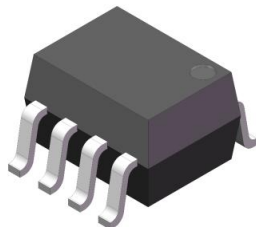
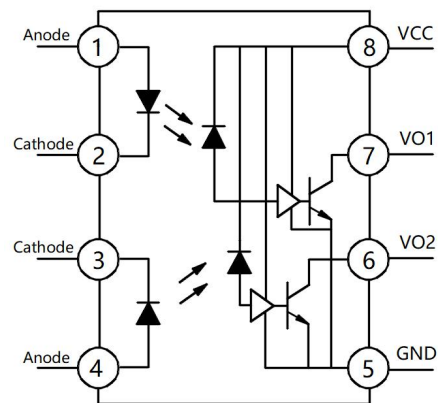


**Product packaging logic diagram**

SOP8



Pin Configuration

**Features**

- Very high speed: 10MBit/s
- High isolation voltage between input and output ( $V_{iso} = 3750V$  rms )
- Operating Temperature:  $-40^{\circ}C \sim 100^{\circ}C$
- 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

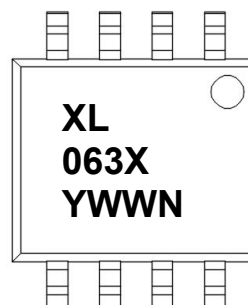
| <u>XL</u> | <u>063X</u> | <u>(M)</u> | <u>(G)</u> | <u>(X)</u> | - | <u>(U)</u> | <u>(N)</u> | <u>(Y)</u> |
|-----------|-------------|------------|------------|------------|---|------------|------------|------------|
| ①         | ②           | ③          | ④          | ⑤          |   | ⑥          | ⑦          | ⑧          |

- ① Brand (XL)
- ② Product series (063X)
- 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 |
|-------------|---------|-----------------------|--------------|
| XL063XP     | SOP8    | 2000pcs / Tape & Reel | XL063X       |

### Marking Information

- " XL" denotes brand
- " 063X" denotes Product series: 0, 1
- " Y" denotes Year : A(2024), B(2025), C(2026)
- " WW" denotes Week' s number
- " N" denotes the day of Week.



### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

| Parameter |                               | Symbol | Value | Unit |
|-----------|-------------------------------|--------|-------|------|
| Input     | Forward Current               | IF     | 50    | mA   |
|           | Reverse Voltage               | VR     | 5     | V    |
|           | Power Dissipation             | PD     | 45    | mW   |
| Output    | Collector Output              | PO     | 100   | mW   |
|           | Output Current                | IO     | 50    | mA   |
|           | Output Voltage                | VO     | 7.0   | V    |
|           | Supply voltage (max 1 minute) | VCC    | 7.0   | V    |

### Thermal Characteristics

| Parameter                 | Symbol           | Value      | Unit             |
|---------------------------|------------------|------------|------------------|
| Isolation Voltage *2      | V <sub>ISO</sub> | 3750       | V <sub>rms</sub> |
| Operating Temperature     | T <sub>OPR</sub> | -40 ~ +100 | °C               |
| Storage Temperature Range | T <sub>STG</sub> | -55 ~ +125 | °C               |
| Soldering Temperature *3  | T <sub>SOL</sub> | 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<sub>A</sub> = 25°C unless otherwise specified)

| Parameter                |                                            | Symbol                           | Condition                                                                    | Min | Typ | Max | Unit  |
|--------------------------|--------------------------------------------|----------------------------------|------------------------------------------------------------------------------|-----|-----|-----|-------|
| Input                    | Forward Voltage                            | V <sub>F</sub>                   | I <sub>F</sub> = 10mA                                                        | -   | 1.4 | 1.8 | V     |
|                          | Reverse Breakdown Voltage                  | V <sub>R</sub>                   | I <sub>R</sub> = 10μA                                                        | 5   | -   | -   | V     |
|                          | Temperature coefficient of forward voltage | ΔV <sub>F</sub> /ΔT <sub>A</sub> | I <sub>F</sub> = 10mA                                                        | -   | 1.8 | -   | mV/°C |
|                          | Input capacitance                          | C <sub>IN</sub>                  | V <sub>F</sub> = 0, f = 1MHz                                                 | -   | 60  | -   | PF    |
| Output                   | High level supply current                  | I <sub>CCH</sub>                 | I <sub>F</sub> = 0mA,<br>V <sub>E</sub> = 0.5V,<br>V <sub>CC</sub> = 5.5V    | -   | 13  | 18  | mA    |
|                          | Low level supply current                   | I <sub>CCL</sub>                 | I <sub>F</sub> = 10mA,<br>V <sub>E</sub> = 0.5V,<br>V <sub>CC</sub> = 5.5V   | -   | 15  | 21  | mA    |
| Transfer Characteristics | HIGH Level Output Current                  | I <sub>OH</sub>                  | V <sub>CC</sub> = 5.5V,<br>V <sub>O</sub> = 5.5V,<br>I <sub>F</sub> = 250μA, | -   | -   | 100 | μA    |
|                          | LOW Level Output Current                   | V <sub>OL</sub>                  | V <sub>CC</sub> = 5.5V,<br>I <sub>F</sub> = 5mA,<br>I <sub>CL</sub> = 13mA   | -   | -   | 0.6 | V     |
|                          | Input Threshold Current                    | I <sub>FT</sub>                  | V <sub>CC</sub> = 5.5V,<br>V <sub>O</sub> = 0.6V,<br>I <sub>OL</sub> = 13mA  | -   | -   | 5   | mA    |

**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              | Condition                                                                                                                                   | Min.  | Typ. | Max. | Unit |
|--------------------------------------------------------|--------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|------|------|------|
| Propagation delay time to output High level*4 (Fig.11) |        | TPHL                | $CL = 15\text{pF}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$                                                                           | -     | -    | 100  | ns   |
| Propagation delay time to output Low level*5 (Fig.11)  |        | TPLH                | $CL = 15\text{pF}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$                                                                           | -     | -    | 100  | ns   |
| Pulse width distortion                                 |        | $T_{phl} - T_{plh}$ | $CL = 15\text{pF}$ , $RL = 350\Omega$                                                                                                       | -     | -    | 35   | ns   |
| Output rise time*6 (Fig.11)                            |        | $T_r$               | $CL = 15\text{pF}$ , $RL = 350\Omega$                                                                                                       | -     | 40   | -    | ns   |
| Output fall time*7 (Fig.11)                            |        | $T_f$               | $CL = 15\text{pF}$ , $RL = 350\Omega$                                                                                                       | -     | 10   | -    | ns   |
| Common Mode Transient Immunity at Logic High*8         | XL0630 | CMH                 | $I_F = 0\text{mA}$ , $VOH(\text{MIN}) = 2.0\text{V}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$ , $IVCMI = 1\text{KV}(\text{Fig.12})$   | 5000  | -    | -    | V/uS |
|                                                        | XL0631 |                     | $I_F = 0\text{mA}$ , $VOH(\text{MIN}) = 2.0\text{V}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$ , $IVCMI = 1\text{KV}(\text{Fig.12})$   | 10000 | -    | -    | V/uS |
| Common Mode Transient Immunity at Logic Low*9          | XL0630 | CML                 | $I_F = 7.5\text{mA}$ , $VOL(\text{MAX}) = 0.8\text{V}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$ , $IVCMI = 1\text{KV}(\text{Fig.12})$ | 5000  | -    | -    | V/uS |
|                                                        | XL0631 |                     | $I_F = 7.5\text{mA}$ , $VOL(\text{MAX}) = 0.8\text{V}$ , $RL = 350\Omega$ , $TA = 25^{\circ}\text{C}$ , $IVCMI = 1\text{KV}(\text{Fig.12})$ | 10000 | -    | -    | V/uS |

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

Fig.1 Input Diode Forward Voltage vs. Forward Current

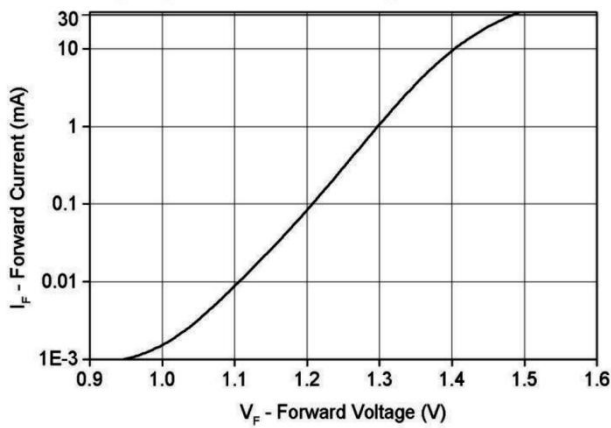


Fig.2 Low Level Output Voltage vs. Ambient Temperature

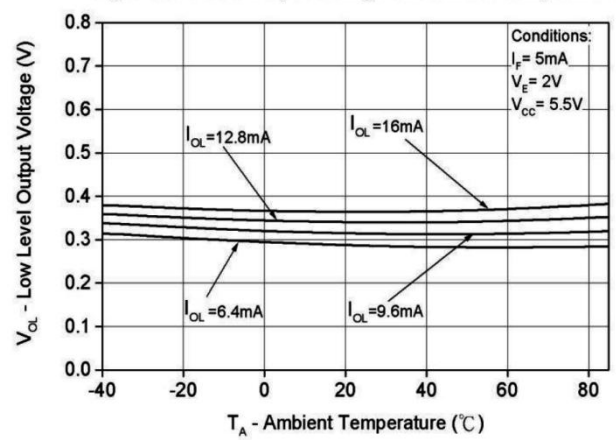


Fig.3 Low Level Output Current vs. Ambient Temperature

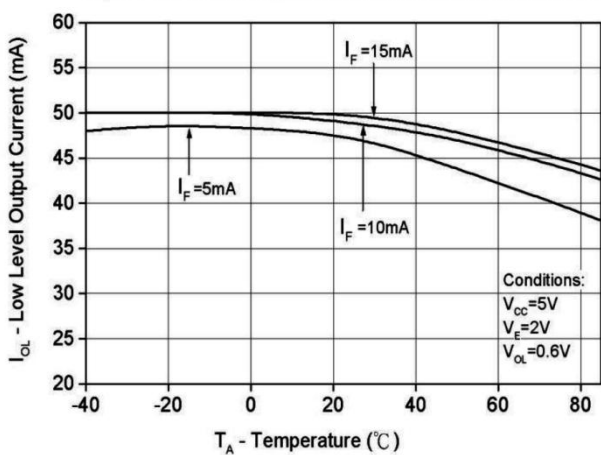


Fig.4 Input Threshold Current vs. Ambient Temperature

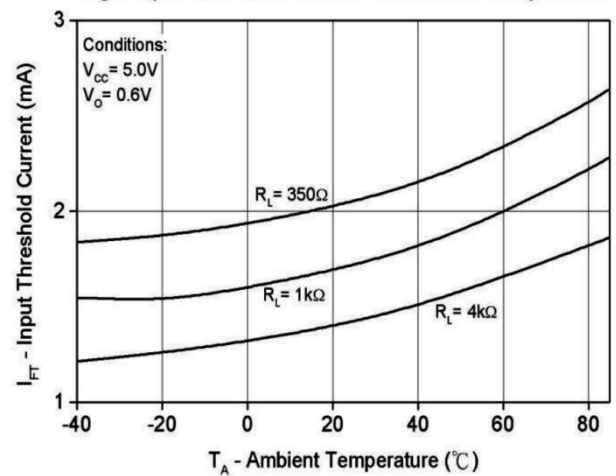


Fig.5 Output Voltage vs. Input Forward Current

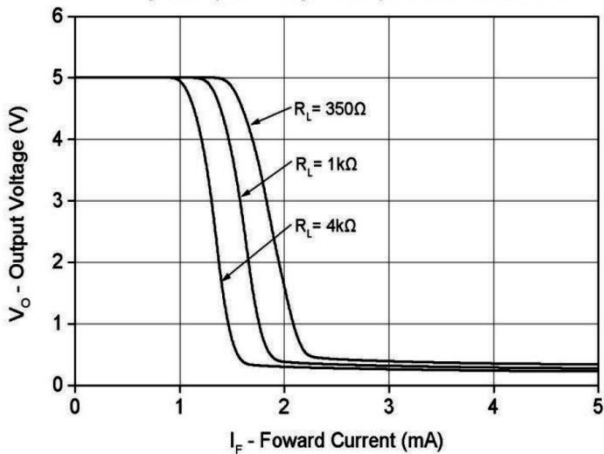
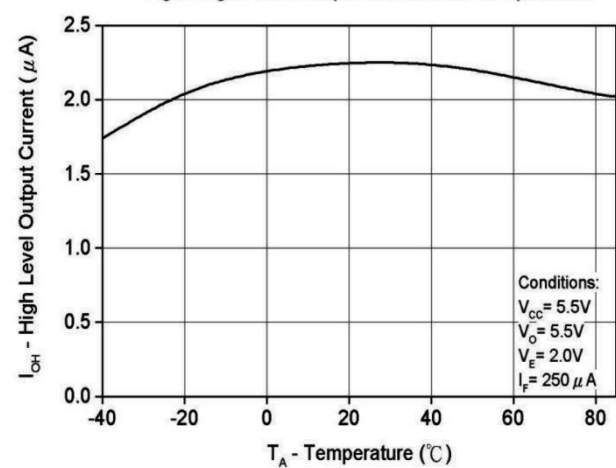


Fig.6 High Level Output Current vs. Temperature



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

Fig.7 Switching Time vs. Forward Current

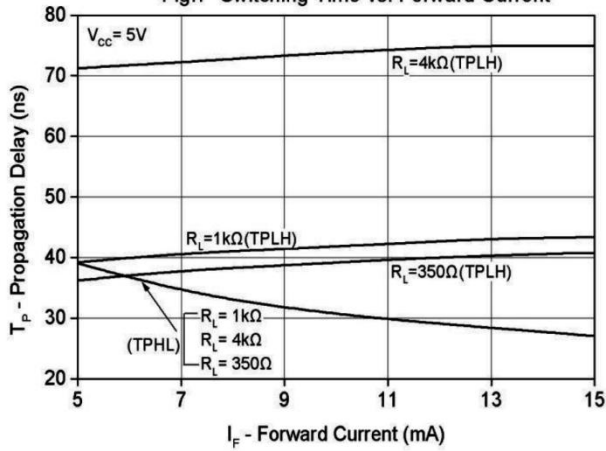


Fig.8 Switching Time vs. Temperature

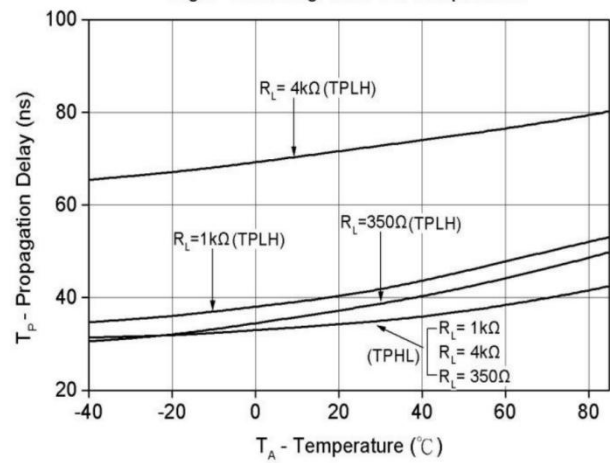


Fig.9 Pulse Width Distortion vs. Temperature

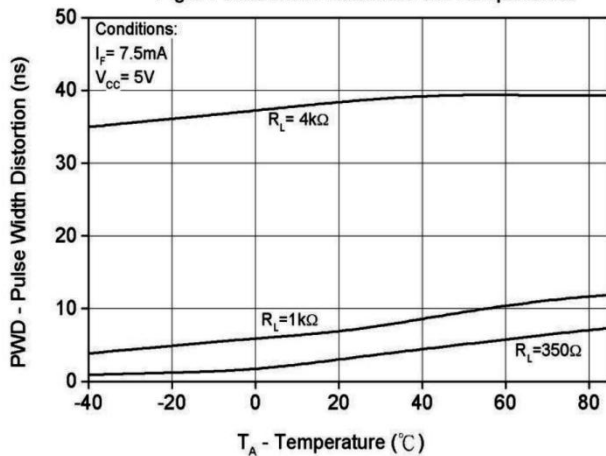
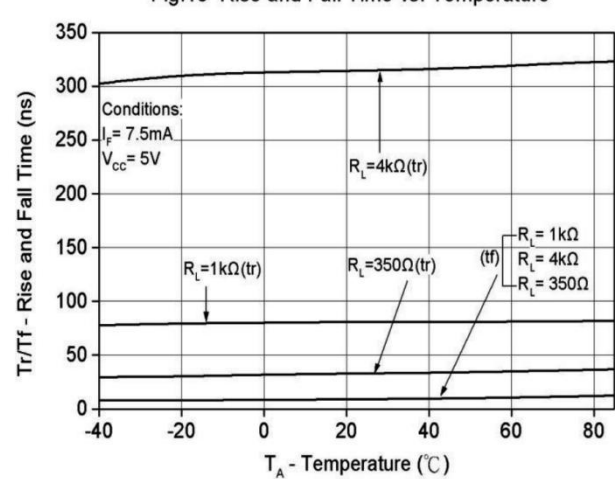


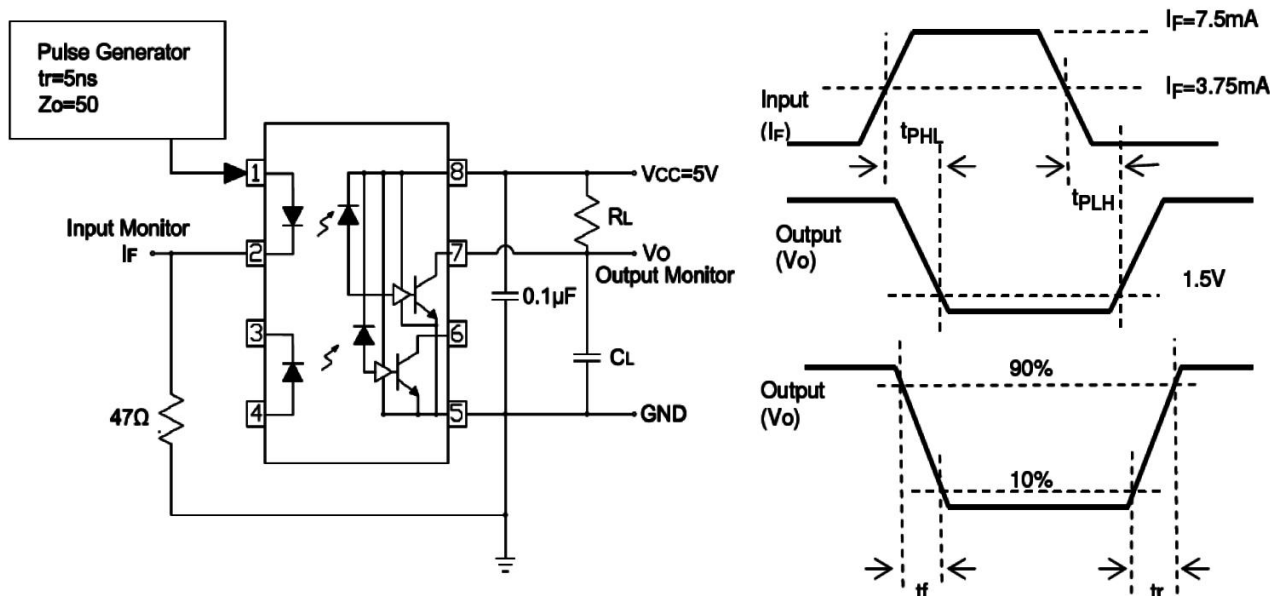
Fig.10 Rise and Fall Time vs. Temperature



### Notes

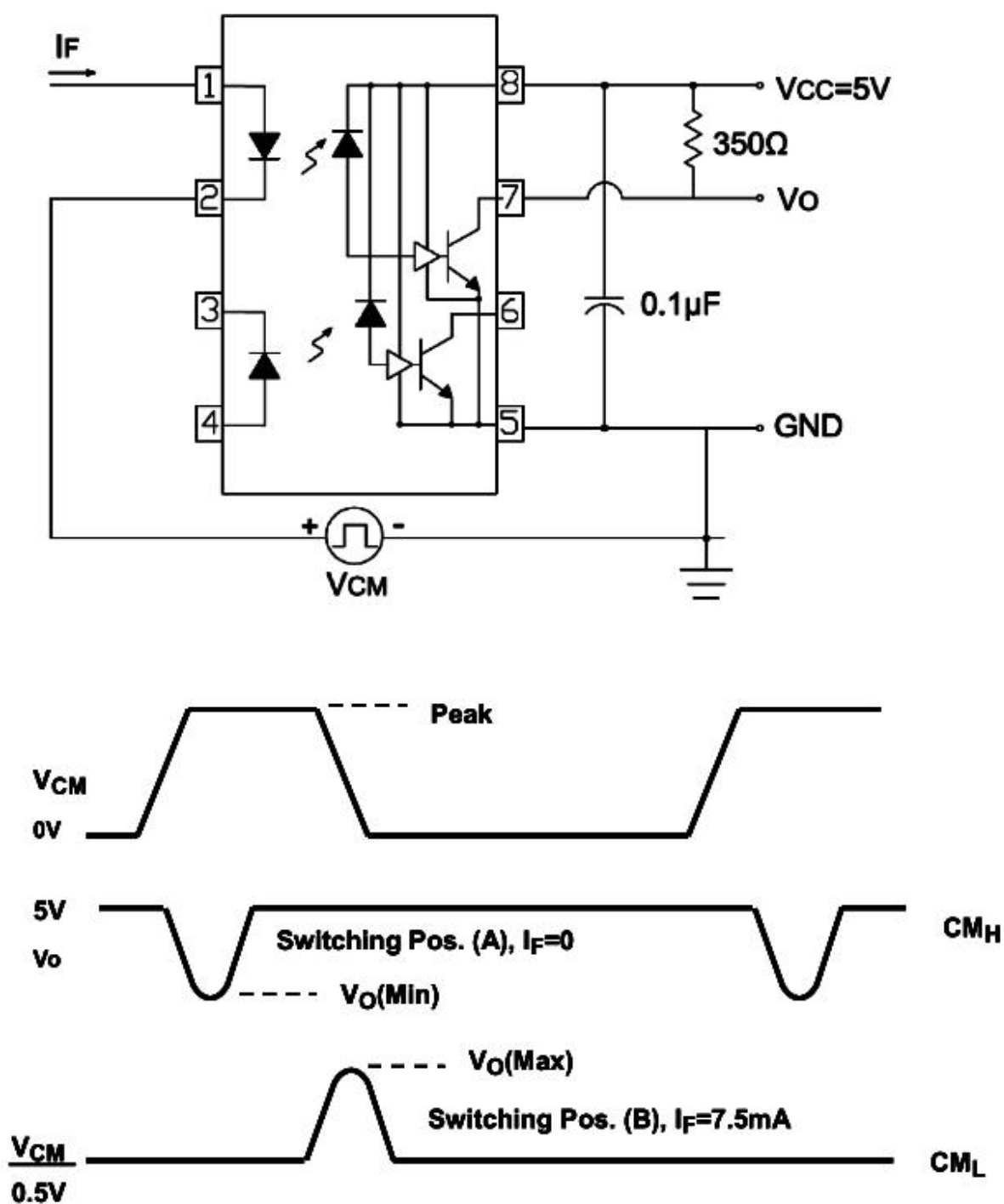
- \*3 The  $V_{CC}$  supply must be bypassed by a  $0.1\mu F$  capacitor or larger. This can be either a ceramic or solid tantalum capacitor with good high frequency characteristic and should be connected as close as possible to the package  $V_{CC}$  and GND pins
- \*4.  $t_{PLH}$  – Propagation delay is measured from the  $3.75mA$  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.
- \*5.  $t_{PHL}$  – Propagation delay is measured from the  $3.75mA$  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.
- \*6.  $t_r$  – Rise time is measured from the 90% to the 10% levels on the LOW to HIGH transition of the output pulse.
- \*7.  $t_f$  – Fall time is measured from the 10% to the 90% levels on the HIGH to LOW transition of the output pulse.
- \*8  $CM_H$  – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the HIGH state (i.e.,  $V_{OUT} > 2.0V$ ).
- \*9  $CM_L$  – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the LOW output state (i.e.,  $V_{OUT} < 0.8V$ ).

**Fig. 11 Test circuit and waveforms for  $t_{PHL}$ ,  $t_{PLH}$ ,  $t_r$ , and  $t_f$**





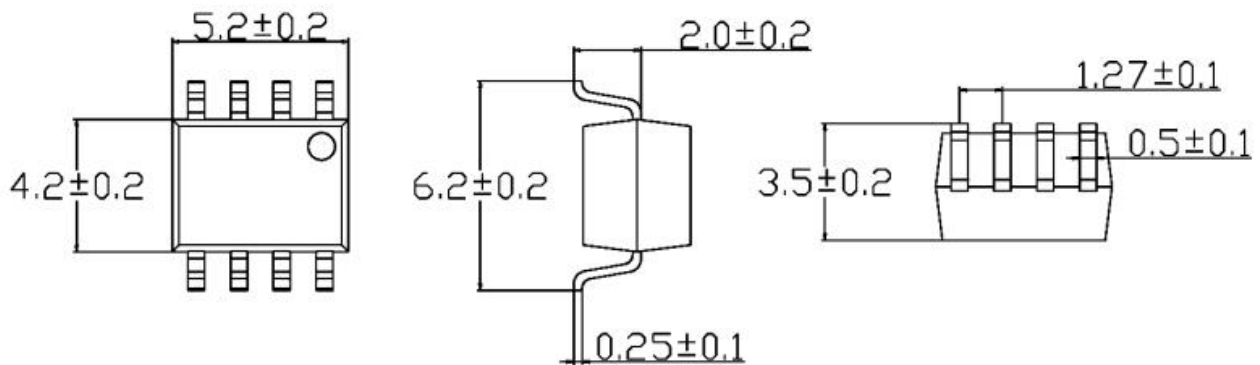
**Fig. 12 Test circuit Common mode Transient Immunity**



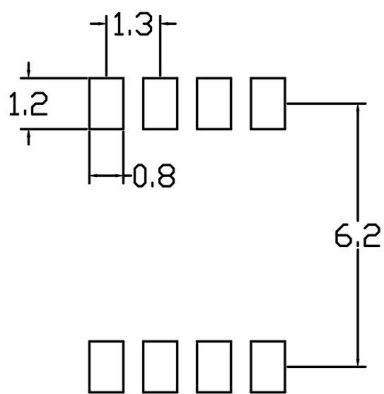


### Package Outline Dimensions (unit: mm)

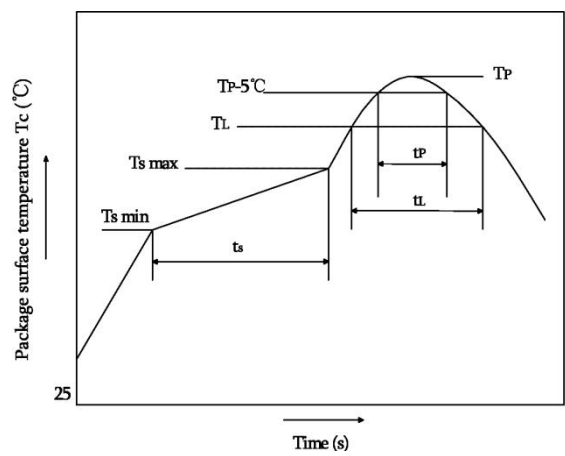
#### SOP8



### SOLDERING FOOTPRINT (unit: mm)



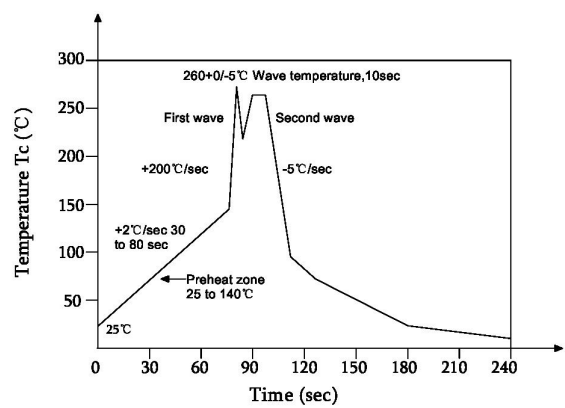
Reflow soldering



|                                               | Symbol | Min | Max | Unit |
|-----------------------------------------------|--------|-----|-----|------|
| Preheat temperayure                           | Ts     | 150 | 200 | °C   |
| Preheat time                                  | ts     | 60  | 120 | s    |
| Ramp-up ratea(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

- A. Hand soldering iron is only used for product rework or sample testing.
- B. 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. |

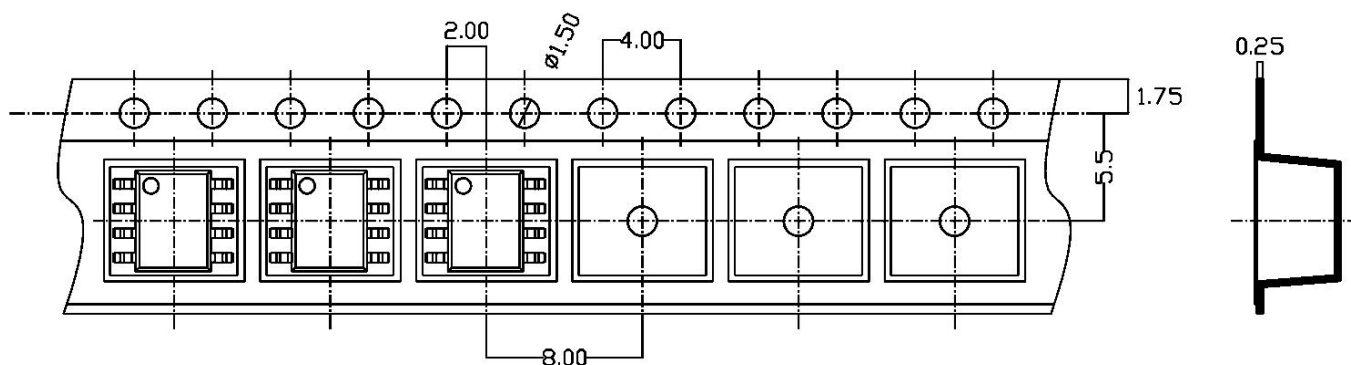
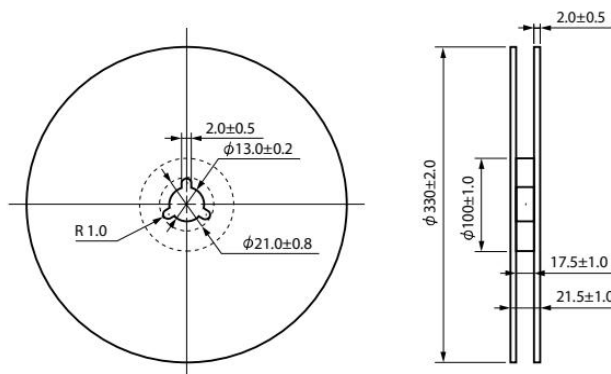
#### ■ Summary table

#### ■ SOP8 (Reel)

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

Qty/ctn : 40000pcs.

Schematic: (unit:mm)



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