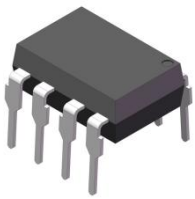
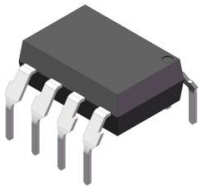
XL3120

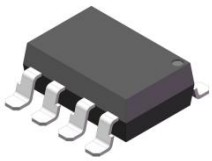
Product packaging logic diagram



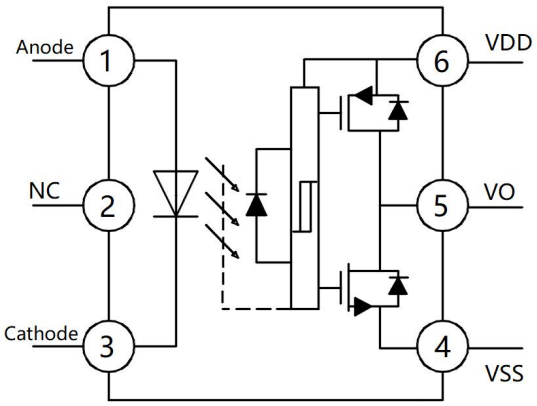
DIP8



DIP8-M



SMD8



Pin Configuration

Features

- 35 kV/μs minimum Common Mode Rejection
- 15V ~ 30V Wide operating VCC Range
- Maximum peak output current 2.5A
- Creepage distance > 7.0mm;
- Operating Temperature: -55℃~110℃
- 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

- Industrial Automation and Electronic Power: Gate isolation drive for devices such as frequency converters and servo drives.
- New Energy and Power Systems: Vehicle mounted charging station (OBC), motor controller drives power devices.
- Power Control and Protection Devices: Solid state relay (SSR), isolation control terminal and power terminal in circuit breaker drive circuit.
- Noise Environment Equipment and Precision Medical Instruments: Suitable for industrial scenarios with severe electromagnetic interference, such as welding machines and induction cookers.
- Communications and Data Transmission: Communication interface circuits, data center server communication; Achieve high-speed signal isolation transmission, ensure data integrity.

XL3120

XL	3120	(X)	(X)	-	(U)	(N)	(Y)
①	②	③	④		⑤	⑥	⑦

① Brand(XL)

② Product series(3120)

③ Package type (DIP8:, DIP8-M, SMD8)

④ Halogen option(None :Halogen free)

⑤ Lead frame (None: Copper)

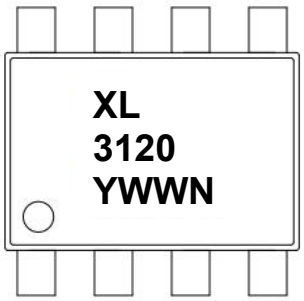
⑥ Customer option 1 (0-9 or A-Z or none)

⑦ Customer option 2 (0-9 or A-Z or none)

Part Number	Package	Shipping Quantity	Marking Code
XL3120X	DIP8	45pcs / Tube	XL3120X
XL3120MX	DIP8-M	45pcs / Tube	XL3120X
XL3120SX	SMD-8	1000pcs / Tape & Reel	XL3120X

Marking Information

- " XL" denotes brand.
- " 3120 " 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	50	mA
	Power Dissipation	PD	45	mW
	Reverse Voltage	VR	5	V
Output	Peak Output Current	IO(PEAK)	3	A
	Supply Voltage	VDD - VSS	0 ~30	V
	Output Voltage	VO	0 ~VDD	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Isolation Voltage *1	VISO	5000	Vrms
Total Power Consumption	Ptot	200	mW
Operating Temperature	TOPR	-55 ~ +100	℃
Storage Temperature Range	TSTG	-55 ~ +125	℃
Soldering Temperature *2	TSOL	260	℃

Notes:
1. 40 to 60% RH, AC for 1 minute
2. For 10 seconds

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	VF	IF =10mA	1.2	1.5	1.8	V
	Reverse Current	IR	VR =5V	-	-	10	μA
	Input The Turn On Current	IFLH	IO =0mA , VO >5V	-	2.8	5.0	mA
	Input The Turn Off Voltage	VFHL	IO =0mA , VO <5V	0.8	-	-	V
	UVLO Threshold	VUVLO+	IF =10mA , VO >5V	11.5	12.7	13.5	V
		VUVLO -	IF =10mA, VO <5V	10.0	11.2	12	V
	UVLO Hysteresis	UVLOHYS	-	-	1.5	-	V
Output	High Level Output Current	IOH	VO =VDD-3V	-1.0	-2.0	-2.5	A
			VO =VDD-6V	-2.0	-	-2.5	
	Low Level Output Current	IOL	VO =VSS+3V	1.0	2.0	2.5	A
			VO =VSS+6V	2.0	-	2.5	
	High Level Output Voltage	VOH	IF =10mA ; IO = -2.5A	VDD-6.25V	VDD-2.5V	-	V
			IF =10mA ; IO = -100mA	VDD-0.3V	VDD-0.1V	-	
	Low Level Output Voltage	VOL	IF =0mA ; IO = 2.5A	-	VSS+2.5V	VSS+6.25V	V
			IF =0mA ; IO = 100mA	-	VSS+0.1V	VSS+0.3V	
	High Level Power Supply Current	IDDH	VO =Open , IF =7 to 16mA	-	1.8	3.8	mA
	Low Level Power Supply Current	IDDL	VO =Open , VF =0 to 0.8V	-	2.1	3.8	mA

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Transfer Characteristics	Propagation Delay Time to Low Output Level	TPHL	IF =7mA to16mA, Rg=10Ω , Cg=10nF, F =10KHZ, duty cycle=50%	-	71	400	ns
	Propagation Delay Time to High Output Level	TPLH		-	68	400	ns
	Pulse Width Distortion	PWD		-	3	100	ns
	Propagation Delay Diference Between Any Two Parts	PDD		-250	-	250	ns
	Output Rise Time (10% To 90%)	Tr		-	60	-	ns
	Output Drop Time(90% ~10%)	Tf		-	60	-	ns
	Isolation Resistance	RISO	VI-O =500V , 40 ~60%R.H.	-	10^{11}	-	Ω
	Isolation Capacitance	CISO	VI-O =0V; Freq=1MHZ	-	1	-	pF
	UVLO Turn On Delay	TUVLO ON	IF =10mA ; VO >5V	-	1.6	-	μs
	UVLO Turn Off Delay	TUVLO OFF	IF =10mA ; VO <5V	-	0.4	-	μs
	Output High Level Common Mode Transient Immunity	CMH	TA =25℃ VDD =30V VCM =2000V IF =7 ~16mA VF =0V	35	50	-	KV/μs
	Output Low Level Common Mode Transient Immunity	CML		35	50	-	KV/μs

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

Fig.1 High Output Rail Voltage vs Ambient Temperature

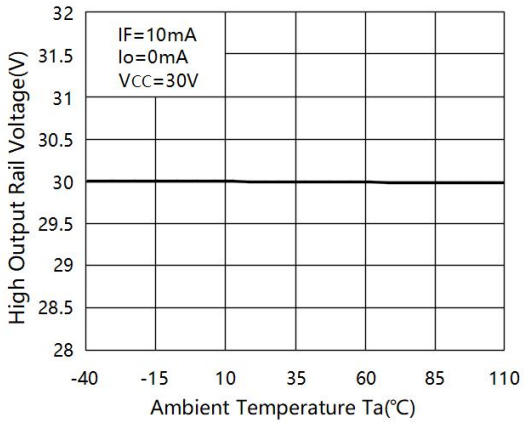


Fig.2 High Level Output Voltage vs Ambient temperature

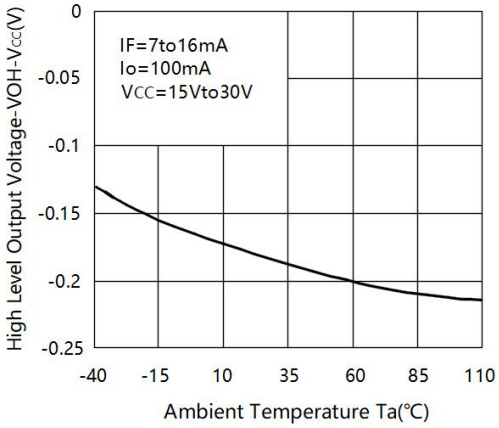


Fig.3 Low Level Output Voltage vs Ambient Temperature

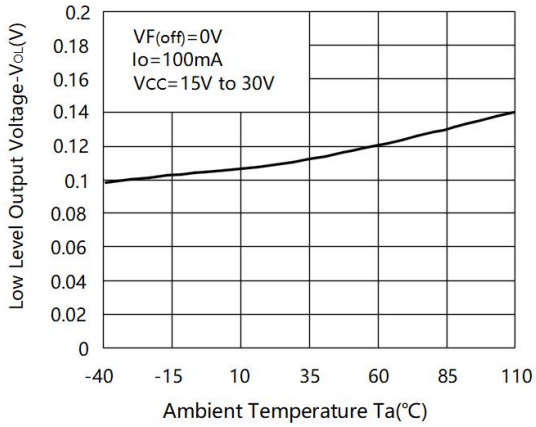


Fig.4 Supply Current vs Ambient temperature

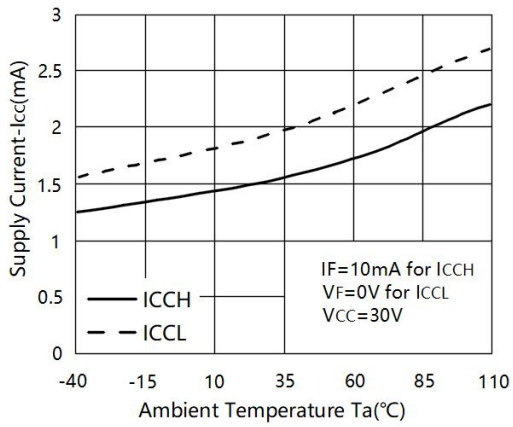


Fig.5 Supply Current vs Supply Voltage

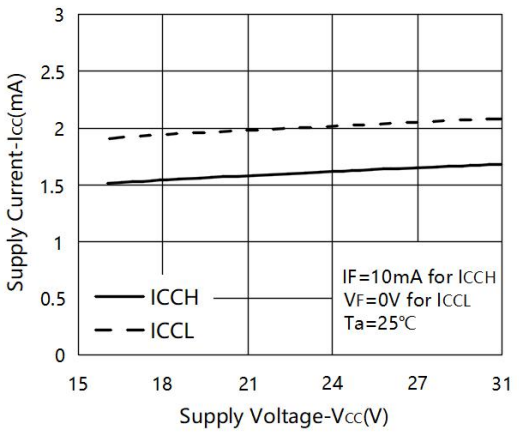
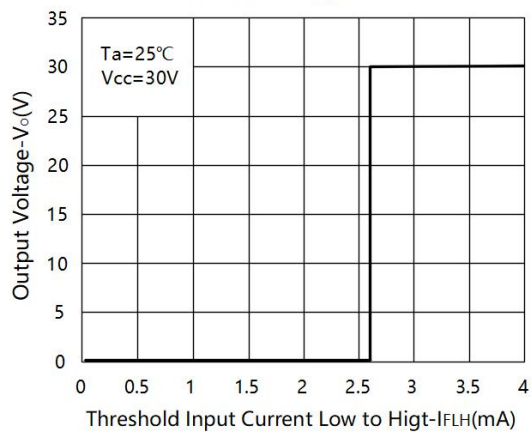


Fig.6 Output Voltage vs Threshold Input Current Low to Higt



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

Fig.7 Threshold Input Current Low to High vs Ambient Temperature

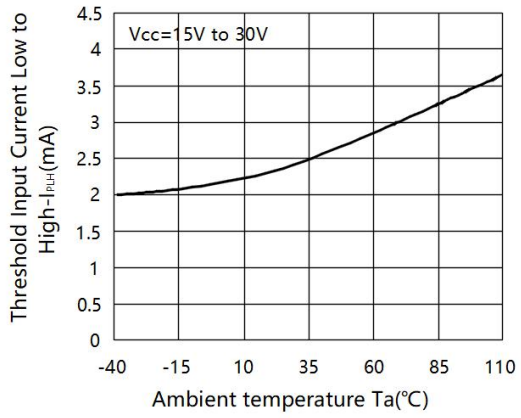


Fig.8 Propagation Delay vs Supply Voltage

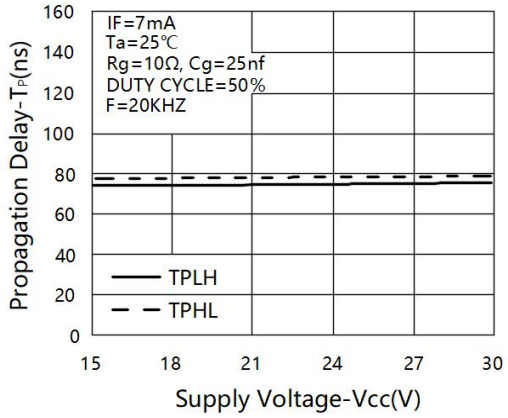


Fig.9 Propagation Delay vs Forward Current

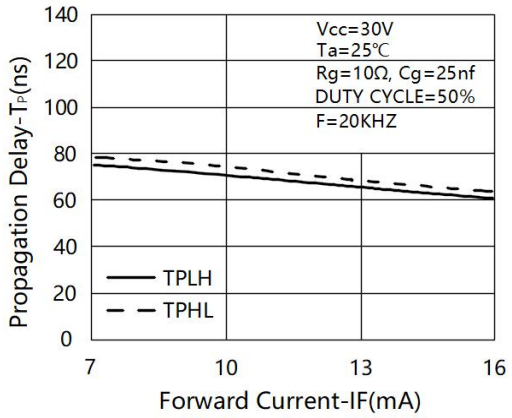


Fig.10 Propagation Delay vs Ambient Temperature

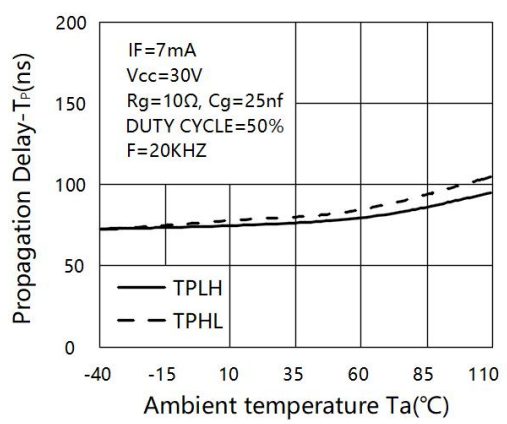
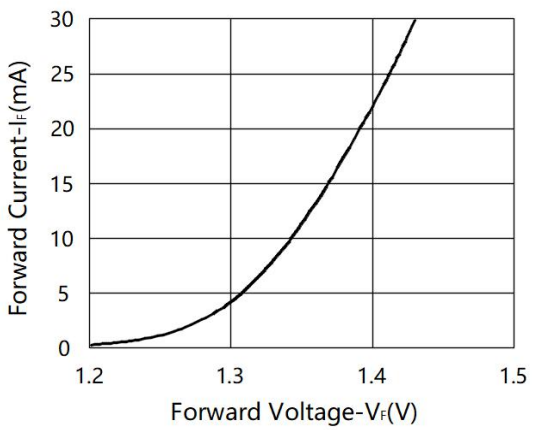


Fig.11 Forward Current vs Forward Voltage



Test Circuits Diagrams

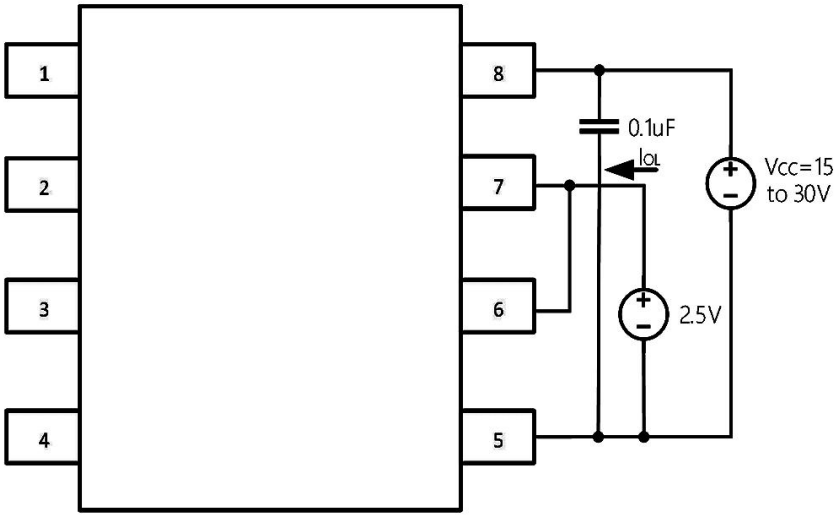


Fig.12 I_{OL} Pulsed Test Circuit

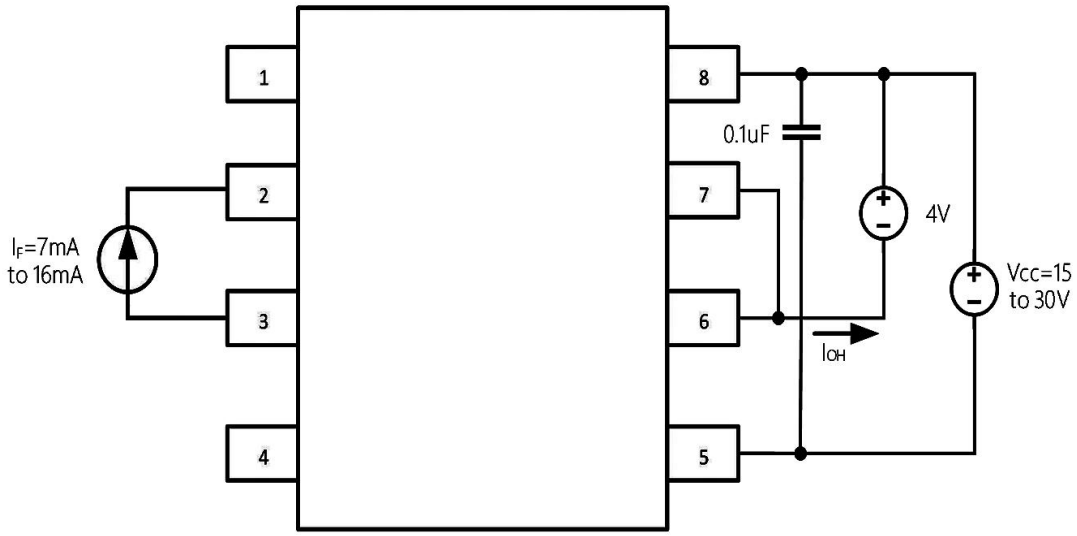


Fig.13 I_{OH} Pulsed Test Circuit

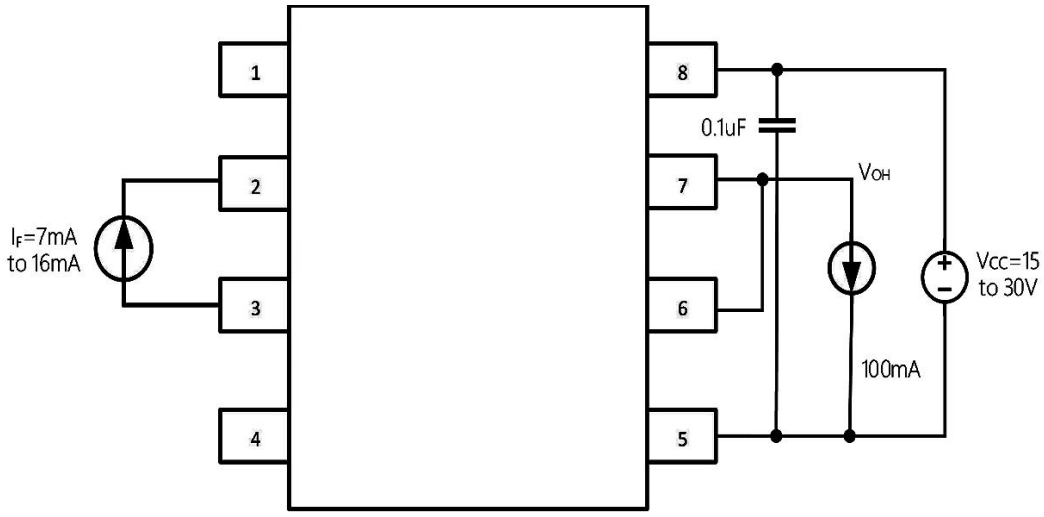


Fig.14 V_{OH} Pulsed Test Circuit

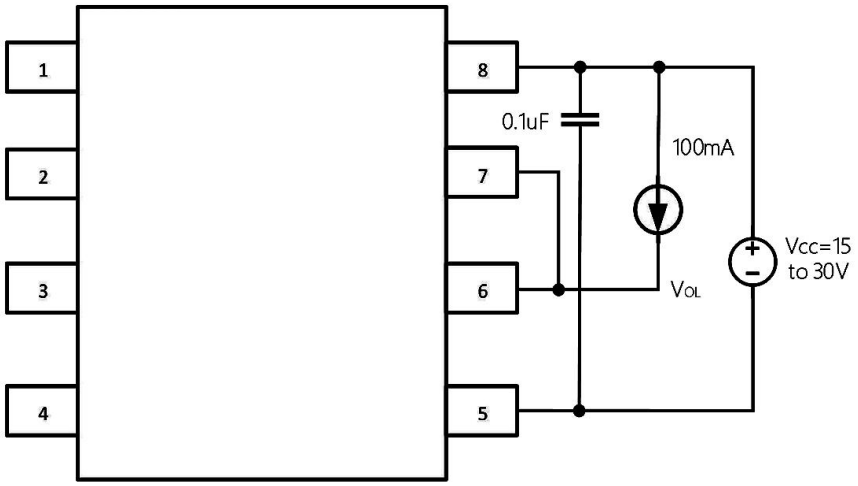


Fig.15 V_{OL} Pulsed Test Circuit

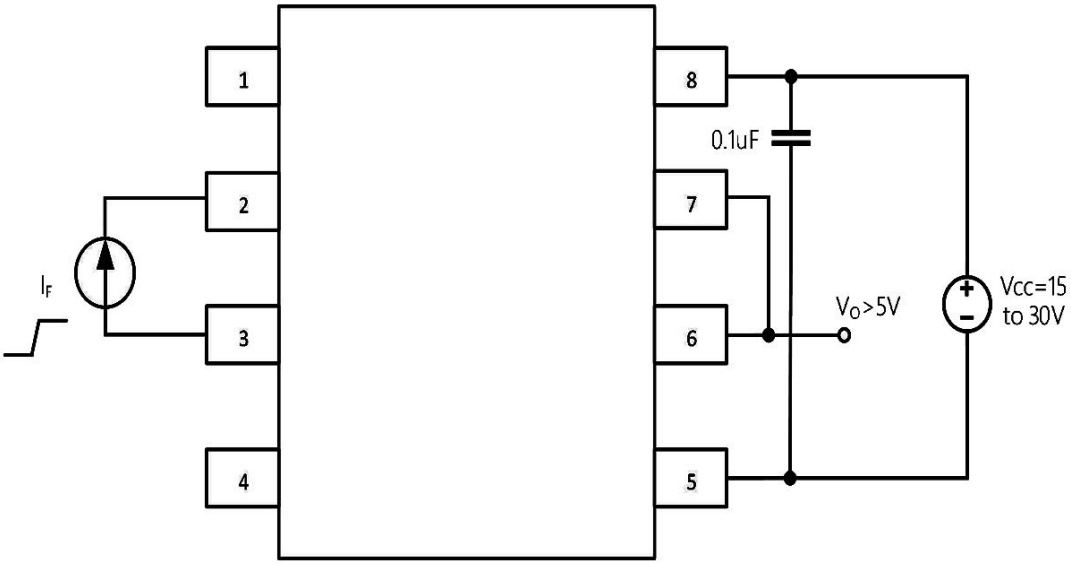


Fig.16 I_{FLH} Pulsed Test Circuit

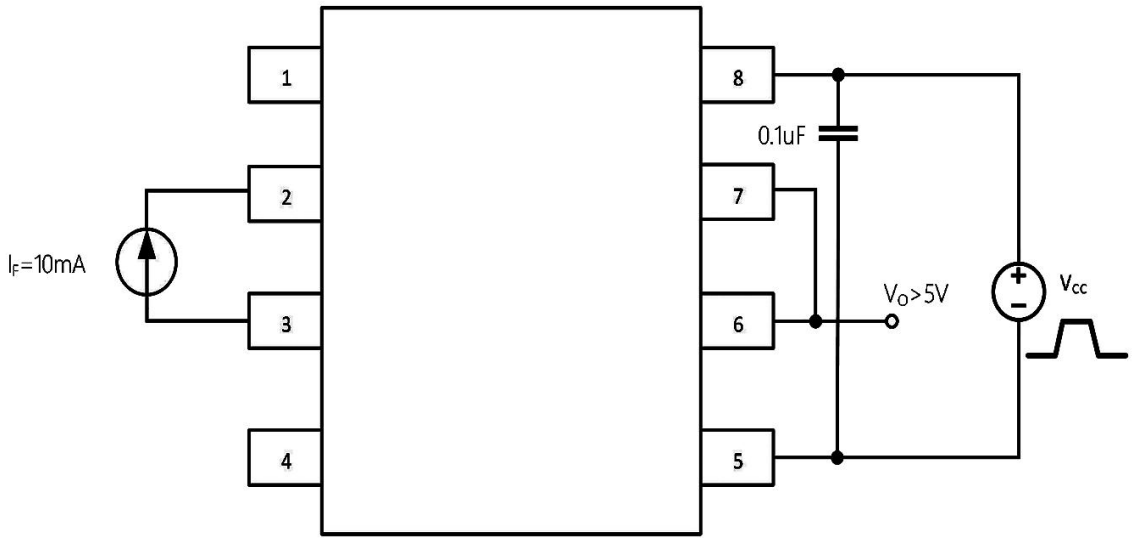


Fig.17 UVLO Test Circuit

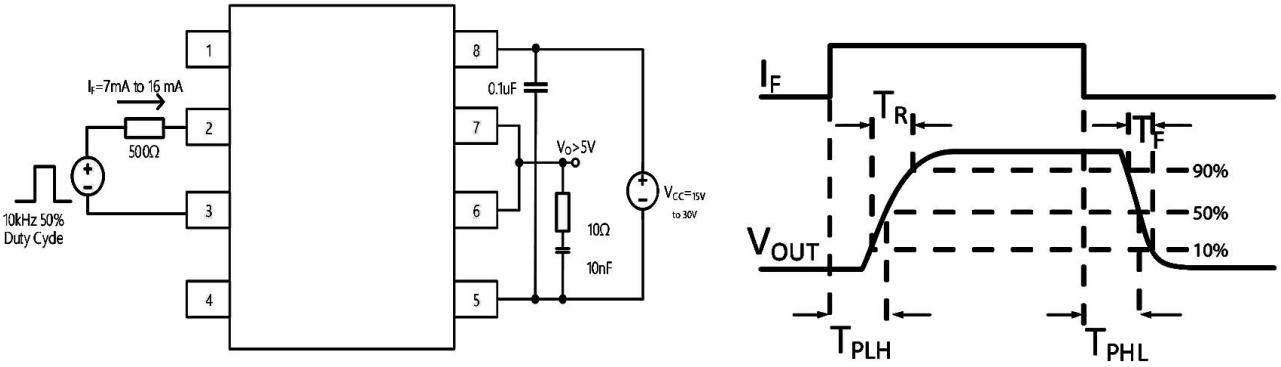


Fig.18 T_{PHL}、T_{PLH}、T_R、T_F Test Circuit

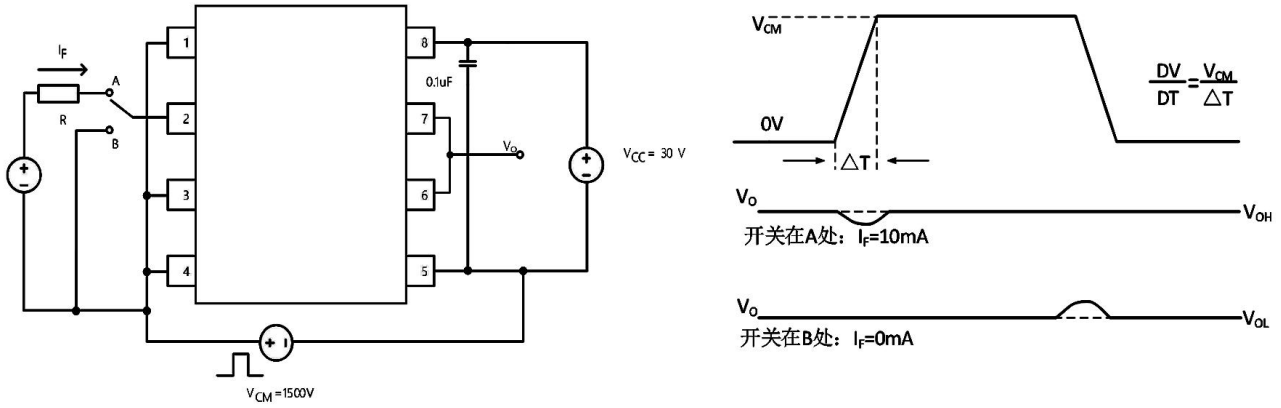
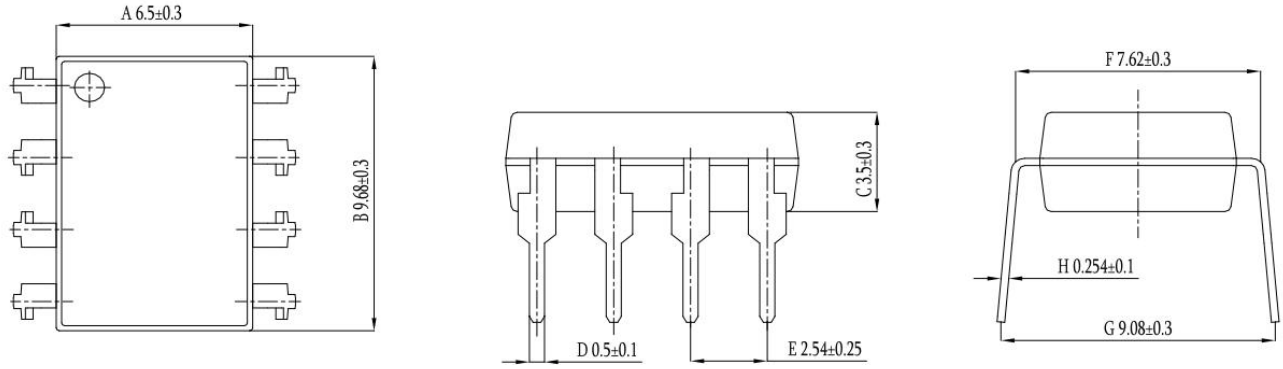


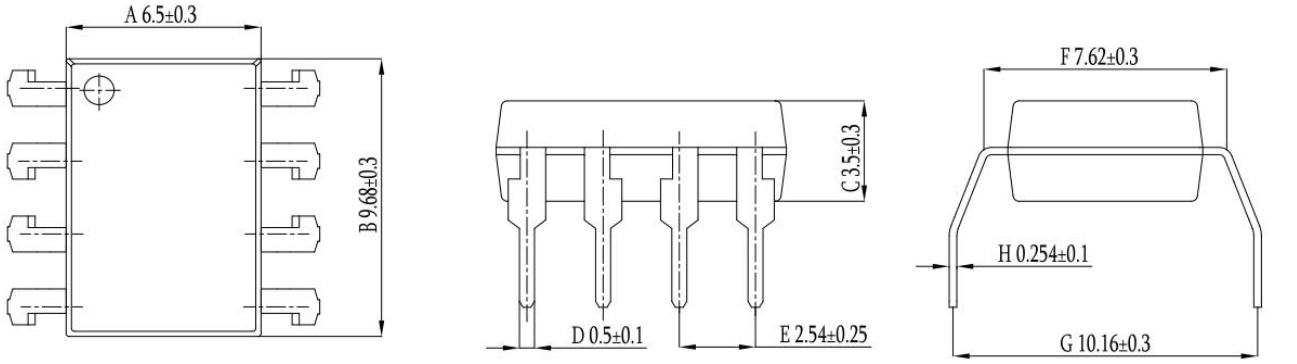
Fig.19 CMR Test Circuit

Package Outline Dimensions (unit: mm)

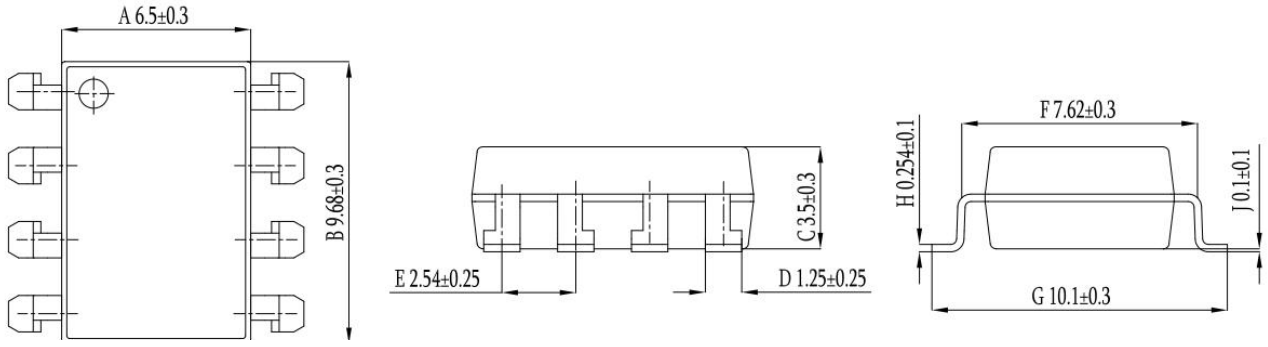
DIP8



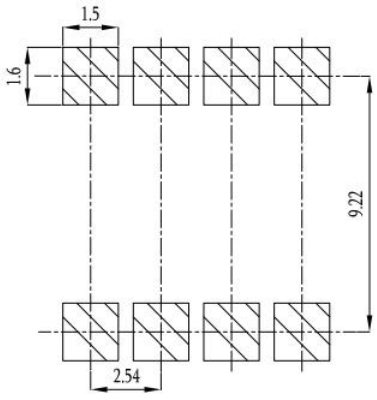
DIP8-M



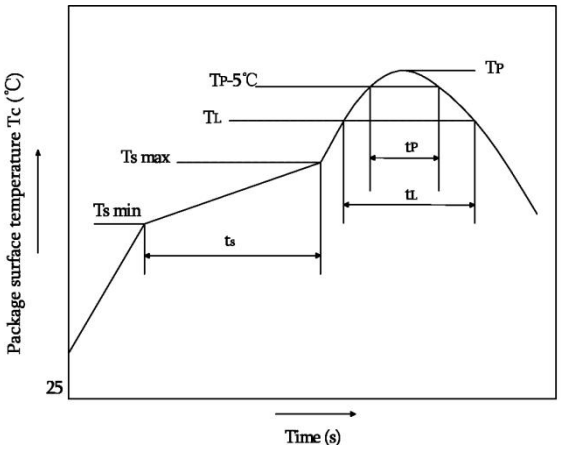
SMD8



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

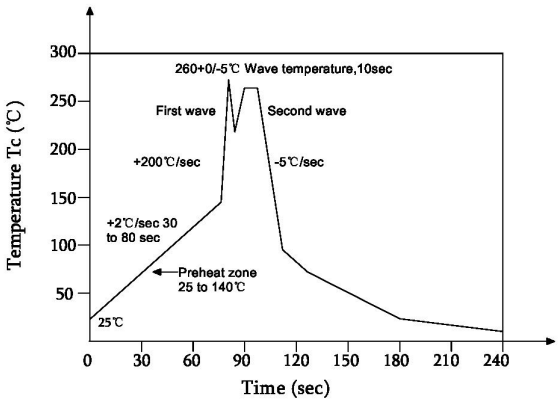


	Symbol	Min	Max	Unit
Preheat temperayure	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up ratea(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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.

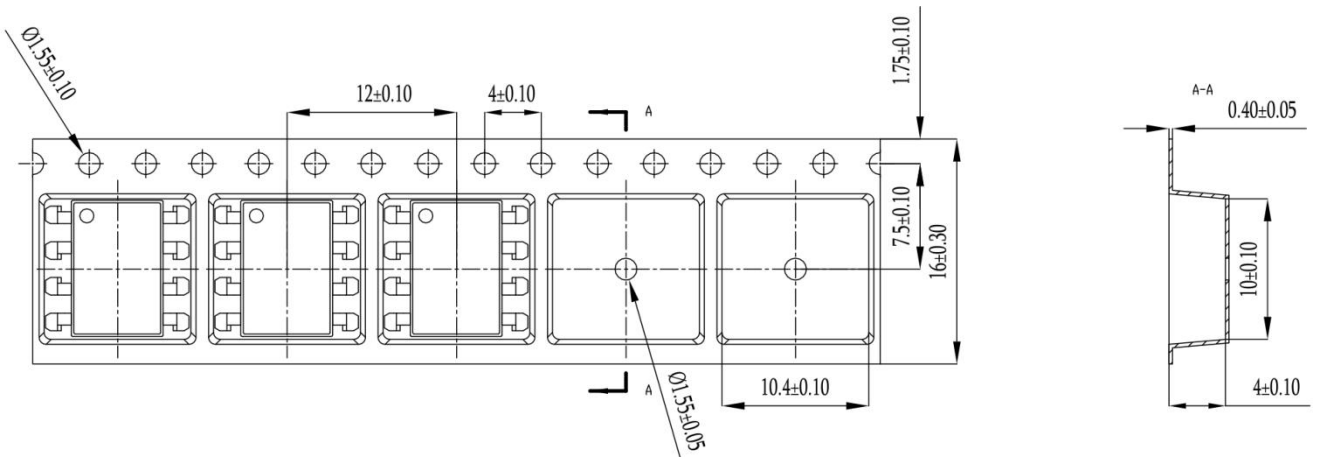
Schematic：（unit：mm）

■ 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.