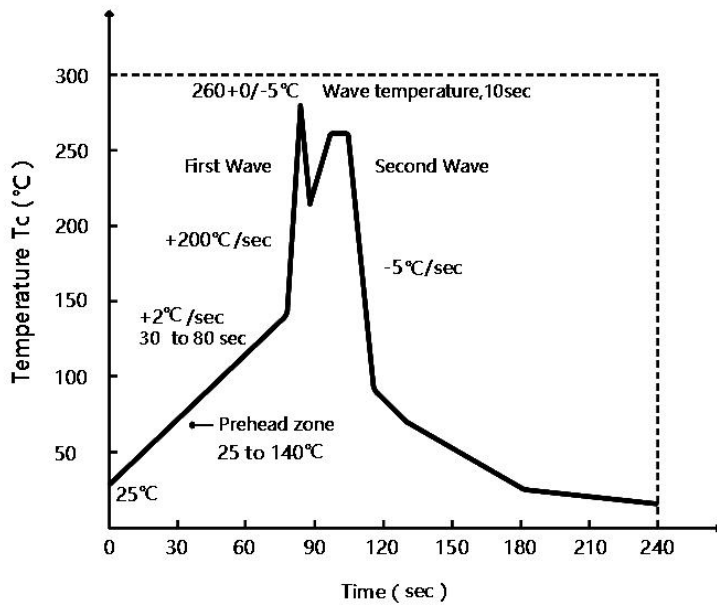


有铅制程 Lead Process



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°C ± 5°C, 时间 ≤ 3s.

Hand soldering iron requirements: Temperature: 350°C ± 5°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: