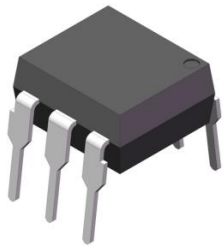
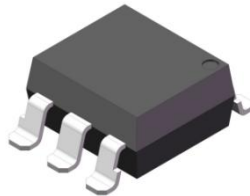


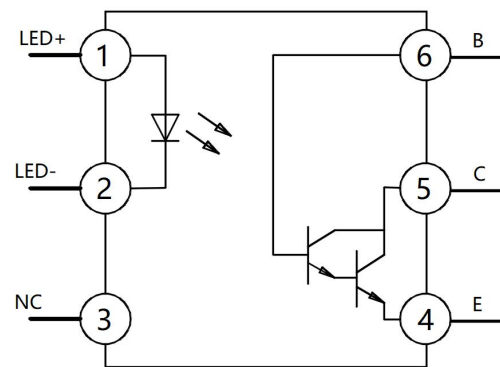
Product packaging logic diagram



DIP6



SMD6



Pin Configuration

Features

- Current transfer ratio
(CTR: $\geq 100\%$ at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{Vrms}$)
- Operating Temperature: $-55^\circ\text{C} \sim 100^\circ\text{C}$
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: DIP6, SMD6
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- Drive industrial controllers and actuators, Ensure the stability of signal transmission.
- At switch-mode power supplies, regulated power supplies, and battery management systems, Achieve signal isolation and amplification, ensuring the stability of power output.
- Can directly drive high-power motors and provide precise control signals. Achieve precise control over speed and direction
- Home appliances For controlling high-power loads such as motors and relays, Provide reliable signal transmission and electrical isolation to ensure the safe operation.
- Ensuring signal clarity and stability in signal transmission circuits.



Ordering Information

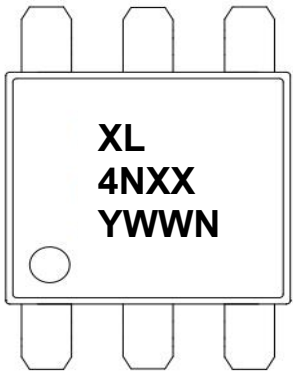
XL 4NXX (M) (G) - (U) (N) (Y)
① ② ③ ④ ⑤ ⑥ ⑦

- ① Brand(XL)
- ② Product series(4N29,4N33)
- ③ Package type(DIP6:None, SMD6:S)
- ④ Halogen option(None :Halogen free)
- ⑤ Lead frame (None: Copper)
- ⑥ Customer option 1 (0-9 or A-Z or none)
- ⑦ Customer option 2 (0-9 or A-Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XL4NXX	DIP6	65pcs / Tube	XL4NXX
XL4NXXS	SMD6	1000pcs / Tape & Reel	XL4NXX

Marking Information

- " XL " denotes brand.
- " 4NXX " denotes product series: 4N29,4N33
- " 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	60	mA
	Forward Peak Current* ¹	I _{FP}	1	A
	Reverse Voltage	V _R	6	V
	Power Dissipation	P _D	100	mW
Output	Collector Power Dissipation	P _C	150	mW
	Collected Current	I _C	100	mA
	Collector-Base Voltage	V _{CB0}	50	V
	Emitter-Base Voltage	V _{EB0}	8	V
	Collector-Emitter Voltage	V _{CEO}	30	V
	Eemitter-Collector Voltage	V _{ECO}	5	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P _{TOT}	350	mW
Isolation Voltage * ²	V _{ISO}	5000	V _{rms}
Operating Temperature	T _{OPR}	-55 ~ +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. At this time, pins 1, 2 & 3 are shorted, and pins 4, 5 & 6 are shorted together.
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	-	1.2	1.5	V
	Reverse Current		I _R	V _R = 3V	-	-	10	μA
	Input Capacitance		C _t	V = 0V, f = 1kHz	-	50	-	pF
Output	Collector Dark Current		I _{CEO}	V _{CE} =10V	-	-	100	nA
	Collector-Base Breakdown Voltage		BV _{CBO}	I _B =0.1mA, I _F =0	50	-	-	V
	Collector-Emitter Breakdown Voltage		BV _{CEO}	I _C =0.1mA, I _F =0	40	-	-	V
	Emitter-Collector Breakdown Voltage		BV _{ECO}	I _E =0.1mA, I _F =0	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	4N29	CTR	I _F =10mA, V _{CE} =10V	100	-	-	%
		4N33			500	-	-	
	Collector-Emitter Saturation Voltage		V _{CE(sat)}	I _F =8mA, I _C =2mA	-	-	1	V
	Isolation Resistance		R _{ISO}	DC500V, 40~60%R.H.	-	10 ¹¹	-	Ω
	Isolation Capacitance		C _f	V=0, f=1MHz	-	0.8	-	pF
	Turn On Time		T _{on}	V _{CE} =10V	-	-	5	μs
	Turn Off Time		T _{off}	I _C =50mA, R _L =100Ω	-	-	100	μs

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

Fig.1 Forward Current vs. Forward Voltage

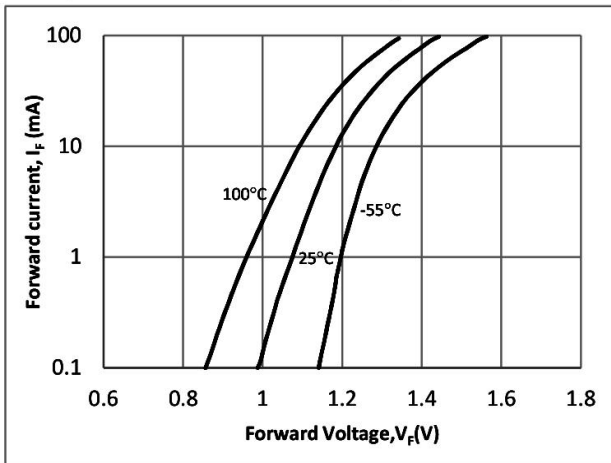


Fig.2 Turn on time vs. Forward Voltage

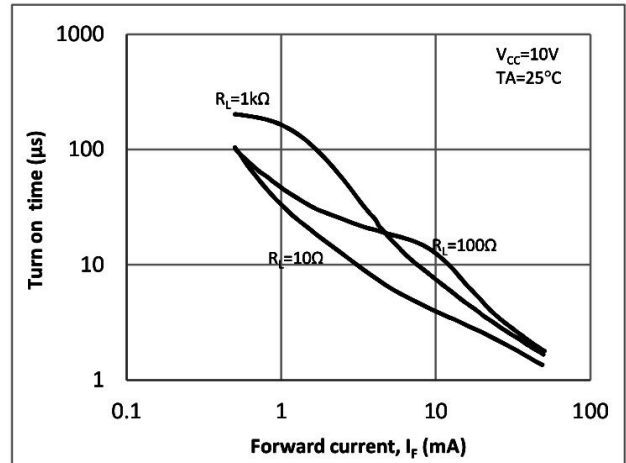


Fig.3 Current Transfer Ratio vs. Forward Current

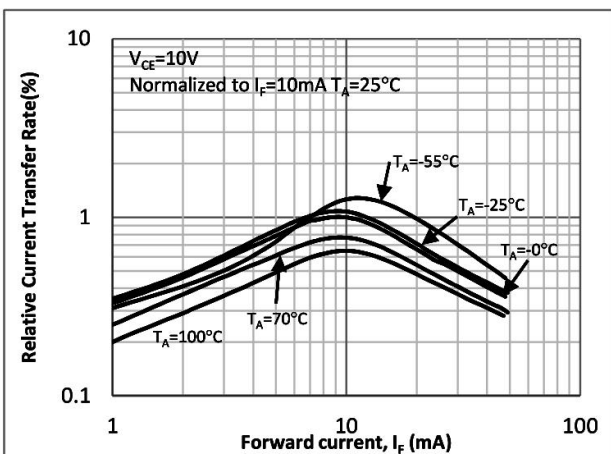


Fig.4 Turn off time vs. Forward Current

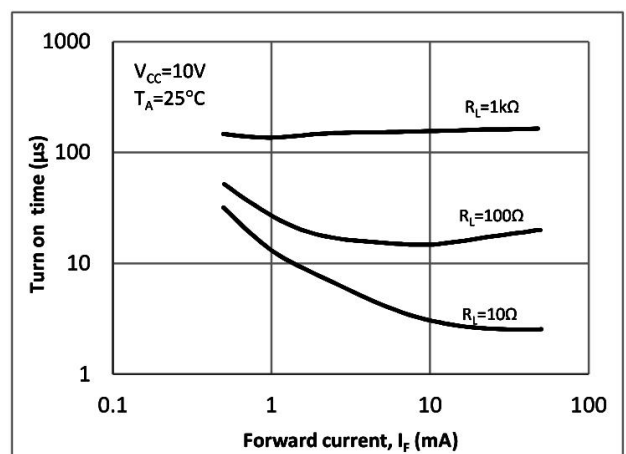


Fig.5 Collector Dark Current vs. Ambient Temperature

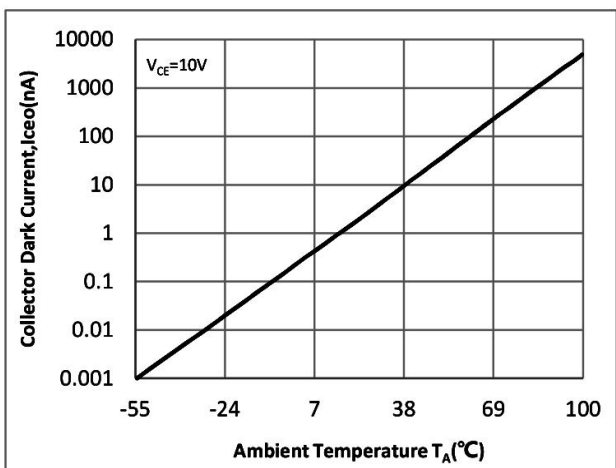
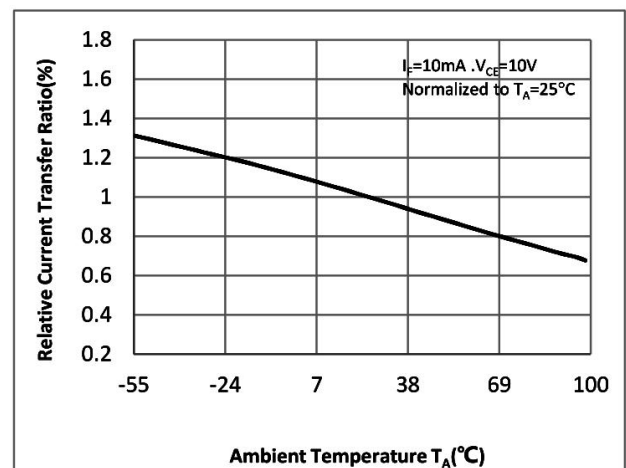
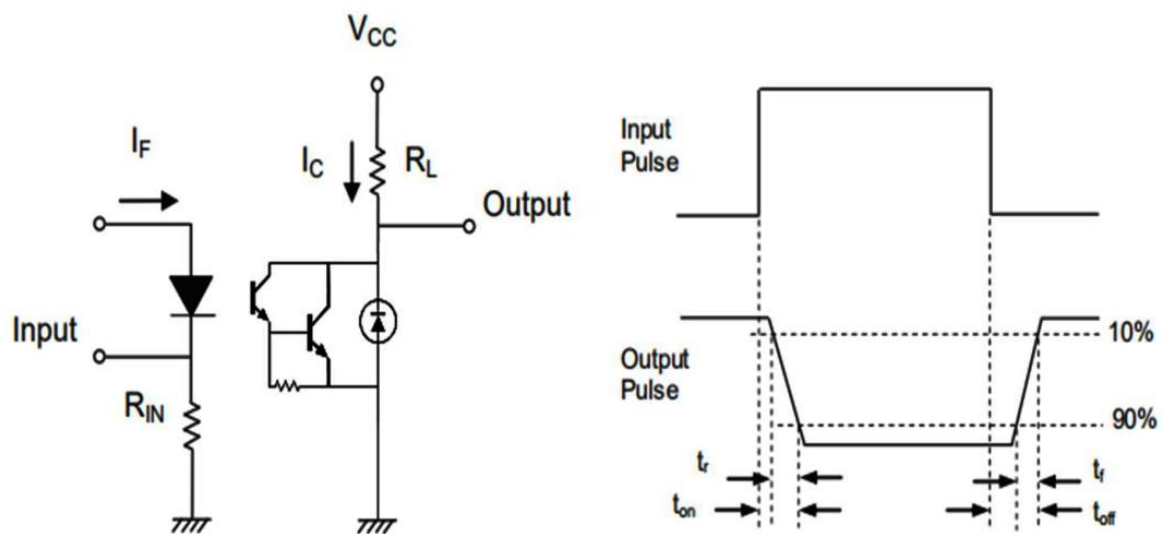


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature

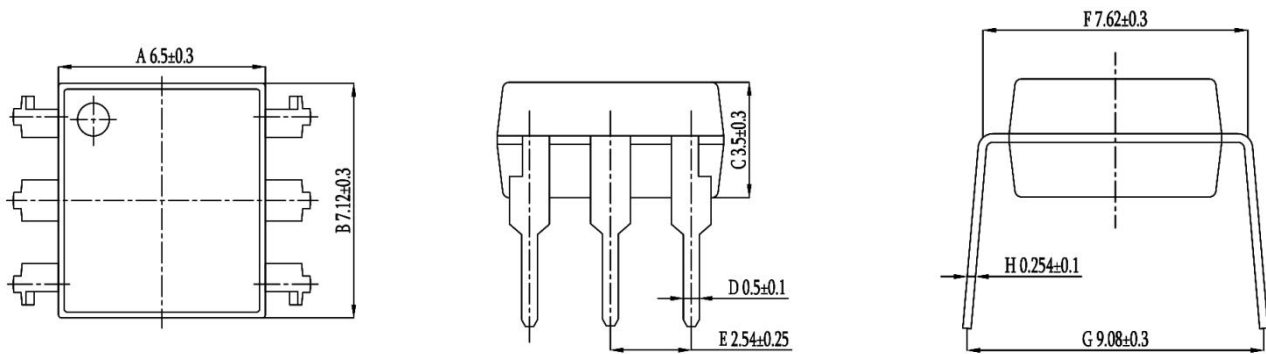


Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

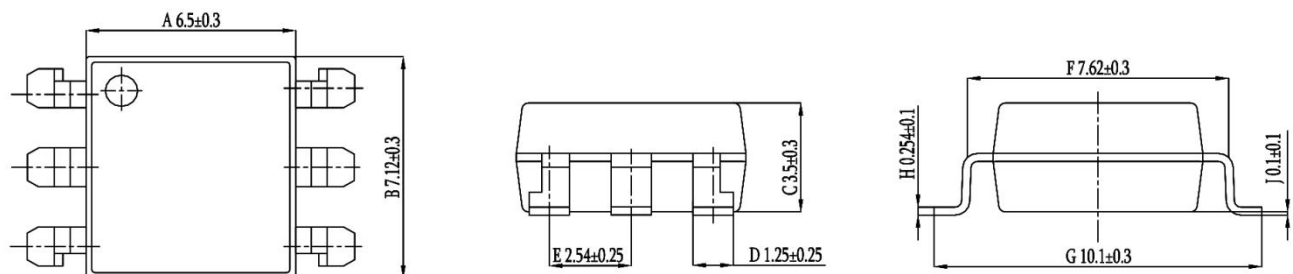
Fig.7 Test circuit diagram



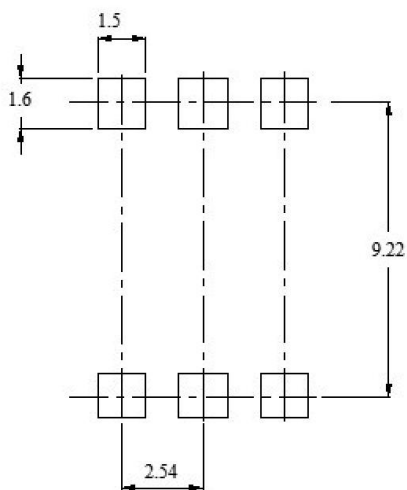
Package Outline Dimensions (unit: mm) DIP6



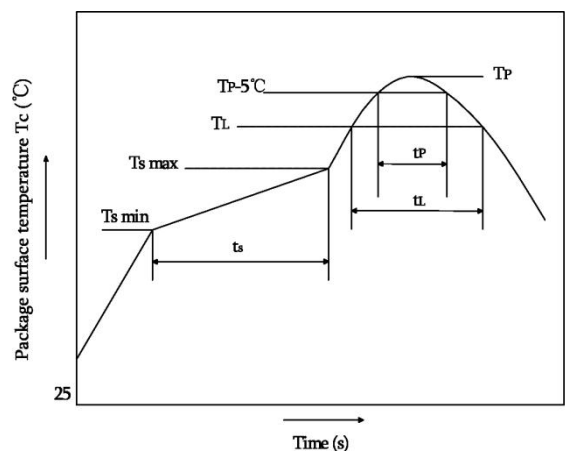
SMD6



SOLDERING FOOTPRINT (unit: mm)



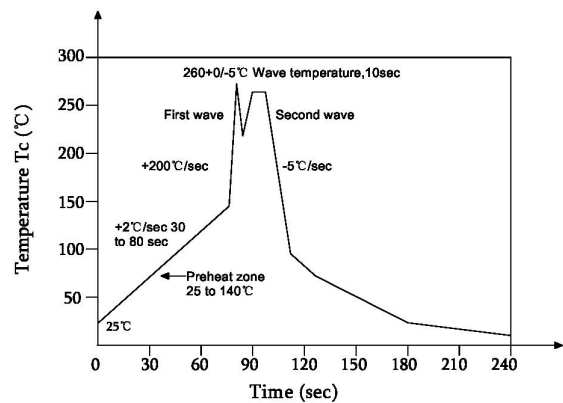
Reflow soldering



	Symbol	Min	Max	Unit
Preheat temprayure	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
DIP6	Tube(500mm)	65pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
SMD6	Reel(φ330mm)	100 pcs/reel	2 reels/box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm/min.

■ Summary table

■ DI6 (Tube)

Qty/ tube : 65pcs. Qty/box: 1625pcs.

Qty/ctn : 19500pcs.

Schematic: (unit:mm)

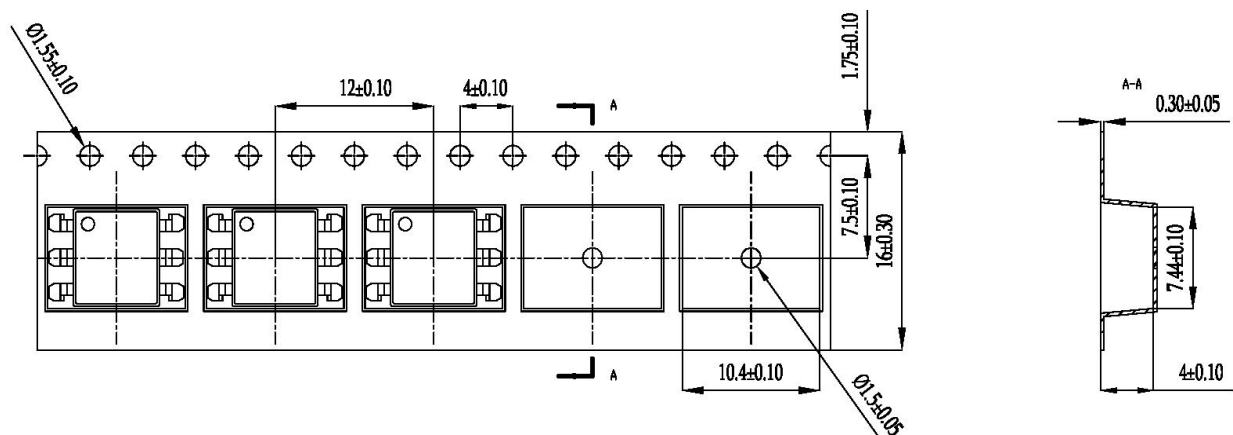
■ SMD6 (Reel)

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

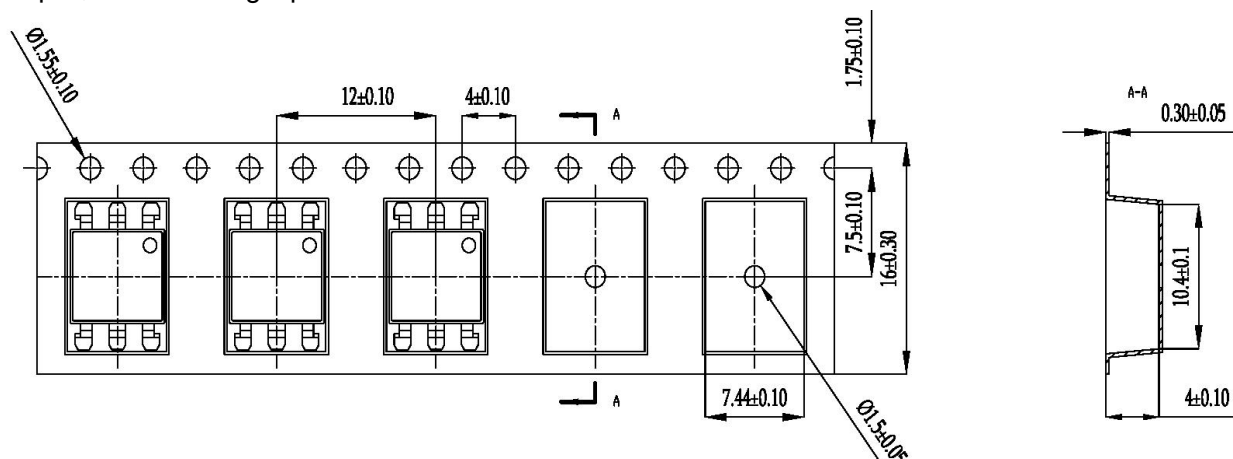
Qty/ctn : 10000pcs.

Schematic: (unit:mm)

Tape \$ Reel Packing Option T1



Tape \$ Reel Packing Option T2



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