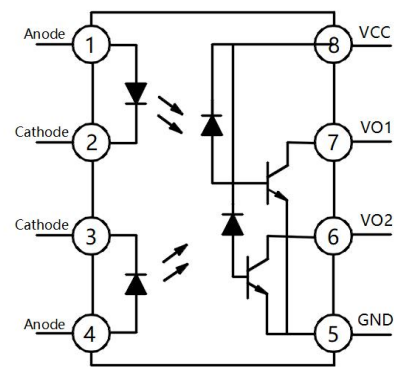


SOP8



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

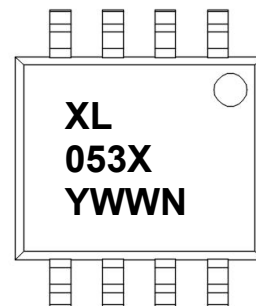
<u>XL</u>	<u>053X</u>	<u>(M)</u>	<u>(G)</u>	<u>(X)</u>	-	<u>(U)</u>	<u>(N)</u>	<u>(Y)</u>
①	②	③	④	⑤		⑥	⑦	⑧

- ① Brand (XL)
- ② Product series (053X)
- 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
XL053XP	SOP8	2000pcs / Tape & Reel	XL053X

Marking Information

- " XL" denotes brand
- " 053X" denotes Product series: 0, 1, 4
- " 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	I _F	50	mA
	Reverse Voltage	V _R	5	V
	Power Dissipation	P _D	45	mW
Output	Collector Output	P _O	100	mW
	Output Current	I _O	8	mA
	Supply Voltage	V _{CC}	30	V
	Output Voltage	V _O	-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		VF	IF =16mA	1.0	1.35	1.7	V
	Reverse Breakdown Voltage		BVR	IR =10μA	5	-	-	V
	Input Capacitance		CIN	V=0,f=1MHz	-	60	-	pF
Output	Logic Low Output Voltage	0530	VOL	IF =16mA, VCC =4.5V, IO =1.1mA	-	0.1	0.5	V
		0531、 0534		IF =16mA, VCC =4.5V, IO =3mA				
	Logic High Output Current		IOH	VCC=VO =5.5V, IF =0mA	-	0.003	0.5	uA
				VCC =VO =15V, IF =0mA	-	-	50	uA
	Logic High Supply Current		ICCH	VCC =15V, IF =0mA	-	0.05	4	uA
	Logic Low Supply Current		ICCL	VCC =15V, IF =16mA	-	100	400	uA
Transfer Characteristics	Current Transfer Ratio	0530	CTR	IF =16mA, VCC =4.5V, VO =0.5V	7	-	-	%
		0531、 0534			19	-	-	%
Isolation Resistance			RI-O	VI-I =500V, 40 ~60%R.H.	-	10 ¹²	-	Ω
Isolation Capacitance			CI-O	V=0,f=1MHz	-	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	Condition	Min.	Typ.	Max.	Unit
Propagation Delay Time to High Output Level		TPLH	$R_L = 4.1\text{k}\Omega$	-	250	-	ns
			$R_L = 1.9\text{k}\Omega$	-	450	-	ns
Propagation Delay Time to Low Output Level		TPHL	$R_L = 4.1\text{k}\Omega$	-	250	-	ns
			$R_L = 1.9\text{k}\Omega$	-	450	-	ns
Common Mode Transient Immunity at High Output Level	0530	CMH	$I_F = 0\text{mA}$ $R_L = 4.1\text{k}\Omega$ $T_A = 25^{\circ}\text{C}$ $ V_{CM} = 10\text{V}$	1	10	-	kV/ μs
	0531		$I_F = 0\text{mA}$ $R_L = 1.9\text{k}\Omega$ $T_A = 25^{\circ}\text{C}$ $ V_{CM} = 10\text{V}$	1	10	-	kV/ μs
	0534			15	30	-	
Common Mode Transient Immunity at Low Output Level	0530	CML	$I_F = 16\text{mA}$ $R_L = 4.1\text{k}\Omega$ $T_A = 25^{\circ}\text{C}$ $ V_{CM} = 10\text{V}$	1	10	-	kV/ μs
	0531		$I_F = 16\text{mA}$ $R_L = 1.9\text{k}\Omega$ $T_A = 25^{\circ}\text{C}$ $ V_{CM} = 10\text{V}$	1	10	-	kV/ μs
	0534			15	30	-	

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

Fig.1 Normalized CTR vs. Input current

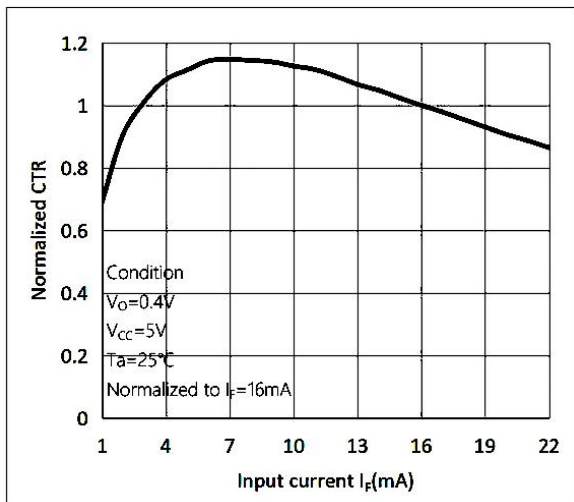


Fig.2 Normalized CTR vs. Ambient temperature

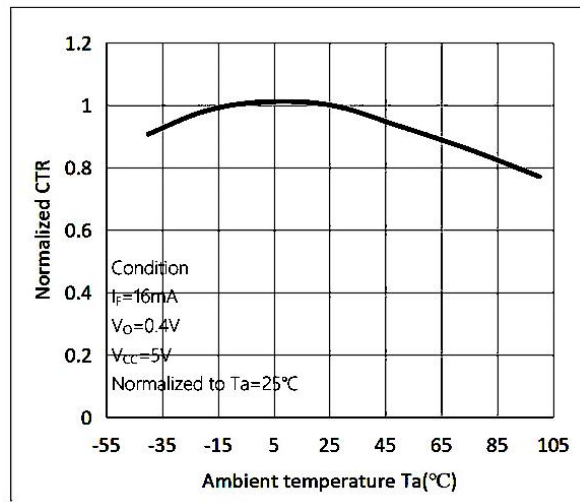


Fig.3 Output current I_O vs. Output voltage

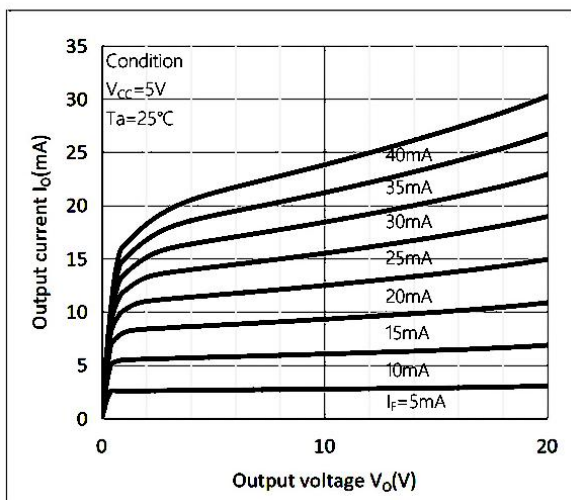


Fig.4 High level output voltage vs. Ambient temperature

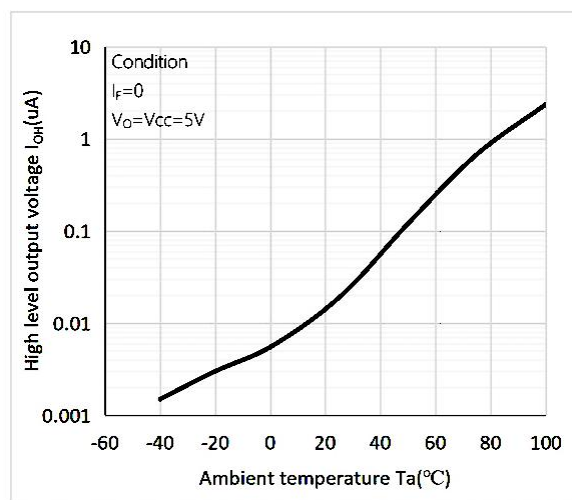


Fig.5 Propagation Delay Time vs. Ambient temperature

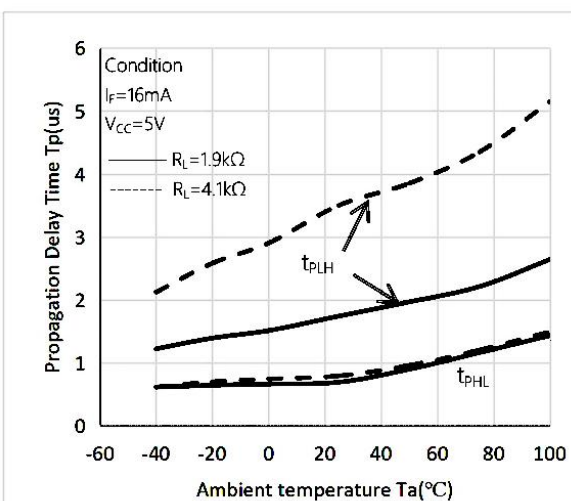
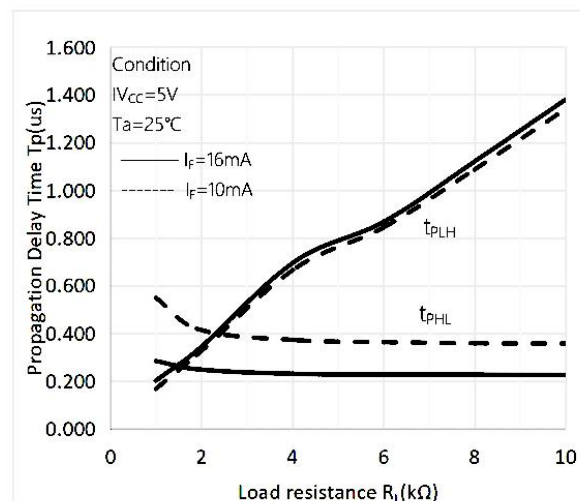
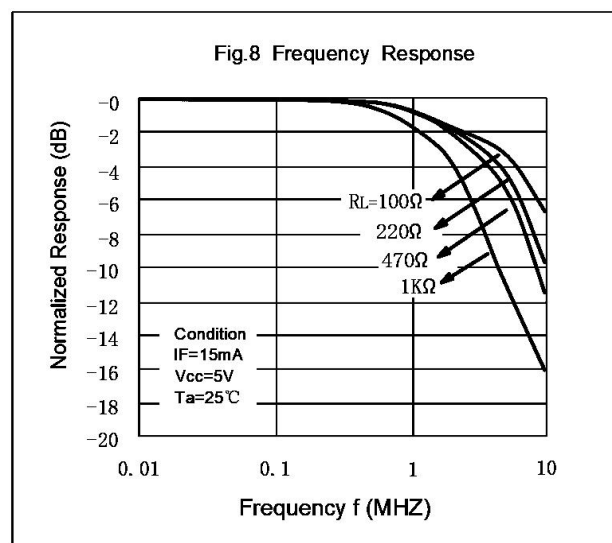
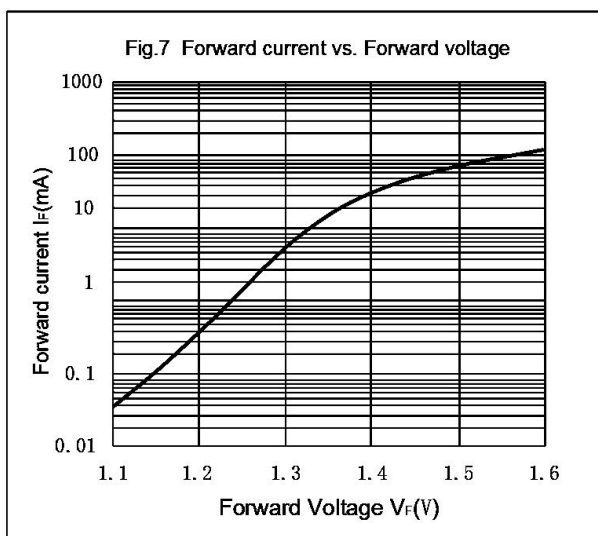


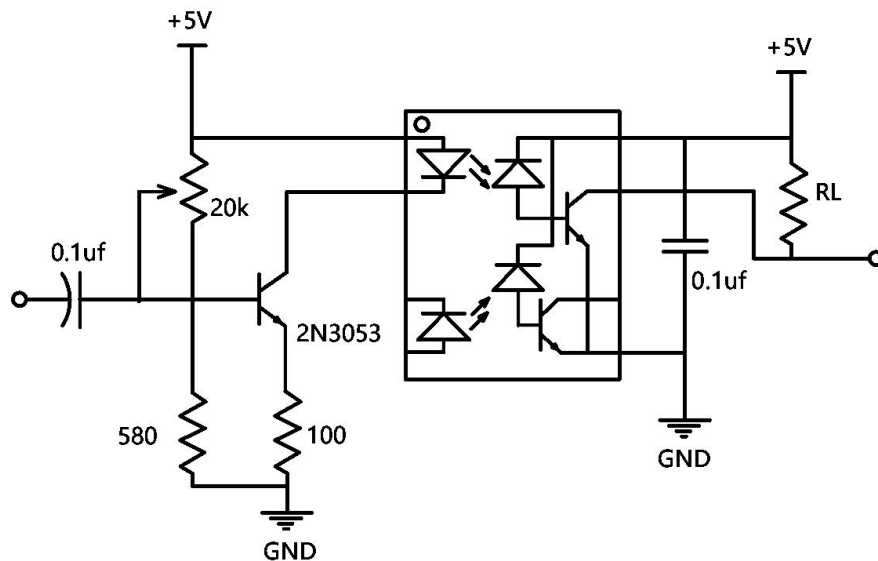
Fig.6 Propagation Delay Time vs. Load resistance



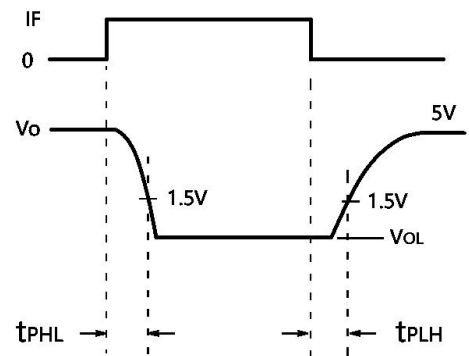
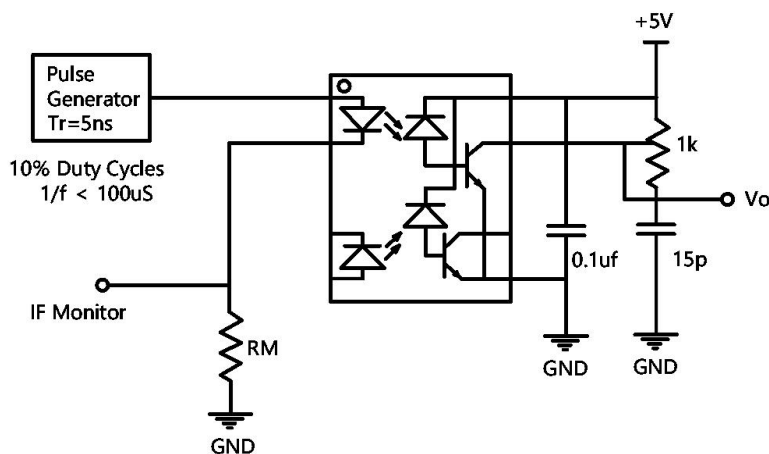
Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)



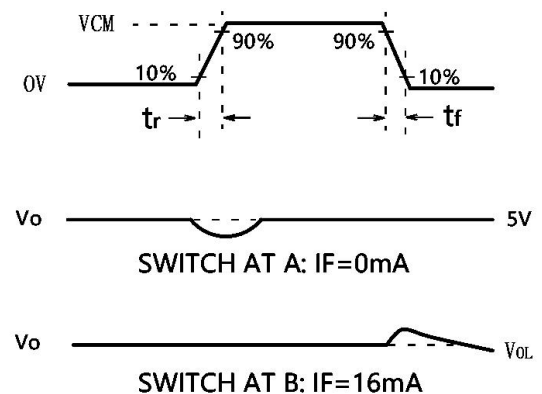
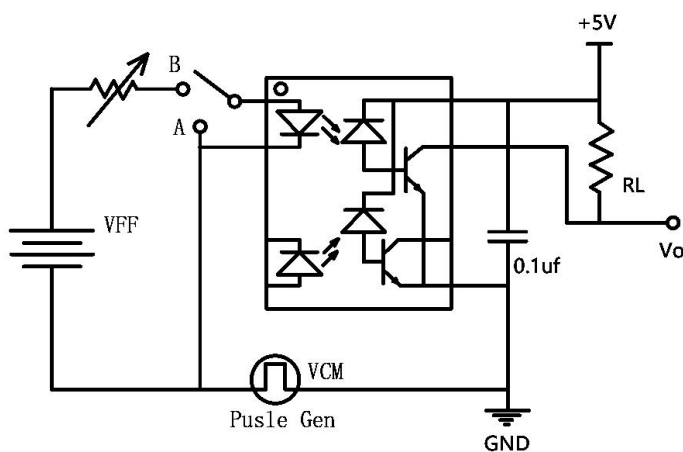
Test Circuit for Frequency Response



Witch Time Test Circuit

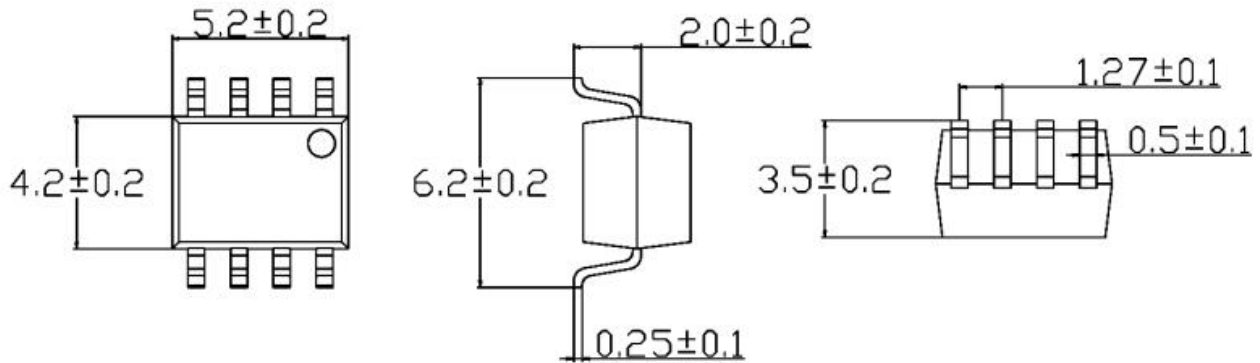


Test Circuit for Common Mode Transient Immunity

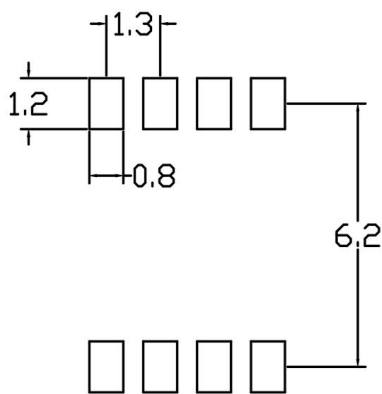


Package Outline Dimensions (unit: mm)

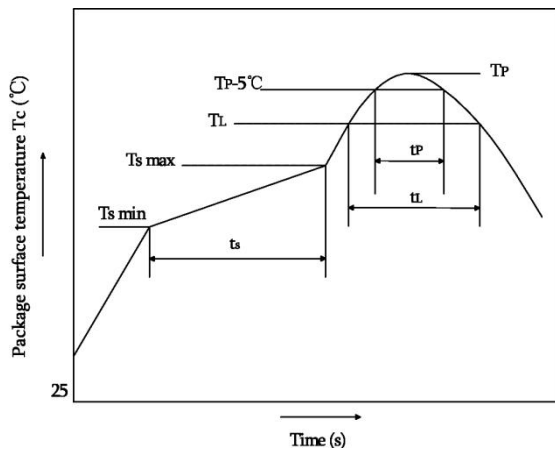
SOP8



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

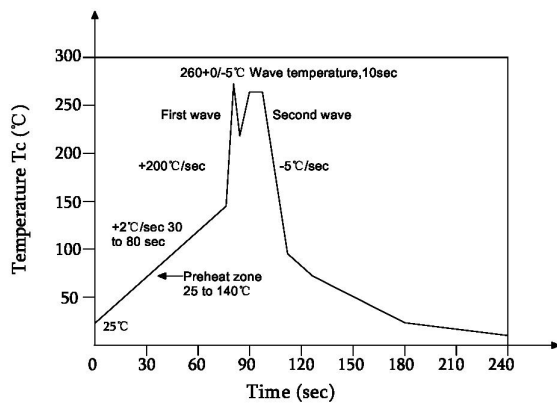


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)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

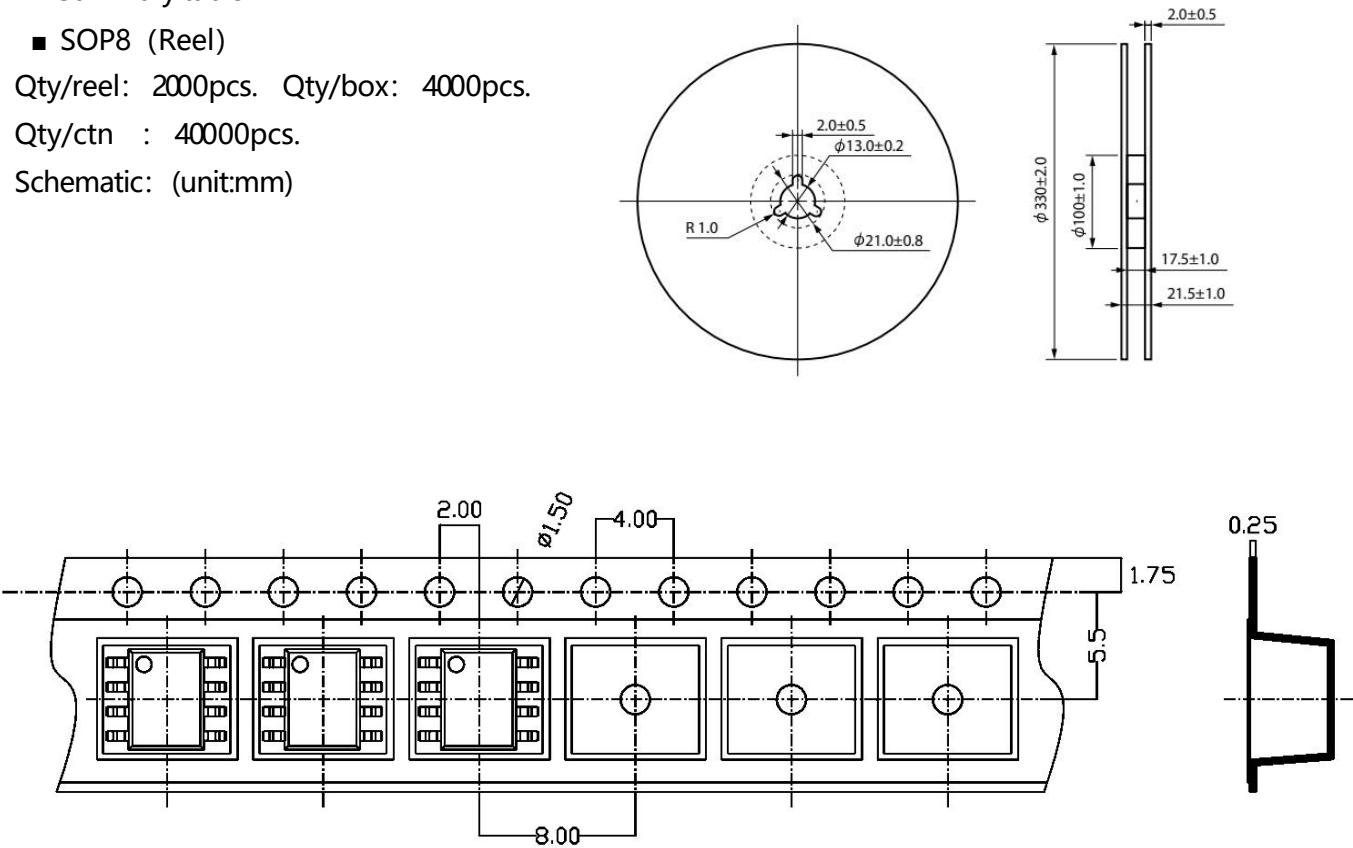
■ Summary table

■ SOP8 (Reel)

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

Qty/ctn : 40000pcs.

Schematic: (unit:mm)



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