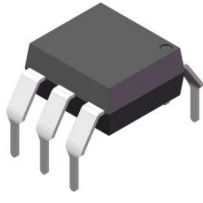


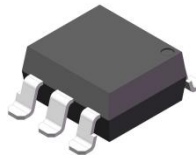
#### Product packaging logic diagram



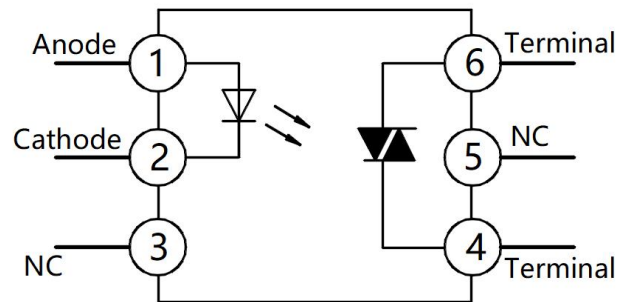
DIP6



DIP6-M



SMD6



Pin Configuration

#### Features

- Peak breakdown voltage:  
250V: XL301X; 400V: XL302X;  
600V: XL305X; 800V: XL307X
- High isolation voltage between input and output (Viso = 5000Vrms)
- Operating Temperature: -55°C~100°C
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

#### Mechanical Data

- Case: DIP6, DIP6-M, 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 and Control.
- PLC and frequency converter, servo drive system, industrial robot.
- Zero crossing products are used for AC voltage regulation.
- Household appliances and consumer electronics: Motor forward and reverse heating control, speed regulation, etc
- Used for dimming control in lighting systems.
- Power System and Energy Management: Used for rectification, transformer protection, and power grid monitoring, Applied to uninterruptible power supply (UPS) and power protection equipment.
- Medical and Special Scenarios: Used for isolation and circuit protection of devices such as heart rate monitors and X-ray machines.



### Ordering Information

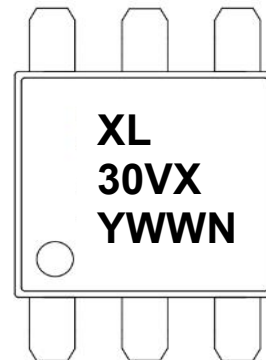
XL      30VX      (X)      ( X )      -      ( U )      ( N )      ( Y )  
 ①            ②            ③            ④                            ⑤            ⑥            ⑦

- ① Brand(XL)
- ② Product series(V:1,2,5,7;X:0,1,2,3,4)
- ③ Package type (DIP6: None, DIP6-M: M,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
XL30V <sup>1</sup> X <sup>2</sup>	DIP6	65pcs / Tube	XL30V <sup>1</sup> X <sup>2</sup>
XL30V <sup>1</sup> X <sup>2</sup> M	DIP6-M	65pcs / Tube	XL30V <sup>1</sup> X <sup>2</sup>
XL30V <sup>1</sup> X <sup>2</sup> S	SMD6	1000pcs / Tape & Reel	XL30V <sup>1</sup> X <sup>2</sup>

### Marking Information

- " XL" denotes brand
- " V" denotes VDRM digit: 1, 2, 5,7
- " X" denotes IFT digit: 0, 1, 2, 3, 4
- " Y" denotes Year : A(2024), B(2025), C(2026)
- " WW" denotes Week' s number
- " N" denotes the day of Week



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

Parameter		Symbol	Value	Unit	
Input	Forward Current	I <sub>F</sub>	60	mA	
	Reverse Voltage	V <sub>R</sub>	6	V	
	Power Dissipation	P <sub>D</sub>	100	mW	
	Derating factor (above T <sub>a</sub> = 85 °C)		3.8	mW/°C	
Output	Power Dissipation	P <sub>C</sub>	300	mW	
	Derating factor (above T <sub>a</sub> = 85 °C)		7.4	mW/°C	
	Off-state Output Terminal Voltage	XL301X	V <sub>DRM</sub>	250	V
		XL302X		400	
		XL305X		600	
		XL307X		800	
	Peak repetitive surge current (pw=100μs, 120pps)		I <sub>TSM</sub>	1	A
Turn-on current (root mean square value)		I <sub>T(RMS)</sub>	100	mA	

#### 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> =20mA	-	1.36	1.5	V
	Reverse Leakage current	I <sub>R</sub>	V <sub>R</sub> =6V	-	-	10	μA
Output	Peak Blocking Current	XL301X	V <sub>DRM</sub> =Rated V <sub>DRM</sub> , I <sub>F</sub> = 0mA	-	-	100	nA
		XL302X					
		XL305X		-	-	500	
		XL307X					
	Peak on-state voltage	V <sub>TM</sub>	I <sub>TM</sub> =100mA, I <sub>F</sub> =Rated I <sub>FT</sub>	-	-	3	V
Critical Rate of Rise off-state Voltage	XL301X	dv/dt	V <sub>PEAK</sub> =Rated V <sub>DRM</sub> , I <sub>F</sub> = 0mA	-	100	-	V/μs
	XL302X						
	XL305X	V <sub>PEAK</sub> =400V, I <sub>F</sub> =0	1000	-	-		
	XL307X						
Transfer Characteristics	LED trigger current	XL3020	Main terminal voltage = 3V	-	-	30	mA
		XL3011		-	-	15	
		XL3021					
		XL3051					
		XL3071		-	-	10	
		XL3012					
		XL3022					
		XL3052					
		XL3072		-	-	5	
		XL3013					
		XL3023					
		XL3053					
		XL3073					
		XL3014		-	-	3	
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XL3074	-	-	-				
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#### Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Fig.1 LED Positive voltage vs Positive current

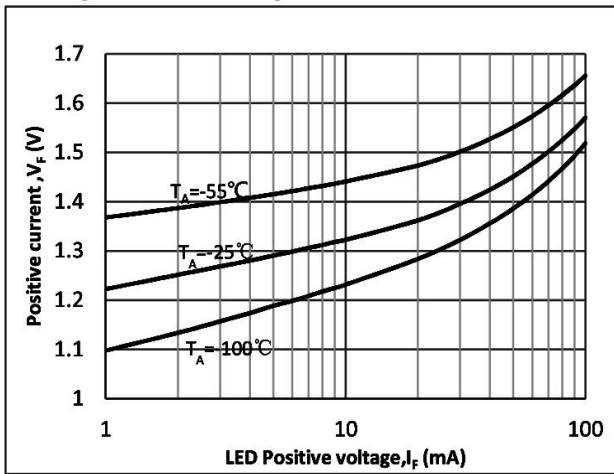


Fig.2 On-state characteristic

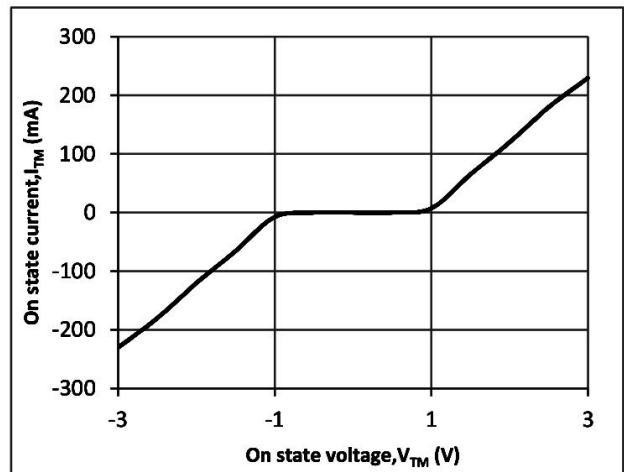


Fig.3 Trigger current vs Ambient temperature

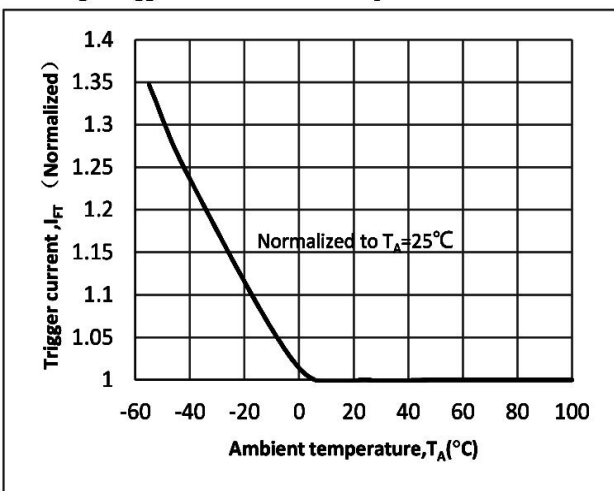


Fig.4 LED Trigger current vs LED Pulse Width

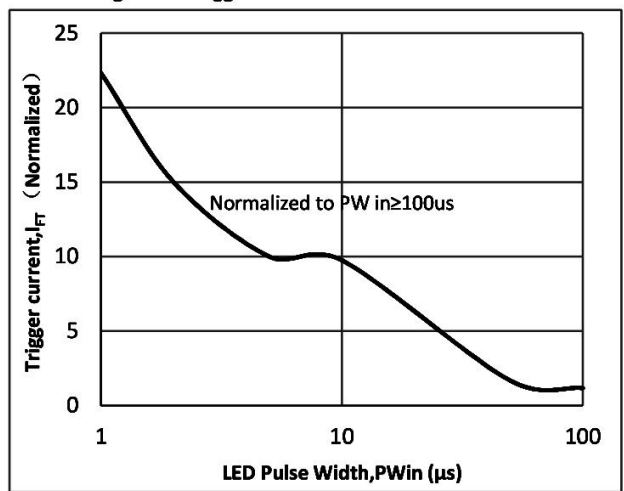


Fig.5 Holding current vs Temperature

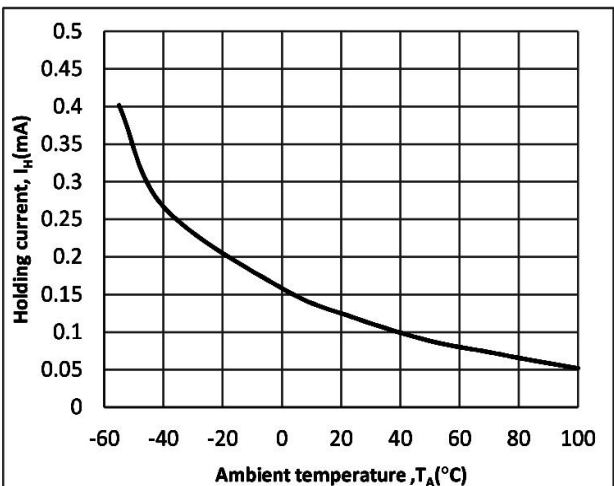
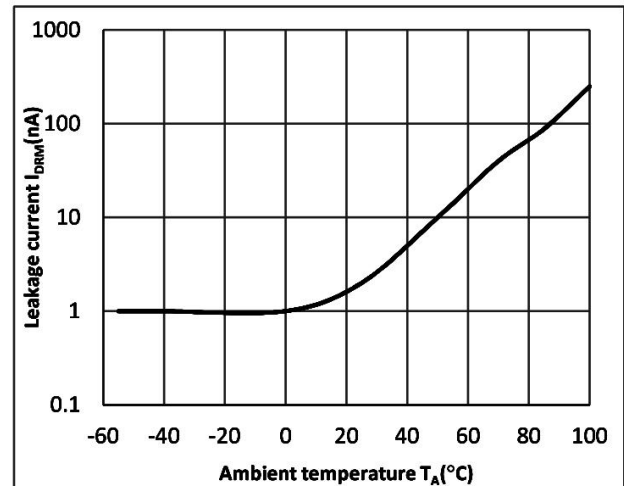
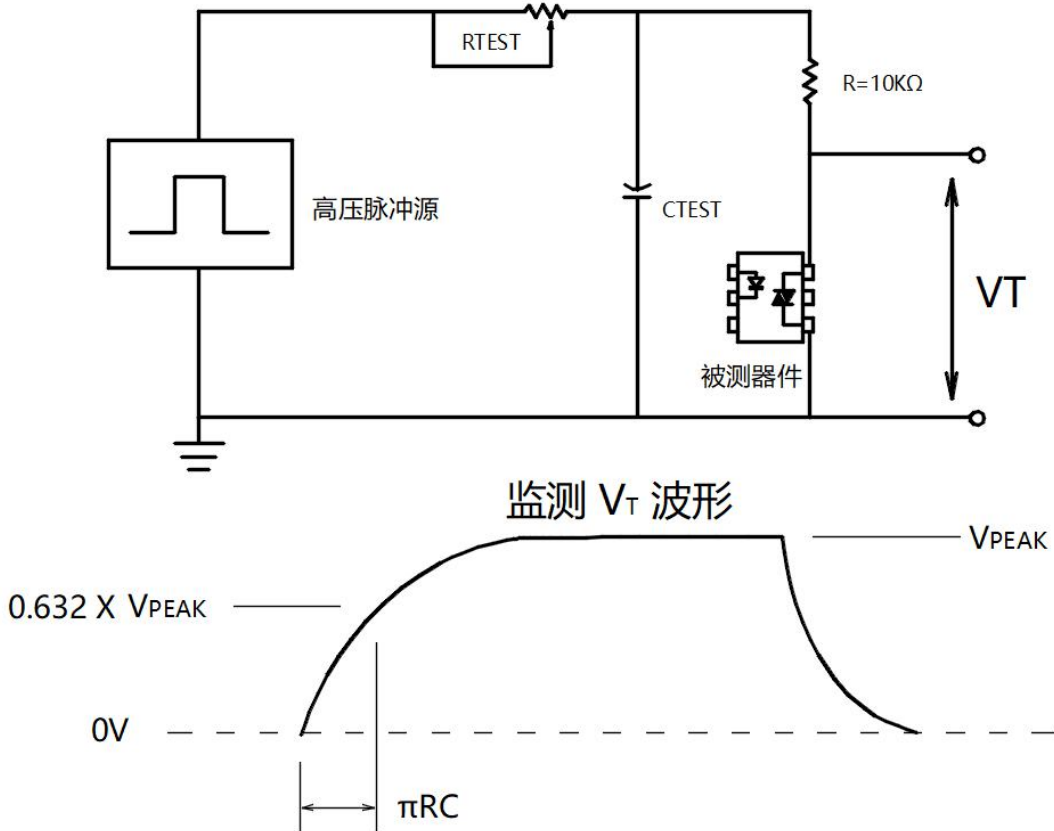


Fig.6 Leakage current vs Temperature



**Ratings and Characteristics Curves** (@ T<sub>A</sub> = 25°C unless otherwise specified)

Fig.7 Static dv / dt test circuit and waveform



The high voltage pulse applied to the output of the device under test through the RC circuit is set to the required V<sub>PEAK</sub> value. LED current is not applied. The waveform VT is monitored with X100 probe.

By adjusting the R<sub>TEST</sub> value, the dv/dt (slope) increases until the device under test is observed to be triggered (waveform collapse). Then dv/dt drops until the device under test stops being triggered. At this point, RC is recorded and the dv/dt calculated.

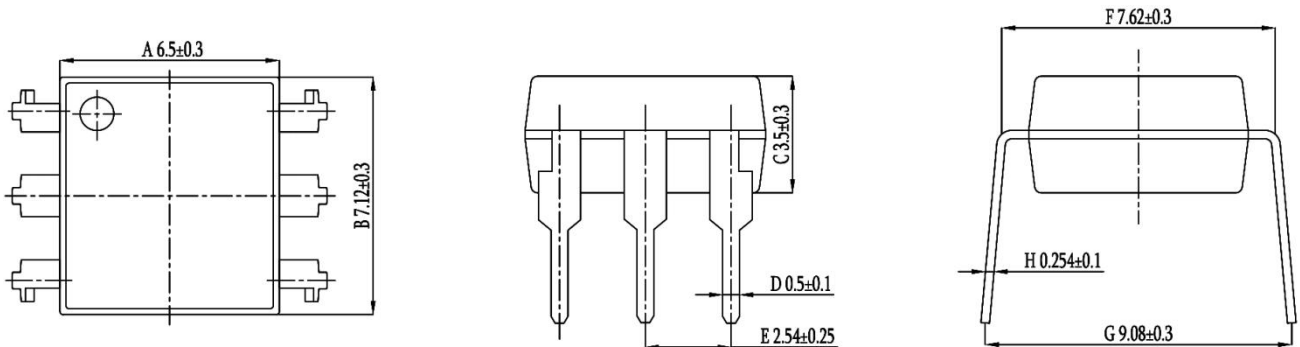
$$dv/dt = \frac{0.632 \times V_{PEAK}}{\tau_{RC}}$$

For example, V<sub>PEAK</sub> = 400V for BL52X series. The dv/dt value is calculated as follows:

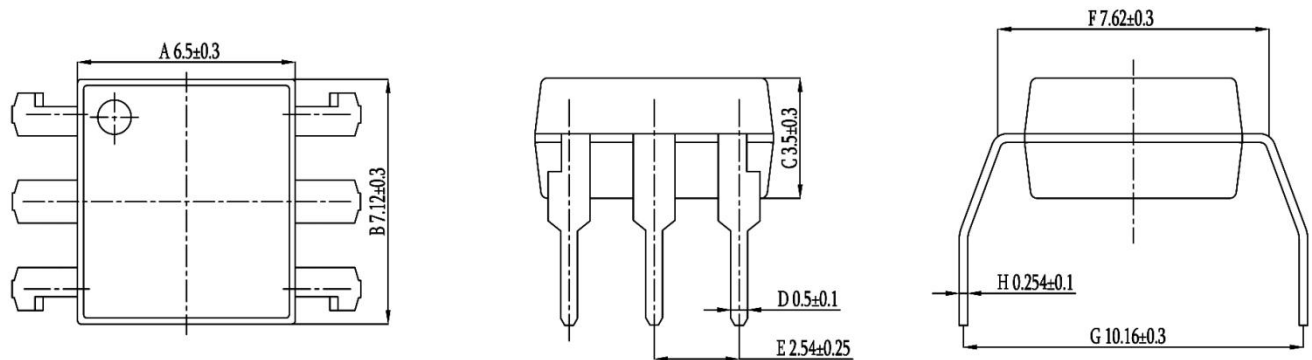
$$dv/dt = \frac{0.632 \times 400}{\tau_{RC}} = \frac{252}{\tau_{RC}}$$

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

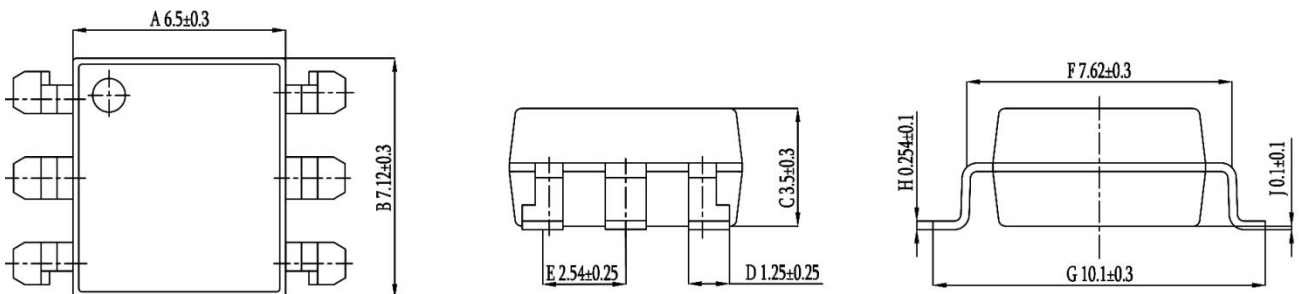
##### DIP6



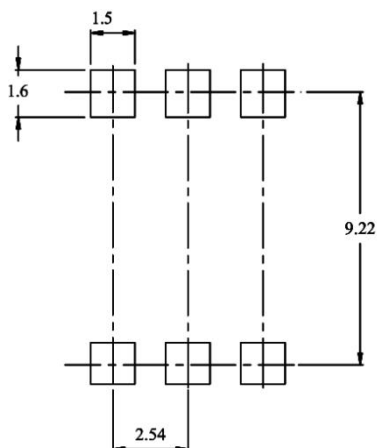
##### DIP6-M



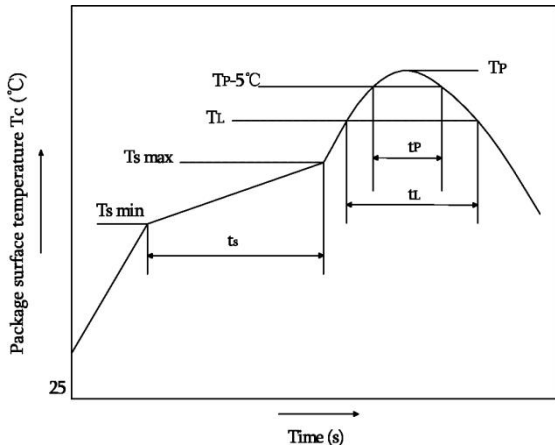
##### SMD6



#### SOLDERING FOOTPRINT (unit: mm)



### Reflow soldering

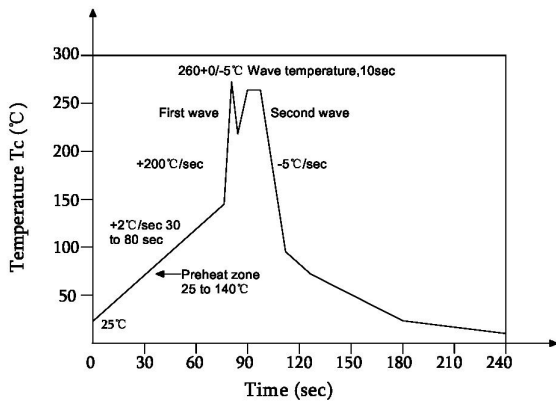


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )	-	-	3	°C/s
Liquidus temperature	T <sub>L</sub>	217		°C
Time above T <sub>L</sub>	t <sub>L</sub>	60	150	s
Peak temperature	T <sub>P</sub>		260	°C
Time during which T <sub>c</sub> is between (T <sub>P</sub> -5) and T <sub>P</sub>	t <sub>p</sub>	-	30	s
Ramp-down rate(T <sub>P</sub> to T <sub>L</sub> )	-	-	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 T <sub>s</sub>	~130°C
Preheat time (25°C to T <sub>s</sub> )	> 60s
Peak temperature T <sub>p</sub>	260°C
Time within peak temperature t <sub>p</sub>	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)	65 pcs/tube	50 tubes /box	10 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP6-M	Tube(500mm)	65 pcs/tube	50 tubes /box	10 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD6	Reel(φ330mm)	1000 pcs/reel	2 reels /box	10 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

#### ■ Summary table

#### ■ DIP6/DIP6-M (Tube)

Qty/ tube: 65pcs. Qty/box: 3250pcs.

Qty/ctn: 32500pcs.

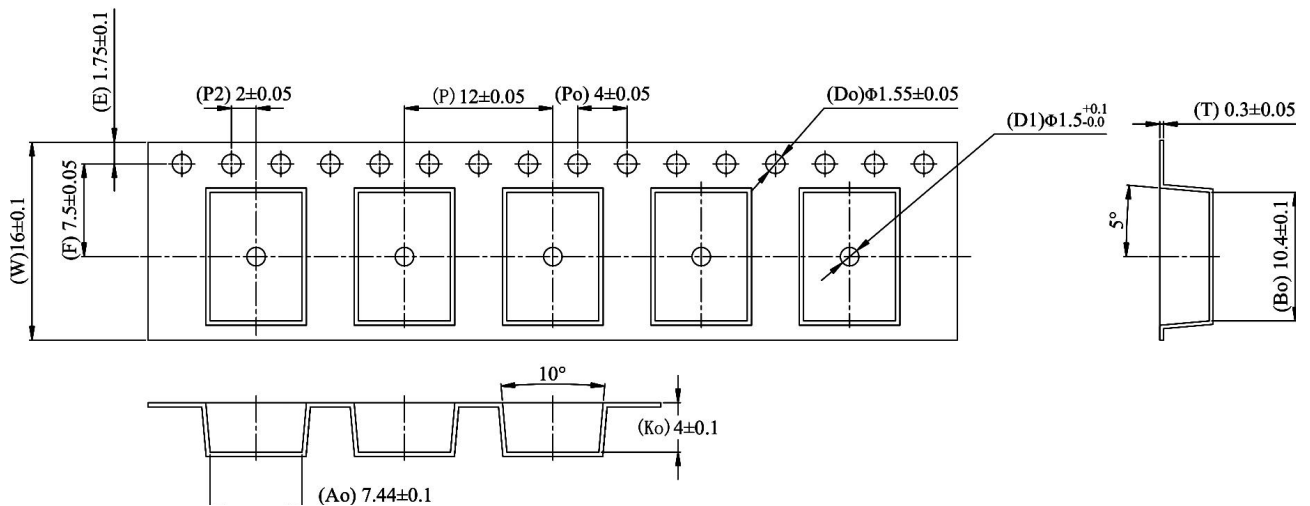
Schematic: (unit:mm)

#### ■ SMD6 (Reel)

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

Qty/ctn: 20000pcs.

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.