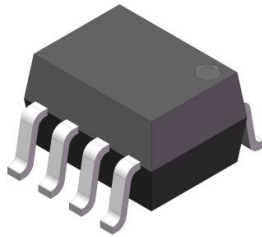
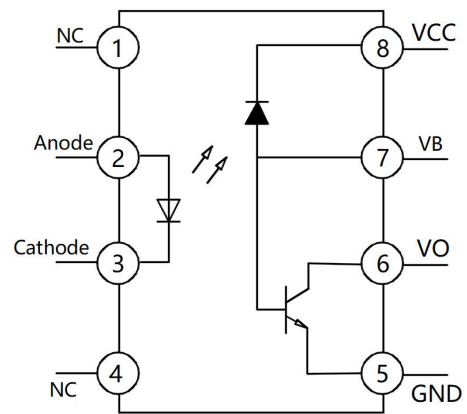


XL050L

Product packaging logic diagram



SOP8



Pin Configuration

Features

- Very high speed: 1 MBit/s
- High isolation voltage between input and output ($V_{iso} = 3750V$ rms)
- Operating Temperature: $-40^{\circ}C \sim 85^{\circ}C$
- Logic gate output
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: SOP8
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- Widely used in communications and networking, industrial automation and control, motor drive and energy management, medical equipment, and automotive electronics fields.
- Communications and Networking: Fiber optic communication, data center.
- Industrial Automation and Control: PLC and frequency converter, Servo drive system, Industrial robot.
- Motor Drive and Energy Management: Motor control, Motor protection, Power electronics, Consumer Electronics.
- Emerging Technology Fields: Intelligent Transportation System, Medical equipment, Automatic production line.
- Automotive Electronics: In-vehicle Network System, Battery Management System (BMS), EV Charging Station.



XL050L

Ordering Information

XL 050L (X) (X) (X) - (U) (N) (Y)

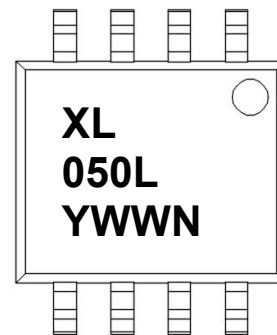
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Brand (XL)
- ② Product series (050L)
- ③ Package type (None: SOP8)
- ④ Halogen)option (None : Halogen free
- ⑤ CTR Bank (None)
- ⑥ Lead frame (None: Copper)
- ⑦ Customer option 1 (0-9 or A- Z or none)
- ⑧ Customer option 2 (0-9 or A- Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XL050L	SOP8	1000pcs / Tape & Reel	XL050L

Marking Information

- " XL" denotes brand
- " 050 L" denotes Product series.
- " Y" denotes Year : A(2024), B(2025), C(2026)
- " WW" denotes Week' s number
- " N" denotes the day of Week.



XL050L

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Input	DC/Average Forward Input Current	IF	50	mA
	Peak Transient Input Current (≤1 μs P.W., 300 pps)	IF (trans)	1	A
	Reverse Voltage	VR	5	V
	Power Dissipation	Pd	45	mW
Output	Supply Voltage	VCC	-0.5 ~ 7.0	V
	Average Output Current	IO	8	mA
	Peak Output Current	IO (pk)	16	mA
	Output Voltage	VO	-0.5 ~ 7.0	V
	Emitter-Base Reverse Voltage	VEBR	5	V
	Base Current	IB	5	mA
	Collector Output Power Dissipation	PO	85	mW

Thermal Characteristics

Parameter	Symbol	Value	Unit
Isolation Voltage *2	V _{ISO}	3750	V _{rms}
Operating Temperature	T _{OPR}	-40 ~ +85	°C
Storage Temperature Range	T _{STG}	-55 ~ +125	°C
Soldering Temperature *3	T _{SOL}	260	°C

Notes:

1. Pulse width ≤ 1 μs, Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

XL050L

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	VF	IF = 10mA	-	1.45	1.7	V
			IF = 16mA	-	-	1.8	
	Reverse Breakdown Voltage	BVR	IR=10μA	5	-	-	V
Output	High Level Output Current	IOH	IF = 0 mA, VO = VCC=3.3 V & 5 V, TA = 25°C	-	0.001	1	μA
	High Level Supply Current	ICCH	IF = 0 mA, VO = Open, VCC= 3.3 V & 5 V, TA = 25°C	-	-	0.3	μA
	Low Level Supply Current	ICCL	IF = 16 mA, VO = Open, VCC = 3.3 V & 5 V	-	-	200	μA
Transfer Characteristics	Current Transfer Ratio(2)	CTR	IF = 16 mA, VO = 0.4 V, VCC = 3.3 V & 5 V, TA = 25°C	15	-	50	%
	Low Level Output Voltage	VOL	IF = 16 mA, IO = 3 mA, VCC= 3.3 V & 5 V, TA = 25°C	-	-	0.3	V
	Input-Output Insulation Leakage Current	I(I-O)	Relative humidity = 45%, TA = 25°C, t = 5 s, VI-O = 3000 VDC(6)	-	-	1.0	μA
	Isolation Resistance	RIO	VI-O = 500 VDC(6)	10 ¹¹	10 ¹²	-	Ω
	Floating Capacitance	CIO	f = 1 MHz(6)	-	0.2	-	pF

XL050L

Switching Characteristics (@ $T_A = -40^{\circ}\text{C} \sim 85^{\circ}\text{C}$, $V_{CC} = 5\text{V}$, $I_F = 7.5\text{mA}$, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Propagation Delay Time to Output Low Level	TPHL	$R_L = 1.9\text{ k}\Omega$, $I_F = 16\text{ mA}$ (3) (Figure 9)	-	300	-	ns
		$R_L = 1.9\text{ k}\Omega$, $I_F = 16\text{ mA}$ (3) (Figure 9) ($T_A = 25^{\circ}\text{C}$)	-	500	-	ns
Propagation Delay Time to Output HIGH Level	TPLH	$R_L = 1.9\text{ k}\Omega$, $I_F = 16\text{ mA}$ (3) (Figure 9)	-	300	-	ns
		$R_L = 1.9\text{ k}\Omega$, $I_F = 16\text{ mA}$ (3) (Figure 9) ($T_A = 25^{\circ}\text{C}$)	-	500	-	ns
Common Mode Transient Immunity (at Output HIGH Level)	CMH	$I_F = 0\text{ mA}$, $V_{CM} = 1,000\text{ VP-P}$, $R_L = 4.1\text{ k}\Omega$, $T_A = 25^{\circ}\text{C}$ (4)(5) (Figure 10)	5000	50000	-	V/us
		$I_F = 0\text{ mA}$, $V_{CM} = 1,000\text{ VP-P}$, $T_A = 25^{\circ}\text{C}$, $R_L = 1.9\text{ k}\Omega$ (3)(5) (Figure 10)	5000	50000	-	V/us
Common Mode Transient Immunity (at Output LOW Level)	CML	$I_F = 16\text{ mA}$, $V_{CM} = 1,000\text{ VP-P}$, $R_L = 4.1\text{ k}\Omega$, $T_A = 25^{\circ}\text{C}$ (4)(5) (Figure 10)	5000	50000	-	V/us
		$I_F = 16\text{ mA}$, $V_{CM} = 1,000\text{ VP-P}$, $R_L = 1.9\text{ k}\Omega$ (3)(5) (Figure 10)	5000	50000	-	V/us

Notes:

- The $1.9\text{ k}\Omega$ load represents 1 TTL unit load of 1.6 mA and $5.6\text{ k}\Omega$ pull-up resistor.
- The $4.1\text{ k}\Omega$ load represents 1 LSTTL unit load of 0.36 mA and $6.1\text{ k}\Omega$ pull-up resistor.
- Common mode transient immunity in logic high level is the maximum tolerable (positive) dV_{cm} / dt on the leading edge of the common mode pulse signal V_{CM} , to assure that the output will remain in a logic high state (i.e., $V_O > 2.0\text{ V}$). Common mode transient immunity in logic low level is the maximum tolerable (negative) dV_{cm} / dt on the trailing edge of the common mode pulse signal, V_{CM} , to assure that the output will remain in a logic low state (i.e., $V_O < 0.8\text{ V}$).
- Device is considered a two terminal device: pins 1, 2, 3 and 4 are shorted together and pins 5, 6, 7 and 8 are shorted together.

XL050L

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Figure 1. LED Forward Current vs. Forward Voltage

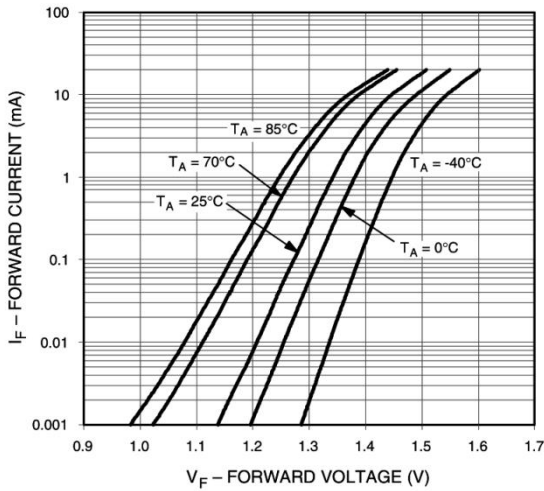


Figure 2. Current Transfer Ratio vs. Forward Current

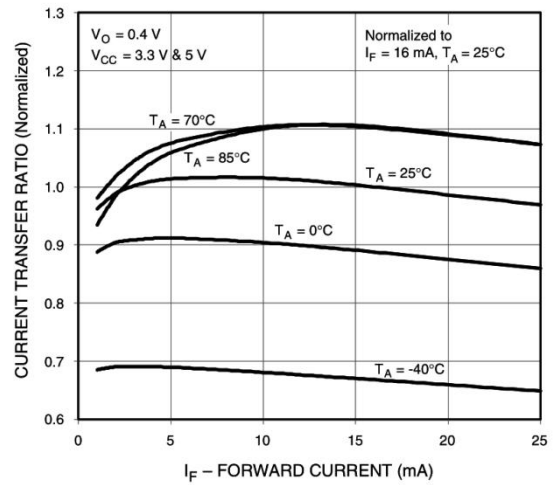


Figure 3. Current Transfer Ratio vs. Ambient Temperature

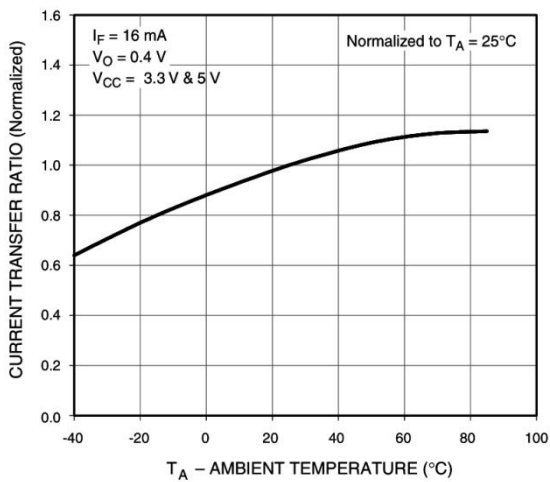


Figure 4. Output Current vs. Output Voltage

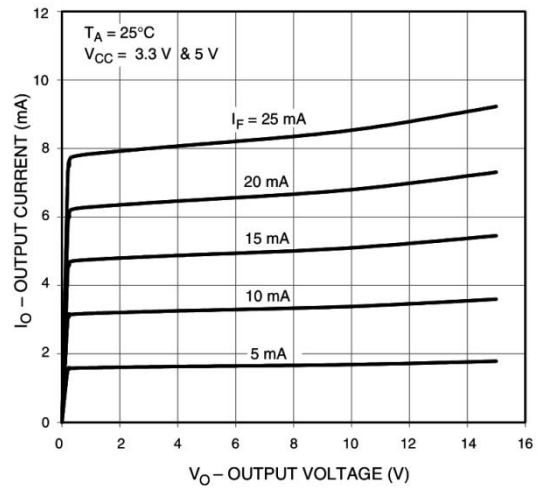


Figure 5. Logic High Output Current vs. Ambient Temperature

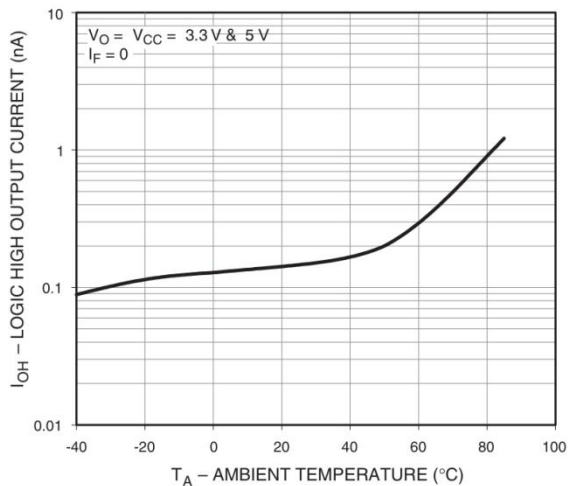
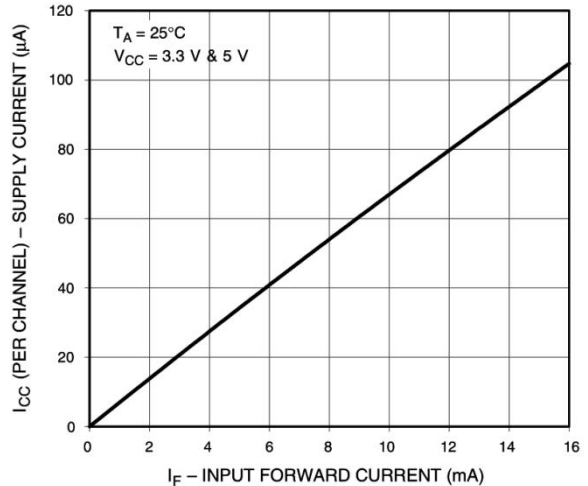


Figure 6. Supply Current vs. Input Forward Current



XL050L

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Figure 7. Propagation Delay vs. Ambient Temperature

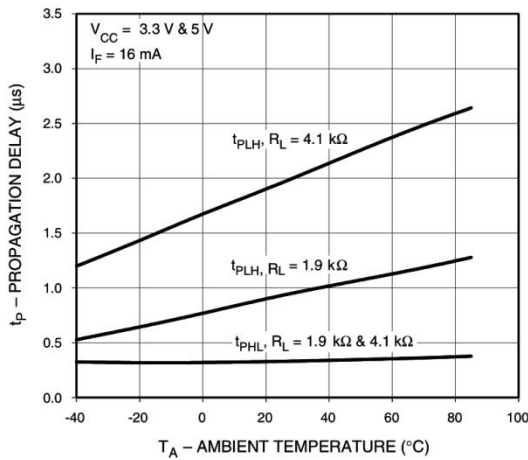


Figure 8. Propagation Delay vs. Load Resistance

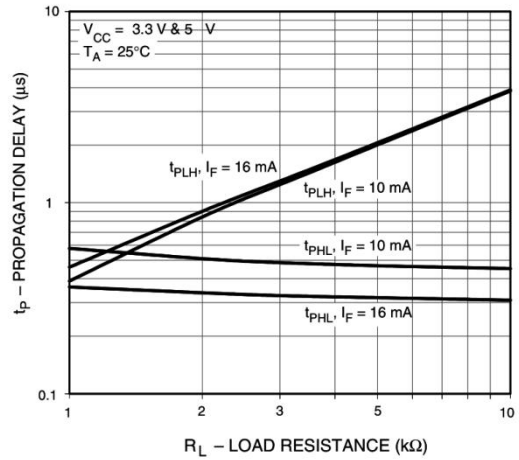
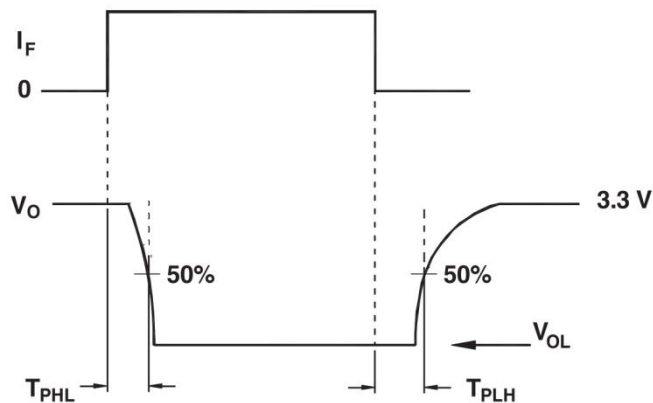
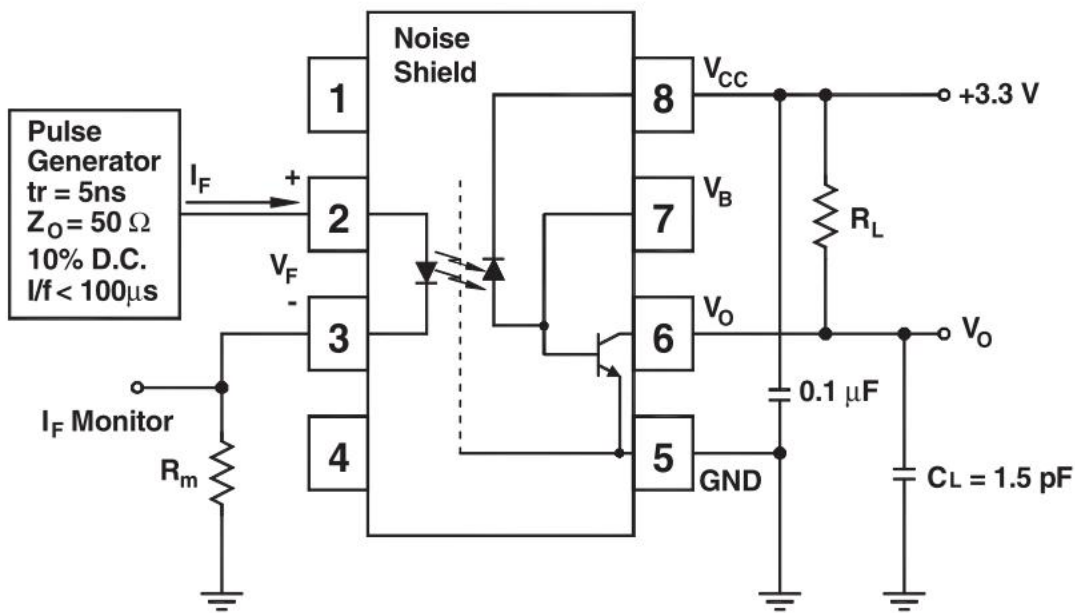
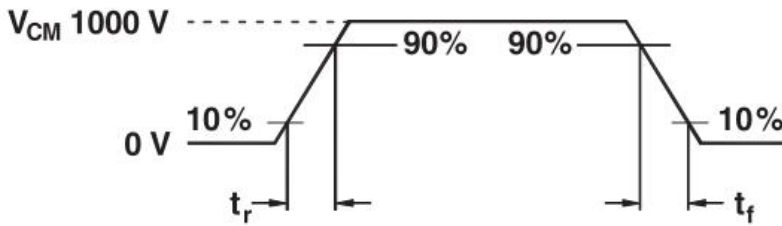
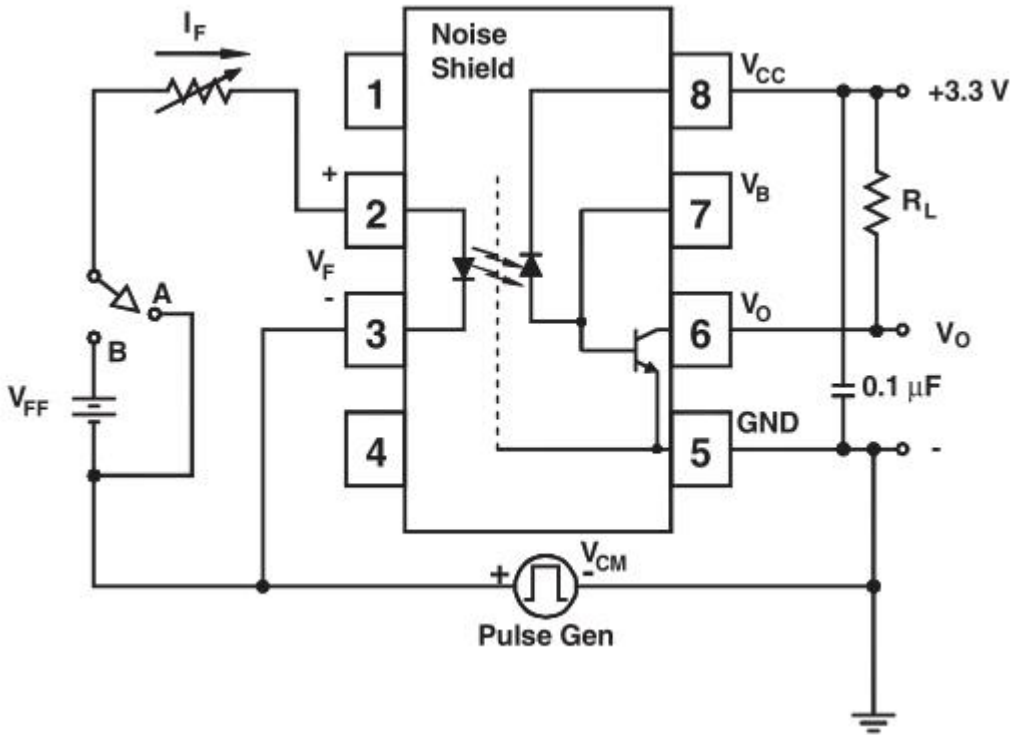


Figure 9. Switching Time Test Circuit



XL050L

Figure 10. Common Mode Immunity Test Circuit



Switch at A : $I_F = 0 \text{ mA}$

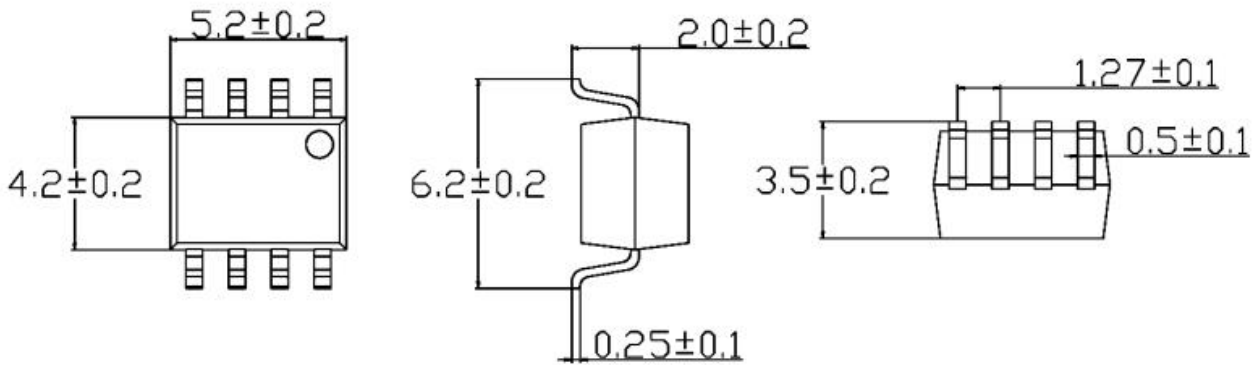


Switch at A : $I_F = 16 \text{ mA}$

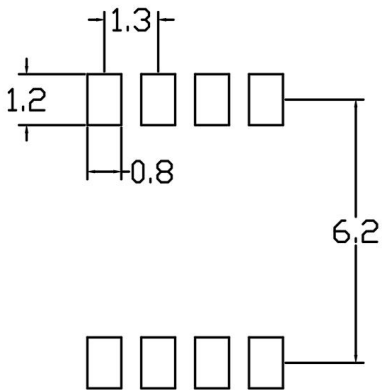
XL050L

Package Outline Dimensions (unit: mm)

SOP8

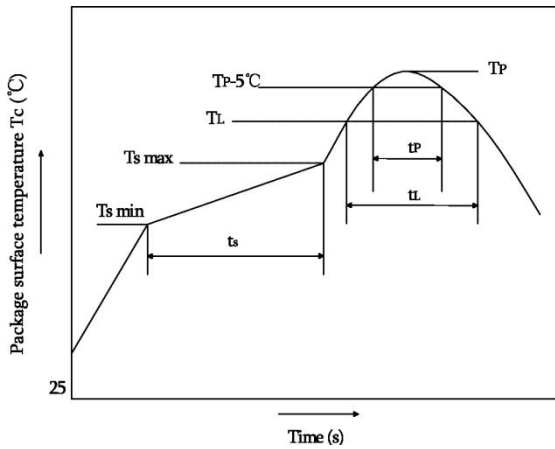


SOLDERING FOOTPRINT (unit: mm)



XL050L

Reflow soldering

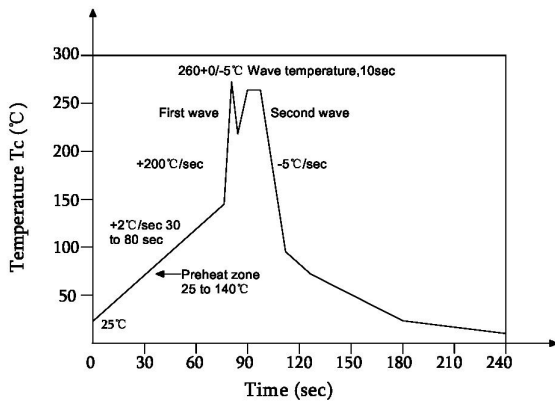


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(TL to TP)			3	°C/s
Liquidus temperature	TL	217		°C
Time above TL	tL	60	150	s
Peak temperature	Tp		260	°C
Time during which Tc is between (TP-5) and TP	tp		30	s
Ramp-down rate(TP to TL)			6	°C/s

Note:

Reflow soldering is recommended at the temperatures and times shown, no more than three times.

Wave soldering



Profile feature	
Average ramp-up rate	~200°C/s
Heating rate during preheat	1°C/s to 2°C/s typical; 4°C/s maximum
Final preheat temperature Ts	~130°C
Preheat time (25°C to Ts)	> 60s
Peak temperature Tp	260°C
Time within peak temperature tp	10s
Ramp-down rate	5°C/s maximum

Soldering with hand soldering iron

- Hand soldering iron is only used for product rework or sample testing.
- Hand soldering iron requirements: Temperature: 360 °C±5°C within 3s.

XL050L

Packing

Package Type	Packing Form	Quantity per Tube & Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SOP8	Reel (φ330mm Blue)	1000 pcs/reel	2 reels/box	10boxes /ctn	450*390*0.1mm	340*60*340mm	620*360*365mm	Guard band 200mm min.

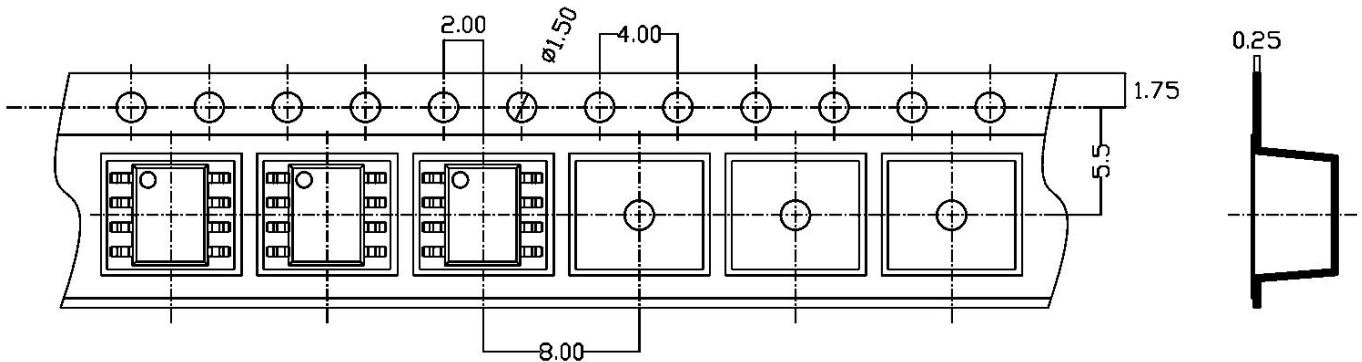
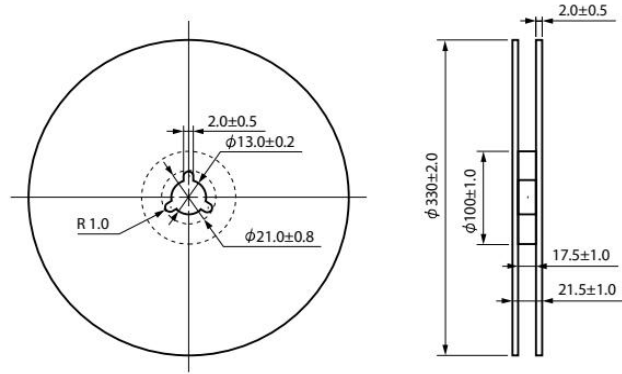
■ Summary table

■ SOP8 (Reel)

Qty/reel: 1000pcs. Qty/box: 2000pcs.

Qty/ctn: 20000pcs.

Schematic: (unit: mm)



Attention

- XINGLIGHT implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until Dec 31, 2026. Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels.