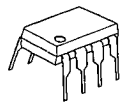
C-MOS COMPARATOR WITH C-MOS OUTPUT

■ GENERAL DESCRIPTION

The NJU7102A and 04A dual and quad C-MOS Comparators performing wide operating voltage from 3 to 14V, low operating current and low offset voltage.

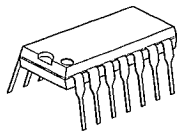
The NJU7102A and 04A operated on a single-power-supply can interface with most of TTL and C-MOS type standard logic ICs.

■ PACKAGE OUTLINE

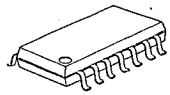


NJU7102AD

NJU7102AM



NJU7104AD

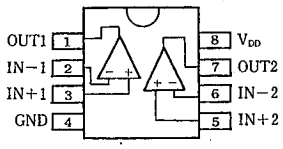


NJU7104AM

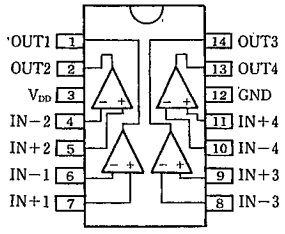
■ FEATURES

- Single-Power-Supply
- Wide Operating Voltage (V_{DD}=3～14V)
- Low Operating Current (9 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
- C-MOS (Push-Pull) Output
- Package Outline DIP/DMP 8 (NJU7102A)
  DIP/DMP 14 (NJU7104A)
- C-MOS Technology

■ PIN CONFIGURATION

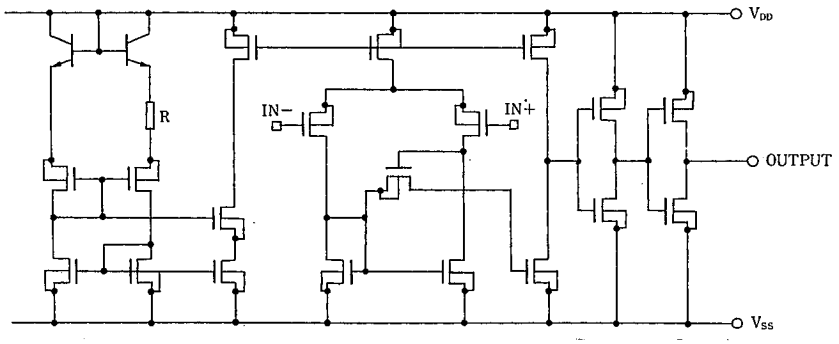


NJU7102AD/AM



NJU7104AD/AM

■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	16	V
Differential Input Voltage	V_{ID}	±16 (Note1)	V
Input Voltage	V_I	16	V
Output Voltage	V_O	16	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 16V, the input voltage must not over the V_{DD} level though 16V is limit specified.

■ ELECTRICAL CHARACTERISTICS

(Ta=25℃, V_{DD}=5V)

PARAMETER	SYMBOL	CONDITIONS	NJU7102A			NJU7104A			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Operating Voltage	V_{DD}		3	−	14	3	−	14	V
Input Offset Voltage	V_{IO}	$V_{IC}=V_{ICMin}$ (Note2)	−	1.2	12	−	1.2	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	4.5	4.7	−	4.5	4.7	−	V
	V_{OL}	V_{ID}=+1V, I_{OL}=+6mA	−	0.22	0.30	−	0.234	0.30	V
Common Mode Rejection Ratio	CMR	$V_{IC}=V_{ICMin}$	−	82	−	−	78	−	dB
Supply Voltage Rejection Ratio	SVR	V_{DD}=5~10V	−	90	−	−	92	−	dB
Operating Current	I_{DD}	No Load, V_O=0V		18	40	−	36	80	μA

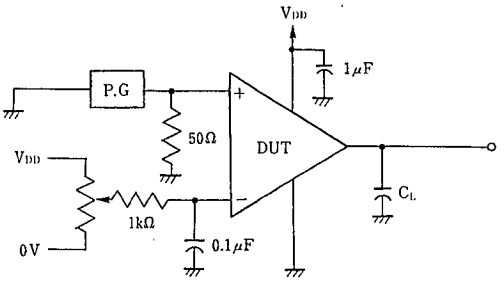
(Note2) This condition is available for operating voltage V_{DD}=5~10V and driving voltage is over 4.5V or under 0.3V.

■ SWITCHING CHARACTERISTICS

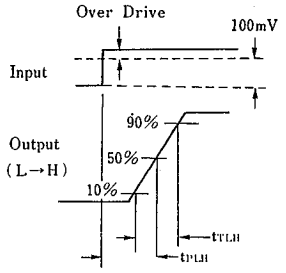
(Ta=25℃, V_{DD}=5V f=10kHz, C_L=15pF)

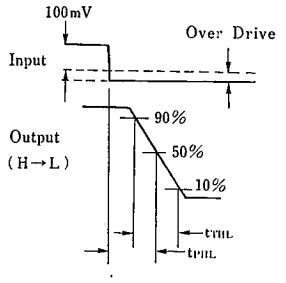
PARAMETER	SYMBOL	CONDITIONS		NJU7102A			NJU7104A			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay High to Low	t_{PHL}	V_{IC}=0V	Over Drive=5mV	−	3.0	−	−	2.3	−	μs
			TTL level step	−	0.17	−	−	0.17	−	
Propagation Delay Low to High	t_{PLH}	V_{IC}=0V	Over Drive=5mV	−	1.9	−	−	1.3	−	μs
			TTL level step	−	0.8	−	−	0.8	−	
Output Signal Falling Time	t_{THL}	Over Drive=50mV		−	30	−	−	30	−	ns
Output Signal Rising Time	t_{TLH}	Over Drive=50mV		−	70	−	−	70	−	ns

■ MEASUREMENT CIRCUIT



■ TIMING WAVEFORM





5

MEMO