

## C-MOS COMPARATOR WITH OPEN DRAIN OUTPUT

### ■ GENERAL DESCRIPTION

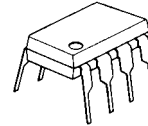
The NJU7112A and 14A dual and quad C-MOS Comparators performing wide operating voltage from 3 to 16V, low operating current and low offset voltage.

The NJU7112A and 14A operated on a single-power-supply can interface with most of TTL and C-MOS type standard logic ICs.

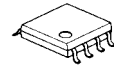
### ■ FEATURES

- Single-Power-Supply
- Wide Operating Voltage ( $V_{DD}=3\sim 16V$ )
- Low Operating Current ( $11\mu A/\text{circuit typ.}$ )
- Wide Common Mode Input Voltage ( $0\sim 3.8V @ V_{DD}=5V$ )
- High Input Impedance
- Low Bias Current ( $I_B=1pA$ )
- Low Offset Voltage
- Open Drain Output
- Package Outline  
DIP/DMP8 (NJU7112A)  
DIP/DMP14 (NJU7114A)
- C-MOS Technology

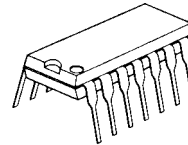
### ■ PACKAGE OUTLINE



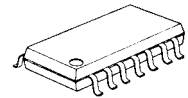
NJU7112AD



NJU7112AM

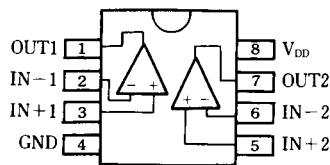


NJU7114AD

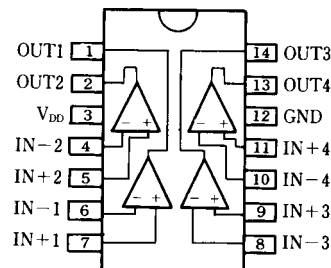


NJU7114AM

### ■ PIN CONFIGURATION

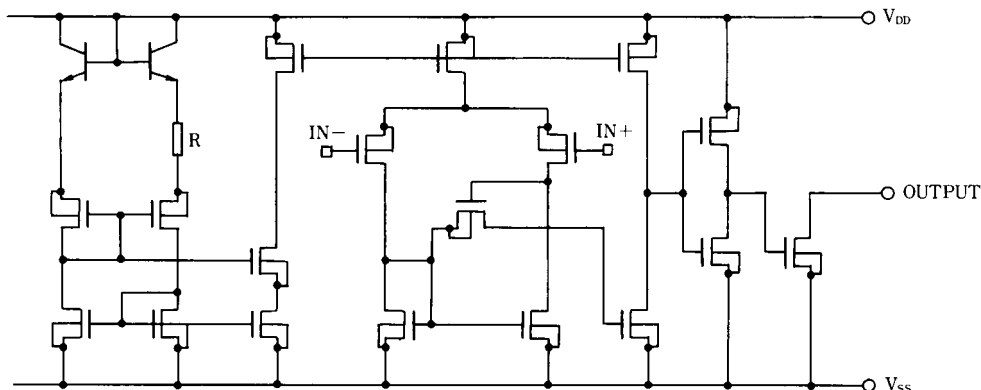


NJU7112AD/AM



NJU7114AD/AM

### ■ EQUIVALENT CIRCUIT



# NJU7112A/14A

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	18	V
Differential Input Voltage	$V_{ID}$	$\pm 18$ ( note1 )	V
Input Voltage	$V_I$	18	V
Output Voltage	$V_O$	18	V
Output Current	$I_O$	20	mA
Power Dissipation	$P_D$	( DIP8 ) 500 ( DIP14 ) 700 ( DMP8 ) 300 ( DMP14 ) 300	mW
Operating Temperature Range	$T_{opr}$	0~+70	°C
Storage Temperature Range	$T_{stg}$	-40~+125	°C

( note1 ) If the supply voltage (  $V_{DD}$  ) is less than 18V, the input voltage must not over the  $V_{DD}$  level though 18V is limit specified.

## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V_{DD}=5V$  )

PARAMETER	SYMBOL	TEST CONDITION	NJU7112A			NJU7114A			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Operating Voltage	$V_{DD}$		3	-	16	3	-	16	V
Input Offset Voltage	$V_{IO}$	$V_{IC}=V_{ICmin}$ ( note2 )	-	1.4	12	-	1.4	12	mV
Input Offset Current	$I_{IO}$		-	1	-	-	1	-	pA
Input Bias Current	$I_B$		-	1	-	-	1	-	pA
Input Common Mode Voltage Range	$V_{ICM}$		0	-	3.8	0	-	3.8	V
High Level Output Current	$I_{OH}$	$V_{ID}=+1V, V_{OH}=+5V$	-	2	40	-	2	40	nA
Low Level Output Voltage	$V_{OL}$	$V_{ID}=+1V, I_{OL}=+6mA$	-	0.35	0.40	-	0.35	0.40	V
Common Mode Rejection Ratio	CMR	$V_{IC}=V_{ICmin}$	-	71	-	-	75	-	dB
Supply Voltage Rejection Ratio	SVR	$V_{DD}=5\sim 10V$	-	80	-	-	85	-	dB
Operating Current	$I_{DD}$	No Load, $V_O=0V$	-	22	40	-	44	80	$\mu A$

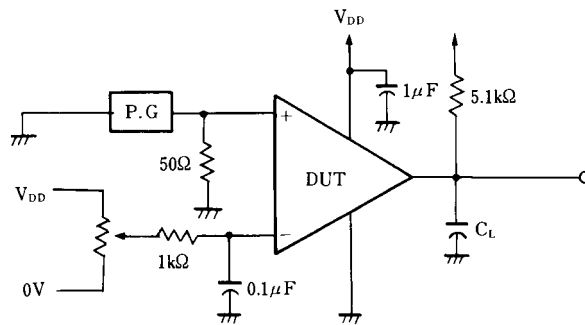
( note2 ) This condition is available for operating voltage  $V_{DD}=5\sim 10V$  and driving voltage is over 4.5V or under 0.3V.

## ■ SWITCHING CHARACTERISTICS

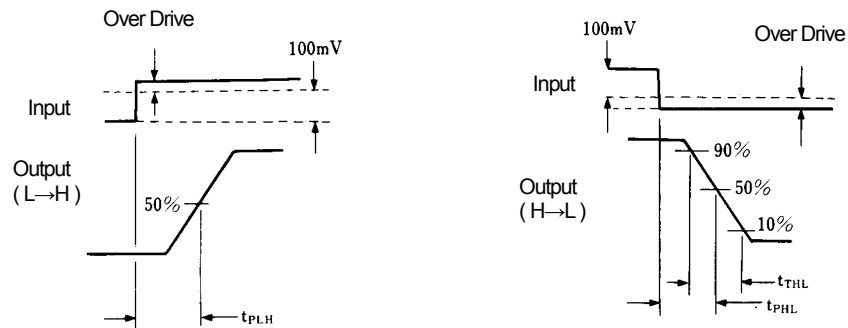
( Ta=25°C,  $V_{DD}=5V, f=10kHz, C_L=15pF$  )

PARAMETER	SYMBOL	CONDITIONS	NJU7112A			NJU7114A			UNIT	
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Propagation Delay High to Low	$t_{PHL}$	$V_{IC}=0V$	Over Drive=5mV	-	2.7	-	-	2.9	-	$\mu s$
			TTL level step	-	0.16	-	-	0.16	-	
Propagation Delay Low to High	$t_{PLH}$	$V_{IC}=0V$	Over Drive=5mV	-	1.5	-	-	1.5	-	$\mu s$
			TTL level step	-	0.7	-	-	0.8	-	
Output Signal Falling Time	$t_{THL}$	Over Drive=50mV	-	20	-	-	20	-	ns	

## ■ MEASUREMENT CIRCUIT



## ■ TIMING WAVEFORM



**[CAUTION]**

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