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Product Specification

XBLW LM2901

Quadruple Comparator

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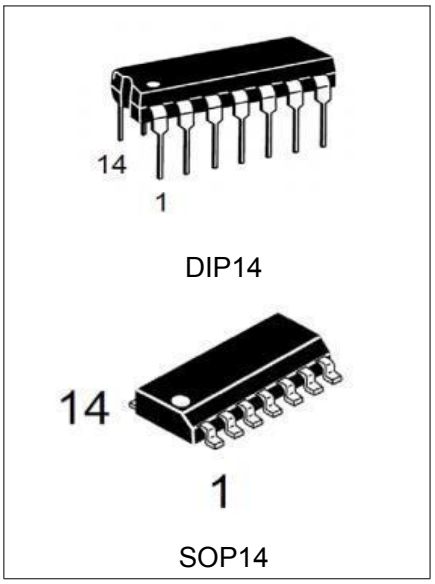
Description

The LM2901 is a four-comparator integrated circuit designed for level detection and low level detection in consumer and industrial electronics.
Adopt DIP14, SOP14 package form.



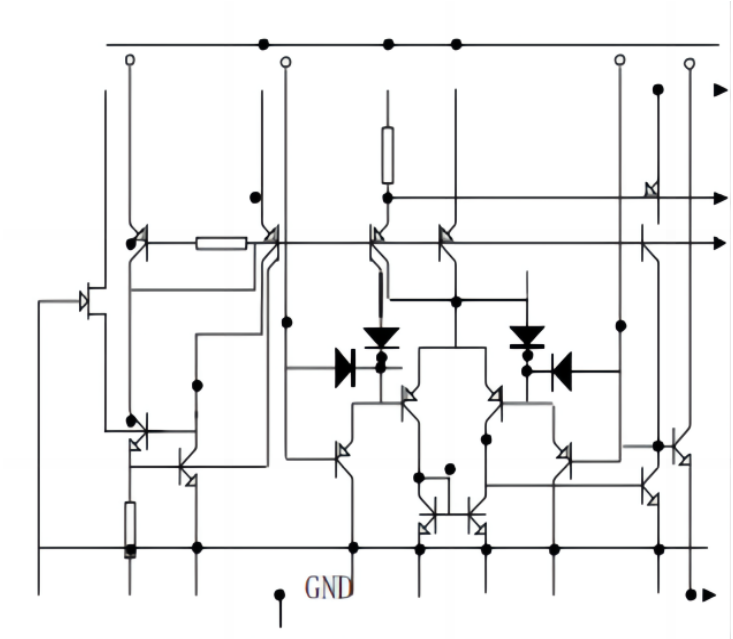
Features

- Single or dual power supply operation
- Low input bias current: 25nA (typical)
- Low input offset current: ± 5.0nA (typical)
- Output saturation voltage: 130mV
- Compatible with TTL and CMOS

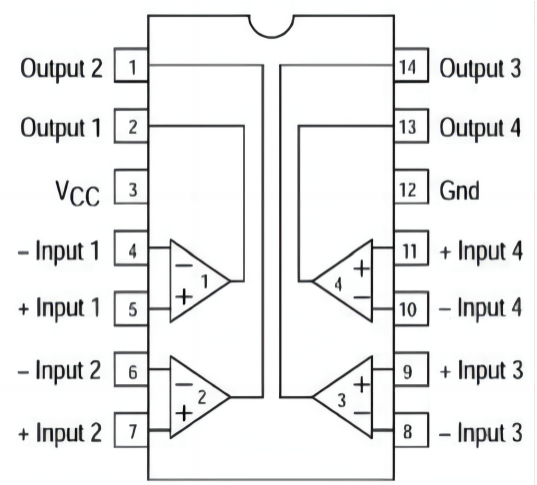
Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW LM2901N	DIP-14	LM2901N	Tube	1000Pcs/Box
XBLW LM2901DTR	SOP-14	LM2901	Tape	2500Pcs/Reel

Internal circuit diagram



Pin arrangement diagram



Pin end function symbol

Export end serial number	Function	Symbol	Export end serial number	Function	Symbol
1	Output 2	OUT2	8	Inverting input3	IN3（-）
2	Output 1	OUT1	9	Positive input3	IN3（+）
3	Power source	Vcc	10	Inverting input4	IN4（-）
4	Inverting input 1	IN1（-）	11	Positive input4	IN4（+）
5	Positive input1	IN1（+）	12	Earthing	GND
6	Inverting input2	IN2（-）	13	Output 4	OUT4
7	Positive input2	IN2（+）	14	Output 3	OUT3

Limit parameter (absolute maximum rating, Tamb=25℃ if no other provisions are made)

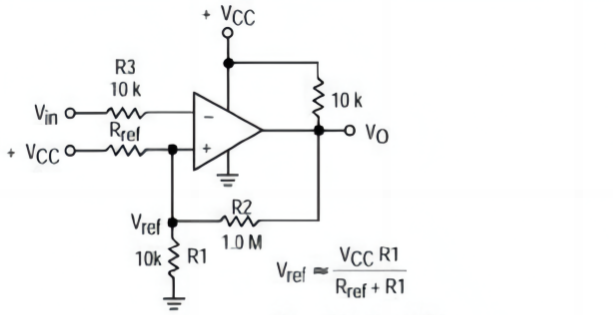
Parameter	Symbol	Number value	Single bit
Supply voltage	Vcc	36 或±18	V
Input differential voltage range	VIDR	36	V
Input common-mode voltage range	VICMR	-0.3~Vcc	V
Output current	ISC	50	mA
Power consumption (*)	PD	1.0	W
Operating ambient temperature	Tamb	-20~+85	℃
Storage temperature	Tstg	-65~150	℃

Note (* :) When used above 25 ° C, power consumption is reduced by 8mW for every 1 ° C increase.

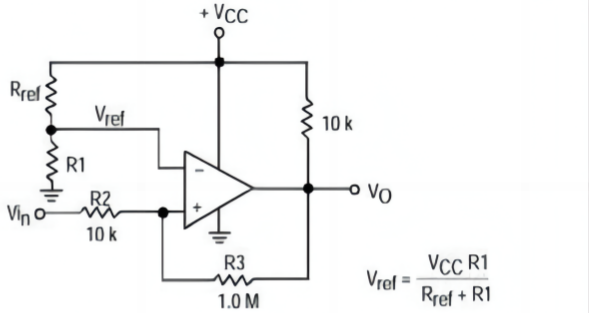
Electrical characteristics (if not otherwise specified, Vcc=5V, Tamb=25℃)

Peculiarity	Test condition	Symbol	Norm value			Single bit
			MIN	TYP	MAX	
Input offset voltage		V_{IO}		±2.0	±5.0	mV
	0℃≤ Ta ≤70℃				±9.0	
Input offset current		I_{IO}		±5.0	±50	nA
	0℃≤Ta ≤70℃				±150	
Input bias current		I_{IB}		25	250	nA
	0℃≤Ta ≤70℃				400	
Input common-mode voltage range		V_{ICR}	0		Vcc-1.5	V
	0℃≤Ta≤70℃		0		Vcc-2.0	
Supply current	R_L= ∞	Icc		0.8	2.0	mA
	R_L=∞, Vcc=30V			1.0	2.5	
Voltage gain	R_L > 15K, Vcc=15V	Gv	50	200		V/mV
Large signal response time	V_{IN}=TTL Logical swing, V_{REF}=1.4V, V_{RL}=5.0V, R_L=5.1K	t_{RES}		300		ns
Response time	V_{RL}=5.0V, R_L=5.1K	t_{RES}		1.3		ns
Input differential voltage		V_{ID}			Vcc	V
Output dip current	V_{IN}（-）> 1.0V, V_{IN}（+）=0V, Vo<1.5V	I_{SINK}	6.0	16		mA
Output saturation voltage	V_{IN}（-）>1.0V, V_{IN}（+）=0V, I_{SINK}<4.0mA	V_{SAT}		130	400	mV
	V_{IN}（-）>1.0V, V_{IN}（+）=0V, I_{SINK}<4.0mA 0℃≤Ta ≤70℃				700	
Output leakage current	V_{IN}（+）>1.0V, V_{IN}（-）=0V, Vo=5.0V	I_{OL}		0.1		nA
	VIN（+）>1.0V, VIN（-）=0V, Vo=30V 0℃≤Ta ≤70℃				1000	

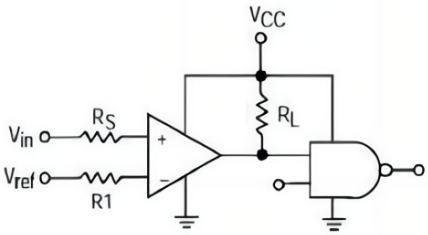
Application drawing



Inverse comparator with hysteresis

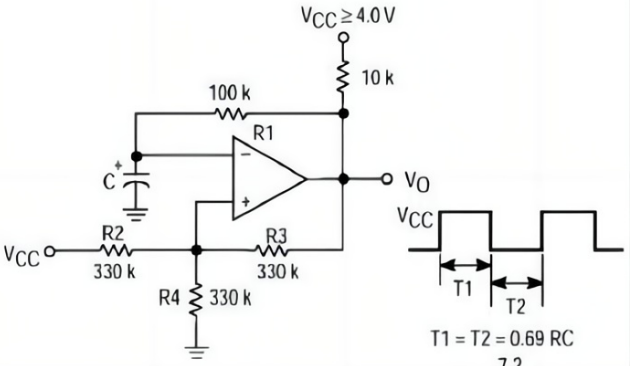


Positive phase comparator with lag

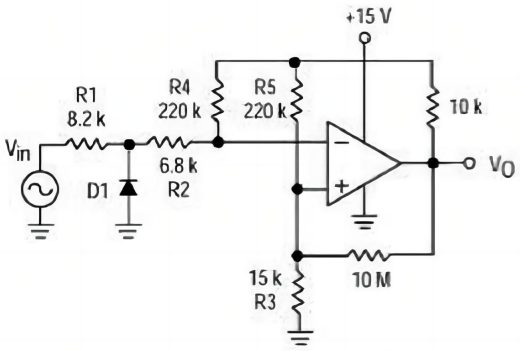


Logic	Device	V_{CC} (V)	R_L kΩ
CMOS	1/4 MC14001	+15	100
TTL	1/4 MC7400	+5.0	10

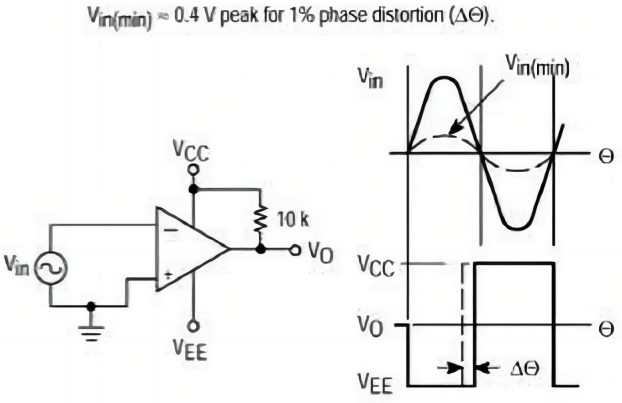
Logical driver



Square wave oscillator



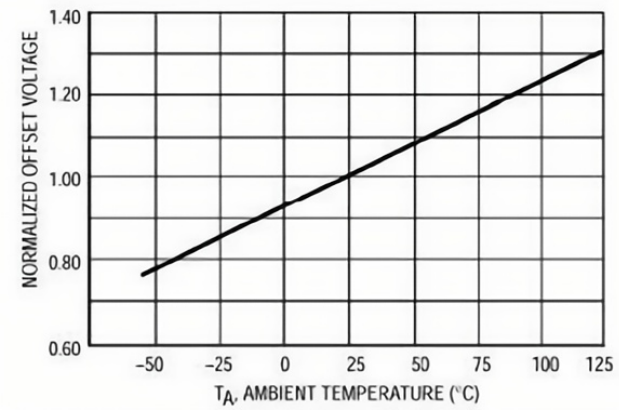
Zero-crossing detector (single-supply application)



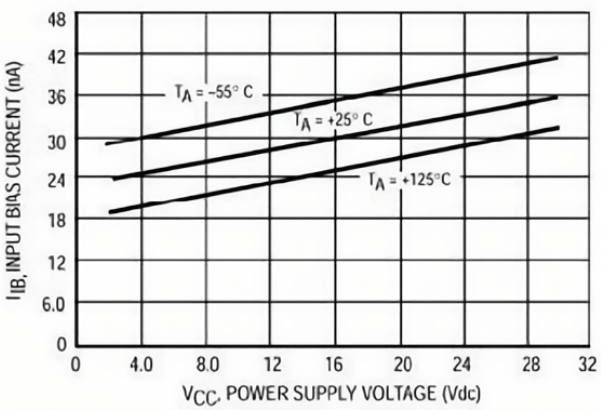
Zero-crossing detector (dual power supply application)

Characteristic Curve

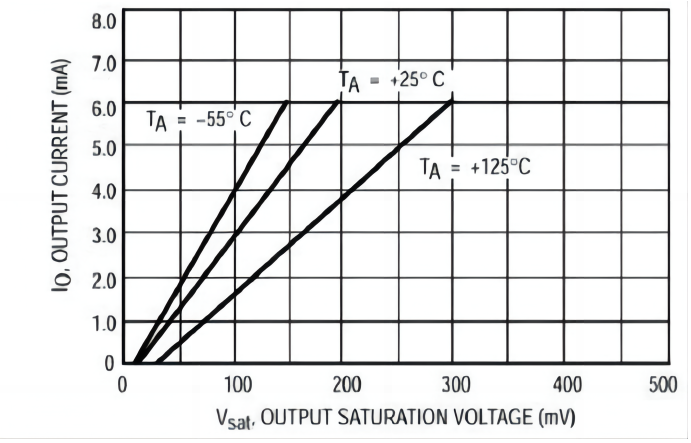
Normal input offset voltage



Input bias current

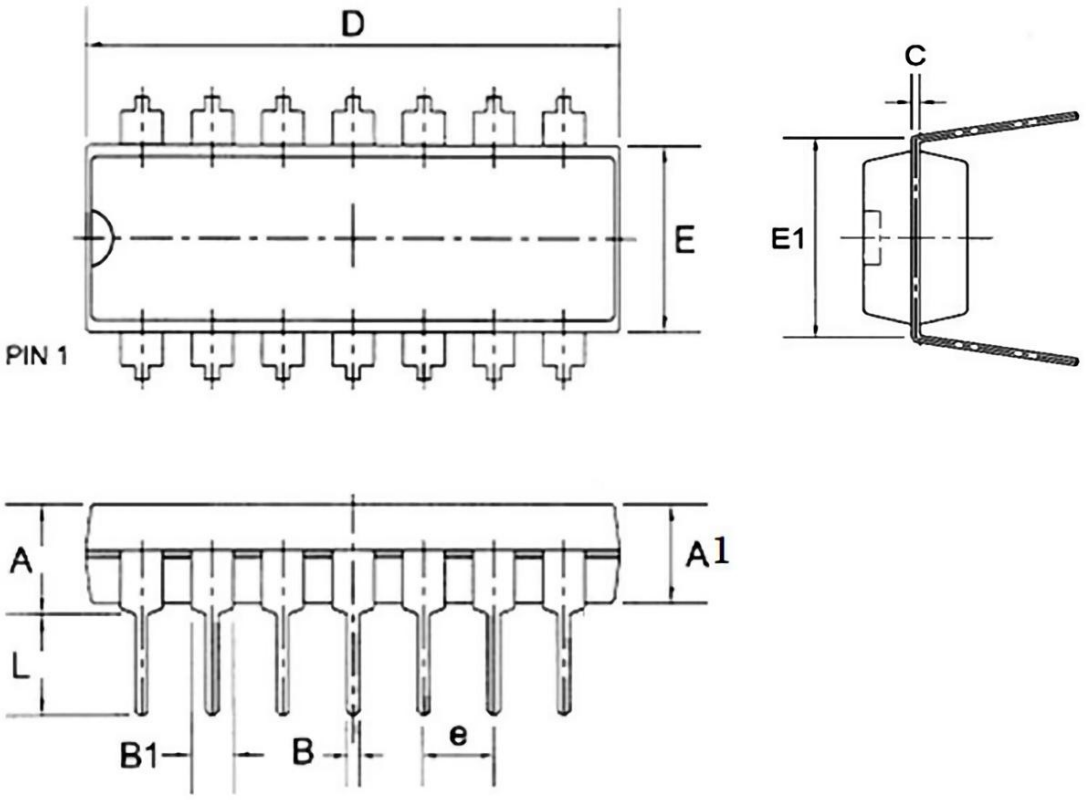


Output trap current and output saturation voltage



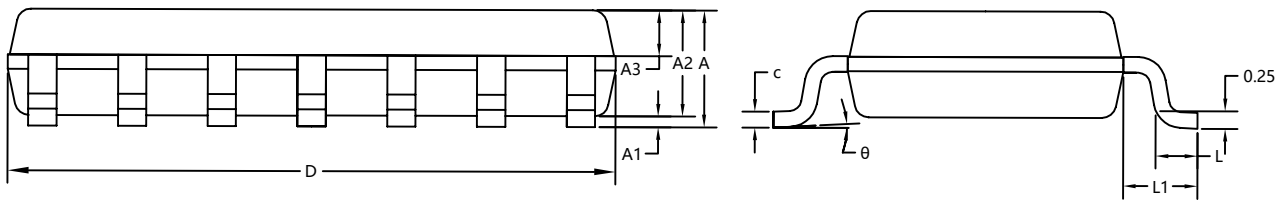
Packaging information:

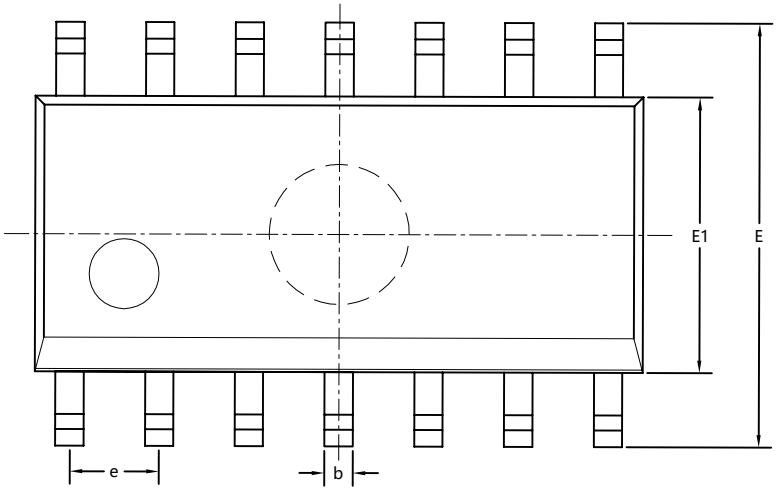
DIP14



Symbol	Dimensions in Millimeters		
	Min	Nom	Max
A	--	--	4.31
A1	3.15	3.30	3.65
B	--	0.46	--
B1	--	1.60	--
C	--	0.25	--
D	19.00	19.30	19.60
E	6.20	6.40	6.60
E1	--	7.60	--
e	--	2.54	--
L	3.00	3.35	3.60

SOP14





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.50	1.60	1.70
A1	0.10	0.15	0.25
A2	1.40	1.45	1.50
A3	0.60	0.65	0.70
b	0.35	0.40	0.45
c	0.15	0.20	0.25
D	8.50	8.60	8.70
E	5.80	6.00	6.20
E1	3.85	3.90	3.95
e	1.27BSC		
L	0.50	0.60	0.70
L1	1.05REF		
θ	0°	4°	8°

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