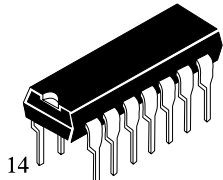


Quad Single Supply Comparator

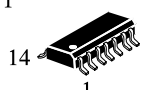
The LM2901 consists of four independent precision voltage comparators with an offset voltage specification as low as 2.0 mV max for four comparators which were designed specifically to operate from a single power supply over a wide range of voltages.

Application areas include limit comparators, simple analog to digital converters; pulse, squarewave and time delay generators; wide range VCO; MOS clock timers; multivibrators and high voltage digital logic gates.

- * Single or Split Supply Operation
- * Low Input Bias Current
- * Low Input Offset Current
- * Input Common Mode Voltage Range to Gnd
- * Low Output Saturation Voltage
- * TTL and CMOS Compatible
- *



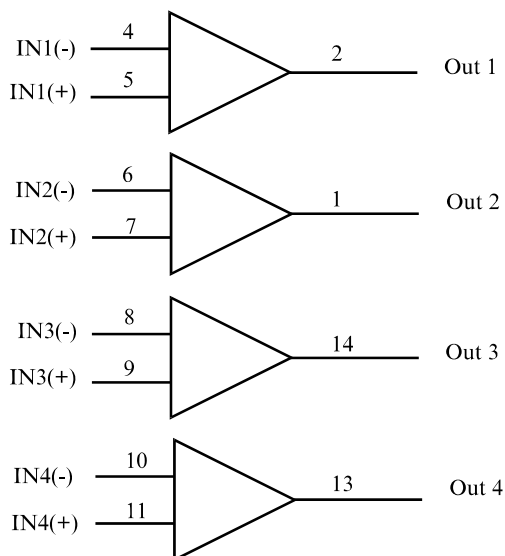
N SUFFIX
PLASTIC



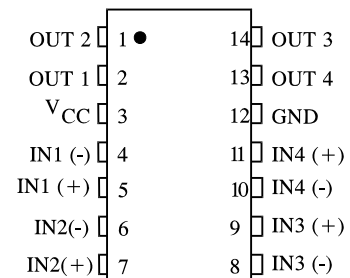
D SUFFIX
SOIC

ORDERING INFORMATION
LM2901N Plastic
LM2901D SOIC
T_A = 0° to 70° C for all packages.

LOGIC DIAGRAM



PIN 3 = V_{CC}
PIN 12 = GND



PIN ASSIGNMENT

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V _{CC}	Power Supply Voltages		
	Single Supply Split Supplies	36 ±18	V
V _{IDR}	Input Differential Voltage Range	36	V
V _{ICR}	Input Common Mode Voltage Range (1)	-0.3 to V _{CC}	V

I_{SC}	Output Short Circuit to Ground	Continuous	
I_{IN}	Input Current, per pin (2)	50	mA
T_J	Junction Temperature Plastic Packages	150	°C
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature, 1mm from Case for 10 Seconds	260	°C
P_D	Power Dissipation @ $T_A=25^{\circ}C$ Plastic Package Derate above 25°C	1.0 8.0	W mW/°C

*Maximum Ratings are those values beyond which damage to the device may occur.
 Functional operation should be restricted to the Recommended Operating Conditions.

Notes:

1. Split Power Supplies.
2. $V_{IN} < -0.3V$. This input current will only exist when voltage at any of the input leads is driven negative.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	±2.5 or 5.0	±15 or 30	V
T_A	Operating Temperature, All Package Types	0	+70	°C

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation, V_{IN} and V_{OUT} should be constrained to the range $GND \leq (V_{IN} \text{ or } V_{OUT}) \leq V_{CC}$.

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or V_{CC}).
 Unused outputs must be left open.

DC ELECTRICAL CHARACTERISTICS (T_A=0 to +70°C)

Symbol	Parameter	Test Conditions	Guaranteed Limit			Unit
			Min	Typ	Max	
V _{IO}	Input Offset Voltage	V ₀ =1.4V V _{CC} =5.0-30V; R _S ≤100Ω V _{ICR} =0V - (V _{CC} -1.5)V	-		9.0	mV
I _{IB}	Input Bias Current	V ₀ =1.4V V _{CC} =5.0-30V V _{ICR} =0V - (V _{CC} -1.5)V	-		400	nA
I _{IO}	Input Offset Current	V ₀ =1.4V V _{CC} =5.0-30V V _{ICR} =0V - (V _{CC} -1.5)V	-		±150	nA
V _{ICR}	Input Common Mode Voltage Range	V _{CC} =5.0-30V	0		V _{CC} -2.0V	V
I _{CC}	Supply Current	R _L =∞, V _{CC} =5.0 R _L =∞, V _{CC} =30V	- -		2.0* 2.5*	mA
A _{VOL}	Voltage Gain	V _{CC} =15V, R _L =15KΩ	-	200*	-	V/mV
t ₁	Large Signal Response Time	V _{IN} =TTL Logic Swing, V _{ref} =1.4V, V _{CC} =5.0V, R _L =5.1KΩ, V _{RL} =5.0V	-	300*	-	ns
t ₂	Response Time	V _{CC} =5.0V, R _L =5.1KΩ, V _{RL} =5.0V	-	1.3*	-	μs
I _{sink}	Output Sink Current	V _{I(-)} =1.0V, V _{I(+)} =0V, V ₀ ≤1.5V, V _{CC} =5.0V	6.0*	-	-	mA
V _{sat}	Saturation Voltage	V _{I(-)} =1.0V, V _{I(+)} =0V, I _{sink} ≤4.0mA, V _{CC} =5.0V	-	-	700	mV
I _{OL}	Output Leakage Current	V _{I(+)} =1.0V, V _{I(-)} =0V, V ₀ =5.0V V ₀ =30V		0.1*	1000	nA
V _{IDR}	Differential Input Voltage Range	All V _{IN} ≥GND or V-Supply (if used)			V _{CC} *	V

*=@25°C

TYPICAL PERFORMANCE CHARACTERISTICS

($V_{CC}=1.5V$, $T_A=+25^{\circ}C$, (each comparator))

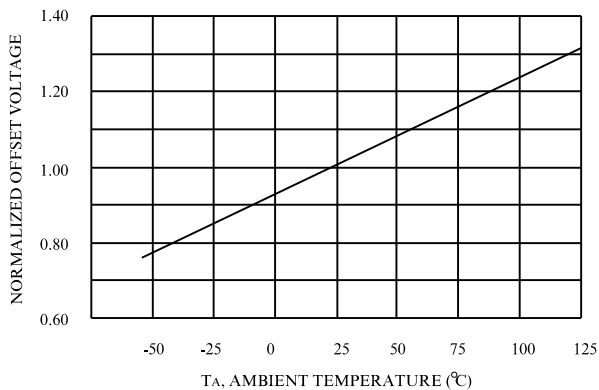


Figure 1. Normalized Input Offset Voltage

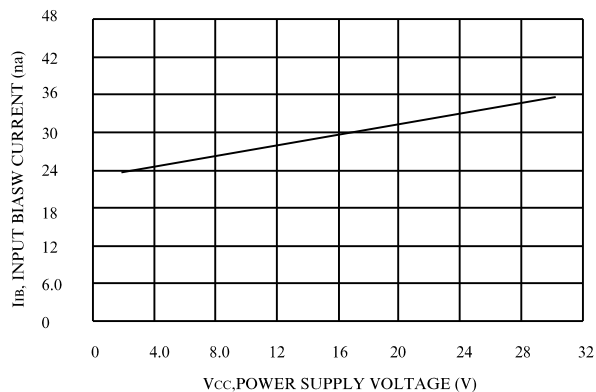


Figure 2. Input Bias Current

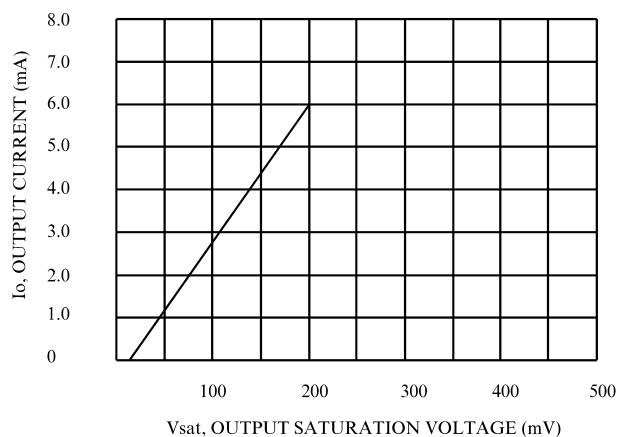


Figure 3. Output Sink Current versus Output Saturation Voltage

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