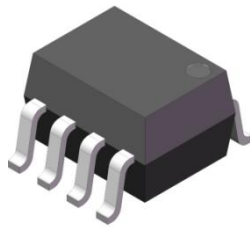
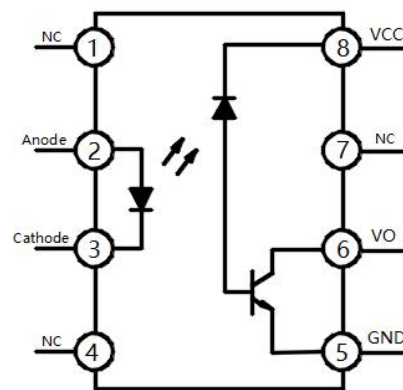


Product packaging logic diagram

SOP8



Pin Configuration

Features

- Very high speed: 1MBit/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

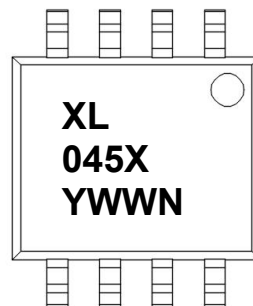
<u>XL</u>	<u>045X</u>	<u>(M)</u>	<u>(G)</u>	<u>(X)</u>	-	<u>(U)</u>	<u>(N)</u>	<u>(Y)</u>
①	②	③	④	⑤		⑥	⑦	⑧

- ① Brand (XL)
- ② Product series (045X)
- 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
XL045XP	SOP8	2000pcs / Tape & Reel	XL045X

Marking Information

- " XL" denotes brand
- " 045X" denotes Product series: 2, 3
- " 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	Forward Current	IF	50	mA
	Reverse Voltage	VR	5	V
	Power Dissipation	PD	45	mW
Output	Collector Output	PO	100	mW
	Output Current	IO	8	mA
	Peak Output Current	IO(peak)	16	mA
	Supply Voltage	VCC	-0.5 ~ 30	V
	Output Voltage	VO	-0.5 ~ 20	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Isolation Voltage *2	V _{ISO}	3750	V _{rms}
Operating Temperature	T _{OPR}	-40 ~ +100	°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	Condition	Min	Typ	Max	Unit
Input	Forward Voltage	V _F	I _F = 16mA	-	1.45	1.8	V
	Reverse Breakdown Voltage	B _{VR}	I _R = 10μA	5	-	-	V
	Temperature coefficient of forward voltage	ΔV _F /ΔT _A	V = 0, f = 1MHz	-	1.9	-	mV/°C
Output	Logic High Output Current	I _{OH}	I _F = 0mA, V _O = V _{CC} = 5.5V, T _A = 25°C	-	0.001	0.5	μA
			I _F = 0mA, V _O = V _{CC} = 15V, T _A = 25°C	-	0.01	1	μA
			I _F = 0mA, V _O = V _{CC} = 15V	-	-	50	μA
	Logic Low Supply Current	I _{CC} L	I _F = 16mA, V _O = Open, V _{CC} = 15V	-	140	200	μA
	Logic High Supply Current	I _{CC} H	I _F = 0mA, V _O = Open, V _{CC} = 15V, T _A = 25°C	-	0.01	1	μA
			I _F = 0mA, V _O = Open, V _{CC} = 15V	-	-	2	μA
Transfer Characteristics	Current Transfer Ratio	CTR	I _F = 16mA, V _O = 0.4V, V _{CC} = 4.5V, T _A = 25°C	19	-	50	%
	Logic Low Output Voltage	V _{OL}	I _F = 16mA, I _O = 3mA, V _{CC} = 4.5V, T _A = 25°C	-	0.18	0.4	V

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 Logic Low (Fig.8)	XL0452	TPLH	$R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	-	350	-	ns
	XL0453		$R_L = 1.9\text{K}\Omega$	-	550	-	ns
Propagation Delay Time to Logic High (Fig.8)	XL0452	TPHL	$R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	-	350	-	ns
	XL0453		$R_L = 1.9\text{K}\Omega$	-	550	-	ns
Common Mode Transient Immunity at Logic High (Fig.9)*3	XL0452	CMH	$I_F = 0\text{mA}$, $V_{CM} = 10\text{Vp-p}$, $R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	-	1000	-	V/ μs
	XL0453		$I_F = 0\text{mA}$, $V_{CM} = 1500\text{Vp-p}$, $R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	15000	-	-	V/ μs
Common Mode Transient Immunity at Logic Low (Fig.9)*3	XL0452	CML	$I_F = 16\text{mA}$, $V_{CM} = 10\text{Vp-p}$, $R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	-	1000	-	V/ μs
	XL0453		$I_F = 16\text{mA}$, $V_{CM} = 1500\text{Vp-p}$, $R_L = 1.9\text{K}\Omega$, $T_A = 25^{\circ}\text{C}$	15000	-	-	V/ μs

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

Figure 1. Forward Current vs Forward Voltage

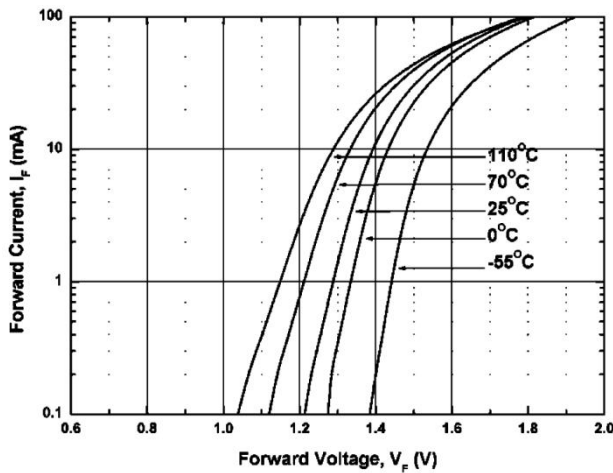


Figure 2. Current Transfer Ratio vs Forward Current

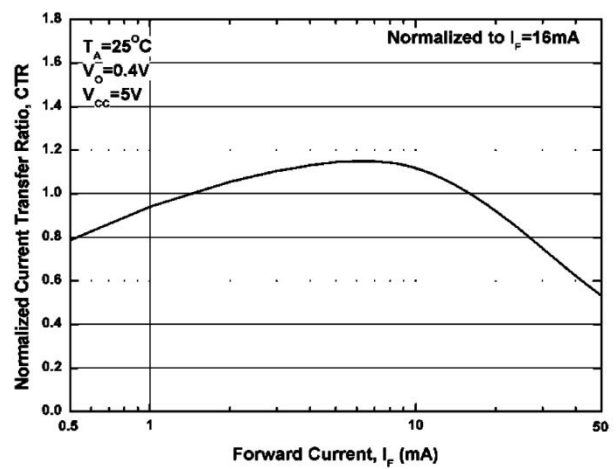


Figure 3. Current Transfer Ratio vs Ambient Temperature

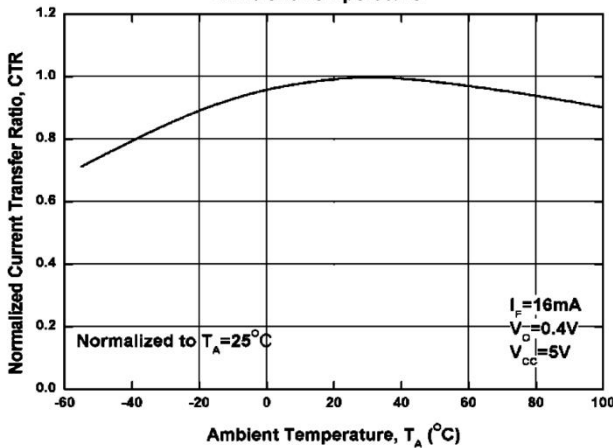


Figure 4. Output Current vs Output Voltage

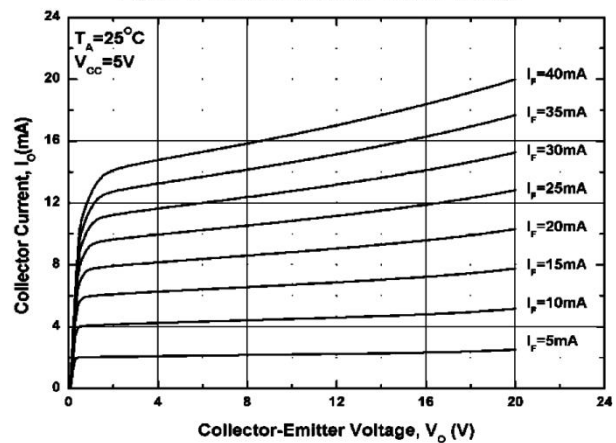


Figure 5. Logic High Output Current vs Ambient Temperature

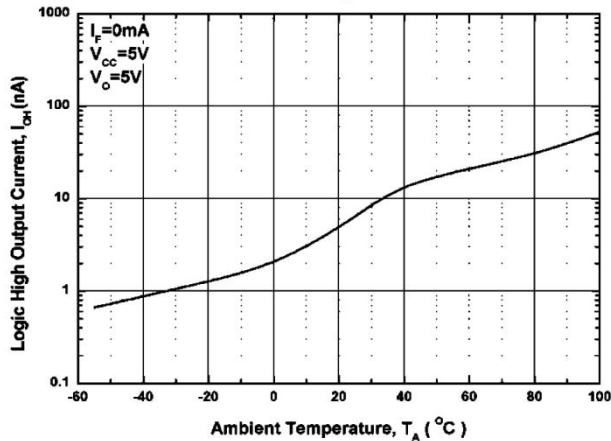
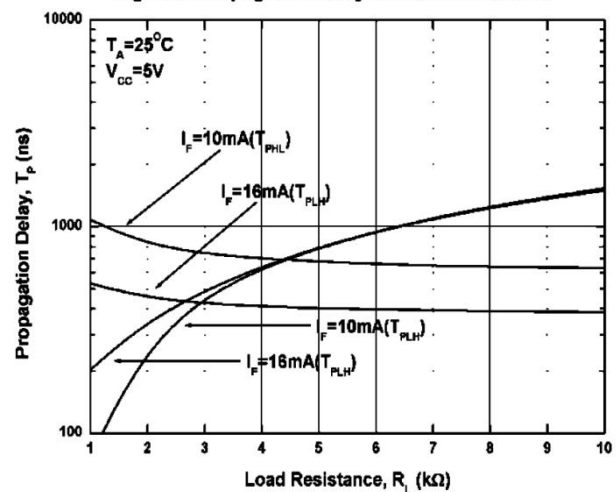


Figure 6. Propagation Delay vs. Load Resistance



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

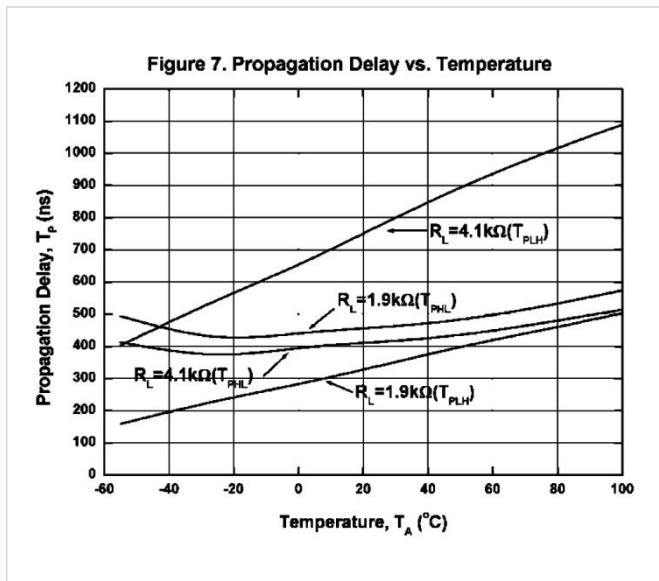


Figure 8 Switching Time Test Circuit & Waveform

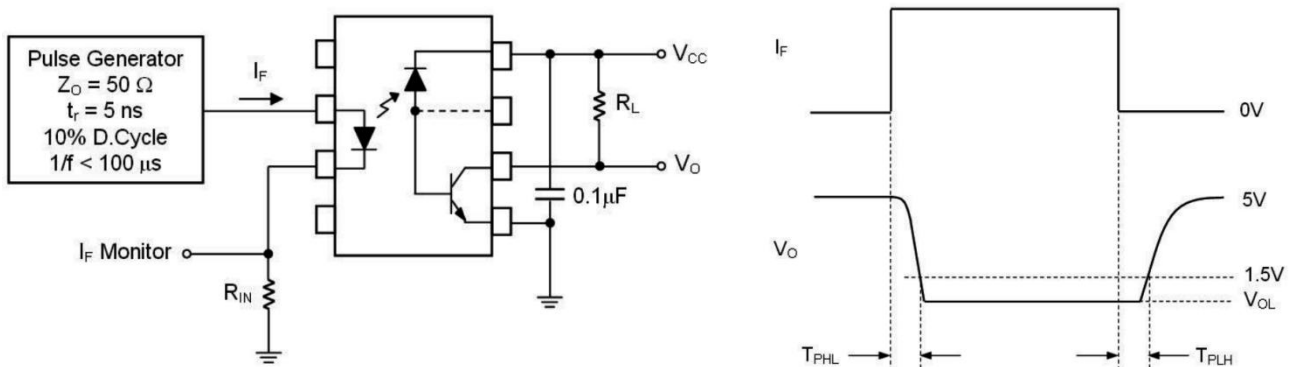
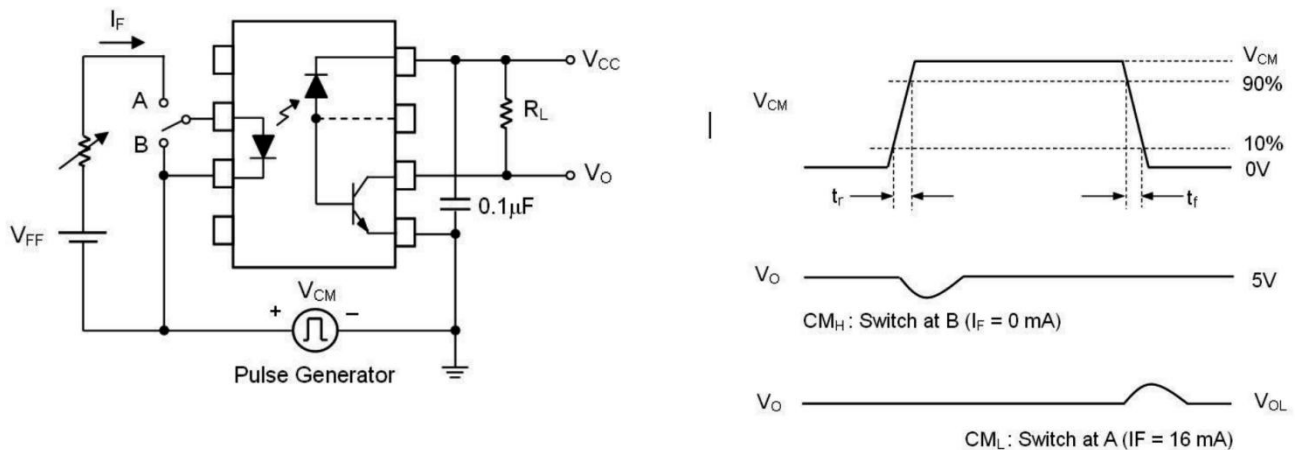
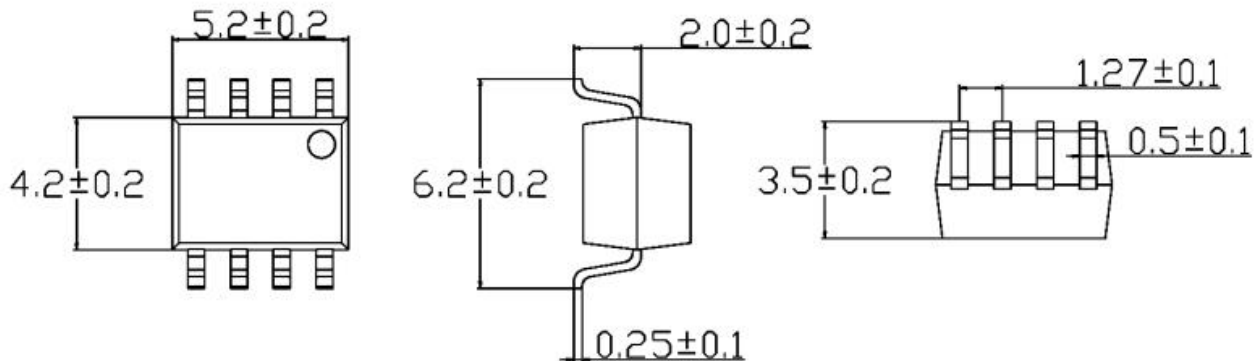


Figure 9 Transient Immunity Test Circuit & Waveform

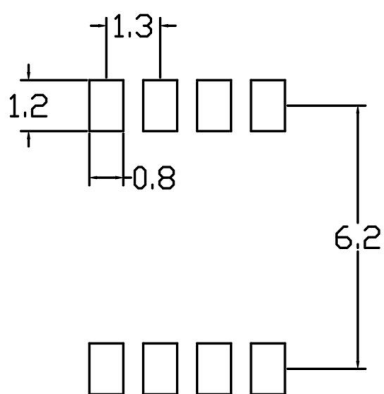


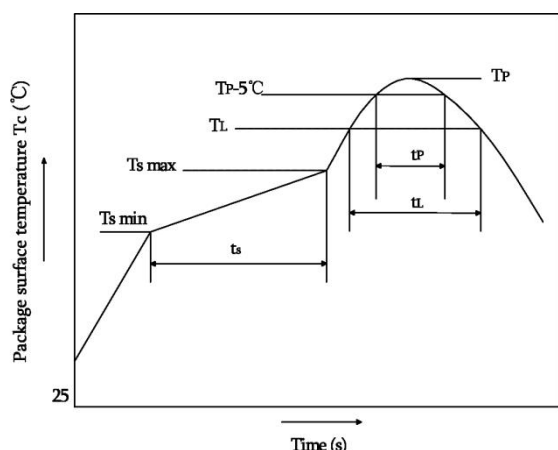
Package Outline Dimensions (unit: mm)

SOP8



SOLDERING FOOTPRINT (unit: mm)



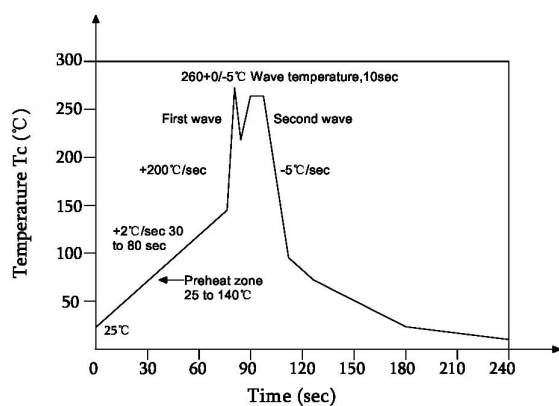


	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up ratea(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)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

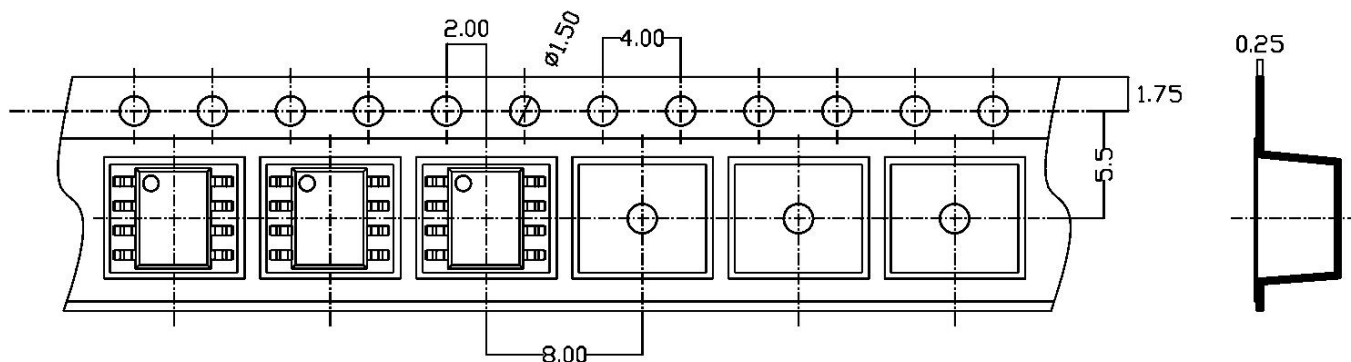
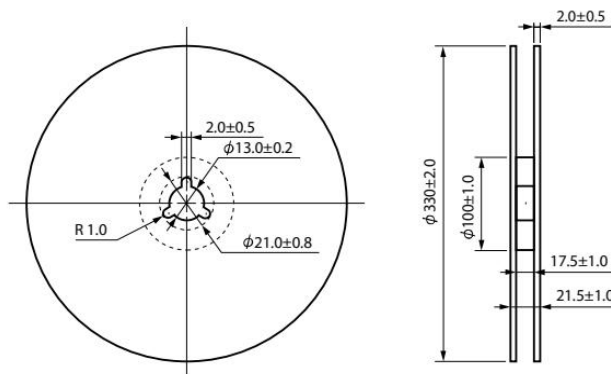
■ Summary table

■ SOP8 (Reel)

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

Qty/ctn : 40000pcs.

Schematic: (unit:mm)



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