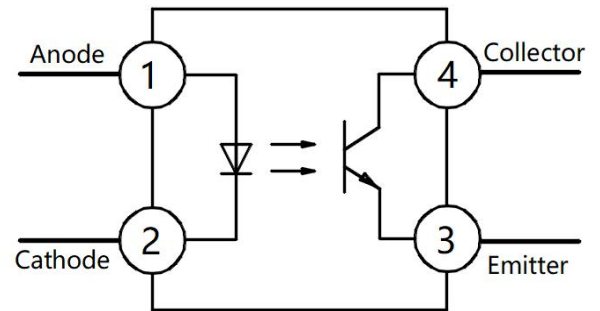
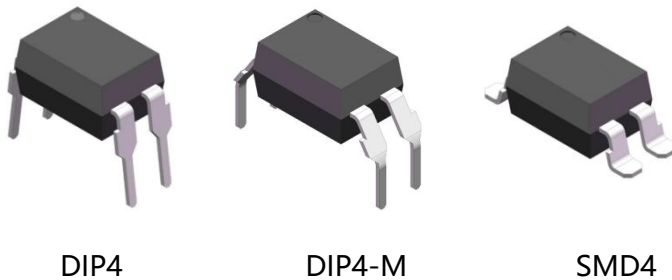


Product packaging logic diagram



Pin Configuration

Features

- Current transfer ratio(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{Vrms}$)
- Collector - emitter breakdown voltage $BV_{CEO} \geq 350\text{V}$
- Operating Temperature: $-55^\circ\text{C} \sim 100^\circ\text{C}$
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: DIP4、DIP4-M、SMD4
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- It is widely used in the feedback control loop of switching power supply and the isolation between the main circuit and the control circuit, ensuring the stability of the output voltage and quickly transmitting the fault signal to trigger the protection mechanism in the case of overload or short circuit.
- In applications such as PLCs (Programmable Logic Controllers), motor drives, and sensor interfaces, it is used for signal isolation to prevent high-voltage noise from interfering with low-voltage control logic.
- For signal isolation in serial communication interfaces (e.g., RS-232,) to improve anti-interference capability.
- Consumer electronics: household appliances, smart home devices (smart lighting, smart sockets), computers and peripherals (printers, monitors), etc.
- Lighting control: AC transistor optocoupler is suitable for dimming control, smart switching, and wireless control, supporting AC input.



Ordering Information

XL 851 (X) (X) - (U) (N) (Y)
 ① ② ③ ④ ⑤ ⑥ ⑦

- ① Brand(BL)
- ② Product series(851)
- ③ Package type(DIP4L:None, DIP4-M:M,SMD4: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 |
|-------------|---------|-----------------------|--------------|
| XL851 | DIP4 | 100pcs / Tube | XL851 |
| XL851M | DIP4-M | 100pcs / Tube | XL851 |
| XL851S | SMD4 | 2000pcs / Tape & Reel | XL851 |

Notes 1: X denotes CTR Rank : A, B or None.

Marking Information

- " XL" denotes brand.
- " 851" 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 (@ T_A = 25°C unless otherwise specified)

| Parameter | | Symbol | Value | Unit |
|-----------|---|--------|-------|-------|
| Input | Forward Current | IF | 60 | mA |
| | Reverse Voltage | VR | 6 | V |
| | Power Dissipation | PD | 100 | mW |
| | Power Dissipation Rating reduction factor*1 | PDD | 2.9 | mW/°C |
| Output | Collector Power Dissipation | PC | 150 | mW |
| | Collector Current | IC | 50 | mA |
| | Collector-Emitter Voltage | VCEO | 350 | V |
| | Emitter-Collector Voltage | VECO | 7 | V |

Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---------------------------|--------|------------|------|
| Total Power Dissipation | PTOT | 200 | mW |
| Isolation Voltage *2 | VISO | 5000 | Vrms |
| Operating Temperature | TOPR | -55 ~ +100 | °C |
| Storage Temperature Range | TSTG | -55 ~ +125 | °C |
| Soldering Temperature *3 | TSOL | 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 | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------------|--------------------------------------|----------------------|---|--------------------|------|------|------|
| Input | Forward Voltage | V _F | I _F = 10mA | - | 1.2 | 1.4 | V |
| | Reverse Current | I _R | V _R = 5V | - | - | 10 | μA |
| | Input Capacitance | C _{in} | V _R = 0V, f = 1kHz | - | 30 | 250 | pF |
| Output | Collector-Emitter Dark Current | I _{CEO} | V _{CE} = 200V, I _F = 0 | - | - | 100 | nA |
| | Collector-Emitter Breakdown Voltage | BV _{CEO} | I _C = 0.1mA, I _F = 0 | 350 | - | - | V |
| | Emitter-Collector Breakdown Voltage | BV _{ECO} | I _E = 0.1mA, I _F = 0 | 7 | - | - | V |
| Transfer Characteristics | Current Transfer Ratio | CTR | I _F = 5 mA, V _{CE} = 5V | 50 | - | 600 | % |
| | Collector-Emitter Saturation Voltage | V _{CE(sat)} | I _F = 20mA, I _C = 1mA | - | - | 0.4 | V |
| | Isolation Resistance | R _{IO} | V _{IO} = 500Vdc 40~60% R.H. | 1X10 ¹¹ | - | - | Ω |
| | Floating Capacitance | C _{IO} | V _{IO} = 0, f = 1MHz | - | 0.6 | - | pF |
| | Cut-off frequency | f _C | V _{CE} = 5V, I _C = 2mA R _L =100Ω, -3dB | - | 80 | - | kHz |
| | Turn On Time | T _{on} | V _{CE} =2V, R _L = 100Ω I _C =2mA | - | 4 | 18 | μs |
| Turn Off Time | T _{off} | | - | 5 | 18 | | |

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

Fig.1 Forward Current vs. Forward Voltage

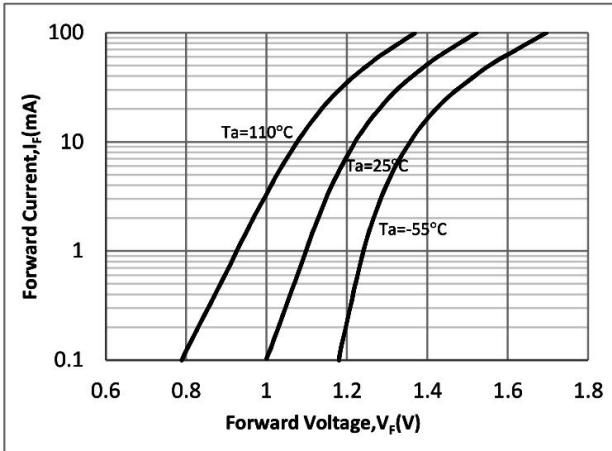


Fig.2 Relative Current Transfer Ratio vs. Forward Current

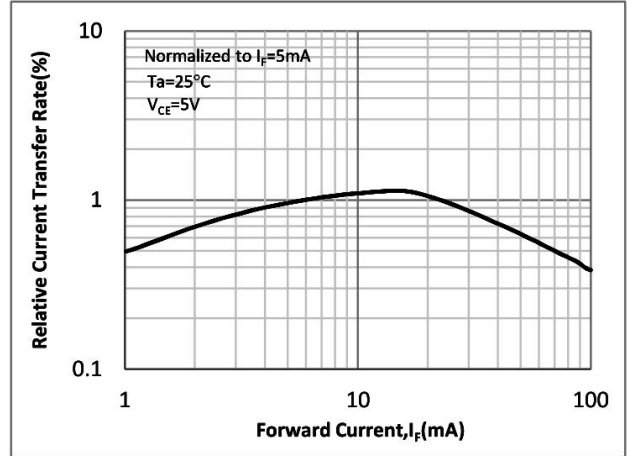


Fig.3 Collector Current vs. Collector-emitter Voltage

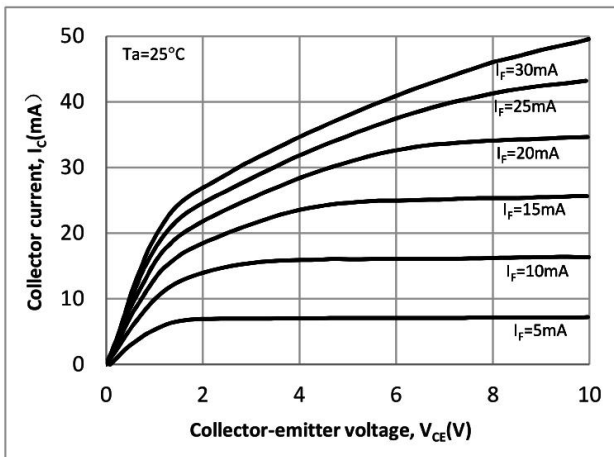


Fig.4 Relative Current Transfer Ratio vs. Ambient Temperature

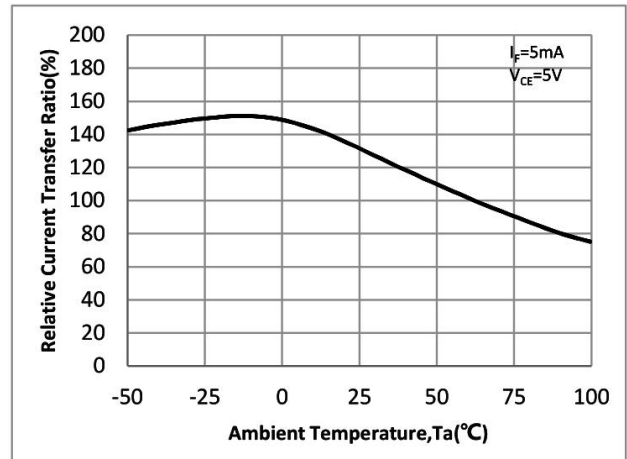


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

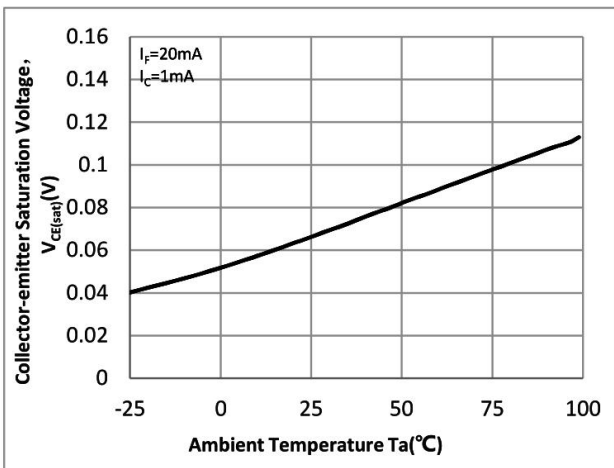
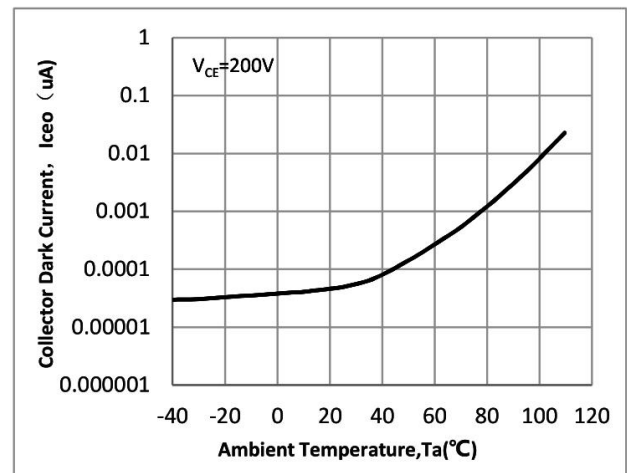


Fig.6 Collector Dark Current vs. Ambient Temperature



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

Fig.7 Response Time vs. Load Resistance

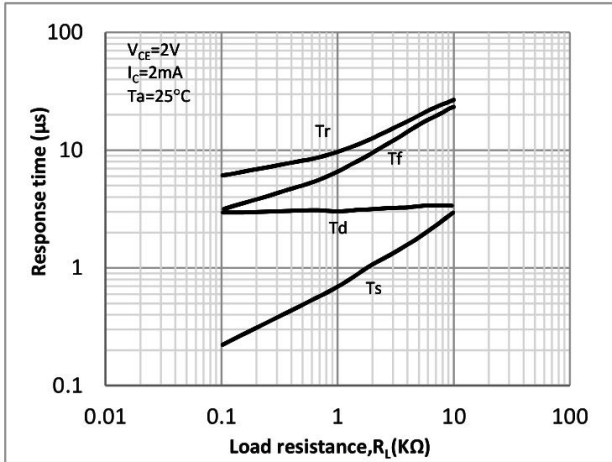


Fig.8 Collector-emitter Saturation Voltage vs. Forward Current

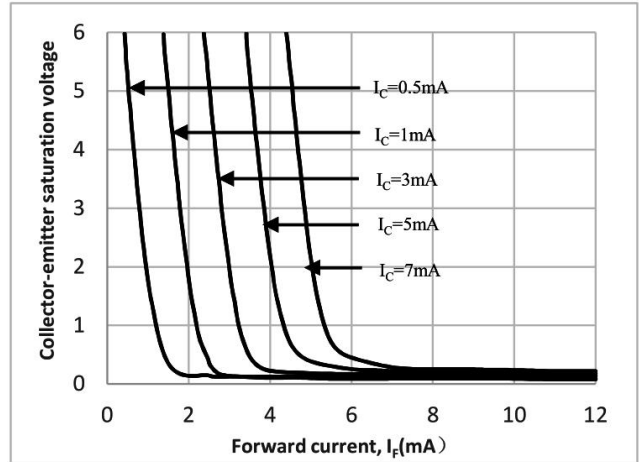
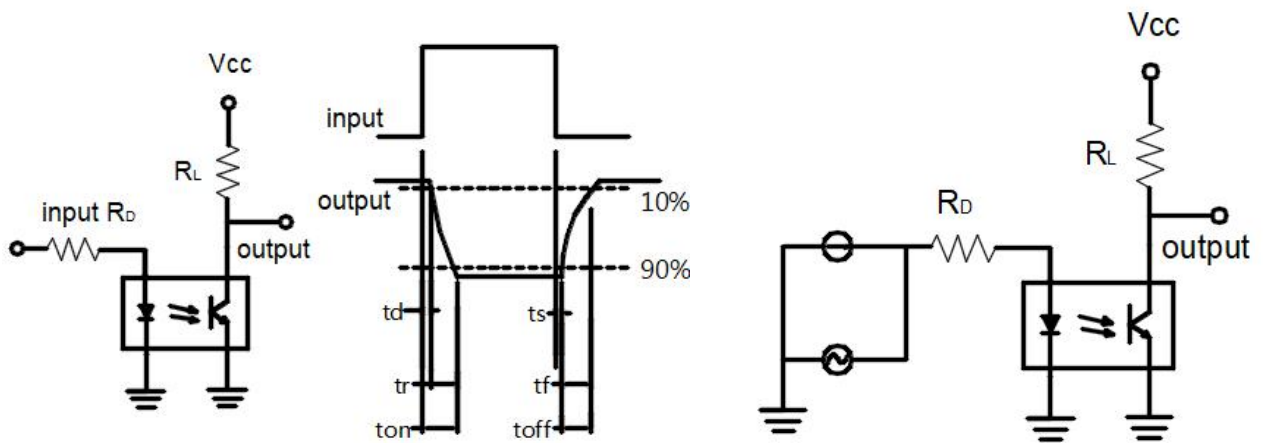
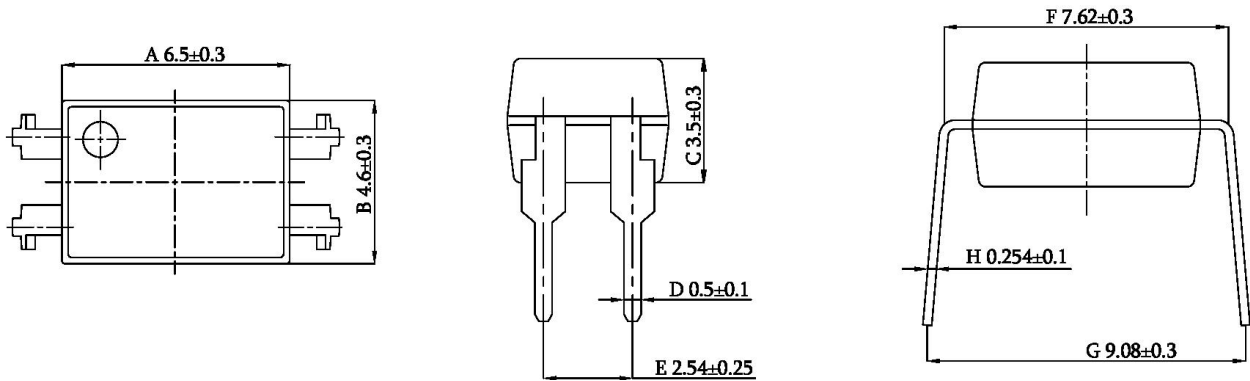


Fig.12 Switching Time Test Circuit & Waveforms

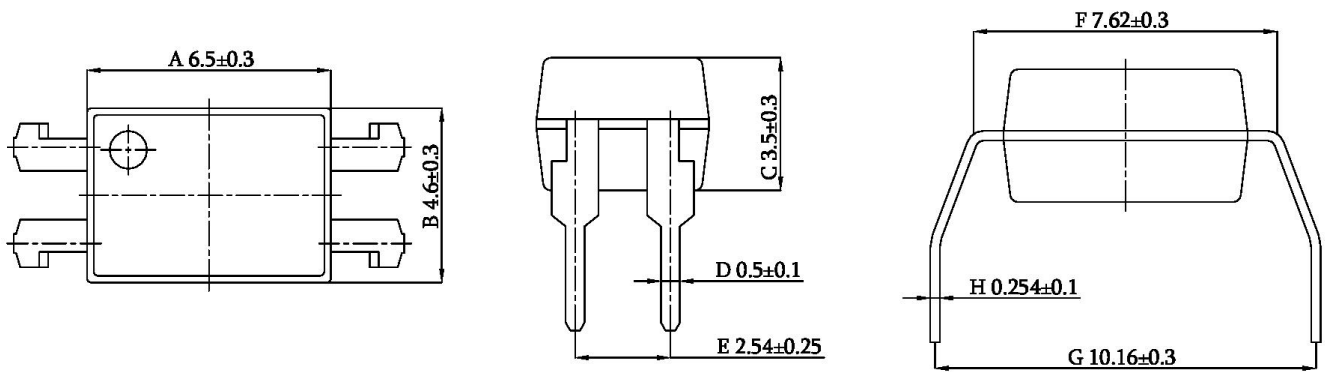


Package Outline Dimensions (unit: mm)

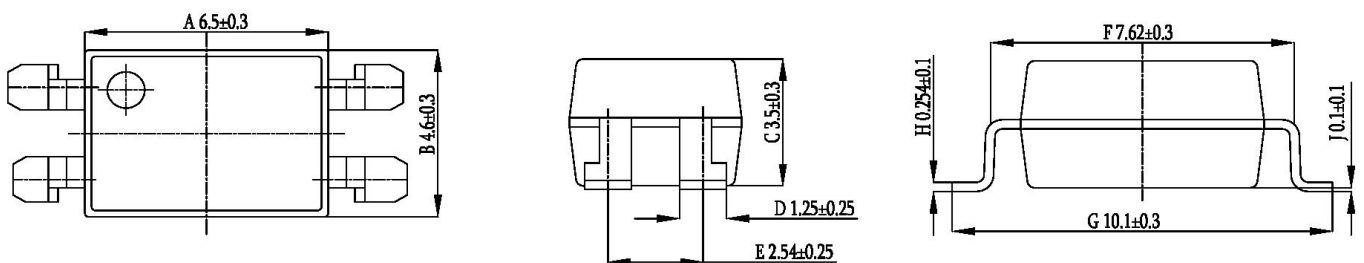
DIP4



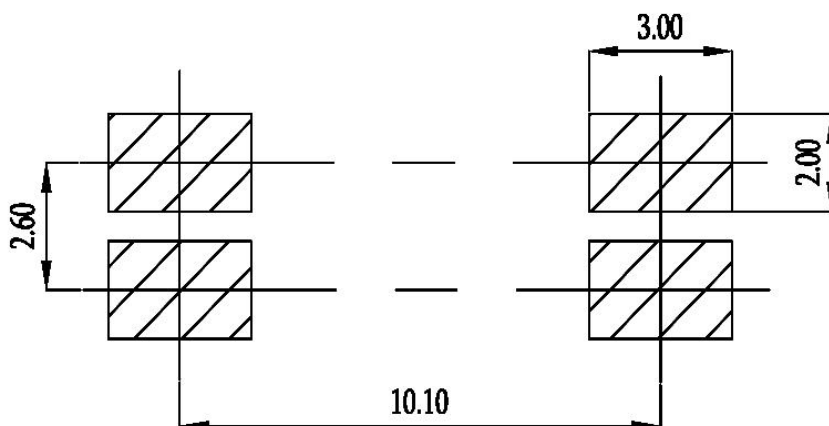
DIP4-M



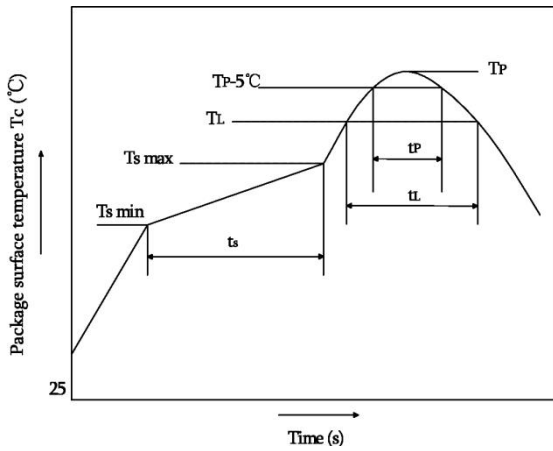
SMD4



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

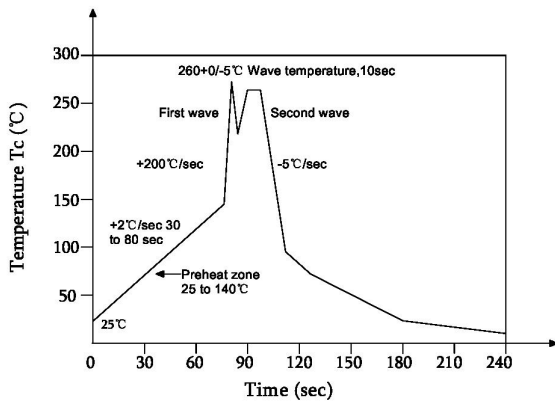


| | Symbol | Min | Max | Unit |
|---|--------|-----|-----|------|
| Preheat temperature | Ts | 150 | 200 | °C |
| Preheat time | ts | 60 | 120 | s |
| Ramp-up rate(TL to TP) | | | 3 | °C/s |
| Liquidus temperature | TL | 217 | | °C |
| Time above TL | tL | 60 | 150 | s |
| Peak temperature | Tp | | 260 | °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 |
|--------------|--------------|--------------------------|------------------|---------------------|------------------------------|-------------------|----------------------|------------------------------------|
| DIP4 | Tube(500mm) | 100pcs/tube | 50 tubes /box | 10 boxes /ctn | 190*670mm | 520*105*50mm | 545*372*235mm | Straight insert type material tube |
| DIP4-M | Tube(500mm) | 100pcs/tube | 50 tubes /box | 10 boxes /ctn | 190*670mm | 520*105*50mm | 545*372*235mm | Seagull foot (M foot) tube |
| SMD4 | Reel(φ330mm) | 2000 pcs/reel | 2 reels /box | 10 boxes /ctn | 380*420mm | 350*340*60mm | 365*330*370mm | Guard band 200mm /min. |

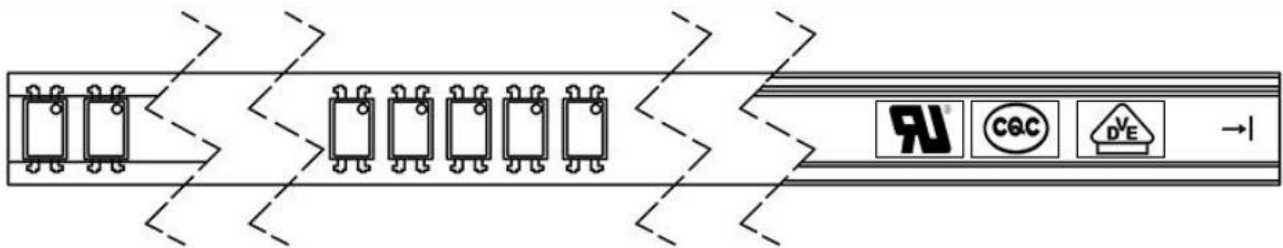
- Summary table

- DIP4/DIP4-M (Tube)

Qty/tube: 100pcs. Qty/box: 5000pcs.

Qty/ctn: 50000pcs.

Schematic: (unit:mm)

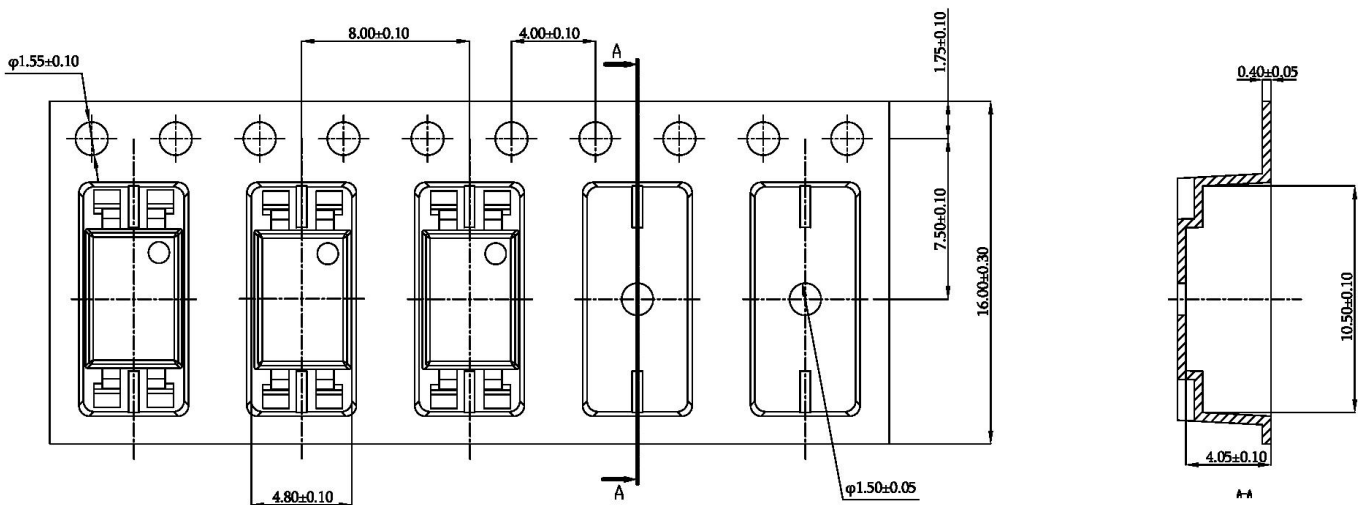


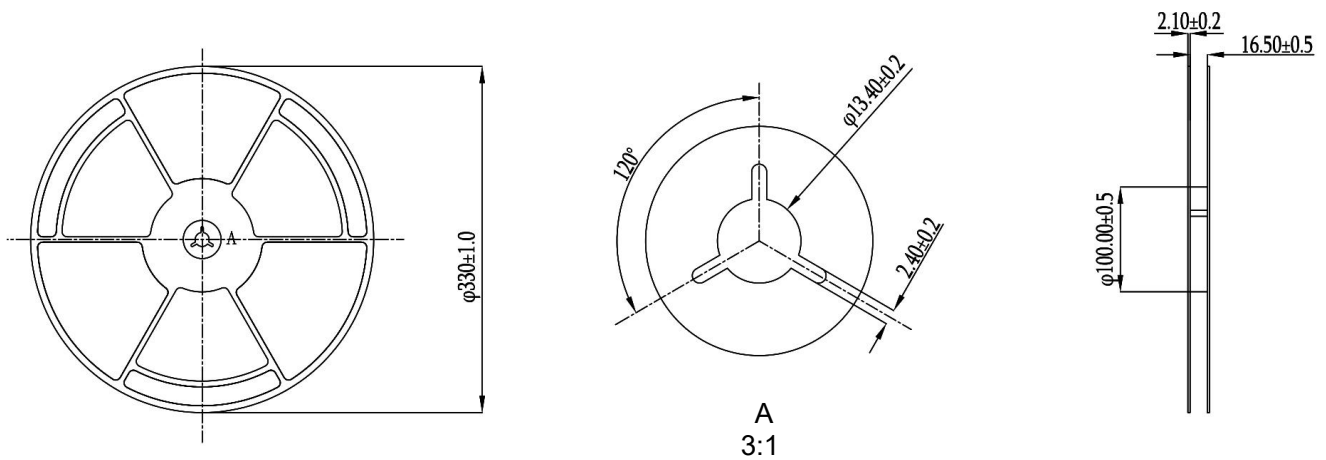
- SMD4 (Reel)

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

Qty/ctn: 40000pcs.

Schematic: (unit:mm)





Attention

- XINGLIGHT implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until Dec 31, 2026. Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels.