

## SINGLE-SUPPLY QUAD COMPARATOR

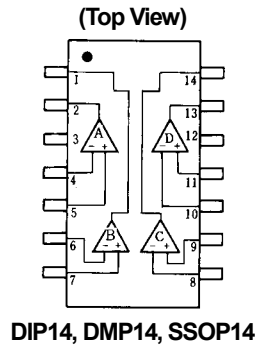
### ■ GENERAL DESCRIPTION

These devices offer higher frequency operation and faster switching than can be had from internally compensated quad op amps. Indeed for single-supply applications, the Darlington PNP input stage allows them to compare voltages that include ground. The two-stage common-emitter output circuit provides gain and output sink capacity of 6mA at an output level of 400mV. The output collector is left open, permitting the designer to drive devices in the range of 2V to 36V.

### ■ FEATURES

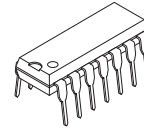
- Operating Voltage ( +2V~+36V )
- Single Supply Operation
- Open Collector Output
- Package Outline DIP14, DMP14, SSOP14
- Bipolar Technology

### ■ PIN CONFIGURATION

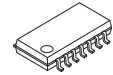


- PIN FUNCTION**
1. B OUTPUT
  2. A OUTPUT
  3. V<sup>+</sup>
  4. A -INPUT
  5. A +INPUT
  6. B -INPUT
  7. B +INPUT
  8. C -INPUT
  9. C +INPUT
  10. D -INPUT
  11. D +INPUT
  12. GND
  13. D OUTPUT
  14. C OUTPUT

### ■ PACKAGE OUTLINE



NJM2901N  
(DIP14)

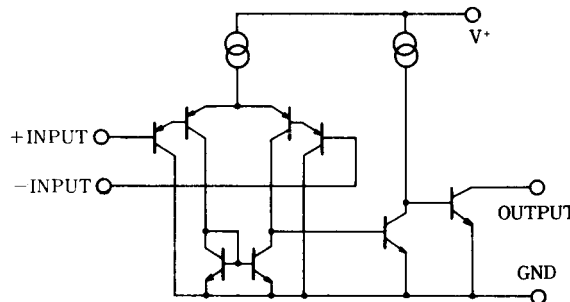


NJM2901M  
(DMP14)



NJM2901V  
(SSOP14)

### ■ EQUIVALENT CIRCUIT ( 1/4 Shown )



# NJM2901

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+$	36 (± 18)	V
Differential Input Voltage	$V_{ID}$	36	V
Input Voltage	$V_{IN}$	-0.3~+36	V
Power Dissipation	$P_D$	( DIP14 ) 570 ( DMP14 ) 300 ( SSOP14 ) 300	mW
Operating Temperature Range	$T_{opr}$	-40~+85	°C
Storage Temperature Range	$T_{stg}$	-50~+125	°C

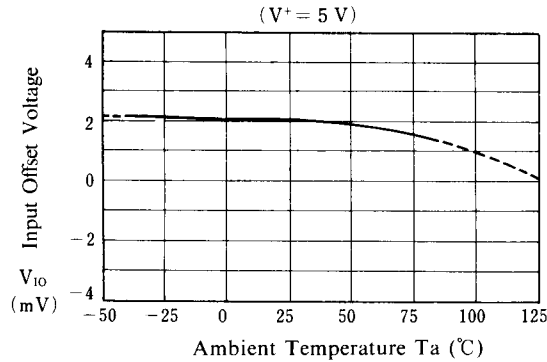
## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V^+=5V$  )

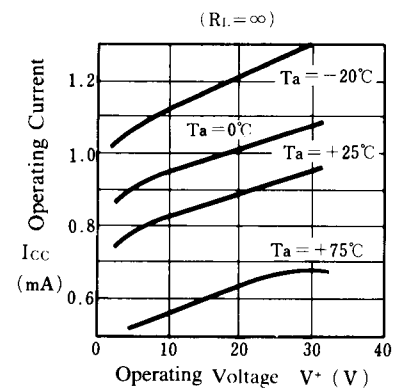
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_S=0\Omega, V_O=1.4V$	-	2	7	mV
Input Offset Current	$I_{IO}$	$I_{IN}=I_{IN^+}-I_{IN^-}$	-	5	50	nA
Input Bias Current	$I_B$		-	25	250	nA
Input Common Mode Voltage Range	$V_{ICM}$		0~3.5	-	-	V
Large Signal Voltage Gain	$A_V$	$R_L=15k\Omega$	-	106	-	dB
Response Time	$t_R$	$R_L=5.1k\Omega$	-	1.3	-	$\mu s$
Output Sink Current	$I_{SINK}$	$V_{IN^-}=1V, V_{IN^+}=0V, V_O=1.5V$	6	16	-	mA
Output Saturation Voltage	$V_{SAT}$	$V_{IN^-}=1V, V_{IN^+}=0V, I_{SINK}=3mA$	-	200	400	mV
Output Leakage Current	$I_{LEAK}$	$V_{IN^-}=0V, V_{IN^+}=1V, V_O=5V$	-	0.1	1.0	$\mu A$
Operating Current	$I_{CC}$	$R_L=\infty$	-	0.8	2	mA

## ■ TYPICAL CHARACTERISTICS

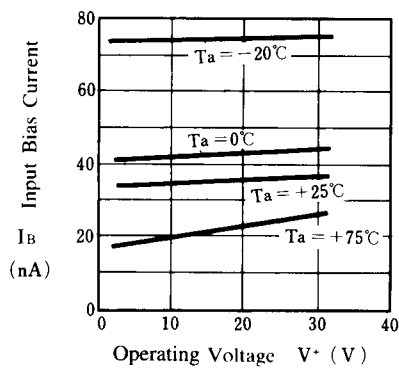
**Input Offset Voltage vs. Temperature**



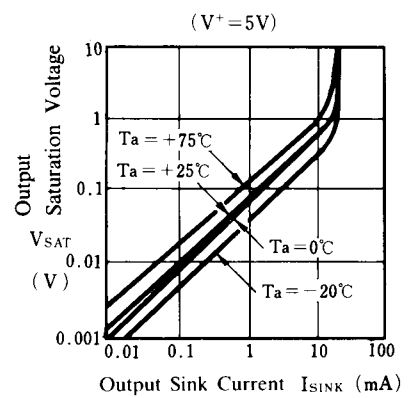
**Operating Current**



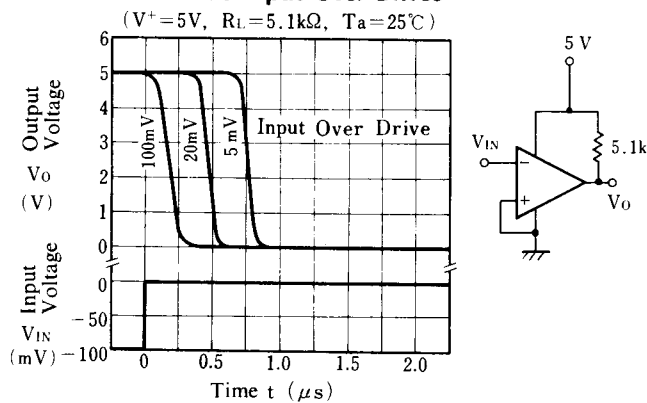
**Input Bias Current**



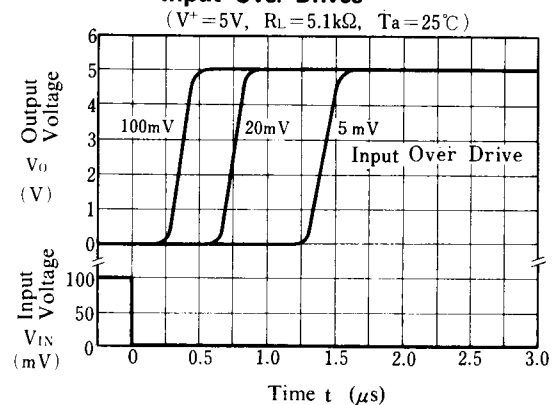
**Output Saturation Voltage**



**Response Time for Various Input Over Drives**



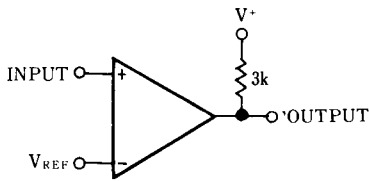
**Response Time for Various Input Over Drives**



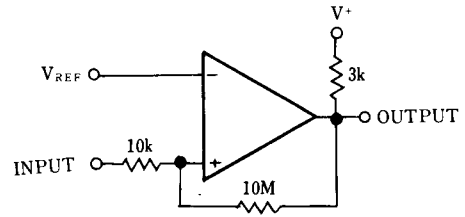
# NJM2901

## ■ TYPICAL APPLICATIONS

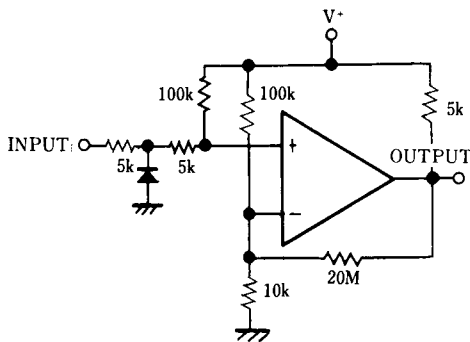
**Basic Comparator**



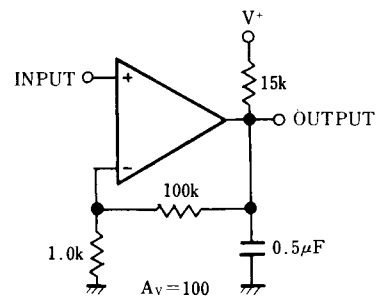
**Comparator With Hysteresis**



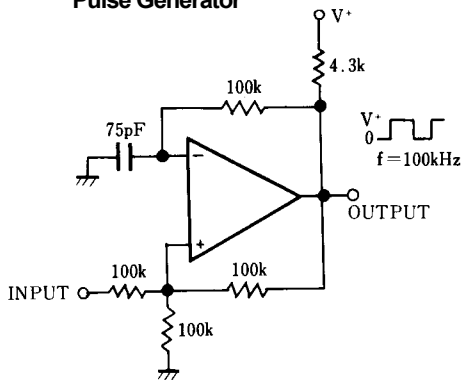
**Zero Crossing Detector**



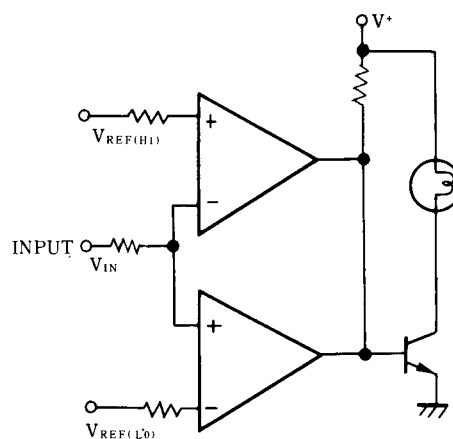
**Low Frequency Op Amp.**



**Pulse Generator**



**Limit Comparator**



**[CAUTION]**

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