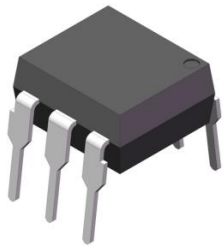
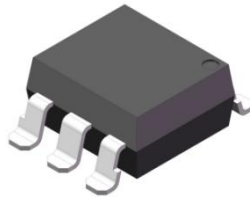
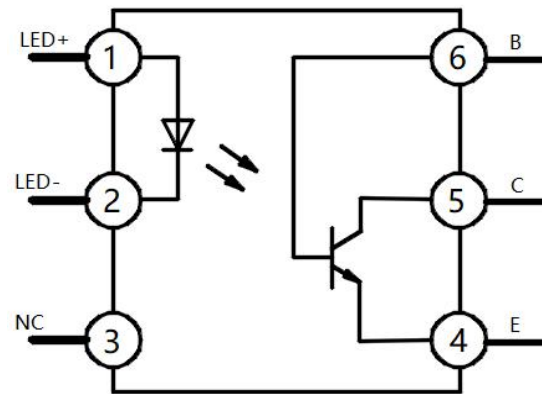


**Product packaging logic diagram**

DIP6



SMD6



Pin Configuration

**Features**

- Current transfer ratio  
(CTR:  $\geq 20\%$  at  $I_F = 10\text{mA}$ ,  $V_{CE} = 10\text{V}$ )
- High isolation voltage between input and output ( $V_{iso} = 5000\text{V}_{rms}$ )
- 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**

- Industrial automation equipment (PLC module, sensor interface)
- Measurement instrument signal isolation
- Design and application of smart meters and switching power supplies
- Photo voltaic inverters, energy storage system applications
- Main control circuit for household appliances (air conditioning, refrigerator, water heater);



Ordering Information

XL      4N25      (M)      ( G )   -   ( U )   ( N )   ( Y )  
①                      ②                      ③                      ④                      ⑤                      ⑥                      ⑦

- ① Brand(XL)
- ② Product series(4N25)
- 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 |
|-------------|---------|-----------------------|--------------|
| XL4N25      | DIP6    | 65pcs / Tube          | XL4N25       |
| XL4N25S     | SMD6    | 1000pcs / Tape & Reel | XL4N25       |

Marking Information

- " XL" denotes brand.
- " 4N25" denotes Product series.
- " Y" denotes Year : A(2024), B(2025), C(2026)
- " WW" denotes Week' s number .
- " N" denotes the day of Week.



Maximum Ratings (@ TA = 25°C unless otherwise specified)

| Parameter |                             | Symbol           | Value | Unit |
|-----------|-----------------------------|------------------|-------|------|
| Input     | Forward Current             | IF               | 60    | mA   |
|           | Forward Peak Current*1      | IFP              | 1     | A    |
|           | Reverse Voltage             | VR               | 6     | V    |
|           | Power Dissipation           | PD               | 100   | mW   |
| Output    | Collector Power Dissipatio  | PC               | 300   | mW   |
|           | Collected Current           | IC               | 100   | mA   |
|           | Collector-Base Voltage      | V <sub>CBO</sub> | 70    | V    |
|           | Collector-Emitter Voltage   | V <sub>CEO</sub> | 30    | V    |
|           | Eemitter- Collector Voltage | V <sub>ECO</sub> | 7     | V    |

## Thermal Characteristics

| Parameter                 | Symbol           | Value      | Unit             |
|---------------------------|------------------|------------|------------------|
| Total Power Dissipation   | P <sub>TOT</sub> | 350        | mW               |
| Isolation Voltage *2      | V <sub>ISO</sub> | 5000       | V <sub>rms</sub> |
| Operating Temperature     | T <sub>OPR</sub> | -55 ~ +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. At this time, pins 1, 2 & 3 are shorted, and pins 4, 5 & 6 are shorted together.
3. For 10 seconds

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

| Parameter                |                                      | Symbol               | Test Condition                               | Min.               | Typ.             | Max. | Unit |
|--------------------------|--------------------------------------|----------------------|----------------------------------------------|--------------------|------------------|------|------|
| Input                    | Forward Voltage                      | V <sub>F</sub>       | I <sub>F</sub> = 10mA                        | -                  | 1.2              | 1.5  | V    |
|                          | Reverse Current                      | I <sub>R</sub>       | V <sub>R</sub> = 3V                          | -                  | -                | 10   | μA   |
|                          | Input Capacitance                    | C <sub>t</sub>       | V = 0V, f = 1kHz                             | -                  | 50               | -    | pF   |
| Output                   | Collector Dark Current               | I <sub>CEO</sub>     | V <sub>CE</sub> = 10V                        | -                  | -                | 50   | nA   |
|                          | Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | I <sub>B</sub> = 0.1mA, I <sub>F</sub> = 0   | 70                 | -                | -    | V    |
|                          | Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | I <sub>C</sub> = 0.1mA, I <sub>F</sub> = 0   | 30                 | -                | -    | V    |
|                          | Emitter-Collector Breakdown Voltage  | BV <sub>ECO</sub>    | I <sub>E</sub> = 0.01mA, I <sub>F</sub> = 0  | 7                  | -                | -    | V    |
| Transfer Characteristics | Current Transfer Ratio               | CTR                  | I <sub>F</sub> = 10mA, V <sub>CE</sub> = 10V | 20                 | -                | -    | %    |
|                          | Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>F</sub> = 50mA, I <sub>C</sub> = 2mA  | -                  | -                | 0.5  | V    |
|                          | Isolation Resistance                 | R <sub>ISO</sub>     | DC 500V, 40~60% R.H.                         | 5*10 <sup>10</sup> | 10 <sup>11</sup> | -    | Ω    |
|                          | Isolation Capacitance                | C <sub>f</sub>       | V = 0, f = 1MHz                              | -                  | 1                | 2.5  | pF   |
|                          | Response Time (Rise)                 | T <sub>r</sub>       | V <sub>CE</sub> = 10V                        | -                  | 3                | 10   | μs   |
|                          | Response Time (Fall)                 | T <sub>f</sub>       | I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω  | -                  | 3                | 10   | μs   |

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

Fig.1 Forward Current vs. Forward Voltage

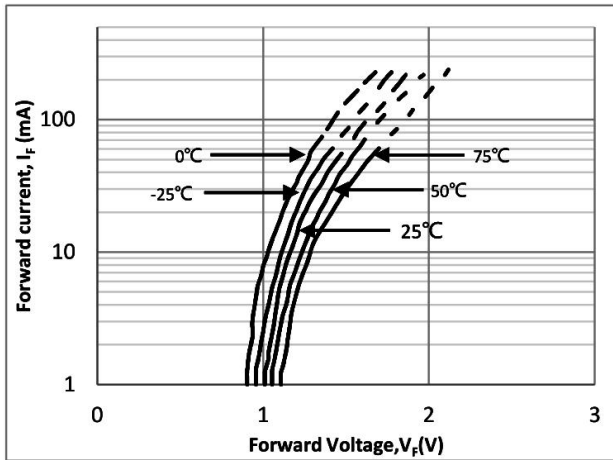


Fig.2 Collector Current vs. Collector-emitter Voltage

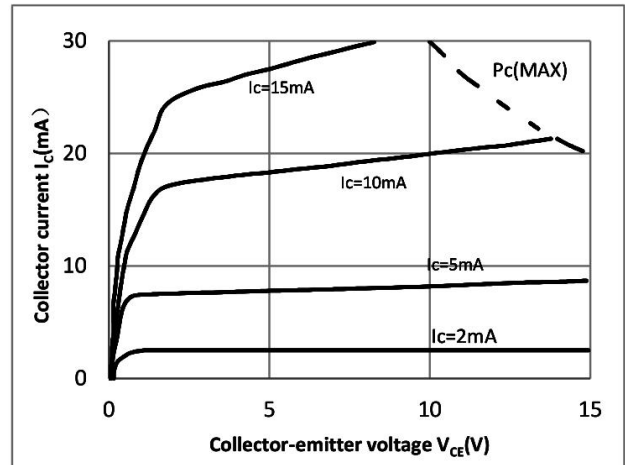


Fig.3 Forward Current vs. Forward Voltage

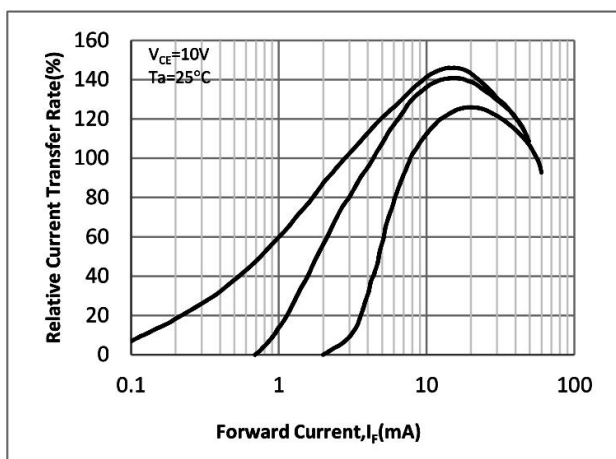


Fig.4 Collector-emitter Saturation Voltage vs. Forward Current

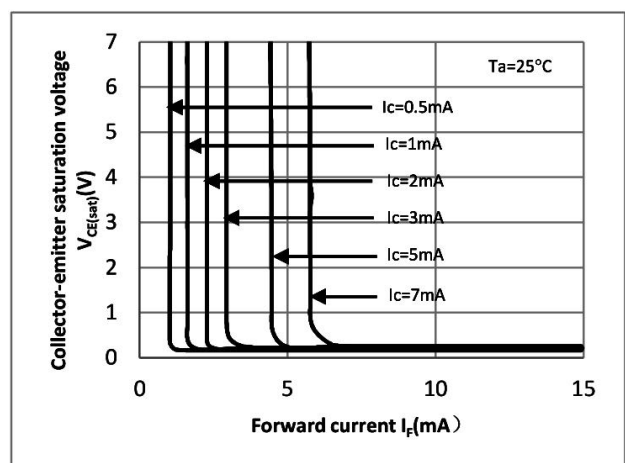


Fig.5 Collector Dark Current vs. Ambient Temperature

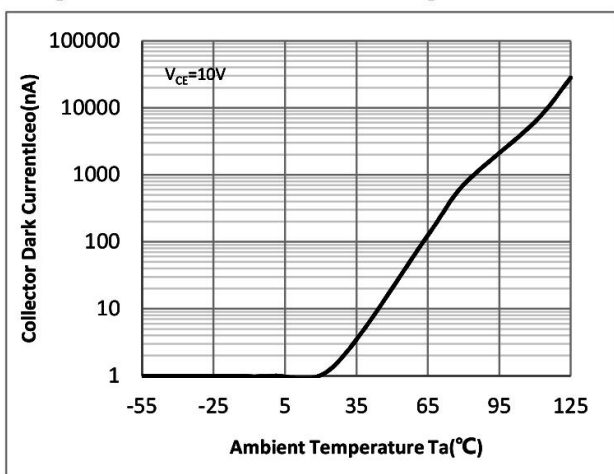
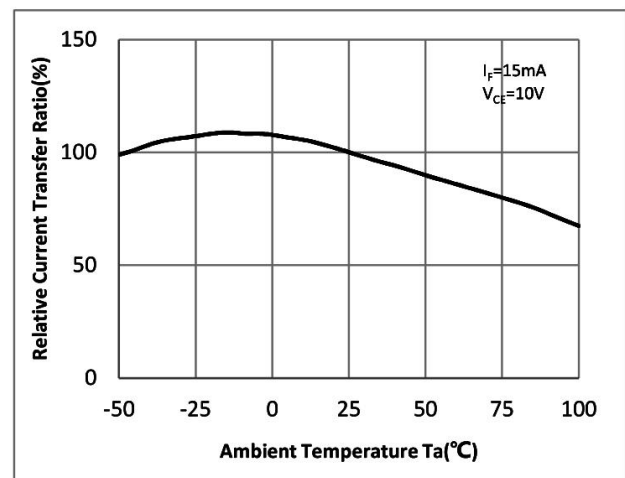


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature



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

Fig.7 Response Time vs. Load Resistance

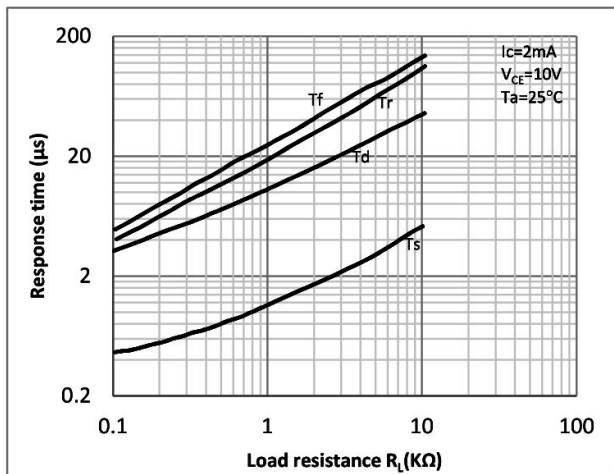
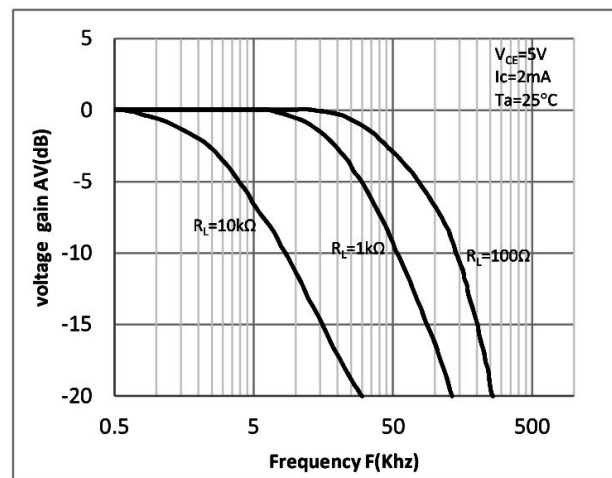
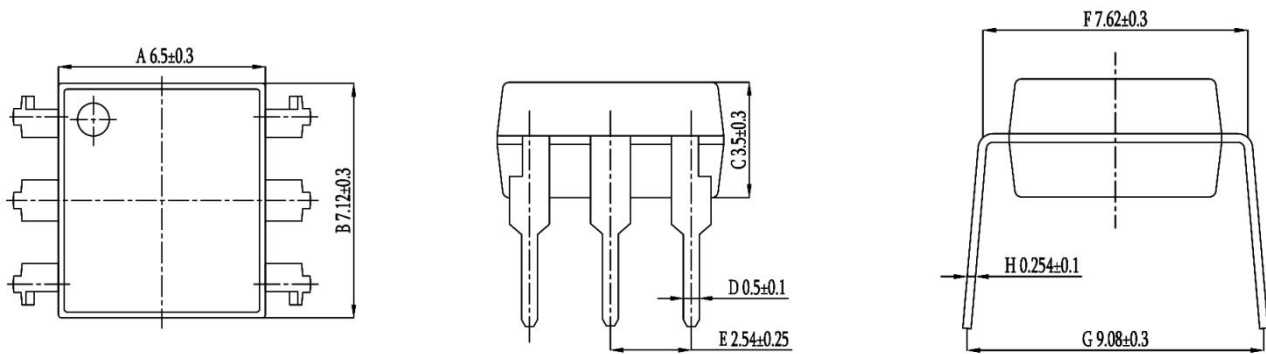


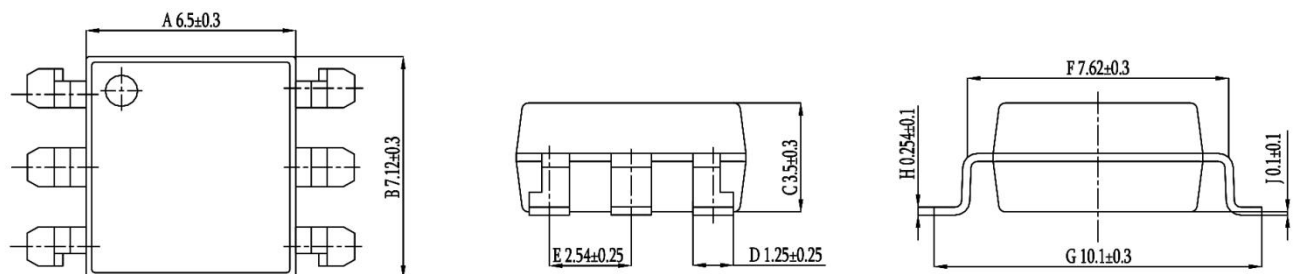
Fig.8 Frequency Response



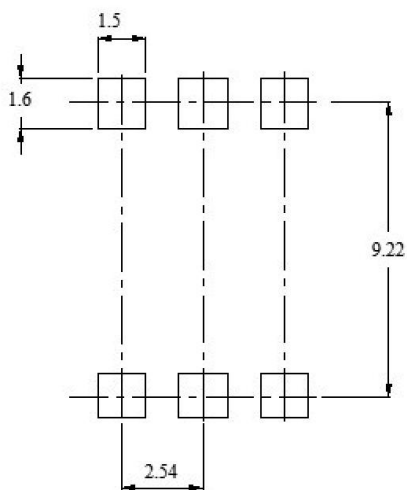
### Package Outline Dimensions (unit: mm) DIP6



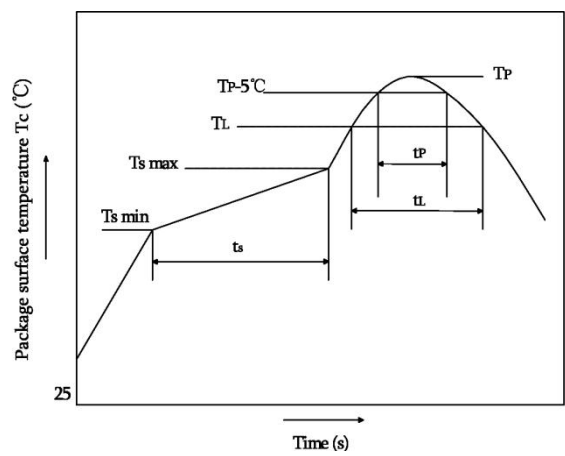
### SMD6



### SOLDERING FOOTPRINT (unit: mm)



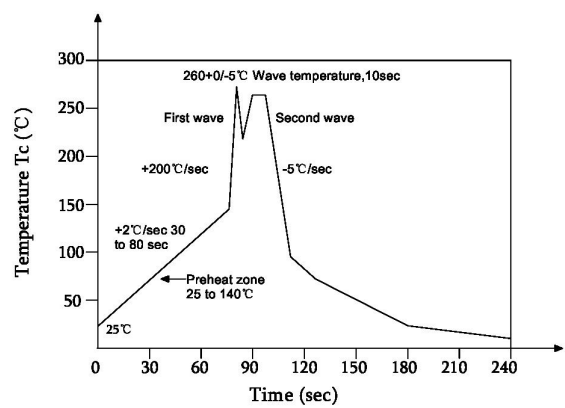
Reflow soldering



|                                               | 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

##### ■ DIP6 (Tube)

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

Qty/ctn : 19500pcs.

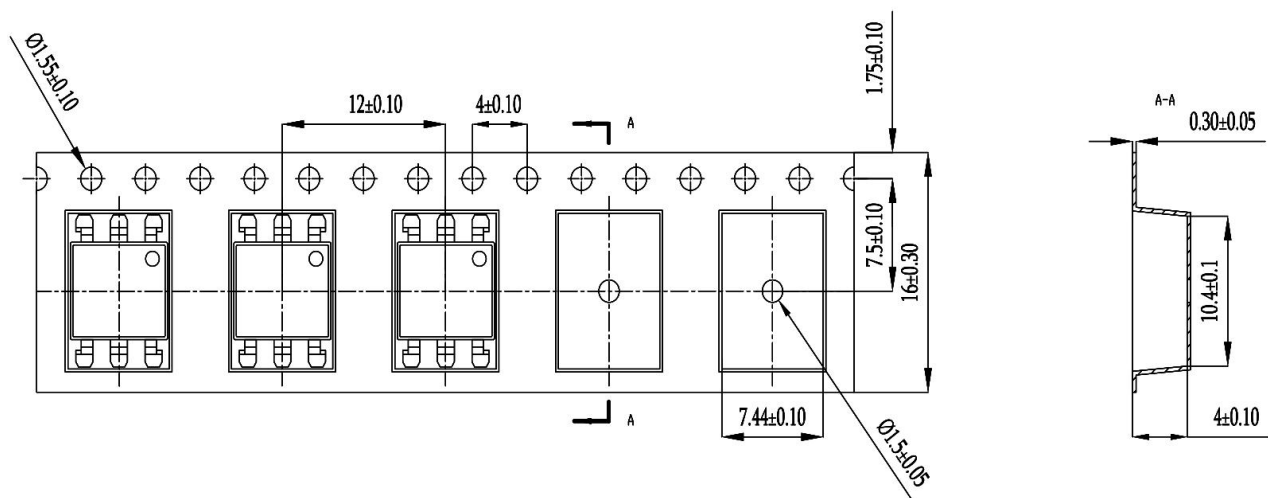
Schematic: (unit:mm)

##### ■ SMD6 (Reel)

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

Qty/ctn : 10000pcs.

Schematic: (unit:mm)



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