

C-MOS COMPARATOR WITH C-MOS OUTPUT

■ GENERAL DESCRIPTION

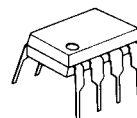
The NJU7102A and 04A dual and quad C-MOS Comparators performing wide operating voltage from 3 to 14V, low operating current and low offset voltage.

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

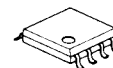
■ FEATURES

- Single-Power-Supply
- Wide Operating Voltage ($V_{DD}=3\sim 14V$)
- Low Operating Current ($9\mu A/\text{circuit typ.}$)
- Wide Common Mode Input Voltage ($0\sim 3.8V @ V_{DD}=5V$)
- High Input Impedance
- Low Bias Current ($I_B=1pA$)
- Low Offset Voltage
- C-MOS (Push-Pull) Output
- Package Outline
DIP/DMP8 (NJU7102A)
DIP/DMP14 (NJU7104A)
- C-MOS Technology

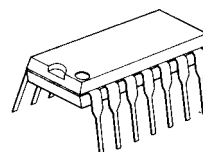
■ PACKAGE OUTLINE



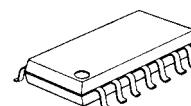
NJU7102AD



NJU7102AM

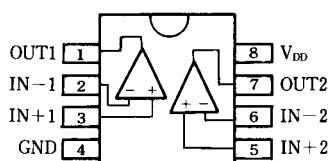


NJU7104AD

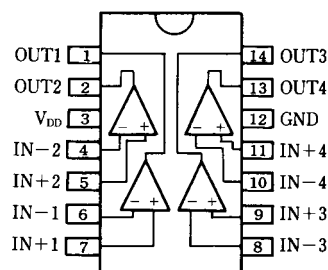


NJU7104AM

■ PIN CONFIGURATION

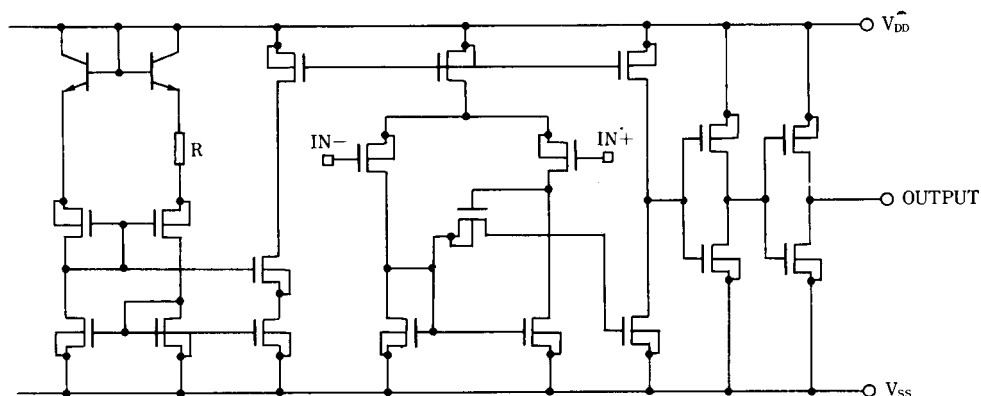


NJU7102AD/AM



NJU7104AD/AM

■ EQUIVALENT CIRCUIT



NJU7102A/04A

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	16	V
Differential Input Voltage	V_{ID}	± 16 (note1)	V
Input Voltage	V_{IC}	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 Range	T_{opr}	0~+70	°C
Storage Temperature Range	T_{stg}	-40~+125	°C

(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°C, $V_{DD}=5V$)

PARAMETER	SYMBOL	TEST CONDITION	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	$V_{DD}=5\sim 10V$	-	90	-	-	92	-	dB
Operating Current	I_{DD}	No Load, $V_O=0V$	-	18	40	-	36	80	μA

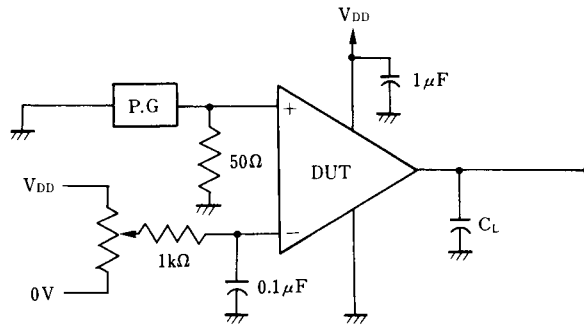
(note2) This condition is available for operating voltage $V_{DD}=5\sim 10V$ and driving voltage is over 4.5V or under 0.3V.

■ SWITCHING CHARACTERISTICS

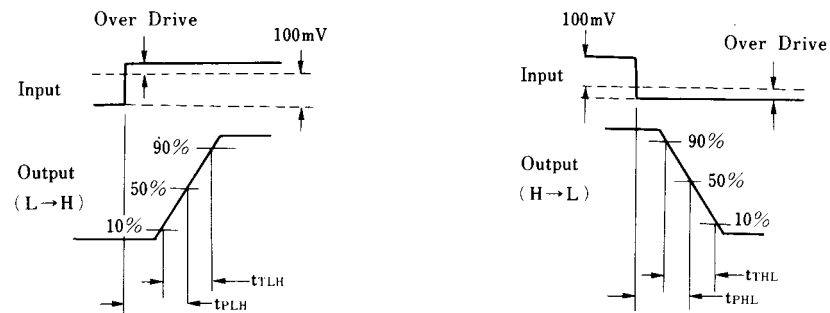
(Ta=25°C, $V_{DD}=5V, f=10kHz, C_L=15pF$)

PARAMETER	SYMBOL	CONDITIONS		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



[CAUTION]

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