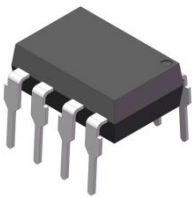
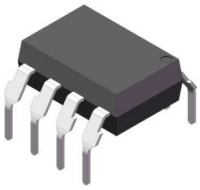
XL4502

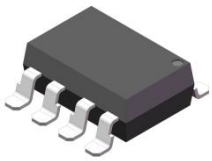
Product packaging logic diagram



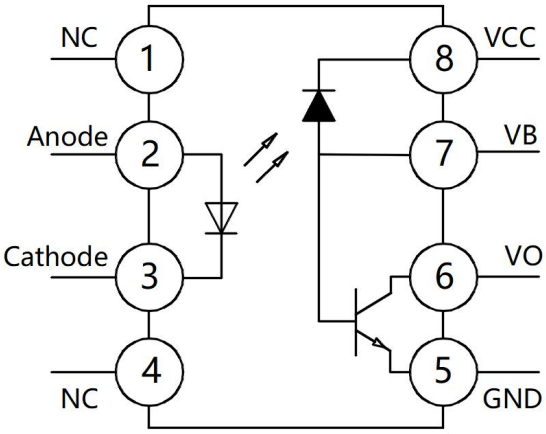
DIP8



DIP8-M



SMD8



Pin Configuration

Features

- Very high speed：1 MBit/s
- High isolation voltage between input and output (Viso =5000Vrms)
- Operating Temperature: -40℃~100℃
- Open-Collector Output
- Environmentally friendly products, compliant with CQC, UL, and VDE requirements

Mechanical Data

- Case: DIP8、DIP8-M、SMD8
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solder ability-per MIL-STD-202, Method 208

Applications

- Widely used in communications and networking, industrial automation and control, motor drive and energy management, medical equipment, and automotive electronics fields.
- Communications and Networking： Fiber optic communication, data center.

Industrial Automation and Control： PLC and frequency converter, Servo drive system, Industrial robot.

- Motor Drive and Energy Management：Motor control, Motor protection,Power electronics,Consumer Electronics.
- Emerging Technology Fields： Intelligent Transportation System,Medical equipment,Automatic production line.
- Automotive Electronics： In-vehicle Network System,Battery Management System (BMS),EV Charging Station.

Ordering Information

XL	4502	(X)	(X)	(X)	-	(U)	(N)	(Y)
①	②	③	④	⑤		⑥	⑦	⑧

① Brand (XL)

② Product series (4502)

③ Package type (None: (DIP8、DIP8-M、SMD8)

④ Halogen option (None : Halogen free)

⑤ CTR Bank(None)

⑥ Lead frame (None: Copper)

⑦ Customer option 1 (0-9 or A- Z or none)

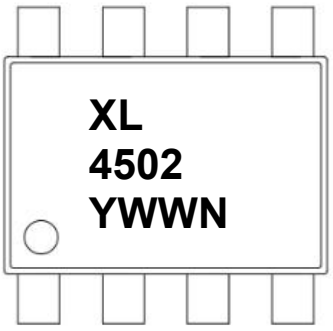
⑧ Customer option 2 (0-9 or A- Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XL4502*1	DIP8	45pcs / Tube	XL4502*1
XL4502*1M	DIP8-M	45pcs / Tube	XL4502*1
XL4502*1S	SMD8	1000pcs / Tape & Reel	XL4502*1

Notes 1: X denotes product series:5,6

Marking Information

- " XL" denotes brand
- " 4502" 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	DC/Average forward input current	$I_{F\ (avg)}$	25	mA
	Peak forward input current (50% duty cycle, 1 ms p.w.)	$I_{F\ (pk)}$	50	mA
	Reverse Voltage	V_R	5	V
	Peak transient input current	$I_{F(trans)}$	1	A
	Power Dissipation	P_I	45	mW
Output	Supply Voltage	V_{CC}	-0.5～30	V
	Output Current	I_O	8	mA
	Peak output current	$I_{O(pk)}$	16	mA
	Output power dissipation	P_O	100	mW
	Output Voltage	V_O	-0.5～20	V
	Emitter-base reverse voltage	V_{EBR}	5	V
	Base current	I_B	5	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Isolation Voltage *2	V_{ISO}	5000	Vrms
Operating Temperature	T_{OPR}	-40 ~ +100	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *3	T_{SOL}	260	°C

Notes:

1. Pulse width≤1μs, 300 pps
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	BV_R	I_R=10μA	5	20	-	V
	Diode Temperature Coefficient	$\Delta V_F/\Delta T_A$	I_F=16mA	-	-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	-	50	200	μA
Transfer Characteristics	High Level Output Current	I_{OH}	V_{CC}=5.5V, V_O=5.5V I_F= 0mA	-	0.001	0.5	μA
			V_{CC}=15V, V_O=15V I_F= 0mA	-	0.005	1	
			V_{CC}=15V, V_O=15V 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
	Current Transfer ratio	CTR	V_{CC}=4.5V, I_F=16mA V_O=0.4V	19	24	50	%
	Isolation Voltage	V_{ISO}	R_H <50%, T_A=25°C , I_{I-O}≤50μA	5000	-	-	V_{RMS}
	Isolation Resistance	R_{IO}	V_{IO} = 500V	-	1×10^{12}	-	Ω
	Floating Capacitance	C_{IO}	f = 1MHz	-	0.6	-	pF

Switching Characteristics (@ T_A = -40°C～85°C, V_{CC}= 5V, I_F= 7.5mA, unless otherwise specified)

Parameter	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Propagation Delay Time to Output HIGH Level	T_{PLH}	I_F=16 mA, R_L=1.9KΩ		-	600	800	ns
Propagation Delay Time to Output Low Level	T_{PHL}	I_F=16 mA, R_L=1.9KΩ		-	200	800	ns
Common Mode Transient Immunity (at Output HIGH Level)	$\|CM_H\|$	R_L=1.9KΩ	T_A=25°C,I_F=0mA $\|V_{CM}\|$=10V(Peak), C_L=15pF	1000	-	-	V/μs
Common Mode Transient Immunity (at Output LOW Level)	$\|CM_L\|$	R_L=1.9KΩ	T_A=25°C,I_F=16mA $\|V_{CM}\|$=10V(Peak), C_L=15pF	1000	-	-	V/μs

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

Fig.1 Normalized CTR vs. Input current

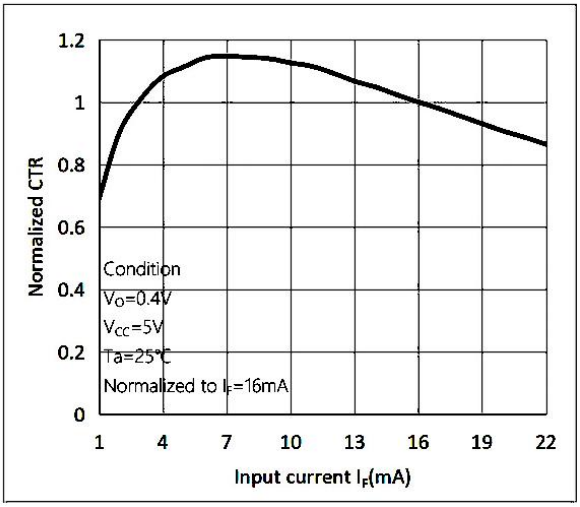


Fig.2 Normalized CTR vs. Ambient temperature

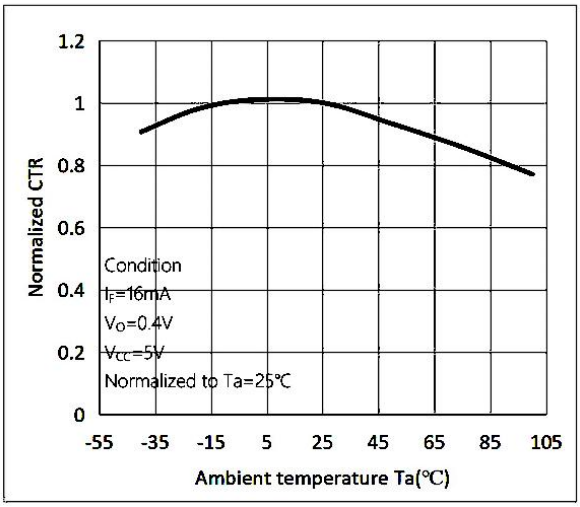


Fig.3 Output current vs. Output voltage

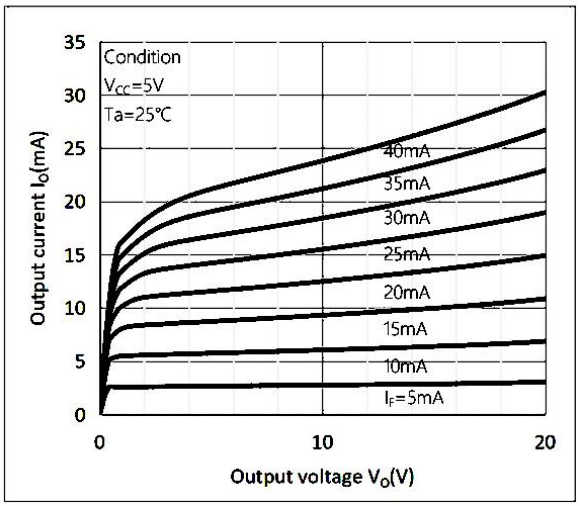


Fig.4 High level output voltage vs. Ambient temperature

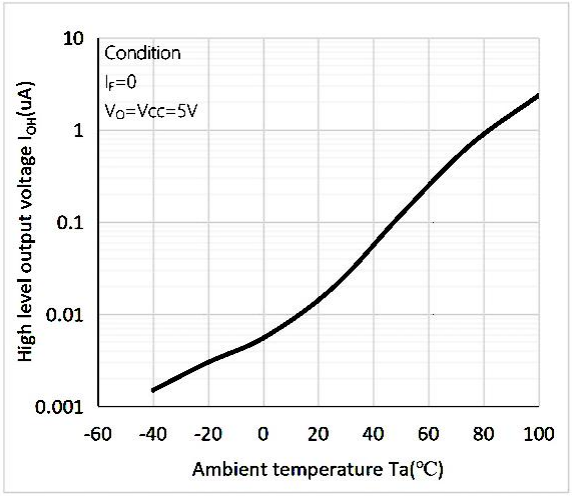


Fig.5 Propagation Delay Time vs. Ambient temperature

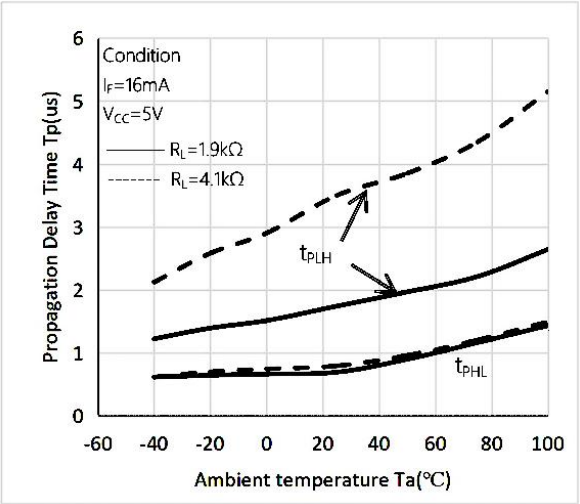
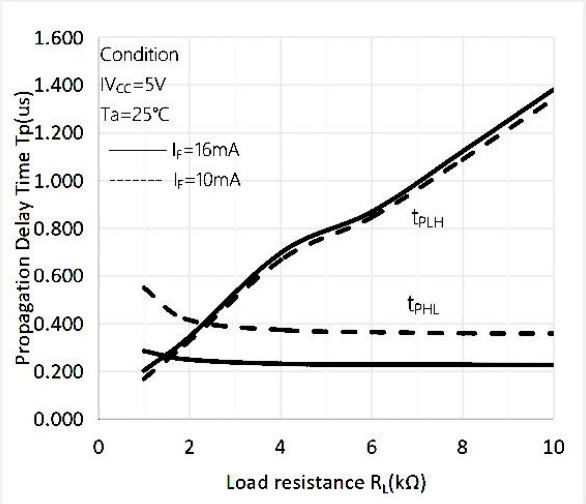


Fig.6 Propagation Delay Time vs. Load resistance



Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

Fig.7 Switching Time Test Circuit

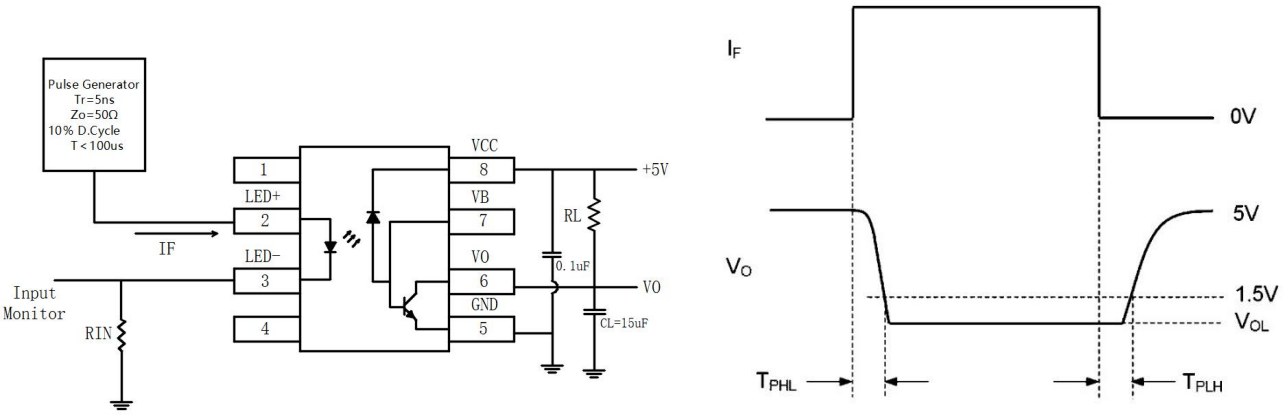
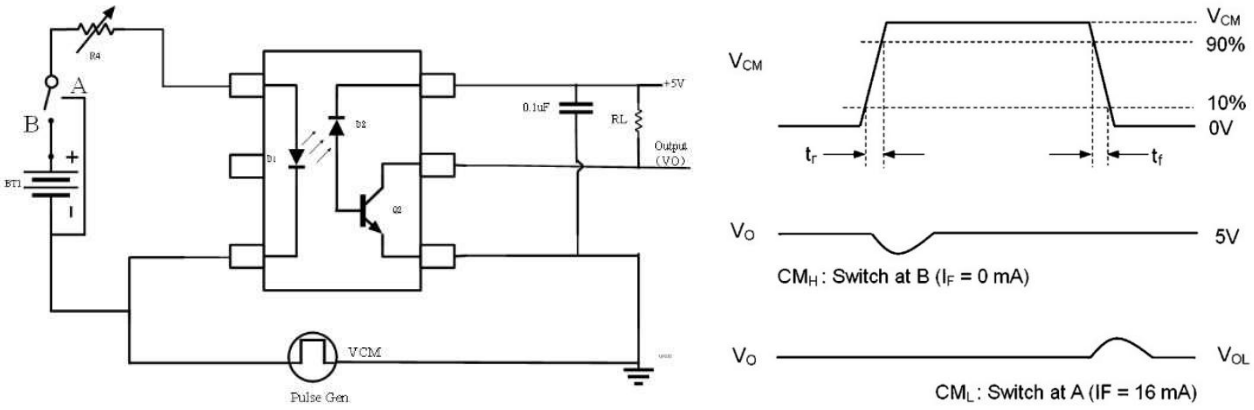
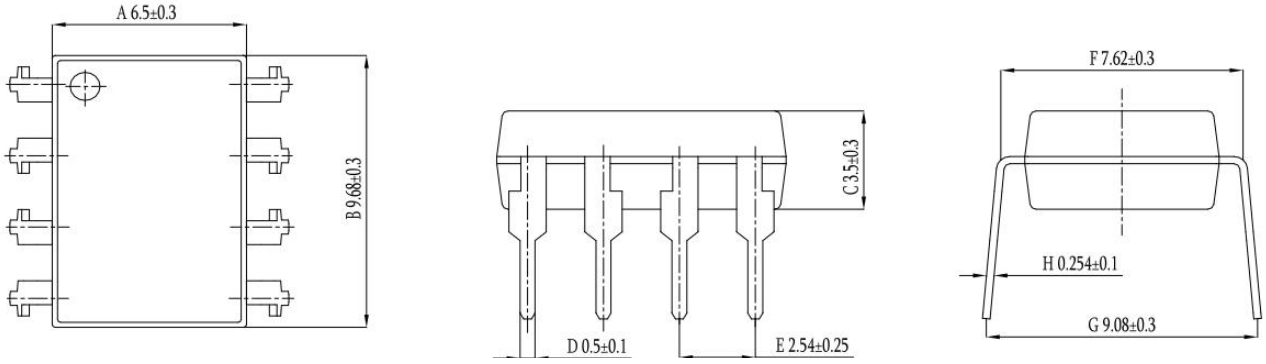


Fig.8 Test Circuit for Common Mode Transient Immunity

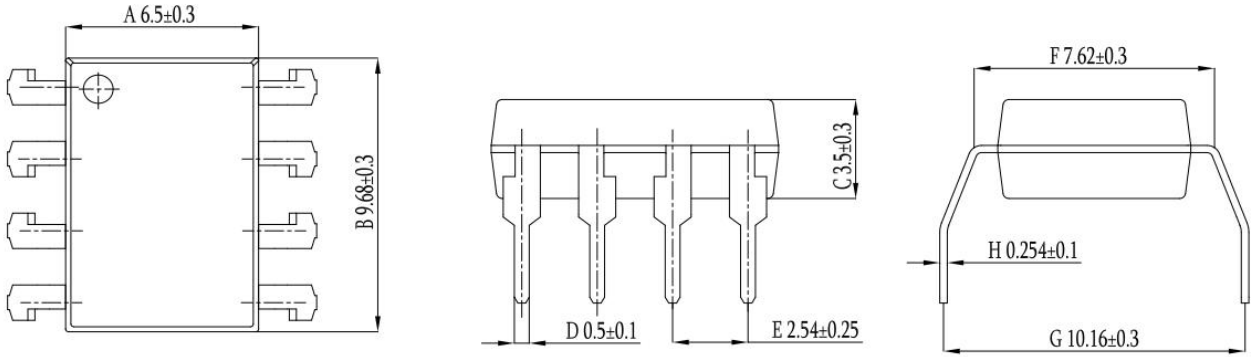


Package Outline Dimensions (unit: mm)

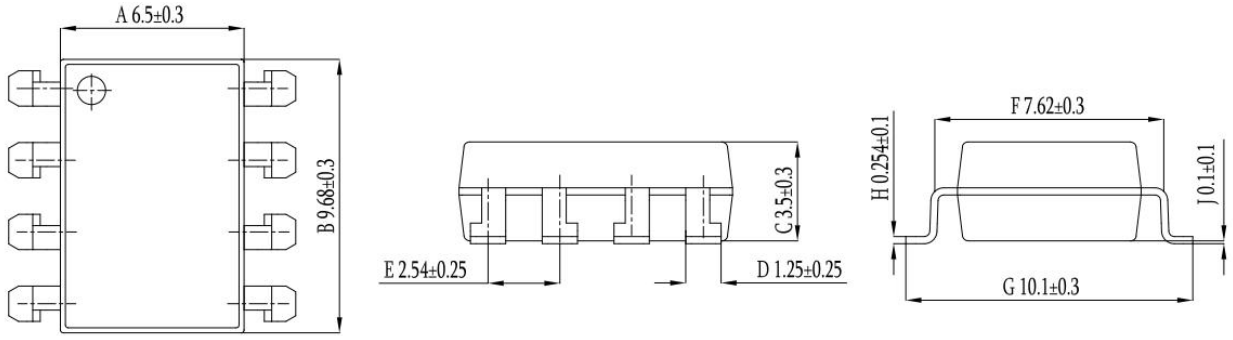
DIP8



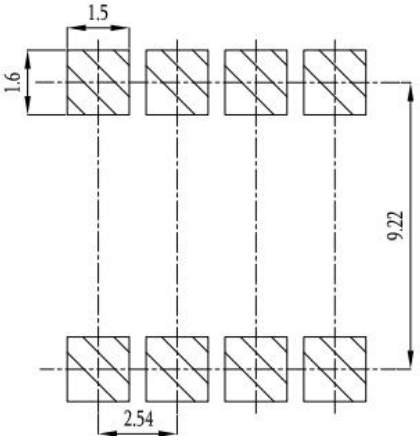
DIP8-M



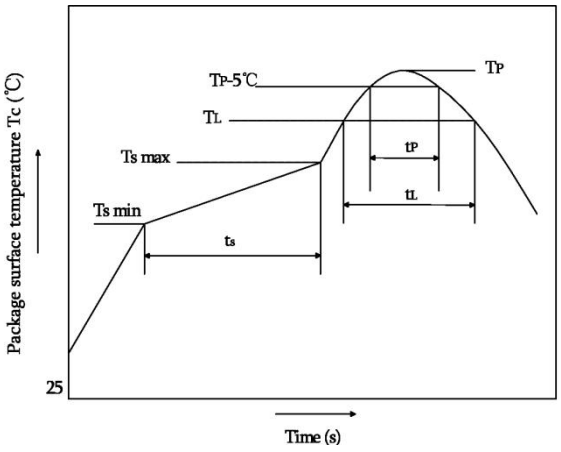
SMD8



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

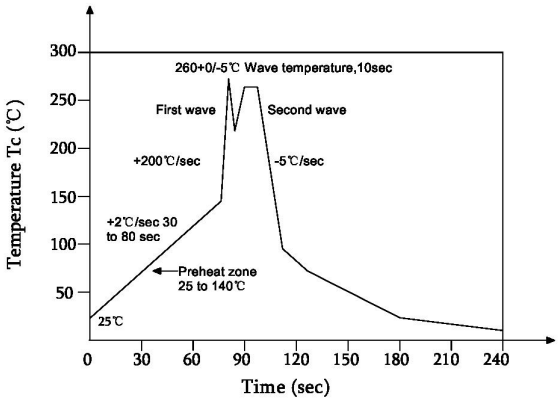


	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up ratea(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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℃/s
Heating rate during preheat	1℃/s to 2℃/s typical;4℃/s maximum
Final preheat temperature Ts	~130℃
Preheat time (25℃ to Ts)	>60s
Peak temperature Tp	260℃
Time within peak temperature tp	10s
Ramp-down rate	5℃/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 ℃+5℃ 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
DIP8	Tube(500mm)	45pcs/tube	50 tubes /box	10 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP8-M	Tube(500mm)	45pcs/tube	50 tubes /box	10 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD8	Reel(ϕ330mm)	1000pcs/reel	2 reels /box	10 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

■ Summary table

■ DIP8/DIP8-M（Tube）

Qty/tube：45pcs.　Qty/box：2250pcs.

Qty/ctn：22500pcs.

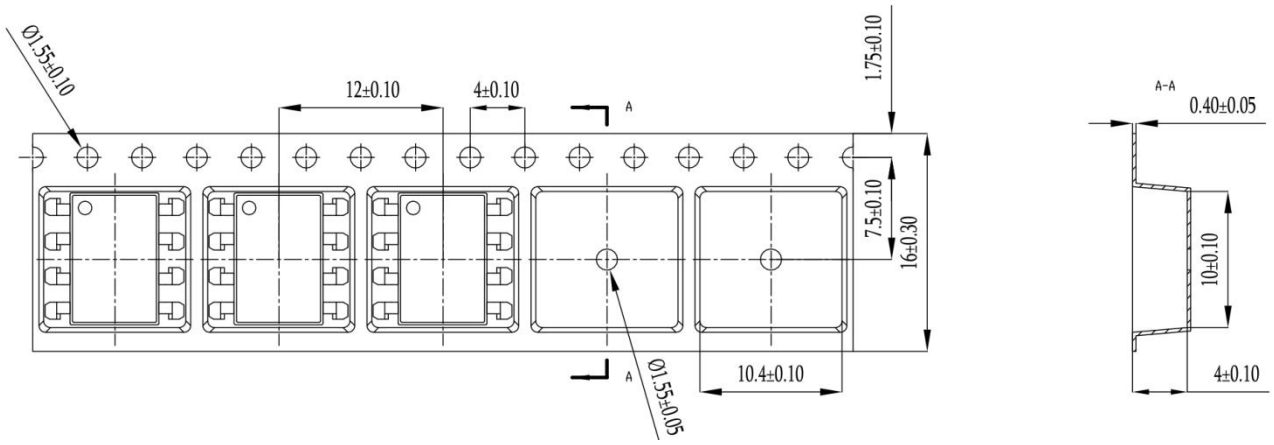
Schematic：（unit：mm）

■ SMD8（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.