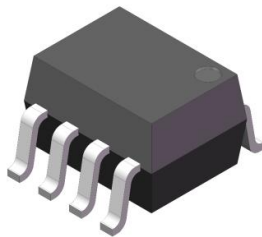
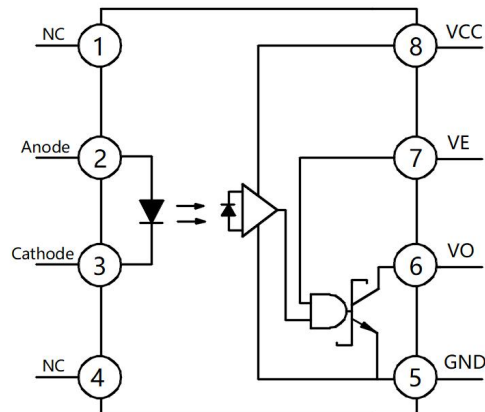


Product packaging logic diagram

SOP8



Pin Configuration

Features

- Very high speed: 10 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

- Fiber optic communication, photoelectric conversion, and digital signal processing are widely used. Can improve data transmission speed and reliability
- In motor control, PLC systems, and industrial robots, Achieve precise control through microsecond-level response and enhance system stability.
- Relying on high-speed optocouplers to achieve real-time data transmission and electrical isolation, ensuring patient safety and data accuracy. Medical imaging equipment and vital signs monitors.
- Spacecraft, satellite communications and radar systems, High-speed digital signal transmission, whose anti-interference capability is crucial in complex environments
- Power system monitoring, frequency converters and renewable energy converters, Ensure the safe operation of equipment.
- In-vehicle entertainment system, BMS (Battery Management System), Improve audio quality and circuit safety.



Ordering Information

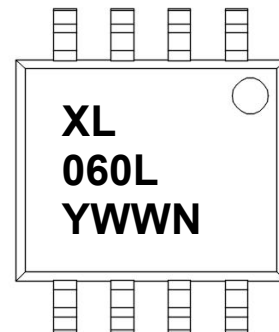
<u>XL</u>	<u>060L</u>	<u>(M)</u>	<u>(G)</u>	<u>(X)</u>	-	<u>(U)</u>	<u>(N)</u>	<u>(Y)</u>
①	②	③	④	⑤		⑥	⑦	⑧

- ① Brand (XL)
- ② Product series (060L)
- 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
XL060L	SOP8	2000pcs / Tape & Reel	XL060L

Marking Information

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



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

Parameter		Symbol	Value	Unit
Input	DC/Average Forward Input Current	IF	50	mA
	Enable Input Voltage, not to exceed VCC by more than 500 mV	VE	Vcc + 0.5V	V
	Reverse Voltage	VR	5	V
	Power Dissipation	Pd	45	mW
Output	Supply Voltage	VCC	7.0	V
	Output Current	IO	50	mA
	Output Voltage	VO	7.0	V
	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 ≤ 1μs, Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

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

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V _F	I _F = 10mA	-	1.4	1.8	V
	Reverse Breakdown Voltage	BVR	I _R = 10μA	5	-	-	V
	Capacitance	C _{in}	V _R = 0V, f = 1MHz	-	60	-	pF
	Diode Temperature Coefficient	ΔV _F /ΔT _A	I _F = 10mA	-	-1.9	-	mV/°C
Output	High Level Supply Current	I _{CCH}	V _E = 0.5 V, I _F = 0mA V _{CC} = 3.3 V	-	3.5	7	mA
	Low Level Supply Current	I _{CCL}		-	3.2	10	mA
	Low Level Enable Current	I _{EL}	V _{CC} = 3.3 V, V _E = 0.5 V	-	-	-1.6	mA
	High Level Enable Current	I _{EH}	V _{CC} = 3.3 V, V _E = 2.0 V	-	-	-1.6	mA
	High Level Enable Voltage	V _{EH}	V _{CC} = 3.3 V, I _F = 10 mA	2.0	1.27	-	V
	Low Level Enable Voltage	V _{EL}	V _{CC} = 3.3 V, I _F = 10 mA	-	1.18	0.8	V
Transfer Characteristics	High Level Output Current	I _{OH}	I _F = 250 μA, V _{CC} = 3.3 V V _O = 3.3 V, V _E = 2.0 V	-	0.01	50	μA
	Low Level Output Voltage	V _{OL}	V _{CC} = 3.3 V, I _F = 5 mA I _{OL} = 13 mA, V _E = 2.0 V	-	0.3	0.6	V
	Input Threshold Current	I _{FT}	V _{CC} = 3.3 V, V _O = 0.6 V, I _{OL} = 13 mA, V _E = 2.0 V	-	-	5	mA
	Input-Output Insulation Leakage Current	I(I-O)	Relative humidity = 45%, T _A = 25°C, t = 5 s, V _{I-O} = 3000 VDC	-	-	1.0	μA
	Isolation Resistance	R _{IO}	V _{I-O} = 500 V (Note 12)	10 ¹²	-	-	Ω
	Floating Capacitance	C _{IO}	f = 1 MHz (Note 12)	-	0.6	-	pF

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 HIGH Level	TPLH	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 9)(Note 3)	-	65	90	ns
Propagation Delay Time to Output Low Level	TPHL	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 9)(Note 4)	-	43	75	ns
Pulse Width Distortion	TPHL-TPLH	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 9)	-	23	25	ns
Propagation Delay Skew	tPSK	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Note 5)	-	31	40	ns
Output Rise Time (10–90%)	Tr	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 9)(Note 6)	-	22	-	ns
Output Rise Time (90–10%)	Tf	$R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 12) (Note 7)	-	3	-	ns
Enable Propagation Delay Time to Output HIGH Level	tELH	$V_{EH} = 3\text{V}$, $R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 10) (Note 8)	-	47	-	ns
Enable Propagation Delay Time to Output LOW Level	tEHL	$V_{EH} = 3\text{V}$, $R_L = 350\Omega$, $C_L = 15\text{pF}$ (Fig. 10) (Note 9)	-	27	-	ns
Common Mode Transient Immunity (at Output HIGH Level)	CMH	$R_L = 350\Omega$, $T_A = 25^{\circ}\text{C}$, $I_F = 0\text{mA}$, $V_{OH}(\text{Min.}) = 2.0\text{V}$, $ V_{CM} = 1,000\text{V}$ (Fig. 11) (Note 10)	25000	50000	-	V/us
Common Mode Transient Immunity (at Output LOW Level)	CML	$R_L = 350\Omega$, $T_A = 25^{\circ}\text{C}$, $I_F = 7.5\text{mA}$, $V_{OL}(\text{Max.}) = 0.8\text{V}$, $ V_{CM} = 1,000\text{V}$ (Fig. 11) (Note 11)	25000	50000	-	V/us

Notes

1. The VCC supply to each optoisolator must be bypassed by a 0.1 μF capacitor or larger. This can be either a ceramic or solid tantalum capacitor with good high frequency characteristic and should be connected as close as possible to the package VCC and GND pins of each device.
2. Enable Input – No pull up resistor required as the device has an internal pull up resistor.
3. tPLH – Propagation delay is measured from the 3.75 mA level on the HIGH to LOW transition of the input current pulse to the 1.5V level on the LOW to HIGH transition of the output voltage pulse.
4. tPHL – Propagation delay is measured from the 3.75 mA level on the LOW to HIGH transition of the input current pulse to the 1.5V level on the HIGH to LOW transition of the output voltage pulse.
5. tPSK is the worst case difference between tPHL and tPLH for any devices at the stated test conditions.
6. tr – Rise time is measured from the 90% to the 10% levels on the LOW to HIGH transition of the output pulse.
7. tf – Fall time is measured from the 10% to the 90% levels on the HIGH to LOW transition of the output pulse.
8. tELH – Enable input propagation delay is measured from the 1.5V level on the HIGH to LOW transition of the input voltage pulse to the 1.5V level on the LOW to HIGH transition of the output voltage pulse.
9. tEHL – Enable input propagation delay is measured from the 1.5V level on the LOW to HIGH transition of the input voltage pulse to the 1.5V level on the HIGH to LOW transition of the output voltage pulse.
10. CMH – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the high state (i.e., $V_{OUT} > 2.0\text{V}$). Measured in volts per microsecond (V/ μs).
11. CML – The maximum tolerable rate of fall of the common mode voltage to ensure the output will remain in the low output state (i.e., $V_{OUT} < 0.8\text{V}$). Measured in volts per microsecond (V/ μs).
12. Device considered a two-terminal device: Pins 1, 2, 3 and 4 shorted together, and Pins 5, 6, 7 and 8 shorted together.

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

Fig. 1 Input Forward Current vs. Forward Voltage

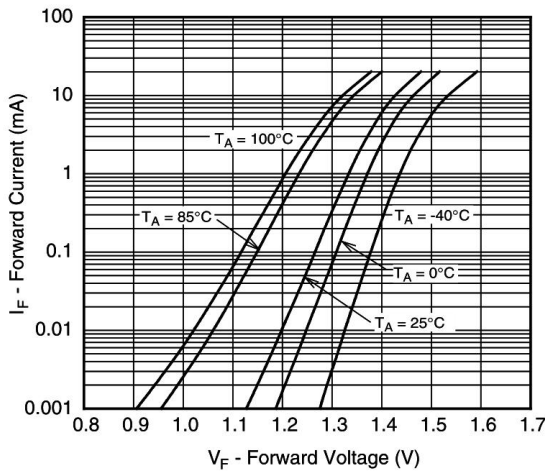


Fig. 2 Input Threshold Current vs. Ambient Temperature

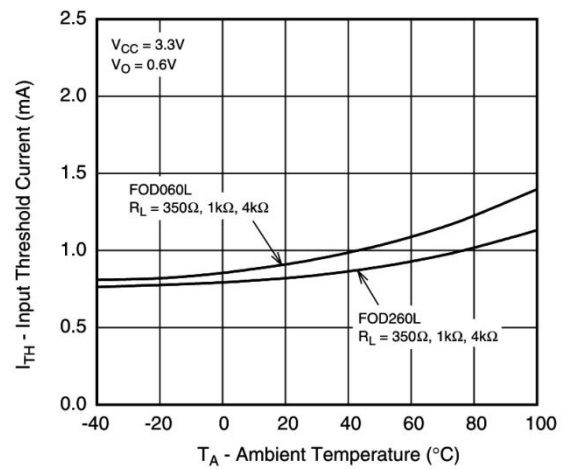


Fig. 3 Low Level Output Voltage vs. Ambient Temperature

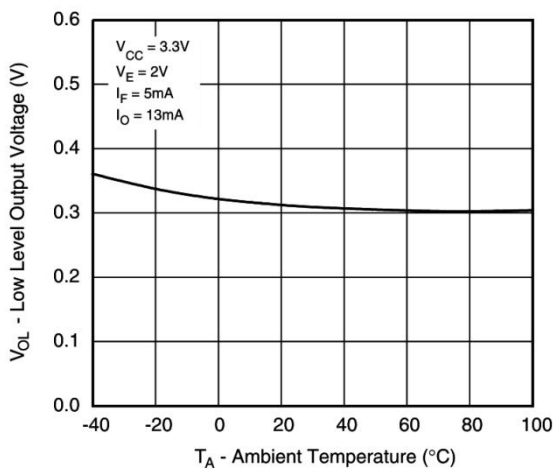


Fig. 4 High Level Output Current vs. Ambient Temperature

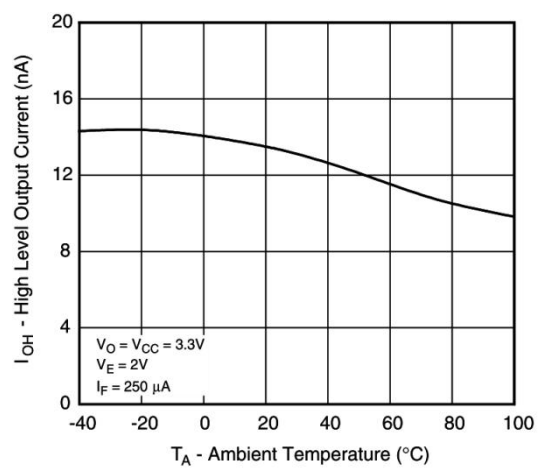


Fig. 5 Low Level Output Current vs. Ambient Temperature

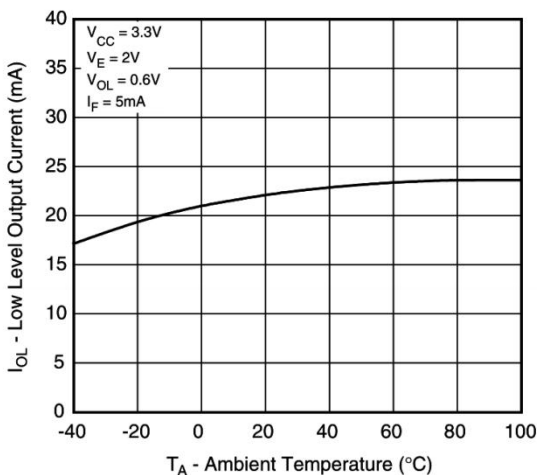
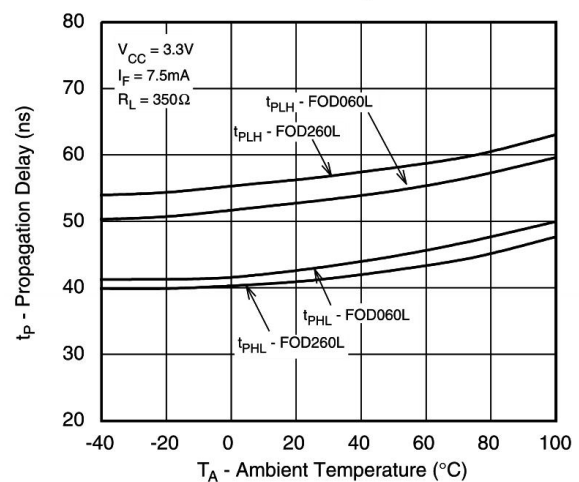


Fig. 6 Propagation Delay vs. Ambient Temperature



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

Fig. 7 Rise and Fall Times vs. Ambient Temperature

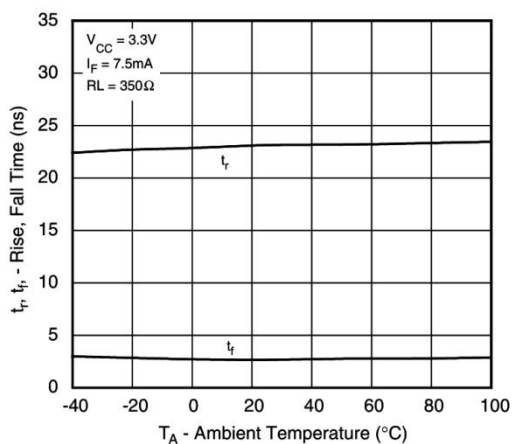


Fig. 8 Pulse Width Distortion vs. Ambient Temperature

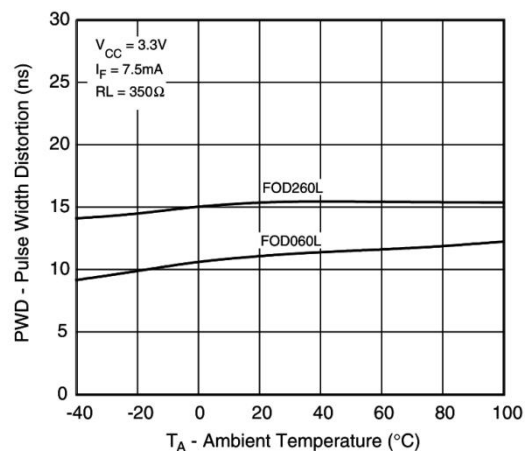


Fig. 9 Test Circuit and Waveforms for t_{PLH} , t_{PHL} , t_r and t_f .

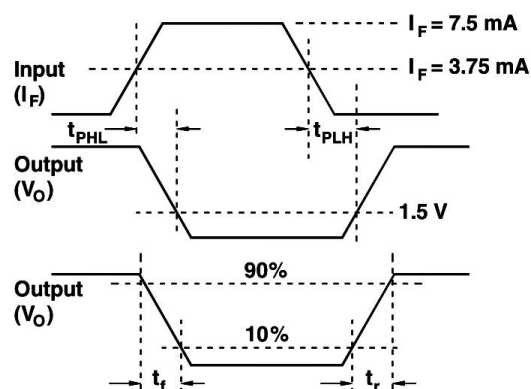
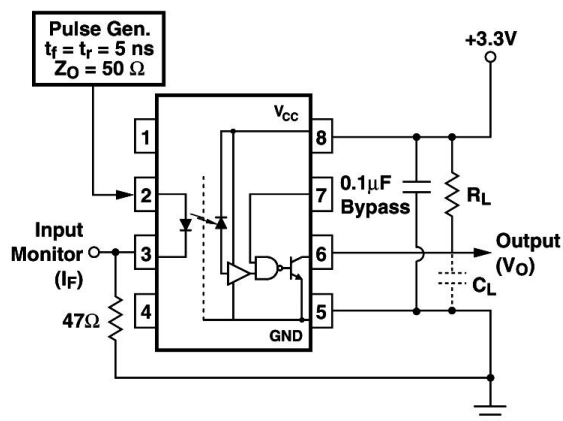


Fig. 10 Test Circuit t_{EHL} and t_{ELH} .

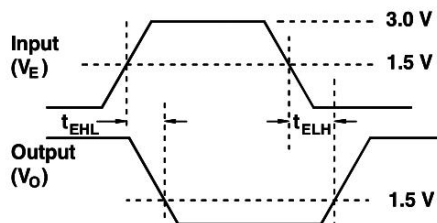
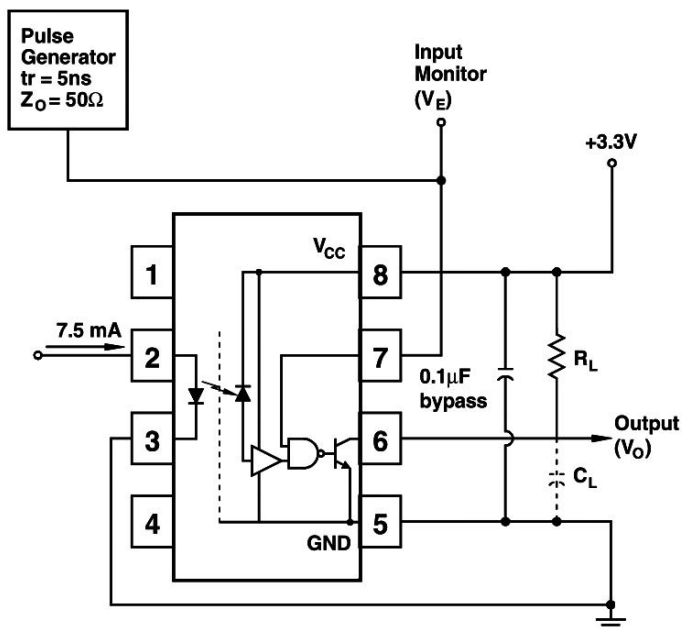
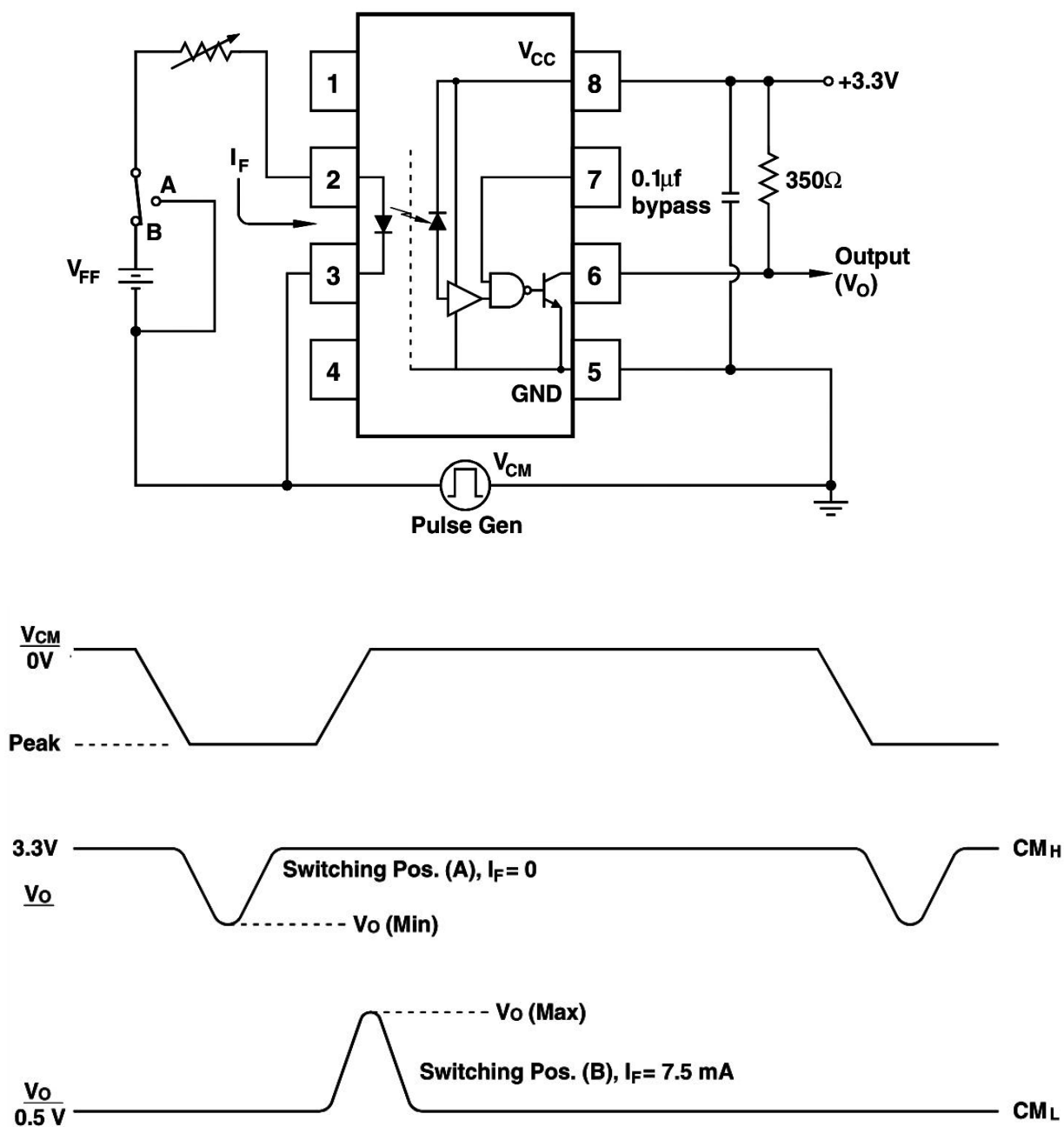
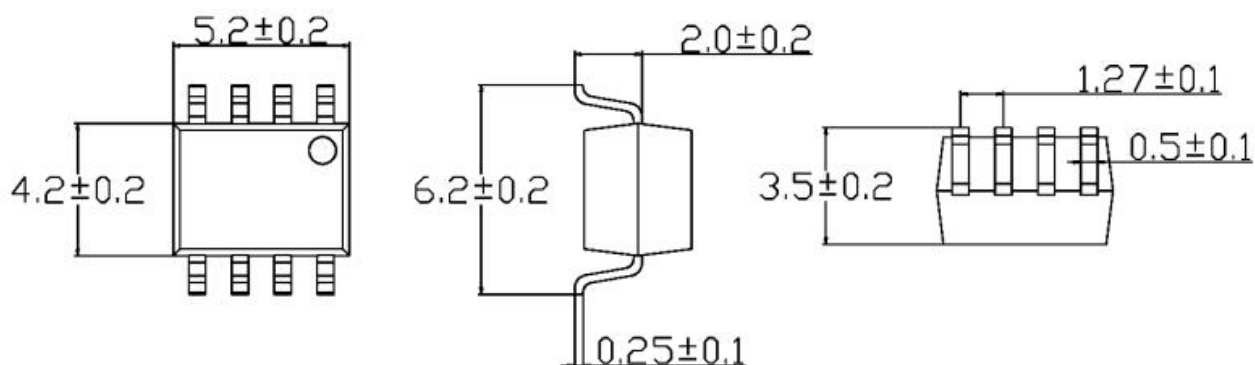


Fig. 11 Test Circuit Common Mode Transient Immunity

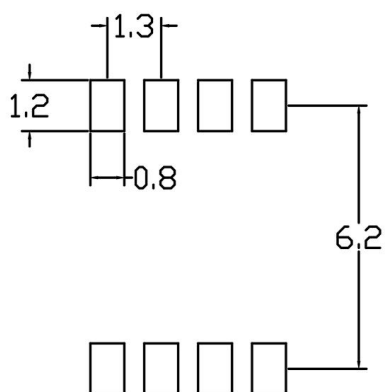


Package Outline Dimensions (unit: mm)

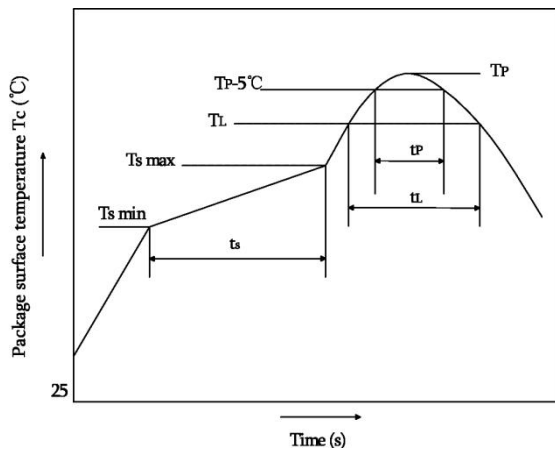
SOP8



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

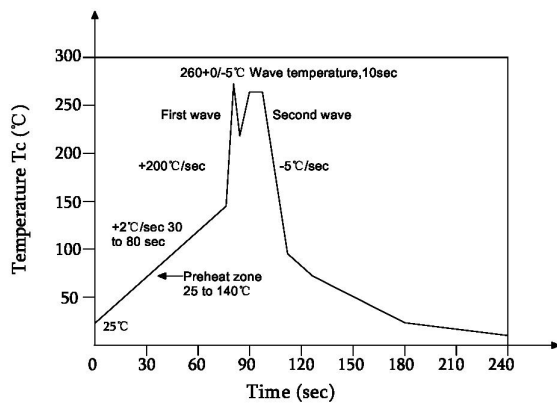


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)			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.

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)	2k pcs/reel	2 reels /box	10 boxes /ctn	450*390*0.1mm	340*60*340mm	620*360*365mm	Guard band 200mm min.

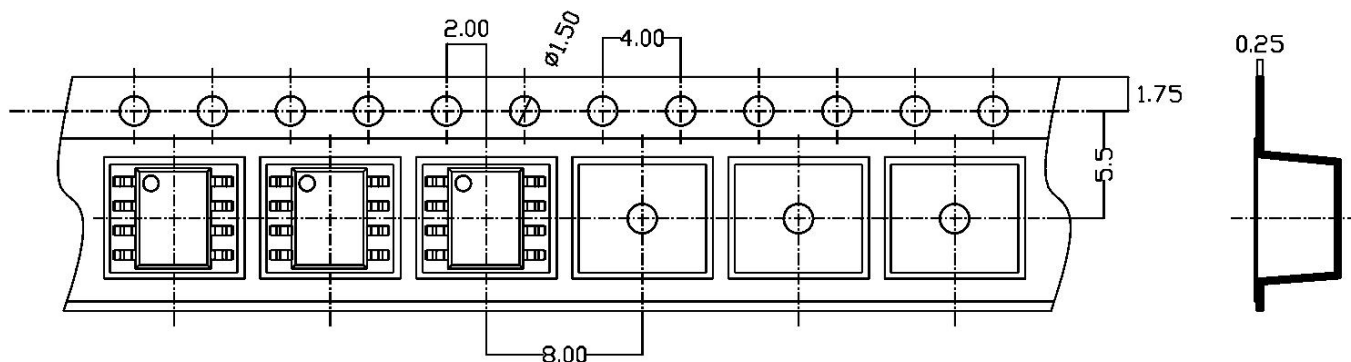
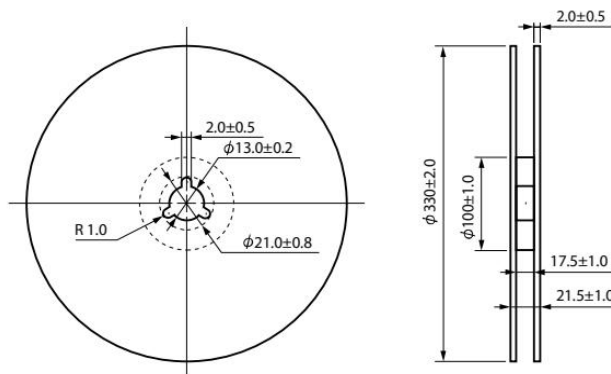
■ Summary table

■ SOP8 (Reel)

Qty/reel: 2000pcs. Qty/box: 4000pcs.

Qty/ctn : 40000pcs.

Schematic: (unit:mm)



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