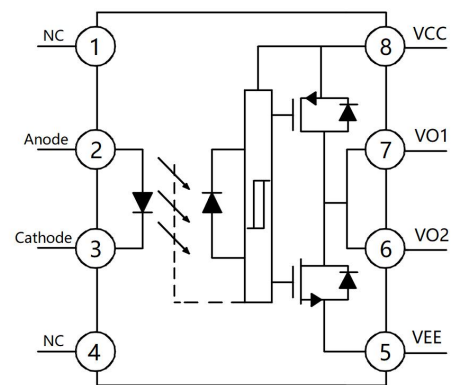
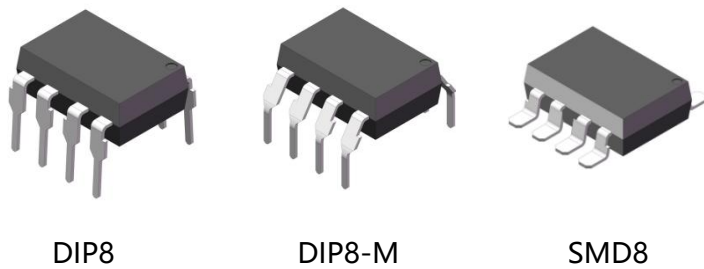


## Product packaging logic diagram



Pin Configuration

## Features

- 35 kV/ $\mu$ s minimum Common Mode Rejection
- 15V ~ 30V Wide operating VCC Range
- Maximum peak output current 2.5A
- Creepage distance > 7.0mm;
- Operating Temperature: -55°C~110°C
- 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 device; 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;



## Ordering Information

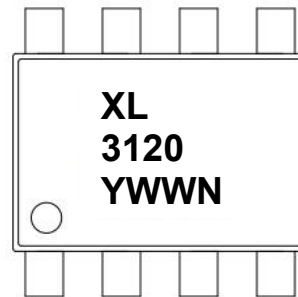
XL    3120    (M)    (G)    -    (U)    (N)    (Y)  
 ①            ②            ③            ④                            ⑤            ⑥            ⑦

- 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<sub>A</sub> = 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	°C
Storage Temperature Range	TSTG	-55 ~ +125	°C
Soldering Temperature *2	TSOL	260	°C

Notes:

1. 40 to 60% RH, AC for 1 minute

2. For 10 seconds

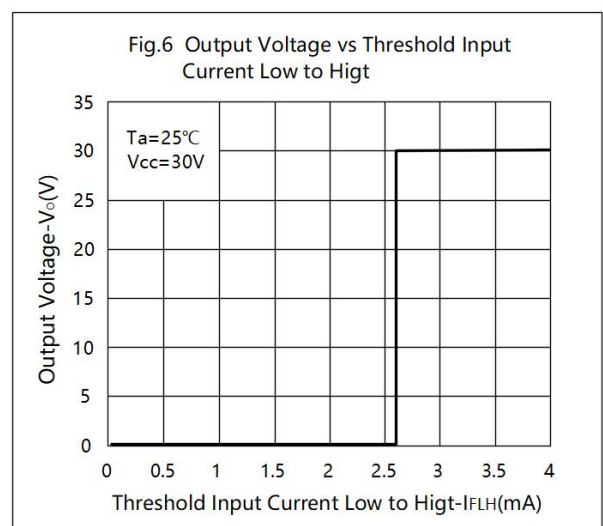
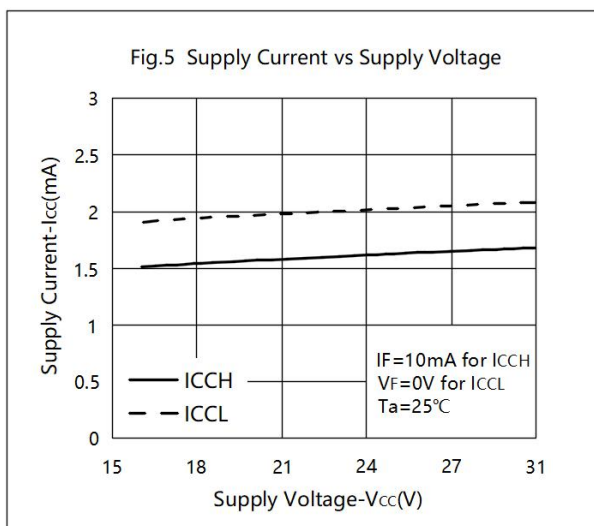
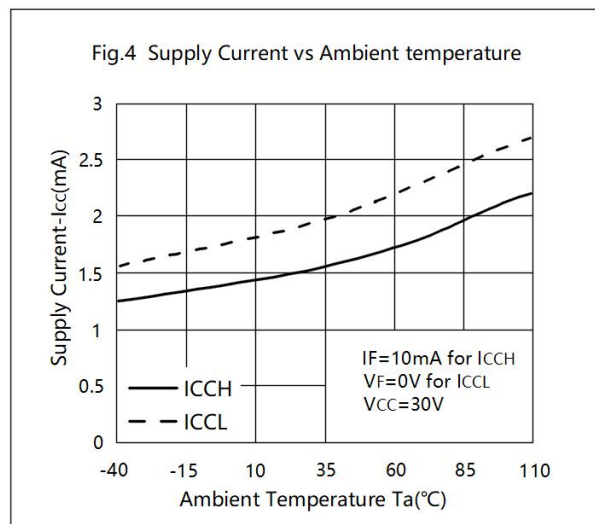
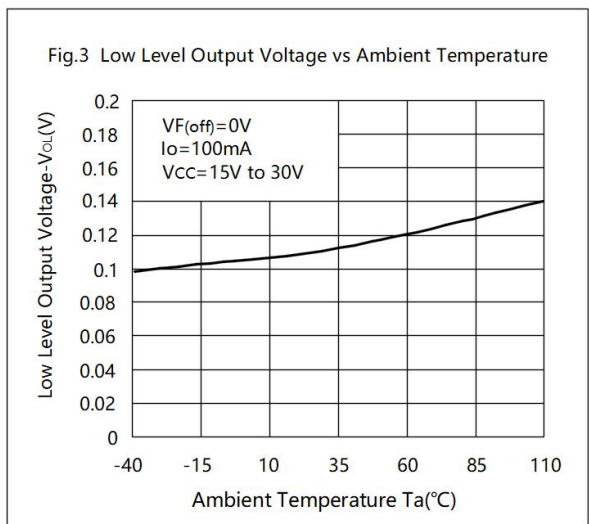
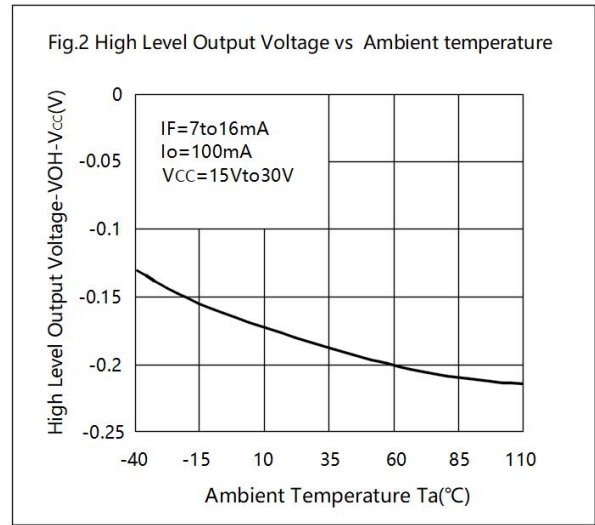
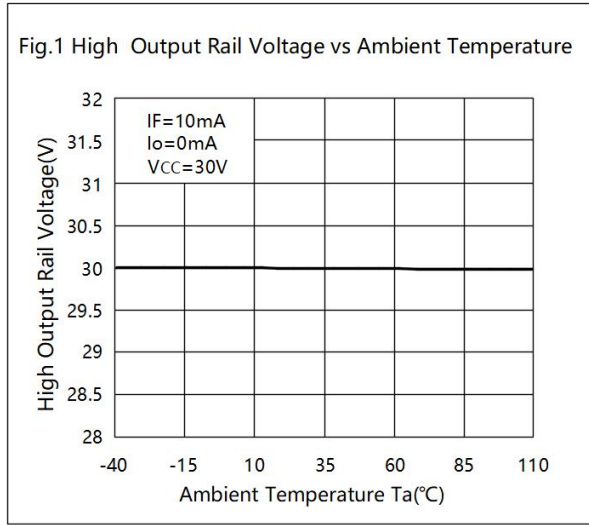
## Electrical Characteristics (@ T<sub>A</sub> = 25°C unless otherwise specified)

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	

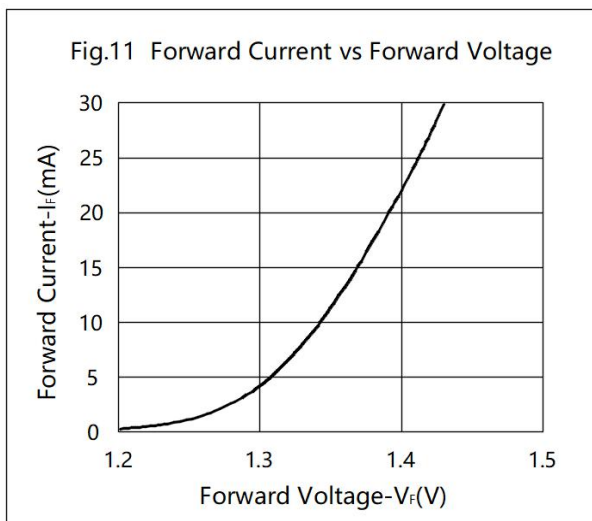
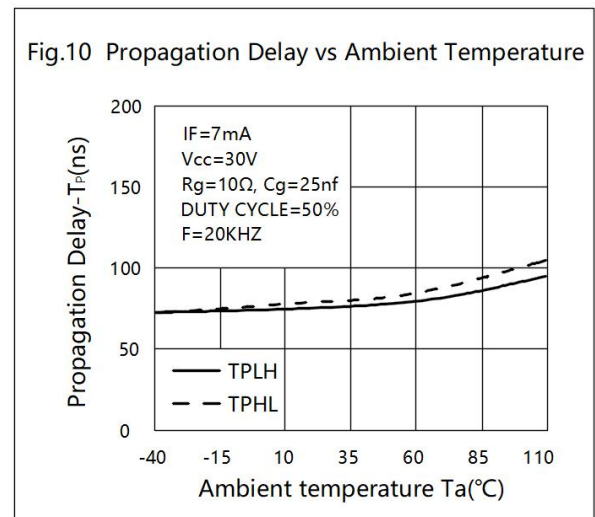
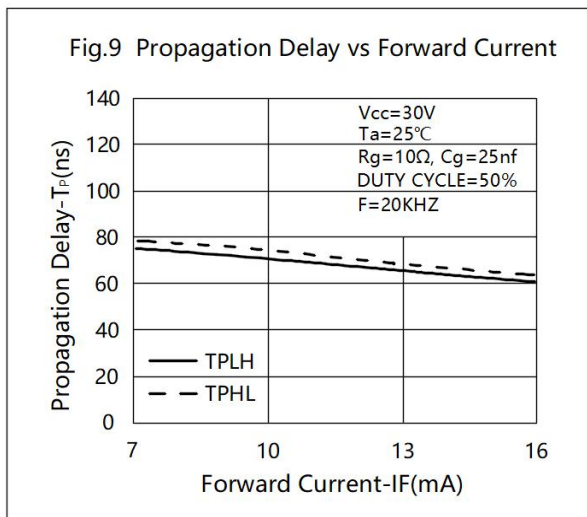
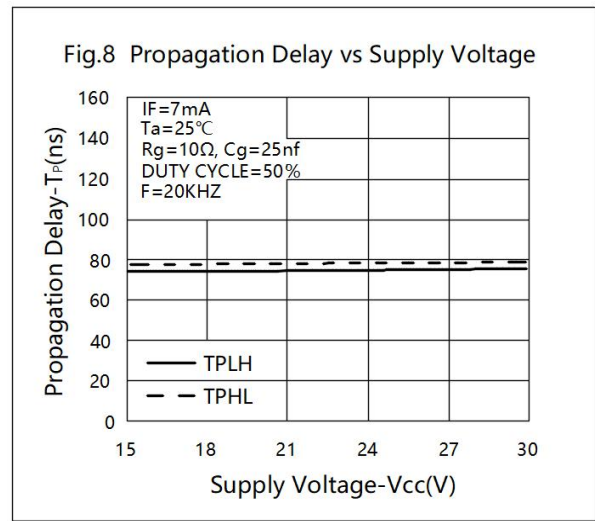
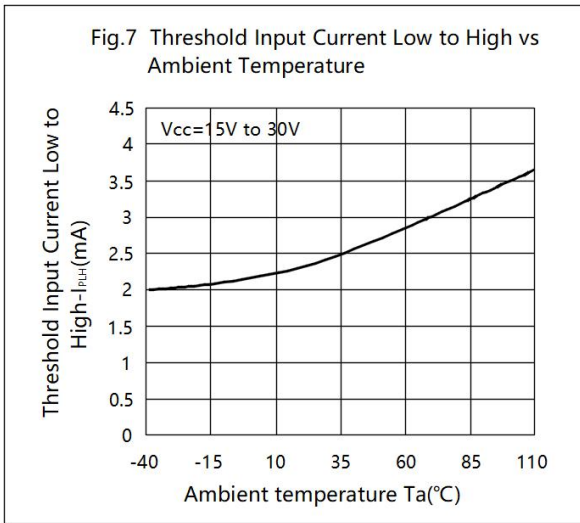
**Electrical Characteristics** (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Transfer Character istics	Propagation Delay Time to Low Output Level	TPHL	IF = 7mA to 16mA, 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 <sup>11</sup>	-	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°C VDD = 30V VCM = 2000V	35	50	-	KV/μs
	Output Low Level Common Mode Transient Immunity	CML	IF = 7 ~ 16mA VF = 0V	35	50	-	KV/μs

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



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



**TestCircuits Diagrams**

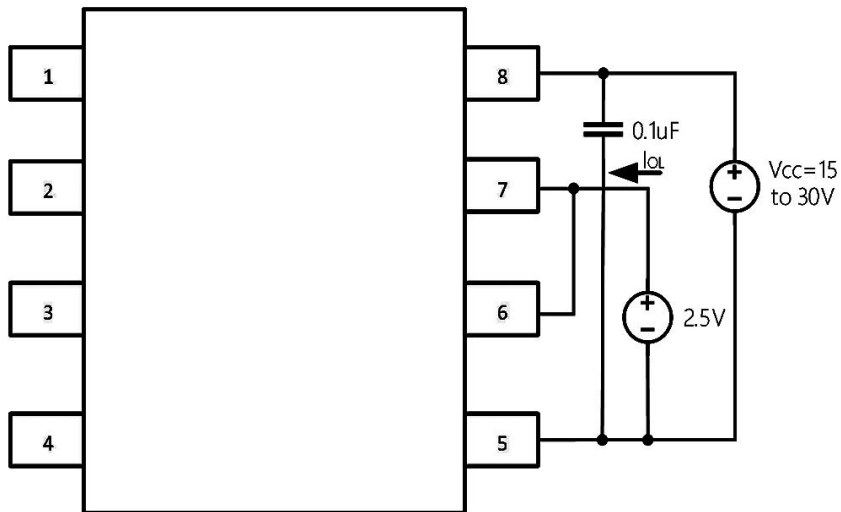


Fig.12  $I_{OL}$  Pulsed Test Circuit

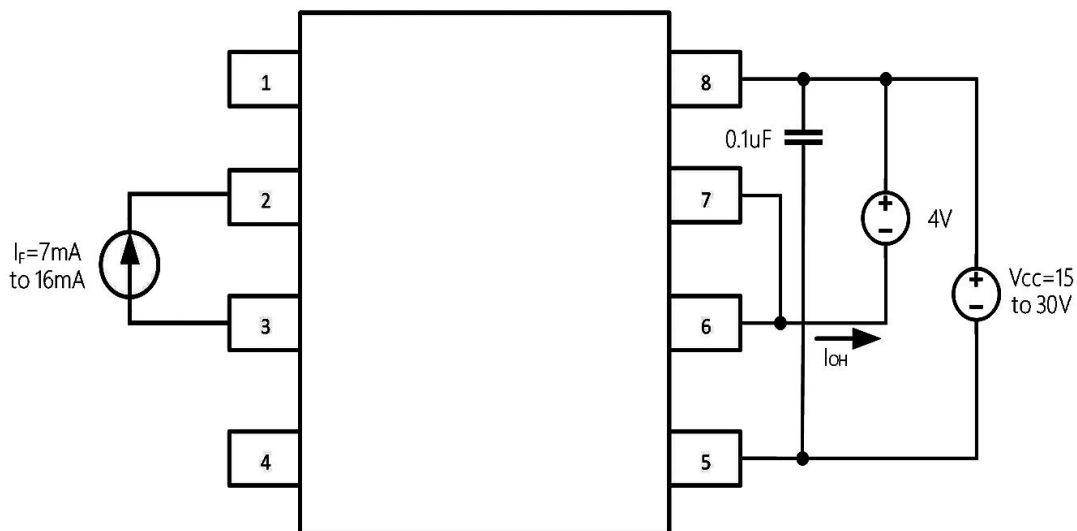


Fig.13  $I_{OH}$  Pulsed Test Circuit

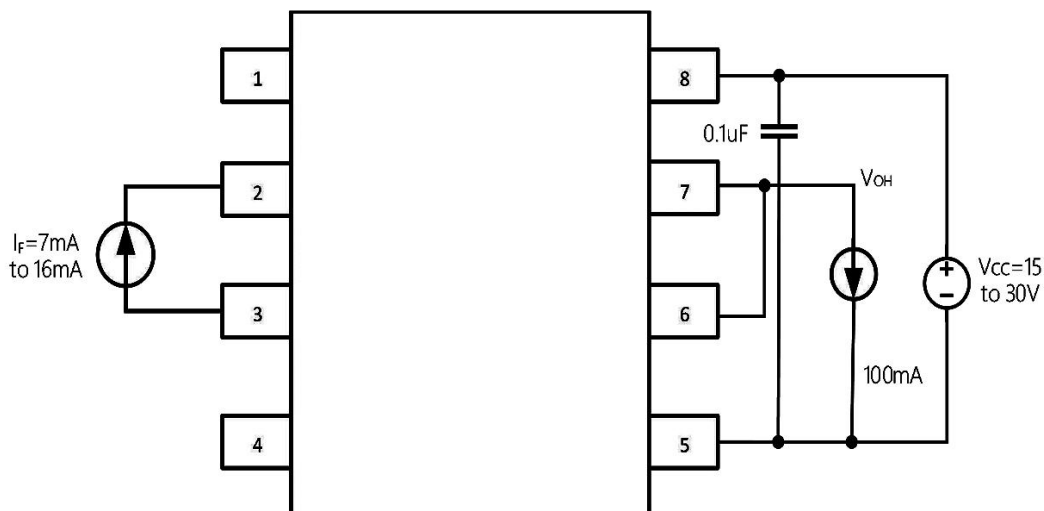


Fig.14  $V_{OH}$  Pulsed Test Circuit

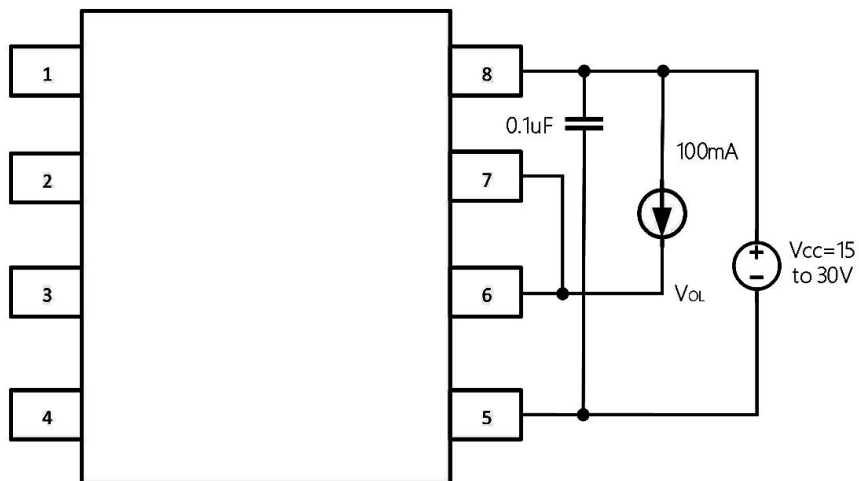


Fig.15  $V_{OL}$  Pulsed Test Circuit

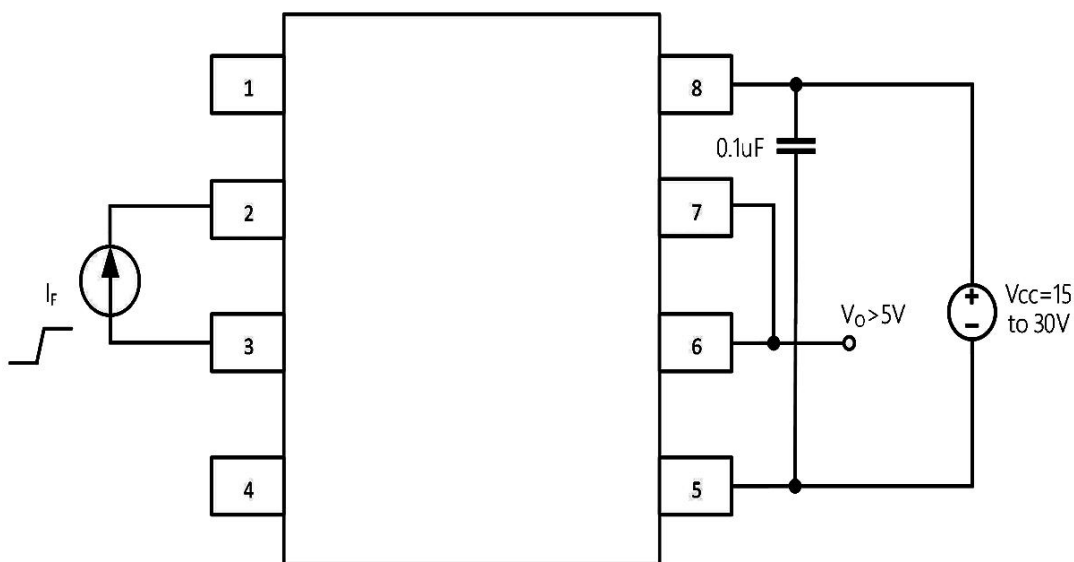


Fig.16  $I_{FLH}$  Pulsed Test Circuit

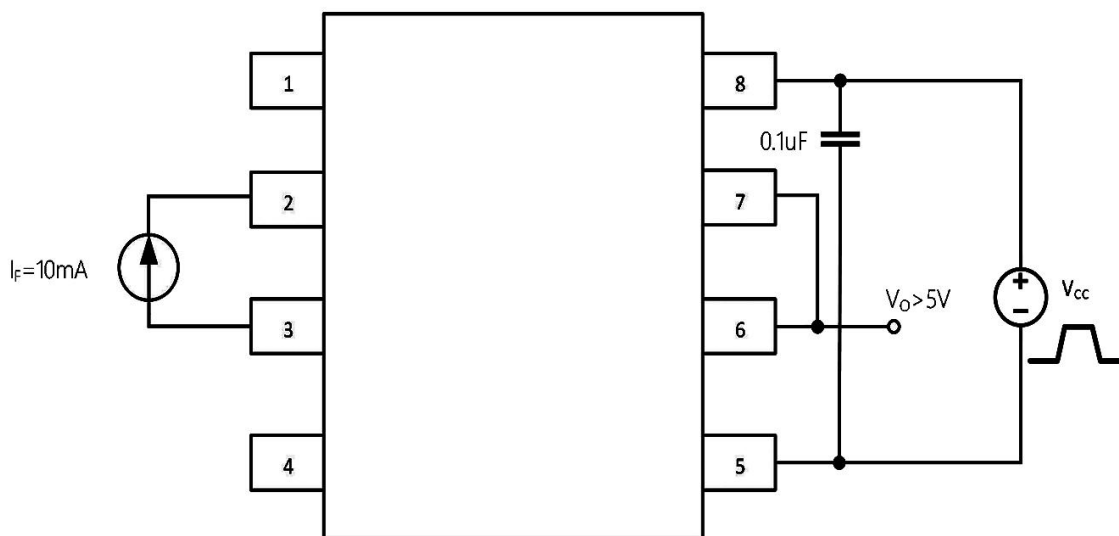


Fig.17 UVLO Test Circuit

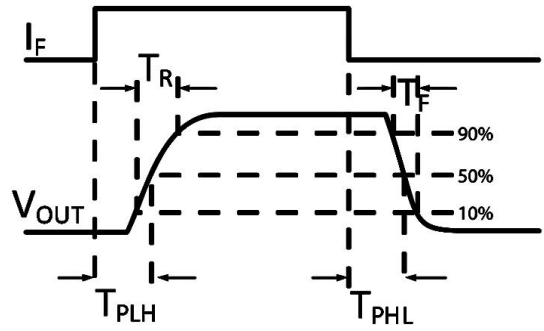
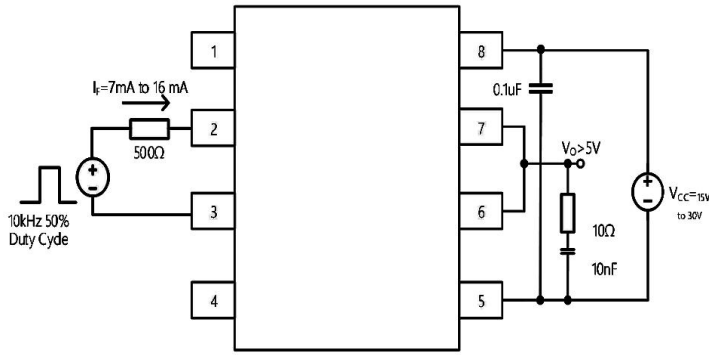


Fig.18  $T_{PHL}$ 、 $T_{PLH}$ 、 $T_R$ 、 $T_F$  Test Circuit

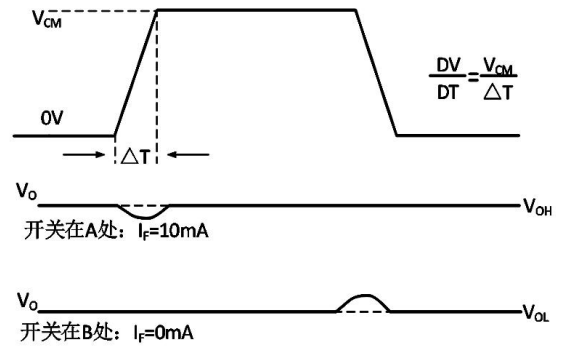
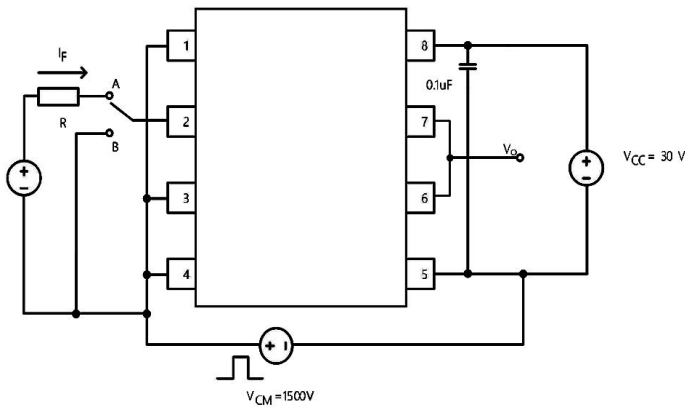
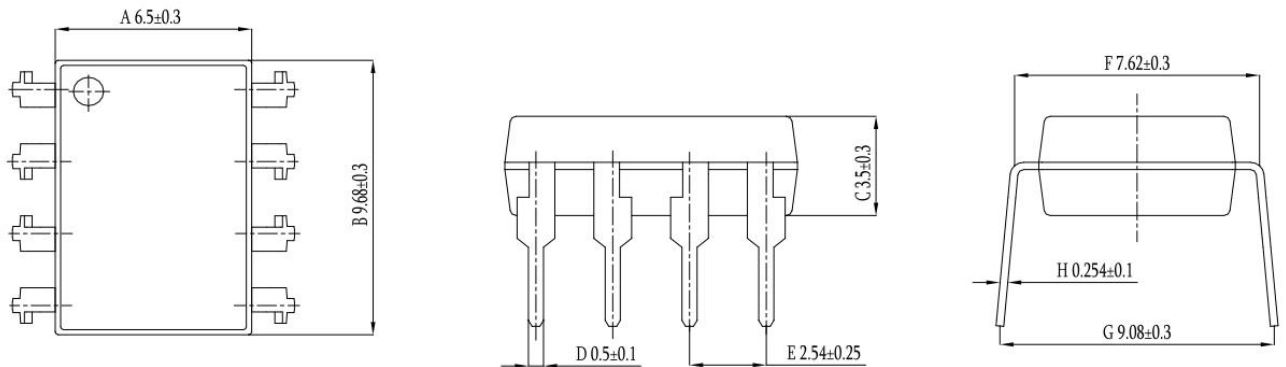


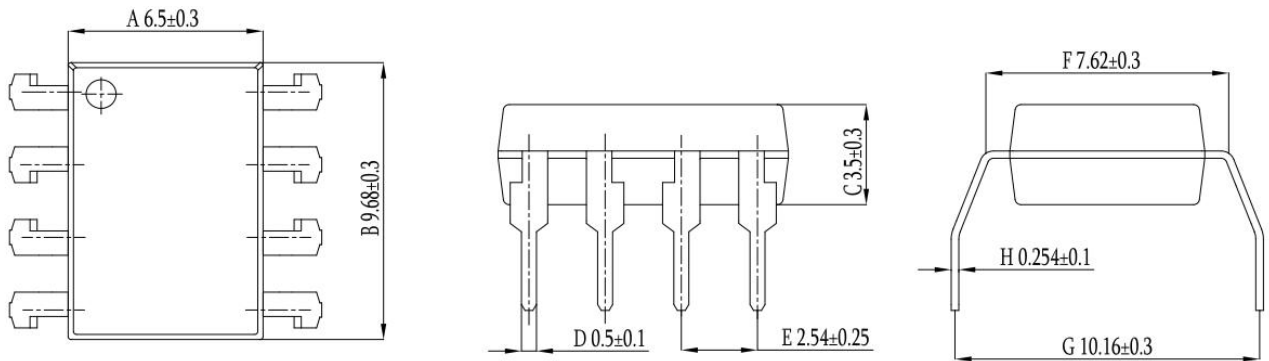
Fig.19 CMR Test Circuit

## Package Outline Dimensions (unit: mm)

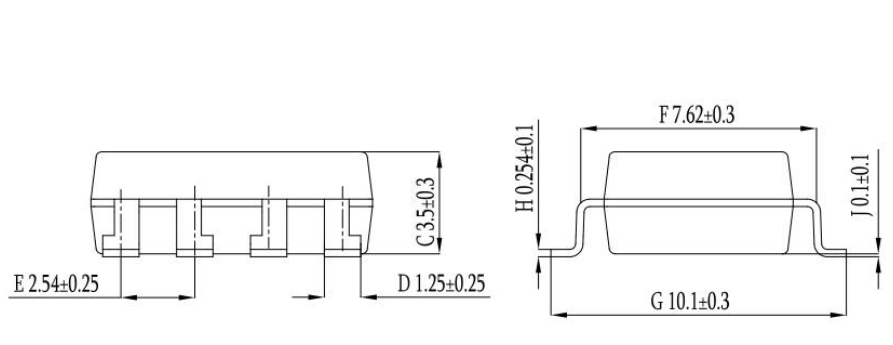
### DIP8



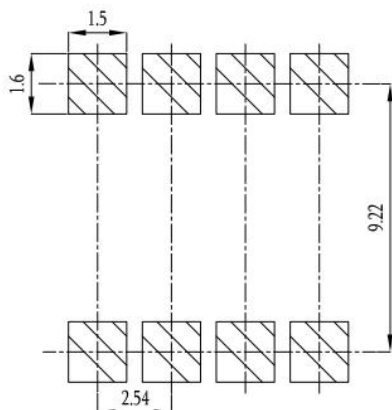
### DIP8-M



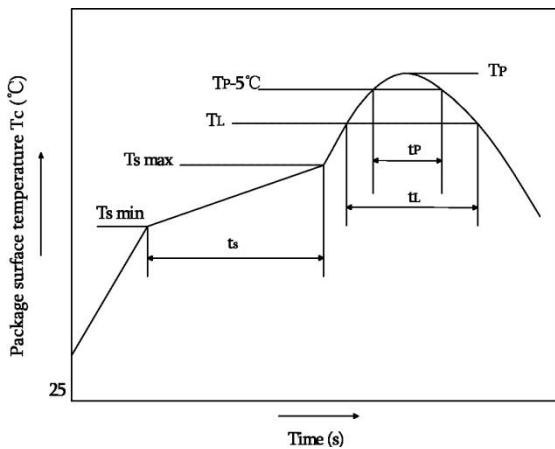
### SMD8



## SOLDERING FOOTPRINT (unit: mm)



**Reflow soldering**

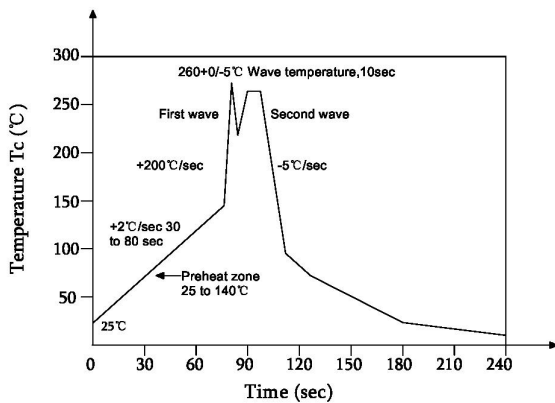


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	°C
Preheat time	ts	60	120	s
Ramp-up rate(TL to TP)			3	°C/s
Liquidus temperature	TL	217		°C
Time above TL	tL	60	150	s
Peak temperature	Tp		260	°C
Time during which Tc is between (TP-5) and TP	tP		30	s
Ramp-down rate(TP to TL)			6	°C/s

**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
DIP8	Tube(500mm)	45pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Straight insert type material tube
DIP8-M	Tube(500mm)	45pcs/tube	25 tubes /box	12 boxes /ctn	190*670mm	520*105*50mm	545*372*235mm	Seagull foot (M foot) tube
SMD8	Reel(φ330mm)	1000pcs/reel	2 reels /box	5 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: 1125pcs.

Qty/ctn : 13500pcs.

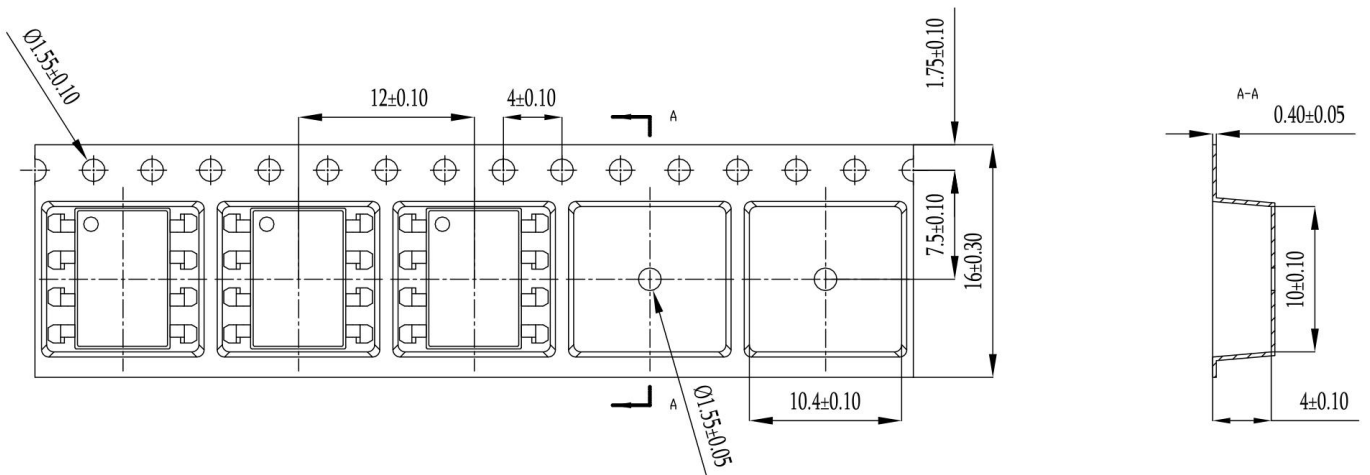
Schematic: (unit:mm)

■ SMD8 (Reel)

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

Qty/ctn : 10000pcs.

Schematic: (unit:mm)



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