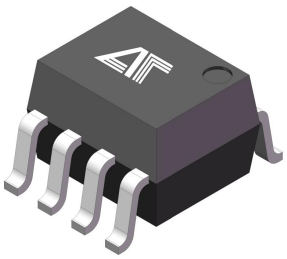
AOTE
SEMICONDUCTOR



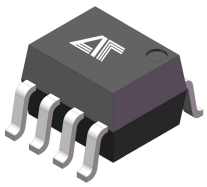
高速光耦
High speed optocoupler

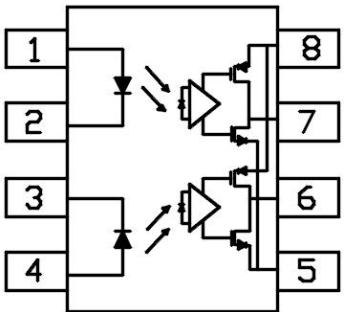
AT075L

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

AT075L 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 AT075L 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.

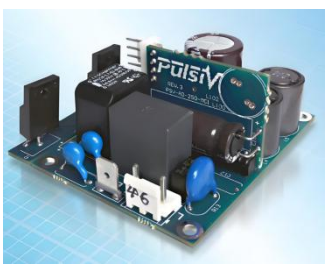
◆ 产品特征Product features

- 输入-输出隔离电压Vios=3750Vrms
  Input output isolation voltage：Vios=3750 Vrms
- 高传输比特率：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℃)

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	℃
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
开启电流 Forward Input Current (ON)	IF(ON)	9	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	S_R	0.5	500	V/ms

◆ 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 =14mA	1.3	1.5	1.8	V
	反向击穿电压 Reverse Breakdown Voltage	BVR	IR =10μA	5	35	-	V
接收端 Output	高电平输出电压 High Level Output Voltage	VOH	IF = 0, IO = -4 mA, VDD=5V	VDD-1	4.85	-	V
	低电平输出电压 Low Level Output Voltage	VOL	IF = 14mA, IO = 4mA, VDD=5V	-	0.07	0.8	V
	输入阈值电流 Input Threshold Current	ITH	IOL = 20 μA	-	3	5	mA
	高电平电源电流 High Output Supply Current	IDDH	IF = 0	-	9.4	12	mA
	低电平电源电流 Low Output Supply Current	IDDL	IF = 14 mA	-	9.05	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	-	-	80	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	-	-	80	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	-	-	40	ns
	上升时间 Rise Time	Tr	IF =14mA,CL=15 pF	-	6	-	ns
	下降时间 Fall Time	Tf	IF =14mA,CL=15 pF	-	4	-	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℃, |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℃, |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(Ta =25℃)

Fig.1 Forward current vs. Forward Voltage

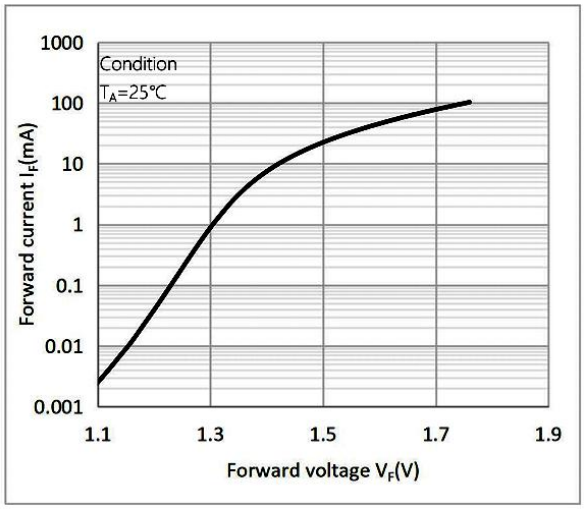


Fig.2 Input threshold current vs. Ambient temperature

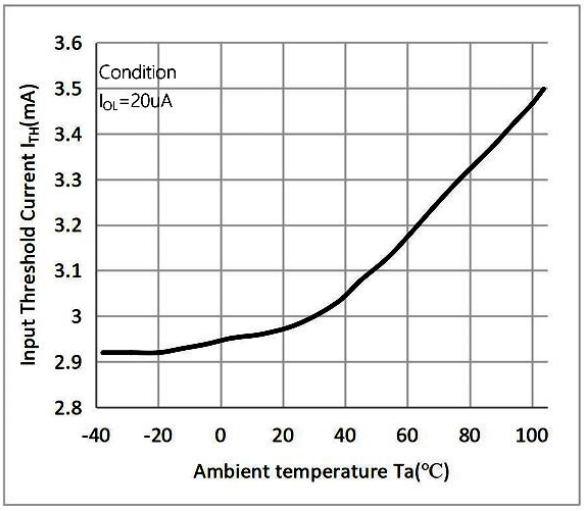


Fig.3 High output supply current vs. Ambient temperature

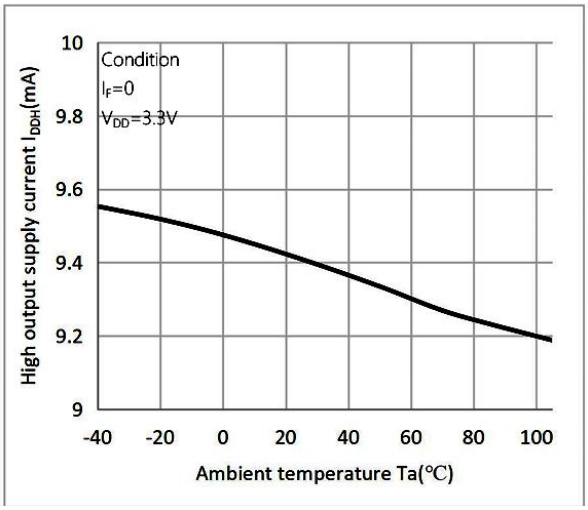


Fig.4 Low output supply current vs. Ambient temperature

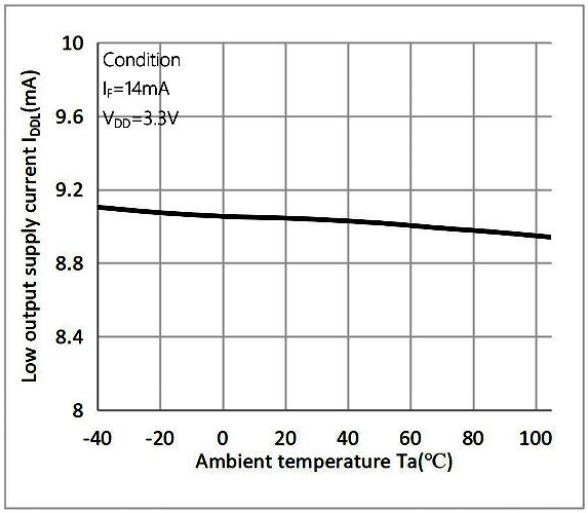


Fig.5 Propagation delay vs. Pulse input current

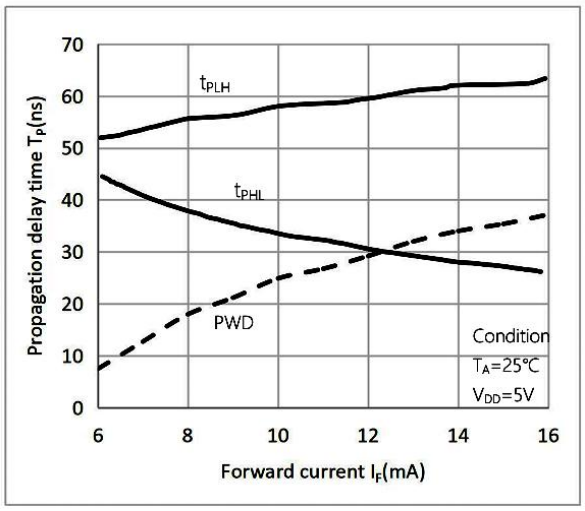


Fig.6 Propagation delay vs. Pulse input current

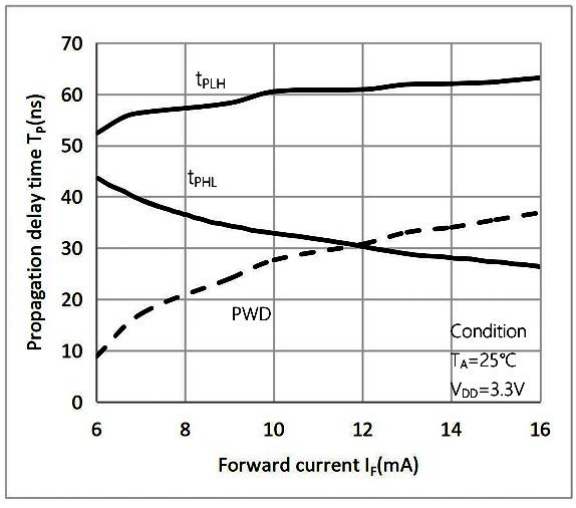


Fig.7 Forward voltage vs. Ambient temperature

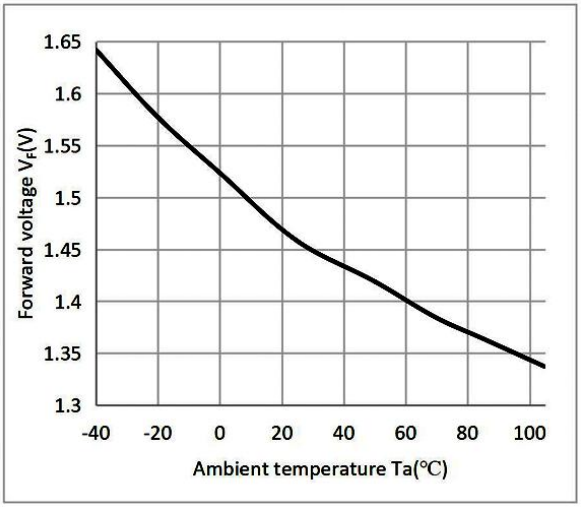


Fig.8 Propagation delay vs. Ambient temperature

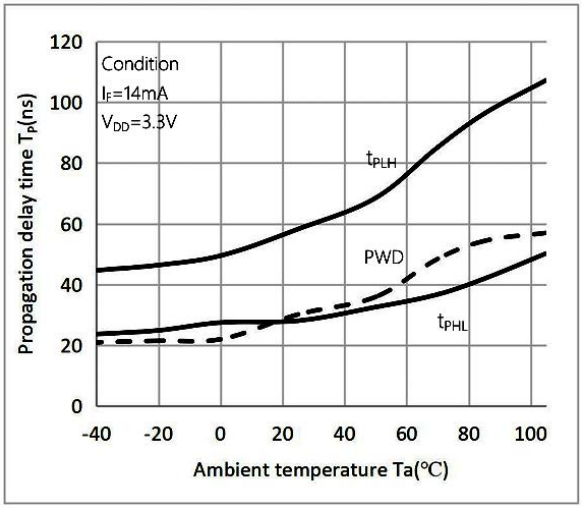
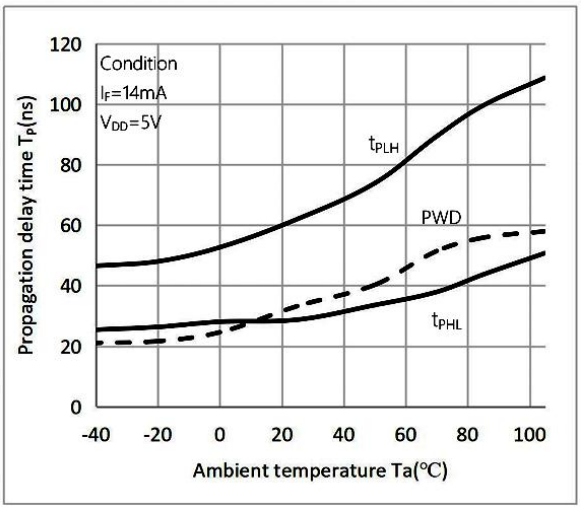


Fig.9 Propagation delay vs. Ambient temperature



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

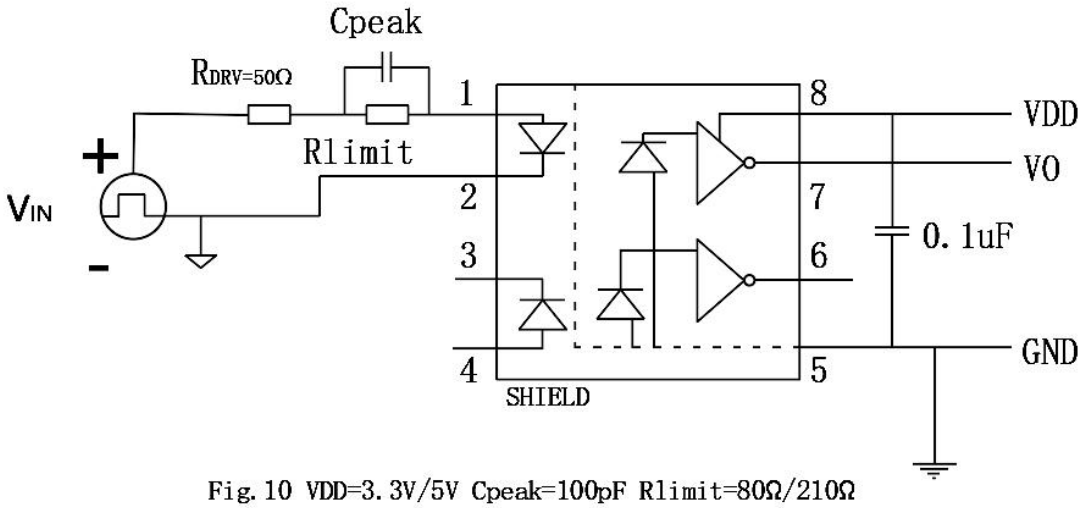
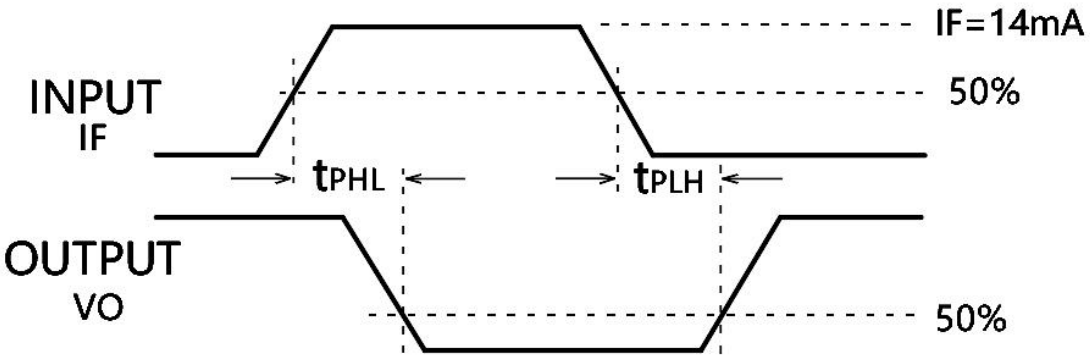
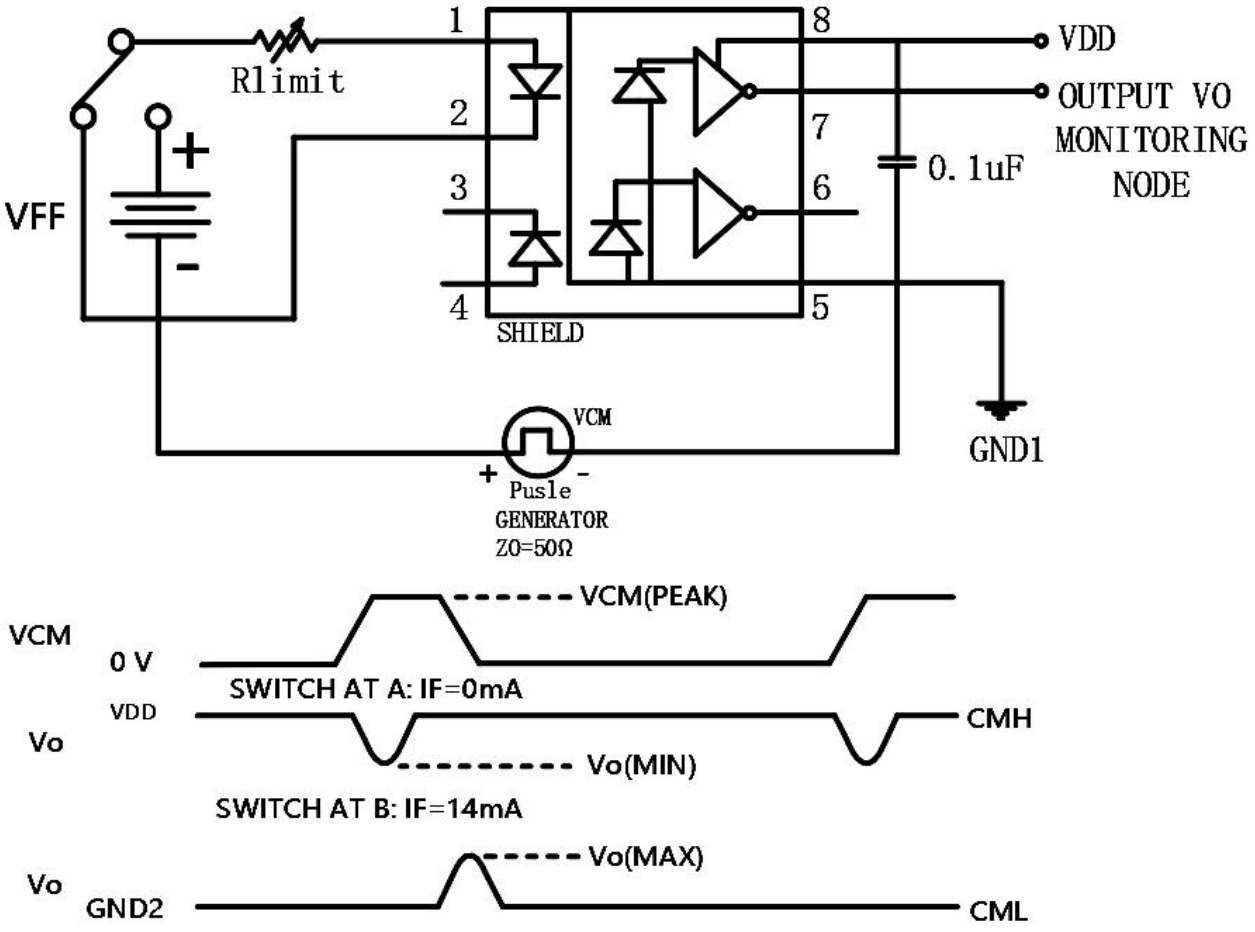


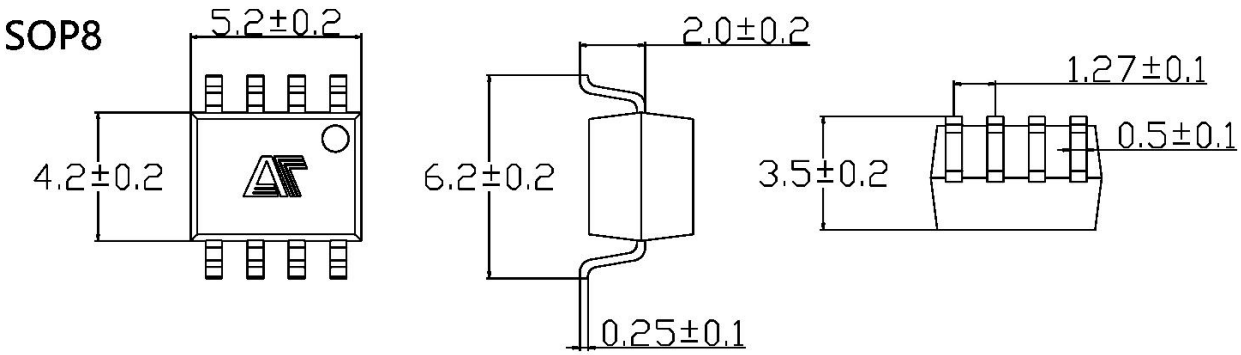
Fig.10 VDD=3.3V/5V Cpeak=100pF Rlimit=80Ω/210Ω



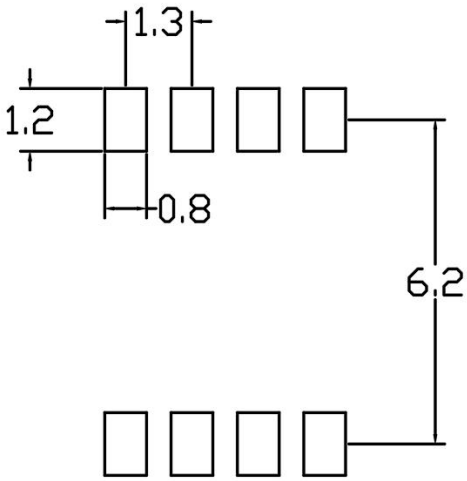
◆ **CMR 测试电路 Test Circuit for Common Mode Transient Immunity**



◆ 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 075L-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 (075L)
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

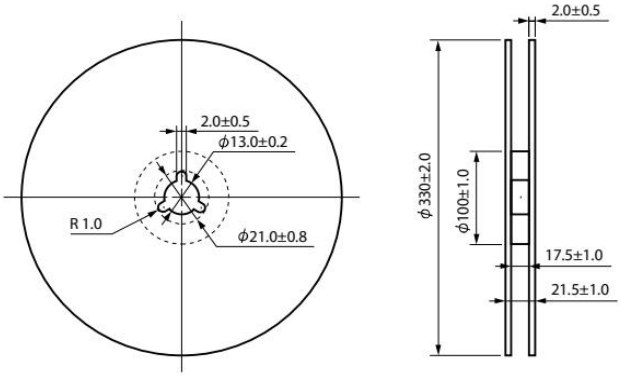
- 印字中“ ”为奥特品牌LOGO
  “ ” denotes LOGO
- 印字中“Y”代表年份； A(2018),B(2019),C(2020) … …
  “Y” denotes YEAR： A(2018), B(2019), C(2020) … …
- 印字中“WW”代表周号
  “WW” denotes Week’ s number
- 印字中“ E”代表内部代码
  “E” denotes Internal code
- 印字中的“H”代表无卤
  “H” denotes Halogen-free

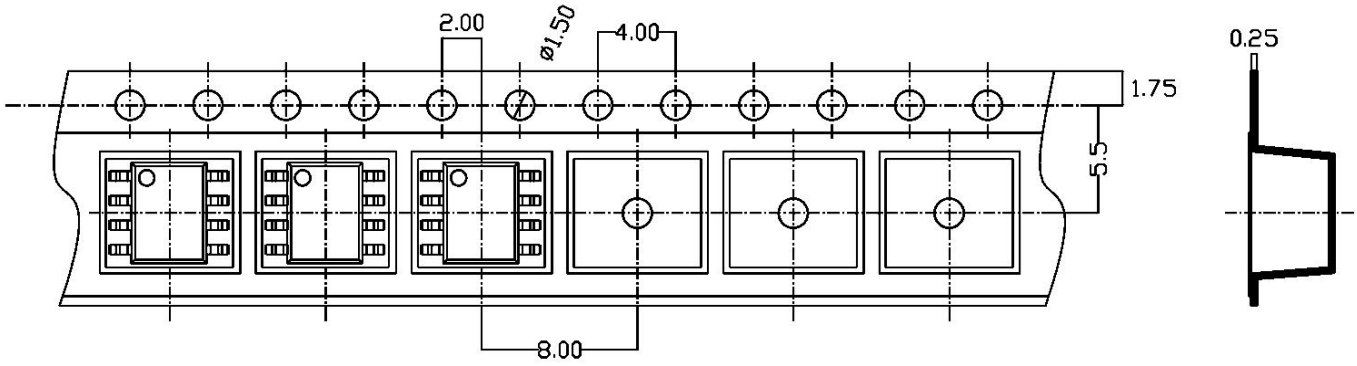
◆ 包装packing

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：



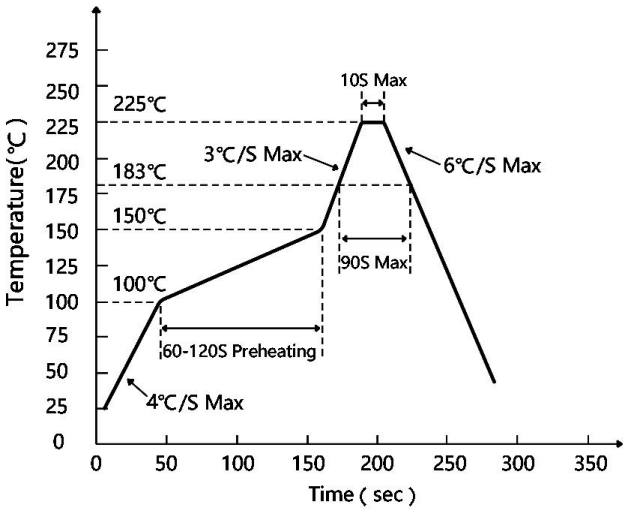


单位：mm

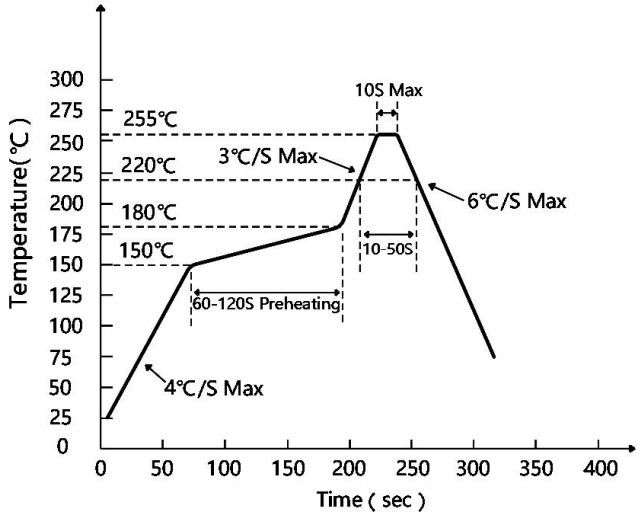
◆ 可靠性测试 Reliability Test Items And Conditions

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）℃, 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

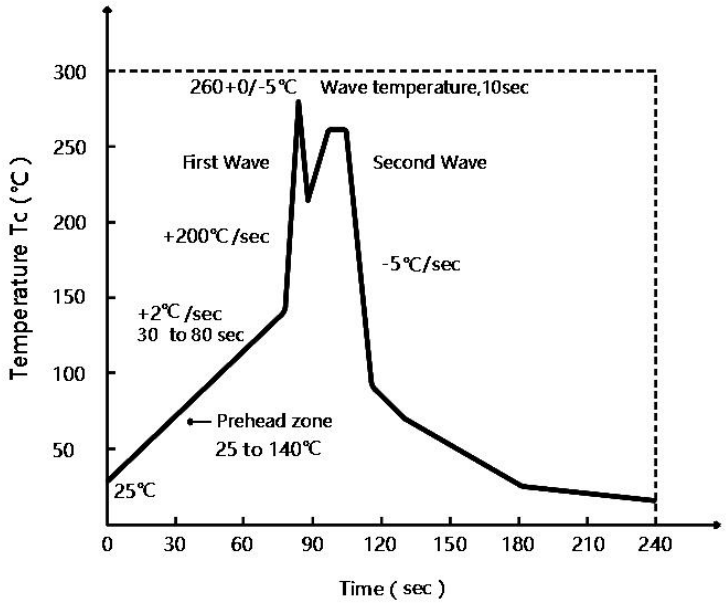


有铅制程 Lead Process



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: