

## 8-CHANNEL MULTIPLEXER WITH SAMPLE AND HOLD

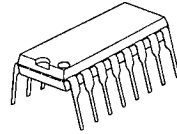
### ■ GENERAL DESCRIPTION

The NJU7304 is a C-MOS 8-channel multiplexer with sample and hold function.

It consists of C-MOS op amplifier, analog switch, hold-capacitor and 1/8 decoder.

Any channels can be selected by 3-bit control input signal.

### ■ PACKAGE OUTLINE

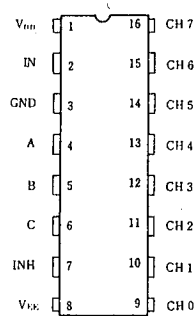


NJU7304D

### ■ FEATURES

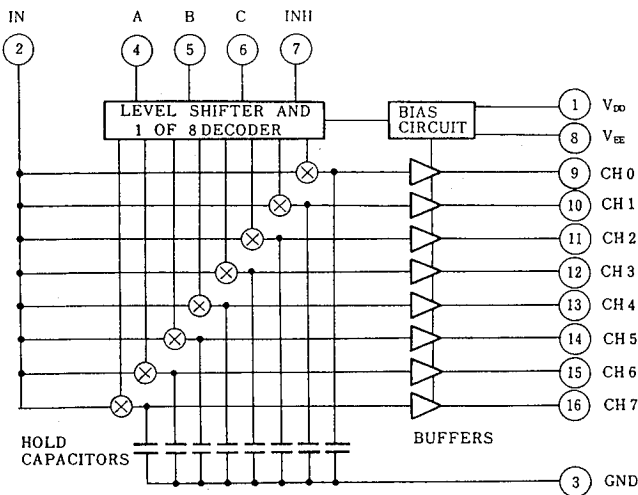
- Multi-signal-input in combination with a Microprocessor and D/A converter.
- Wide Operating Voltage -- 20V
- Low Droop -- 1mV/5ms Typ.
- C-MOS compatible Input
- Package Outline -- DIP 16
- C-MOS Technology

### ■ PIN CONFIGURATION



6

### ■ BLOCK DIAGRAM



### ■ TRUTH TABLE

INH	C	B	A	OUTPUT
0	0	0	0	CH0
0	0	0	1	CH1
0	0	1	0	CH2
0	1	0	0	CH4
0	1	0	1	CH5
0	1	1	0	CH6
0	1	1	1	CH7
1	X	X	X	X

x: Output signal is kept during INH=1.

**■ TERMINAL DESCRIPTION**

NO.	SYMBOL	FUNCTION	NO.	SYMBOL	FUNCTION
1	V <sub>DD</sub>	Positive Power Supply	7	INH	INH Input
2	IN	Signal Input	8	V <sub>EE</sub>	Negative Power Supply
3	GND	Ground	9~16	CH0 ~ CH7	Output
4, 5, 6	A, B, C	Address Input			

**■ ABSOLUTE MAXIMUM RATINGS**

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>DD</sub> - GND	- 0.5 ~ + 20	V
	V <sub>DD</sub> - V <sub>EE</sub>	- 0.5 ~ + 20	V
Input Voltage	V <sub>IN</sub>	V <sub>EE</sub> -0.5 ~ V <sub>DD</sub> +0.5	V
Output Voltage	V <sub>OUT</sub>	V <sub>EE</sub> -0.5 ~ V <sub>DD</sub> +0.5	V
Input Current	I <sub>IN</sub>	- 10 ~ + 10	mA
Output Current	I <sub>OUT</sub>	- 10 ~ + 10	mA
Power Dissipation	P <sub>D</sub>	500 (DIP)	mW
Operating Temperature Range	T <sub>opr</sub>	0 ~ + 75	°C
Storage Temperature Range	T <sub>stg</sub>	- 40 ~ + 125	°C

**■ ELECTRICAL CHARACTERISTICS**

• DC Characteristics

 ( V<sub>DD</sub>=15V, V<sub>EE</sub>=-2V, t<sub>rw</sub>=1μs, t<sub>hold</sub>=5ms, Ta=25°C )

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Current	I <sub>DD</sub>	All Input=GND, No Load			8	mA
Input Voltage	V <sub>INAN</sub>		0		10	V
Off-set Voltage 1	V <sub>OFF1</sub>	CH0~ V <sub>INAN</sub> =0V, R <sub>L</sub> =50kΩ			±30	mV
Off-set Voltage 2	V <sub>OFF2</sub>	CH7 V <sub>INAN</sub> =5V, R <sub>L</sub> =50kΩ			±30	
Off-set Differential Voltage	ΔV <sub>OFF</sub>	V <sub>OFF1</sub> (n) - V <sub>OFF2</sub> (n)   n=0, 1, ... 7			20	mV
Input Current	I <sub>IH</sub>	V <sub>IN</sub> =GND or V <sub>DD</sub>			±10	μA
Control Input	High Input Voltage	V <sub>IH</sub>	4		5	V
	Low Input Voltage	V <sub>IL</sub>	0		1	
Output Current	I <sub>OL</sub>	V <sub>INAN</sub> =0V, V <sub>OL</sub> =0.5V	0.5			mA
	I <sub>OH</sub>	V <sub>INAN</sub> =10V, V <sub>OH</sub> =9.5V			- 1	

## • AC Characteristics

 (  $V_{DD}=15V$ ,  $V_{EE}=-2V$ ,  $t_{sw}=1\mu s$ ,  $t_{HOLD}=5ms$ ,  $T_a=25^\circ C$  )

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Acquisition Time	$t_{AC}$			700		ns
Aperture Time	$t_{AP}$			150		ns
Feedthrough	$V_{FTH}$	$T_a=50^\circ C$ , $V_{INAN}=0V, 5V$			$\pm 15$	mV
Droop	$V_{DRP}$	$T_a=50^\circ C$ , $V_{INAN}=0V, 5V$			$\pm 10$	mV
Buffer Amp. Settling Time	$t_{SET}$			20		$\mu s$

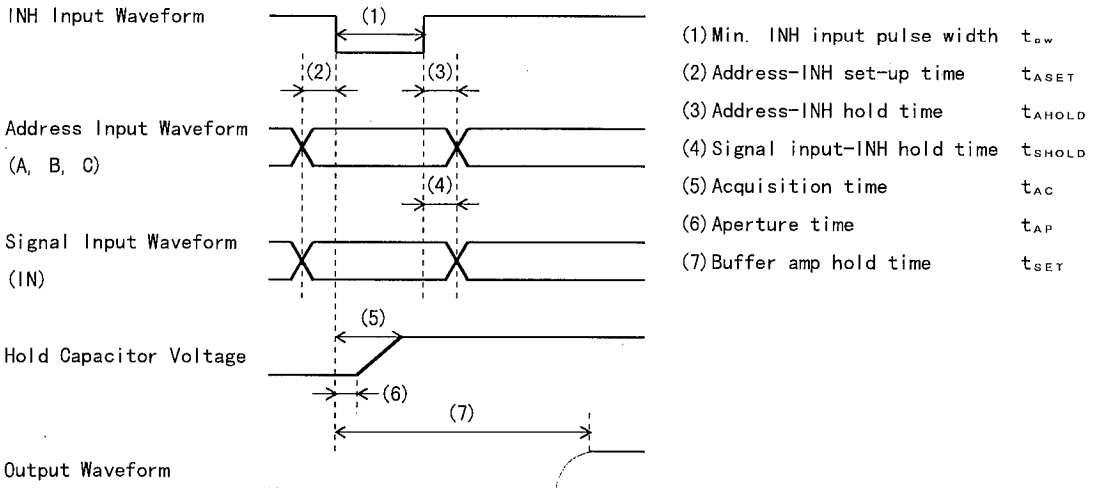
## ■ CONTROL INPUT SWITCHING CHARACTERISTICS

 (  $V_{DD}=15V$ ,  $V_{EE}=-2V$ ,  $t_{sw}=1\mu s$ ,  $t_{HOLD}=5ms$ ,  $T_a=25^\circ C$  )

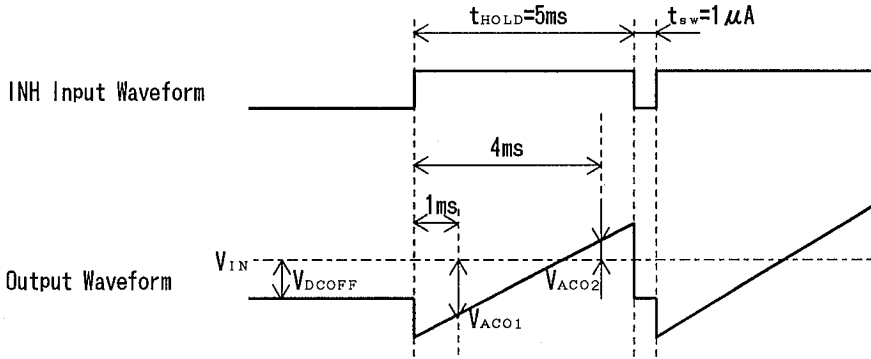
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
INH Min. Input Pulse Width	$t_{sw}$		1	5		$\mu s$
Address-INH Set-up Time	$t_{ASET}$		300			ns
Address-INH Hold Time	$t_{AHOLD}$		300			ns
Signal-INH Hold Time	$t_{SHOLD}$		300			ns

6

## ■ TIMING CHART



## ■ OFF SET VOLTAGE, FEEDTHROUGH, DROOP MEASUREMENT METHOD



Offset voltage, feedthrough and droop are :

- (1) Offset Voltage  $V_{OFF} = (V_{ACO1} + V_{ACO2}) / 2$   
 (2) Feedthrough  $V_{FTH} = V_{ACO1} - V_{DCOFF}$   
 (3) Droop  $V_{DRP} = V_{ACO2} - V_{ACO1}$

## MEMO

[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.