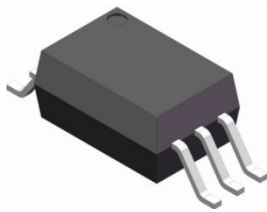
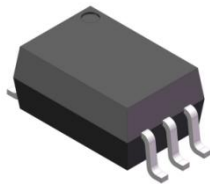
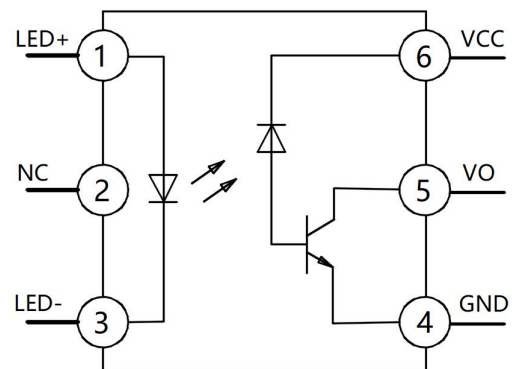


Product packaging logic diagram

SOP6-W



SOP6-P

**Features**

- Very high speed: 1MBit/s
- High isolation voltage between input and output ($V_{iso} = 5000V \text{ rms}$)
- Operating Temperature: $-40^{\circ}C \sim 85^{\circ}C$
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: SOP6-W, SOP6-P
- 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

XL 5XX (M) (G) (X) - (U) (N) (Y)
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Brand (XL)
- ② Product series (501, 511)
- ③ Package type(SOP6-P; SOP6-W:W)
- ④ Halogen option (None : Halogen free)
- ⑤ CTR Bank(A,B or 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
XL501P	SOP6-P	1000pcs / Tape & Reel	XL501

Marking Information

- " XL" denotes brand
- " XX" denotes Product series: 01, 11.
- " 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
Emitter	Forward Current	I _F (avg)	25	mA
	Peak Forward Current (50% duty cycle, 1 ms p.w)	I _F (pk)	50	mA
	Reverse Voltage	V _R	5	V
	Transient Current Peak (≤1μs p.w, 300pps)	I _F (trans)	1	A
	Power Dissipation	P _I	45	mW
Detector	Supply Voltage	V _{CC}	-0.5 ~ 30	V
	Output Current	I _O	8	mA
	Peak Output Current	I _O (pk)	16	mA
	Collector Output	P _O	100	mW
	Output Voltage	V _O	-0.5 to 20	V
	Emitter-Base Reverse Voltage	V _{EBR}	5	V
	Bass Current	I _B	5	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Isolation Voltage *1	V _{ISO}	5000	V _{rms}
Operating Temperature	T _{OPR}	-40 ~ +85	°C
Storage Temperature Range	T _{STG}	-55 ~ +125	°C
Soldering Temperature *2	T _{SOL}	260	°C

Notes:

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 = 16mA	-	1.45	1.7	V
	Reverse Breakdown Voltage	B _{VR}	I _R =10μA	5	20	-	V
	Diode Temperature Coefficient	ΔV _F /ΔT _A	I _F =10mA	-	-1.6	-	mV/°C
Output	High Level Supply Current	I _{CCH}	V _{CC} =15V, I _F =0mA V _O =Open	-	-	1	μA
			T _A =0-70°C	-	-	2	μA
	Low Level Supply Current	I _{CCL}	V _{CC} =15V, I _F =16mA, V _O =Open	-	120	200	μA
Transfer Characteristics	High Level Output Current	I _{OH}	I _F = 0mA, V _O =5.5V V _{CC} =5.5V	-	0.001	0.5	μA
			I _F = 0mA, V _O =15V V _{CC} =15V	-	0.005	1	
			T _A =0-70°C	-	-	50	
	Low Level Output Voltage	V _{OL}	V _{CC} =4.5V, I _F =16mA I _O =3mA	-	0.1	0.4	V
			V _{CC} =4.5V, I _F =16mA I _O =2.4mA	-	0.1	0.5	V
	Current transfer ratio	CTR	I _F =16mA, V _{CC} =4.5V V _O =0.4V	19	24	88	%
			I _F =16mA, V _{CC} =4.5V V _O =0.5V	15	25	-	
	Isolation Resistance	R _{IO}	V _{IO} = 500Vdc 40~60% R.H.	-	1×10 ¹²	-	Ω
	Floating Capacitance	C _{IO}	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	Test Condition	Min.	Typ.	Max.	Unit
Propagation Delay Time to Output HIGH Level		T_{PLH}	$I_F = 16\text{mA}$, $R_L = 1.9\text{k}\Omega$, $T_A = 25^{\circ}\text{C}$	-	150	800	ns
			$I_F = 16\text{mA}$, $R_L = 1.9\text{k}\Omega$			800	
Propagation Delay Time to Output Low Level		T_{PHL}	$I_F = 16\text{mA}$, $R_L = 1.9\text{k}\Omega$, $T_A = 25^{\circ}\text{C}$	-	200	800	ns
			$I_F = 16\text{mA}$, $R_L = 1.9\text{k}\Omega$			800	
Common Mode Transient Immunity(at Logic High)	501	$ CM_H $	$T_A = 25^{\circ}\text{C}$, $I_F = 0\text{mA}$ $ V_{CM} = 10\text{V(Peak)}$ $C_L = 15\text{pF}$, $R_L = 1.9\text{k}\Omega$	5000	-	-	$\text{V}/\mu\text{s}$
	511		$T_A = 25^{\circ}\text{C}$, $I_F = 0\text{mA}$ $ V_{CM} = 1500\text{V(Peak)}$ $C_L = 15\text{pF}$, $R_L = 1.9\text{k}\Omega$	15000	-	-	
Common Mode Transient Immunity (at Logic Low)	501	$ CM_L $	$T_A = 25^{\circ}\text{C}$, $I_F = 16\text{mA}$ $ V_{CM} = 10\text{V(Peak)}$ $C_L = 15\text{pF}$, $R_L = 1.9\text{k}\Omega$	5000	-	-	$\text{V}/\mu\text{s}$
	511		$T_A = 25^{\circ}\text{C}$, $I_F = 16\text{mA}$ $ V_{CM} = 1500\text{V(Peak)}$ $C_L = 15\text{pF}$, $R_L = 1.9\text{k}\Omega$	15000	-	-	

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

Fig.1 Normalized CTR vs. Input current

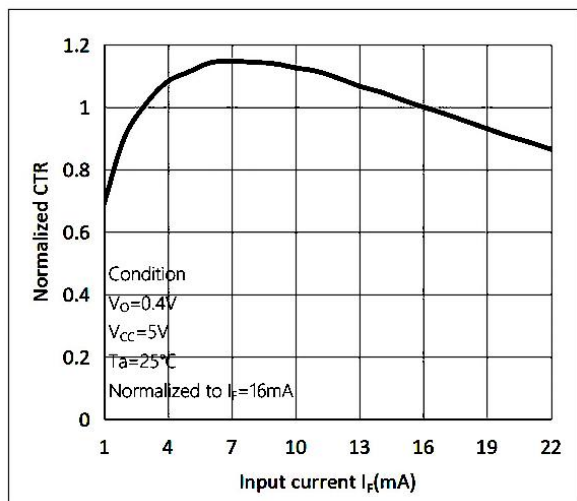


Fig.2 Normalized CTR vs. Ambient temperature

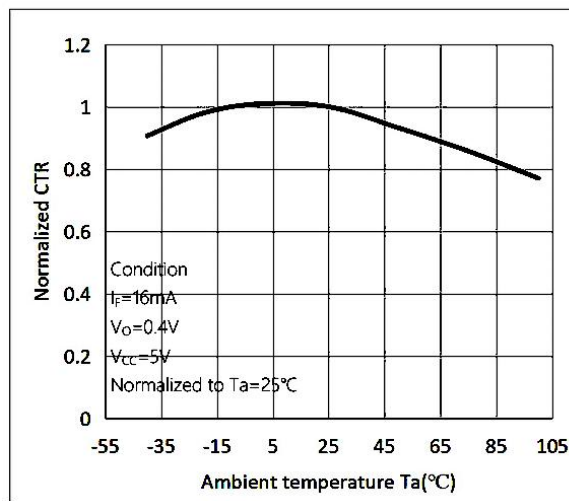


Fig.3 Output current vs. Output voltage

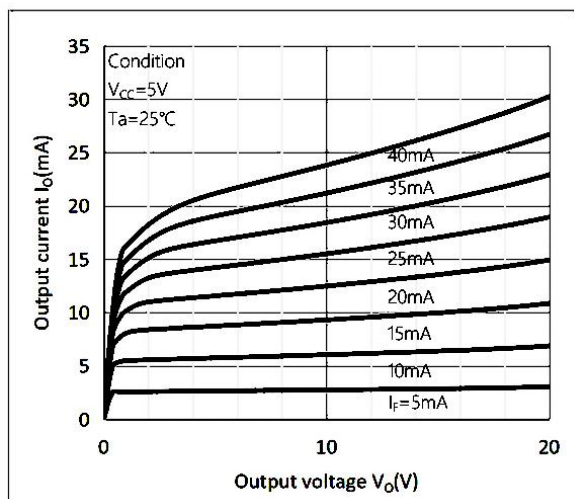


Fig.4 High level output voltage vs. Ambient temperature

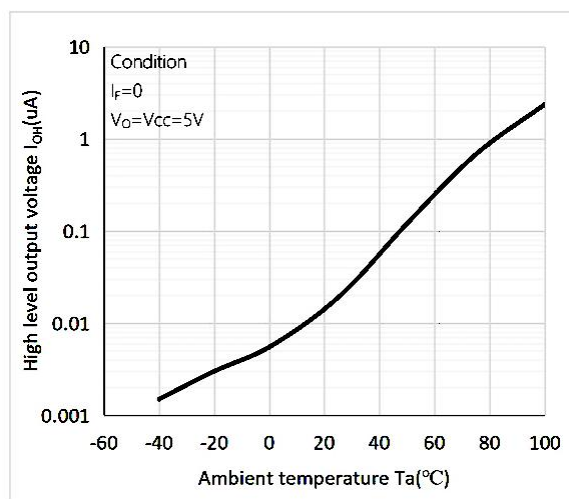


Fig.5 Propagation Delay Time vs. Ambient temperature

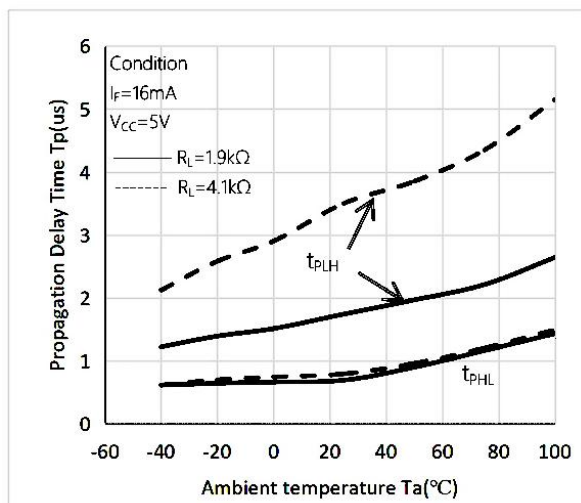
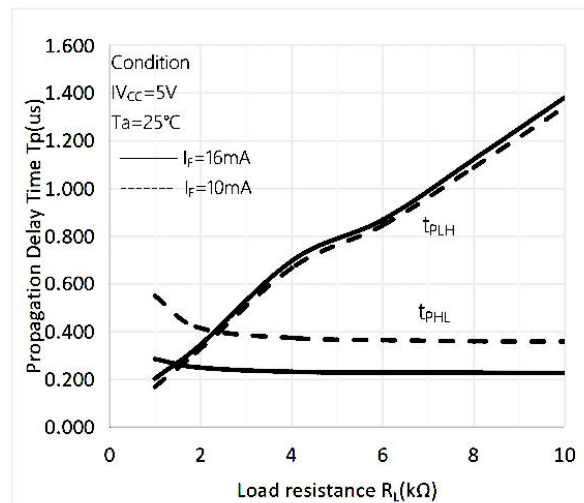


Fig.6 Propagation Delay Time vs. Load resistance



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

Fig.7 Switching Time Test Circuit

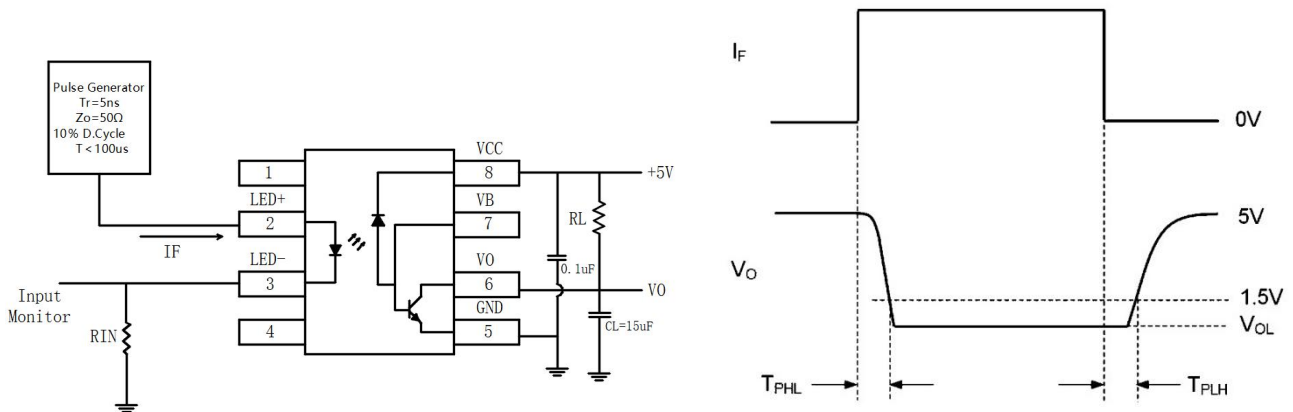
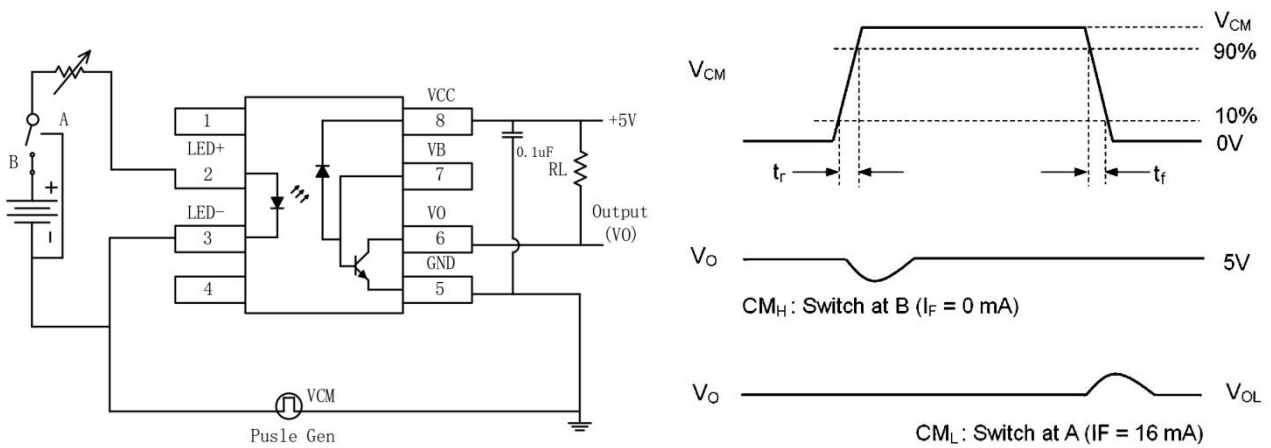
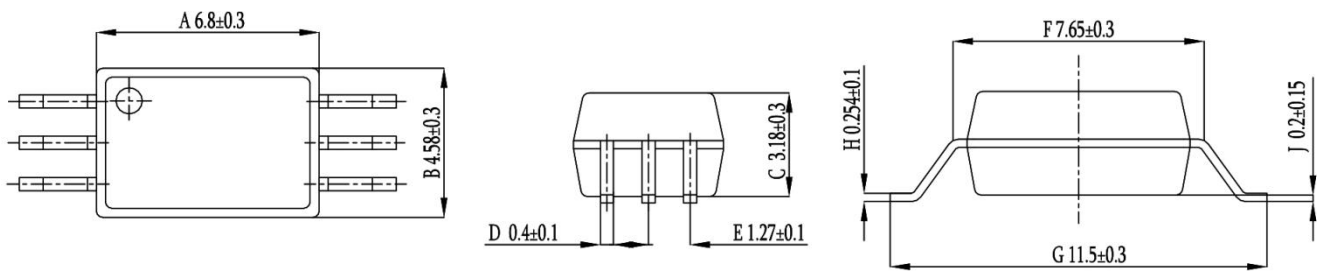


Fig.8 Test Circuit for Common Mode Transient Immunity

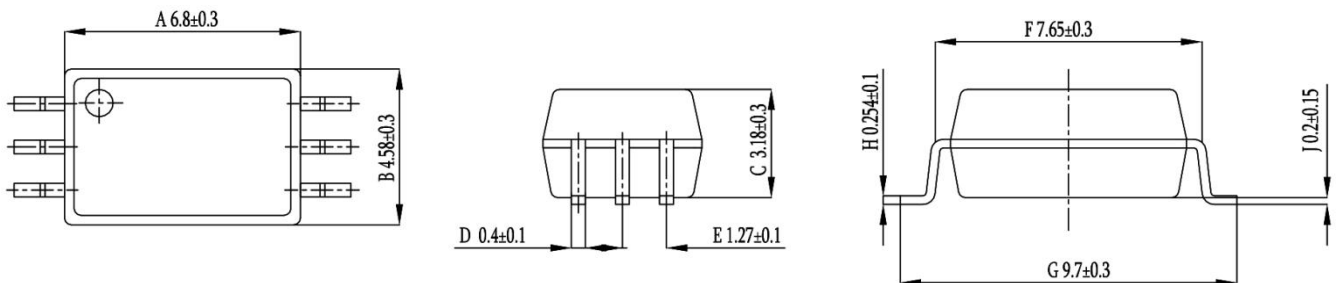


Package Outline Dimensions (unit: mm)

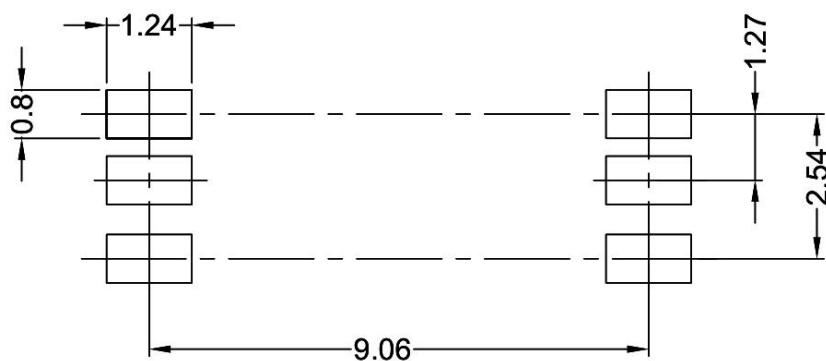
SOP6-W



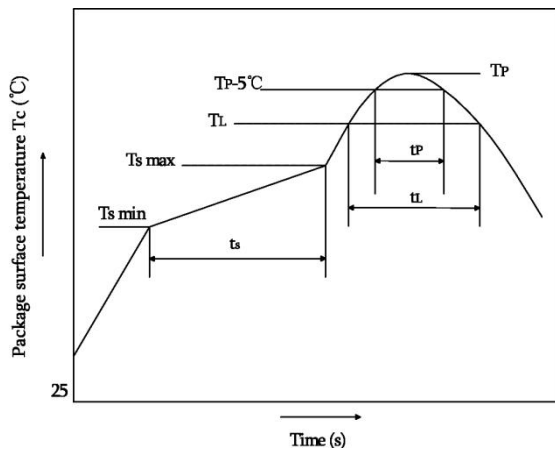
SOP6-P



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

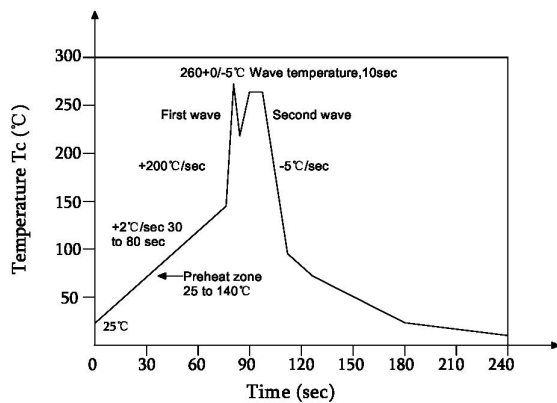


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T _L to T _P)			3	°C/s
Liquidus temperature	T _L	217		°C
Time above T _L	t _L	60	150	s
Peak temperature	T _P		260	°C
Time during which T _c is between (T _P -5) and T _P	t _p		30	s
Ramp-down rate(T _P to T _L)			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
SOP6	Reel($\phi 330$ mm)	1000pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm/min.

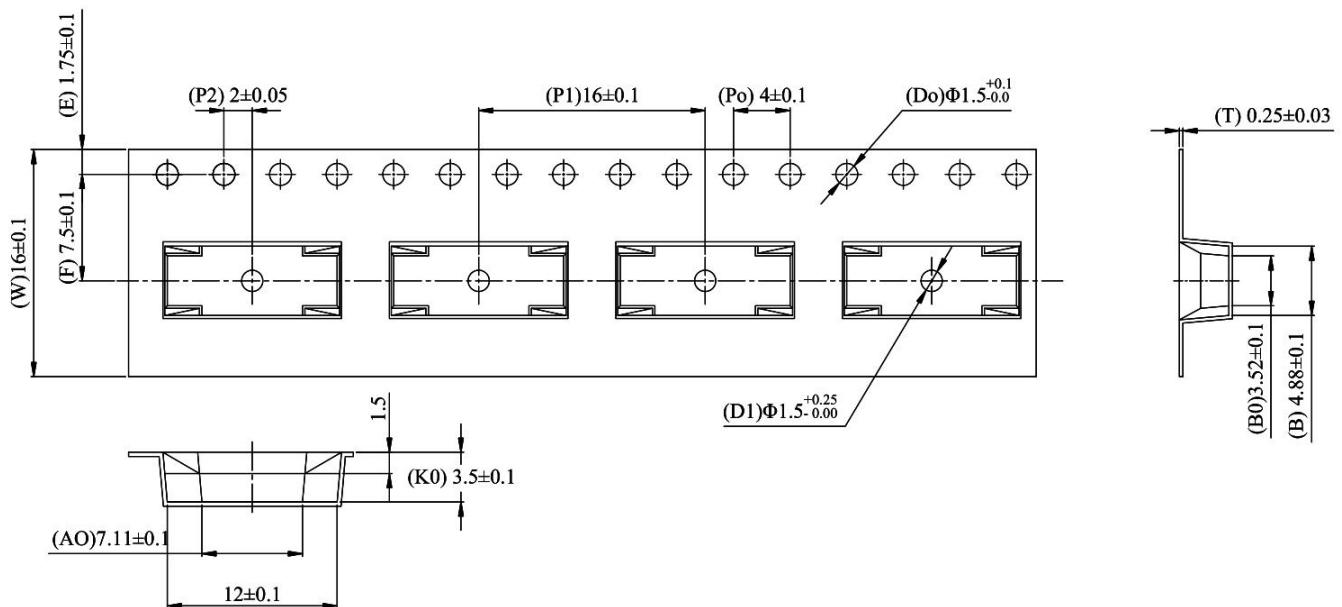
■ Summary table

■ SOP6 (Reel)

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

Qty/ctn : 10000pcs.

Schematic: (unit:mm)



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