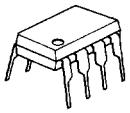
C-MOS COMPARATOR WITH OPEN DRAIN OUTPUT

■ 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.

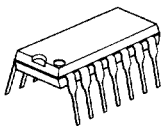
The NJU7112A and 14A operated on a single-power-supply can interface with most of TTL and C-MOS type standard logic ICs.

■ PACKAGE OUTLINE

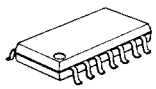


NJU7112AD

NJU7112AM



NJU7114AD

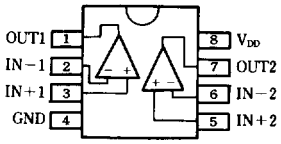


NJU7114AM

■ FEATURES

- Single-Power-Supply
- Wide Operating Voltage (V_{DD}=3～16V)
- Low Operating Current (11 μA / circuit typ.)
- Wide Common Mode Input Voltage (0～3.8V at V_{DD}=5V)
- High Input Impedance
- Low Bias Current (I_{IB}=1pA)
- Low Offset Voltage
- Open Drain Output
- Package Outline DIP/DMP 8 (NJU7112A)
  DIP/DMP 14 (NJU7114A)
- C-MOS Technology

■ EQUIVALENT CIRCUIT



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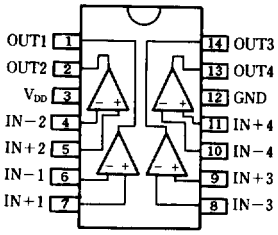

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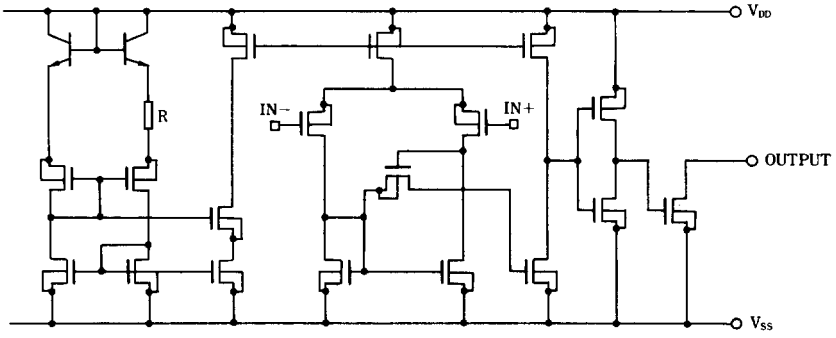
■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	18	V
Differential Input Voltage	V_{ID}	±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	T_{opr}	0～+70	℃
Storage Temperature	T_{stg}	−40～+125	℃

(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℃, V_{DD}=5V)

PARAMETER	SYMBOL	CONDITIONS	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_{IB}		−	1	−	−	1	−	pA
Input Common Mode Voltage Range	V_{ICM}		0	−	3.8	0	−	3.8	V
Output Voltage	V_{OH}	V_{ID}=+1V, I_{OH}=+5V	−	2	40	−	2	40	V
	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}=5~10V	−	80	−	−	85	−	dB
Operating Current	I_{DD}	No Load, V_O=0V		22	40	−	44	80	μA

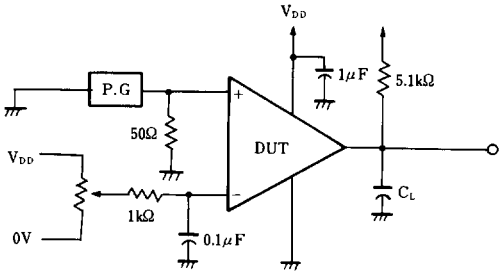
(Note2) This condition is available for operating voltage V_{DD}=5~10V and driving voltage is over 4.5V or under 0.3V.

■ SWITCHING CHARACTERISTICS

(Ta=25℃, 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	−	μs
			TTL level step	−	0.16	−	−	0.16	−	
Propagation Delay Low to High	t_{PLH}	V_{IC}=0V	Over Drive=5mV	−	1.5	−	−	1.5	−	μs
			TTL level step	−	0.7	−	−	0.8	−	
Output Signal Falling Time	t_{THL}	Over Drive=50mV		−	20	−	−	20	−	ns

■ MEASUREMENT CIRCUIT



■ TIMING WAVEFORM