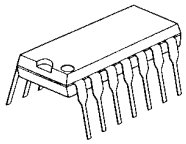
# SINGLE SUPPRY QUAD COMPARATOR

## ■ GENERAL DESCRIPTION

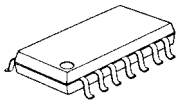
**The NJM12901** is single-supply quad voltage comparator, which can operate from 2V supply. The features are input offset voltage, input bias current and low current consumption. **The NJM12901** compare the input signal to 0V(ground) due to the Darlington PNP input stage.

The package lineup is DIP, DMP and others compact, which is SON, so that the NJM12901 is suitable for any kind of signal comparator.

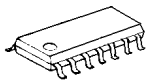
## ■ PACKAGE OUTLINE



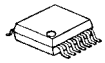
NJM12901D1



NJM12901M



NJM12901E

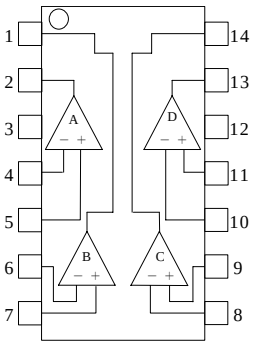


NJM12901V

## ■ FEATURES

- Operating Voltage (+2V to +14V)
- Open Collector Output
- Bipolar Technology
- Package Outline DIP14,DMP14,EMP14,SSOP14

## ■ PIN CONFIGURATION

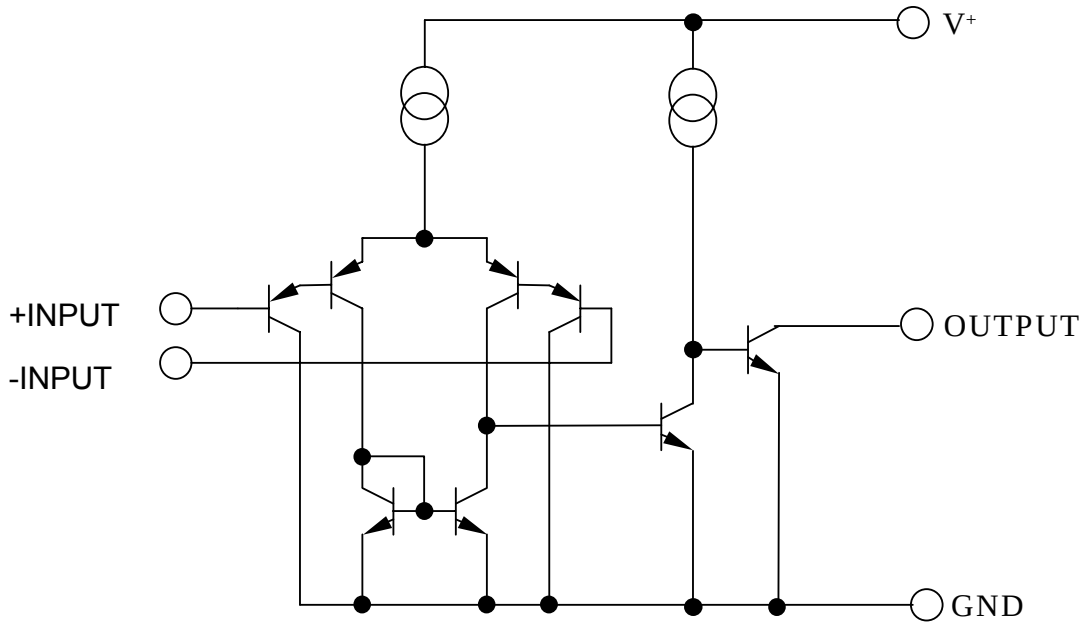



NJM12901D1/12901M
NJM12901E/12901V

PIN FUNCTION

| | |
|---|---|
| 1. B OUTPUT | 8. C –INPUT |
| 2. A OUTPUT | 9. C +INPUT |
| 3. $V^+$ | 10. D –INPUT |
| 4. A –INPUT | 11. D +INPUT |
| 5. A +INPUT | 12. GND |
| 6. B –INPUT | 13. D OUTPUT |
| 7. B +INPUT | 14. C OUTPUT |

## ■ EQUIVALENT CIRCUIT (1/4Shown)



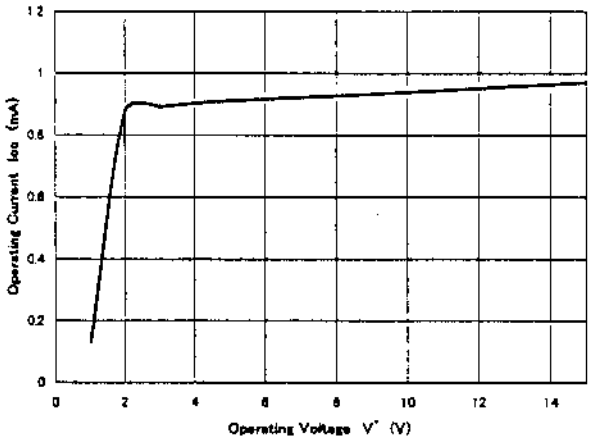
■ **ABSOLUTE MAXIMUM RATING** (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+$ | 15 | V |
| Differential Input Voltage | $V_{ID}$ | 14 | V |
| Input Voltage | $V_{IC}$ | - 0.3 to +14 | V |
| Power Dissipation | $P_D$ | (DIP14) 700<br>(DMP14) 300<br>(EMP14) 300<br>(SSOP14) 300 | mW |
| Operating Temperature Range | Topr | - 40 to +85 | °C |
| Storage Temperature Range | Tstg | - 50 to +125 | °C |

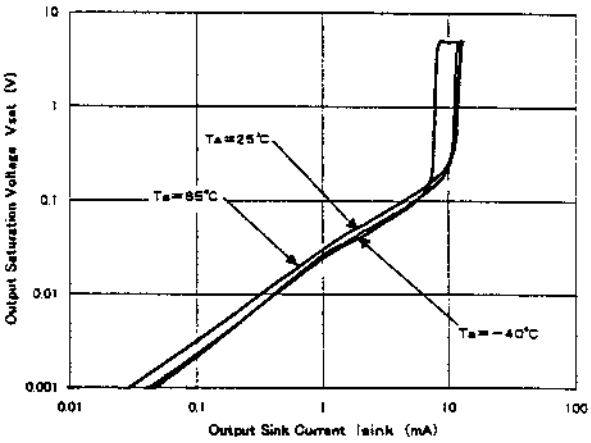
■ **ELECTRICAL CHARACTERISTICS** ( $V^+$=5V, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT. |
|---|---|---|---|---|---|---|
| Operating Voltage | Vopr | | 2 | - | 14 | V |
| Input Offset Voltage | $V_{IO}$ | $R_S$=0Ω,$V_O$≈1.4V | - | 1 | 4 | mV |
| Input Offset Voltage | $I_{IO}$ | | - | 5 | 50 | nA |
| Input Bias Current | $I_B$ | | - | 30 | 200 | nA |
| Input Common Mode Voltage Range | $V_{ICM}$ | | 0 to 3.5 | - | - | V |
| Large Signal Voltage Range | $A_V$ | $R_L$=15kΩ | - | 106 | - | dB |
| Response Time | $t_R$ | $R_L$=5.1kΩ | - | 0.5 | - | μs |
| Output Sink Current | $I_{SINK}$ | $V_{IN}^+$=0V,$V_{IN}^-$=1V,$V_O$=1.5V | 6 | 10 | - | mA |
| Output Saturation Voltage | $V_{SAT}$ | $V_{IN}^+$=0V,$V_{IN}^-$=1V,$I_{SINK}$=3mA | - | 80 | 300 | mV |
| Leakage Current | $I_{LEAK}$ | $V_{IN}^+$=1V,$V_{IN}^-$=0V,Vo=5V | - | 0.1 | 1.0 | μA |
| Operating Current | $I_{CC}$ | $R_L$= ∞ | - | 0.8 | 1.8 | mA |

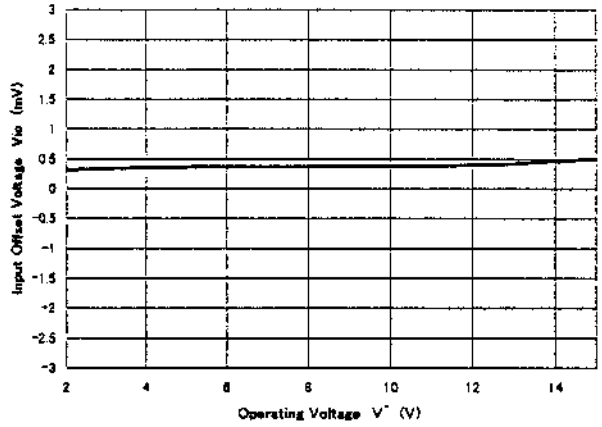
NJM12901 Operating Current vs. Operating Voltage



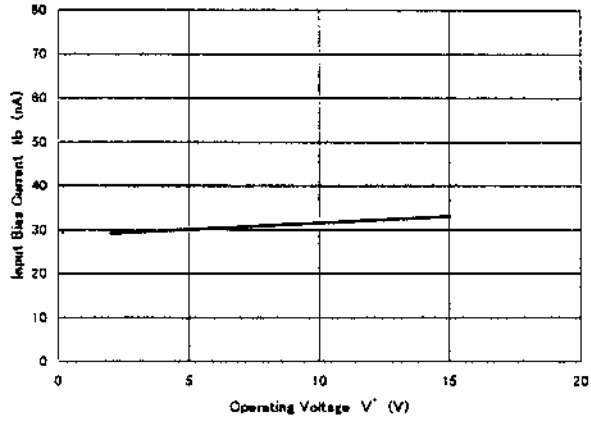

NJM12901 Output Saturation Voltage vs. Output sink Current



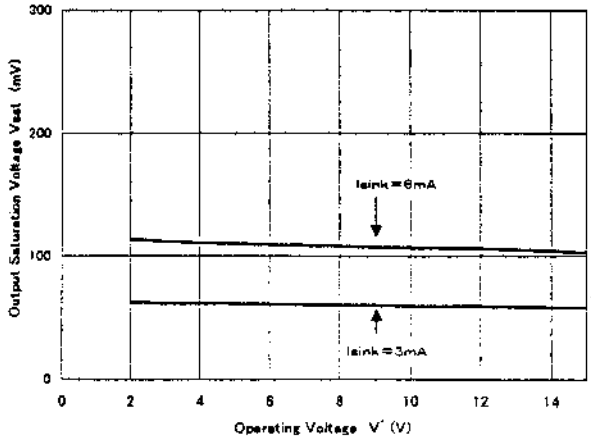

NJM12901 Input Offset Voltage vs. Operating Voltage



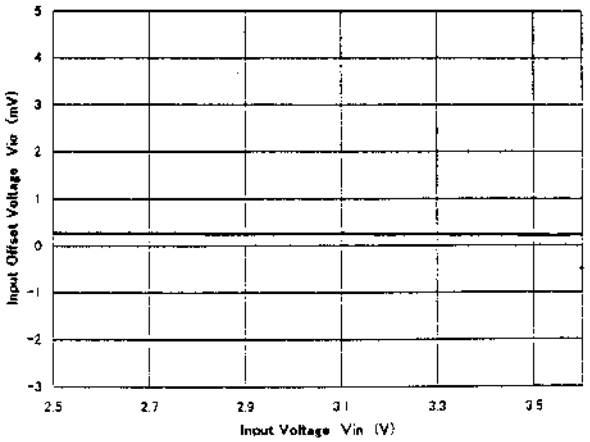

NJM12901 Input Bias Current vs. Operating Voltage



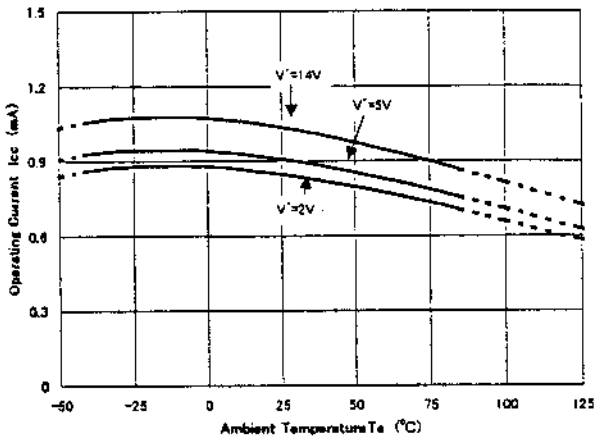

NJM12901 Output Saturation Voltage vs. Operating Voltage



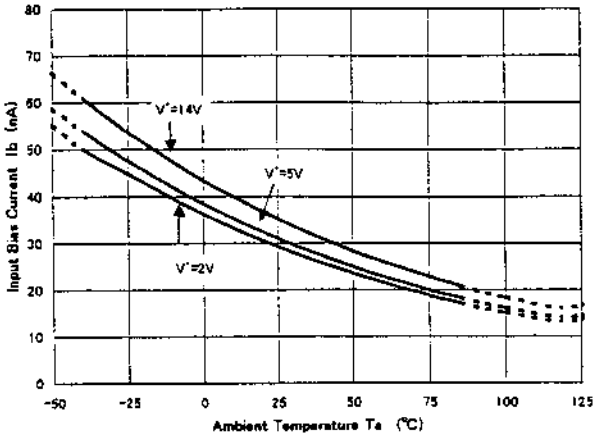

NJM12901 Input Common Mode Voltage Range



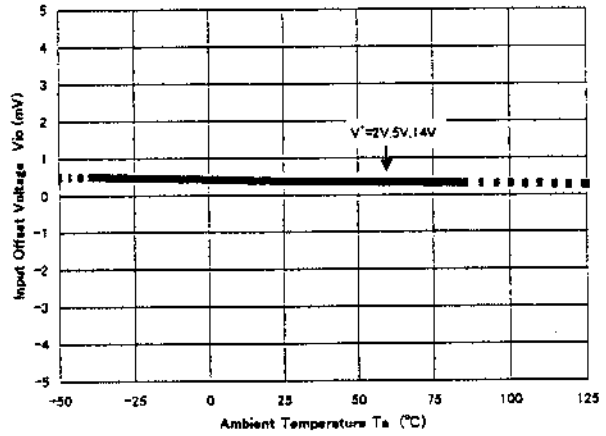
NJM12901 Operating Current vs. Temperature



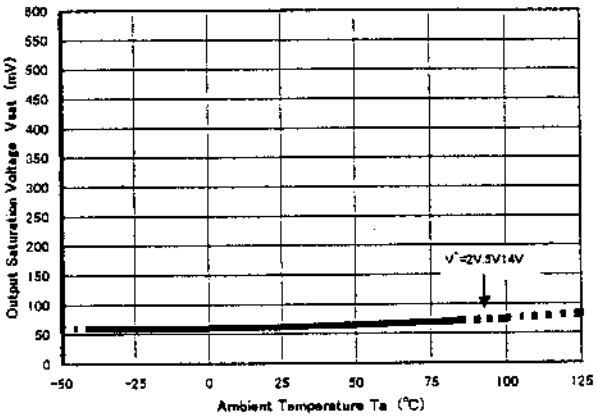

NJM12901 Input Bias Current vs. Temperature



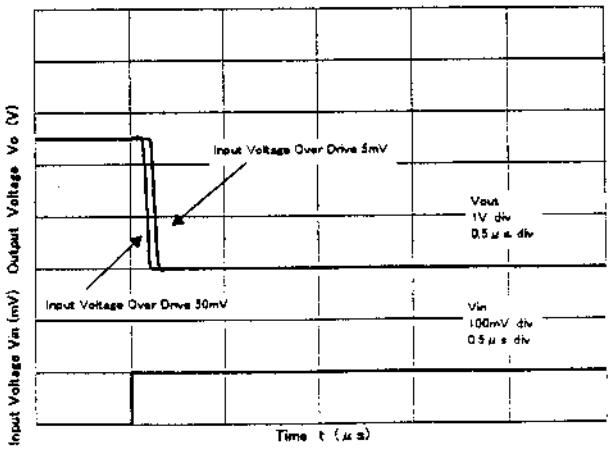

NJM12901 Input Offset Voltage vs. Temperature



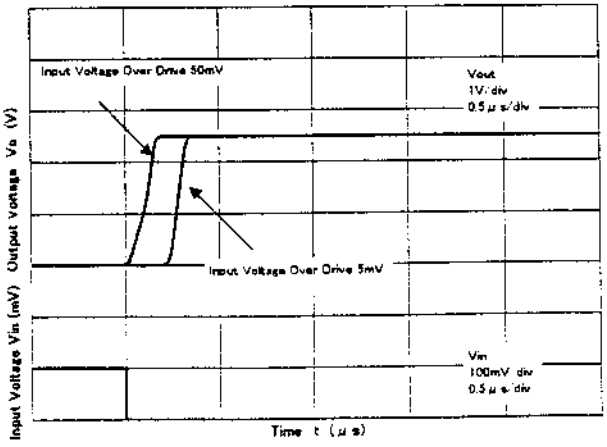

NJM12901 Output Saturation Voltage vs. Temperature
(Isink=3mA)




NJM12901 Pulse Response




NJM12901 Pulse Response



# MEMO

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