

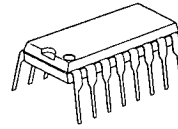
**SINGLE 8-CHANNEL MULTIPLEXER**
**GENERAL DESCRIPTION**

The NJU4051B is a single 8-channel multiplexer with three binary control inputs and an inhibit input.

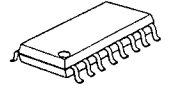
The three binary control input signals select 1 of 8 channels to be turned on, and connect it to the single output.

The operating voltage is as wide as 3 to 18V and the quiescent current is as low as 5  $\mu$ A max. (at  $V_{DD}=5V$ ).

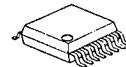
It is equivalent to RCA CD4051B and Motorola MC14051B.

**PACKAGE OUTLINE**


NJU4051BD



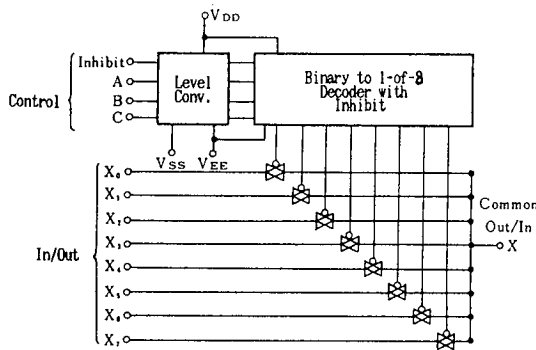
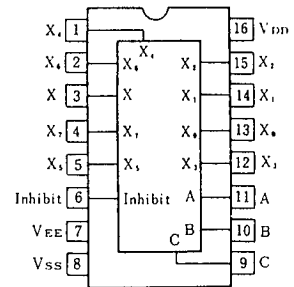
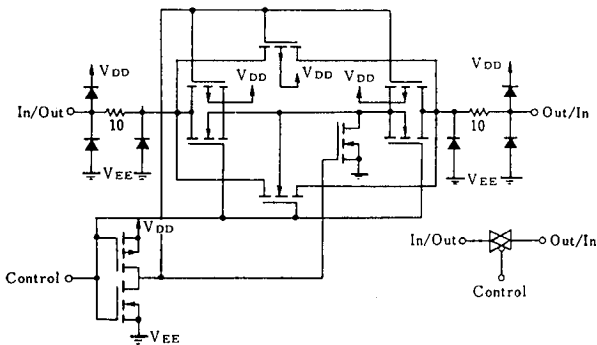
NJU4051BM



NJU4051BV

**FEATURES**

- Wide Operating Voltage -- 3 ~ 18V
- Package Outline -- DIP/DMP/SSOP 16
- C-MOS Technology

**6**
**BLOCK DIAGRAM**

**PIN CONFIGURATION**

**EQUIVALENT CIRCUIT**

**TRUTH TABLE**

INH	C	B	A	ON SW
0	0	0	0	$X_0$
0	0	0	1	$X_1$
0	0	1	0	$X_2$
0	0	1	1	$X_3$
0	1	0	0	$X_4$
0	1	0	1	$X_5$
0	1	1	0	$X_6$
0	1	1	1	$X_7$
1	x	x	x	None

x : Don't care

**■ ABSOLUTE MAXIMUM RATINGS**

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD} - V_{SS}$	- 0.5 ~ + 20	V
	$V_{DD} - V_{EE}$	- 0.5 ~ + 20	
Input Voltage	$V_{IN}$	- 0.5 ~ $V_{DD}+0.5$ *	V
Output Voltage	$V_o$	- 0.5 ~ $V_{DD}+0.5$ *	V
Input Current	$I_{IN}$	± 10	mA
Output Current	$I_o$	± 10	mA
Power Dissipation	$P_D$	500 (DIP) 200 (DMP) 300 (SSOP)	mW
Operating Temperature Range	$T_{opr}$	- 40 ~ + 85	°C
Storage Temperature Range	$T_{stg}$	- 65 ~ + 150	°C

 \*  $V_{DD}+0.5V$  must be 20V or less.

**6**
**■ ELECTRICAL CHARACTERISTICS**

## • DC Characteristics

 (  $V_{SS}=0V$  )

PARAMETER	SYMBOL	CONDITION	$V_{DD}$ (V)	Ta=-40°C		Ta=25°C		Ta=85°C		UNIT
				MIN	MAX	MIN	TYP	MAX	MIN	
Quiescent Current	$I_{DD}$	No signal, Per Package	5 10 15 20	5 10 20 100	5 10 20 100	5 10 20 100	150 300 600 3000		$\mu A$	
On-State Resistance	$R_{ON}$	$0 \leq V_{i_s} \leq V_{DD}$ $V_{EE}=V_{SS}=0V$	5 10 15	500 210 140	220 100 60	600 250 160	800 300 200		$\Omega$	
On-State Resistance Deviation	$\Delta R_{ON}$	Between 2 channels, $V_{EE}=V_{SS}=0V$	5 10 15		15 10 5				$\Omega$	
Off-Channel Leakage Current		Each channel $V_{EE}=V_{SS}=0V$	18	±1000	±10	±100	±1000		nA	
Input Capacitance	$C_{IN}$	$V_{IN}=0V$ 1N <sub>H</sub> , A, B, C A <sub>0</sub> to A <sub>7</sub>			5.0 10	7.5			pF	
Low Level Input Voltage	$V_{IL}$	$R_L=10k\Omega$ $SW=V_{DD}$ $V_{EE}=V_{SS}$ $V_o=1.0V$ $V_o=1.0V$ $V_o=1.5V$	5 10 15	1.5 3.0 4.0	2.25 4.50 6.75	1.5 3.0 4.0	1.5 3.0 4.0		V	
High Level Input Voltage	$V_{IH}$	$R_L=10k\Omega$ $SW=V_{DD}$ $V_{EE}=V_{SS}$ $V_o=4.0V$ $V_o=9.0V$ $V_o=13.5V$	5 10 15	3.5 7.0 11.0	3.5 7.0 11.0	2.75 5.50 8.25	3.5 7.0 11.0		V	
Input Current	± $I_{IN}$	$V_{IN}=0$ or 18V	18	±0.1		±0.1	±1		$\mu A$	

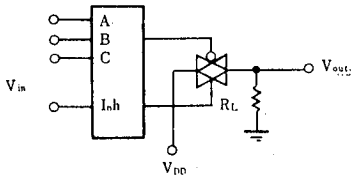
**SWITCHING CHARACTERISTICS**

( Ta=25°C, CL=50pF )

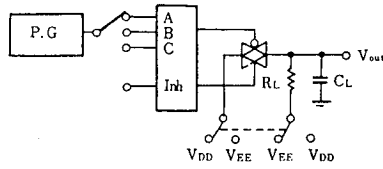
PARAMETER		SYMBOL	CONDITIONS	V <sub>DD</sub> (V)	MIN	TYP	MAX	UNIT
Propagation Delay Time	SW Input to Output	t <sub>PLH</sub>	R <sub>L</sub> =10kΩ	5	15	45	ns	
		t <sub>PHL</sub>		10	8	30		
	CONT Input to Output	t <sub>PLH</sub>		15	5	20		
		t <sub>PHL</sub>		5	15	45		
Output Enable Time	•	t <sub>PZH</sub>	R <sub>L</sub> =10kΩ	5	600	1400	ns	
		t <sub>PZL</sub>		10	250	700		
Output Disable Time	•	t <sub>PHZ</sub>		15	200	500		
		t <sub>PLZ</sub>		5	600	1400		
Sine-Wave Distortion			R <sub>i</sub> =10kΩ, f=1kHz, V <sub>is</sub> =5V <sub>P-P</sub>	10	0.05		%	
Feedthrough(all-ch. off)			R <sub>i</sub> =1kΩ, 20log <sub>10</sub> V <sub>os</sub> /V <sub>is</sub> =-50dB	10	4.5		MHz	
Crosstalk	SW A and B		R <sub>i</sub> =1kΩ, V <sub>is</sub> =1/2 · (V <sub>DD</sub> -V <sub>SS</sub> ) <sub>P-P</sub> , 20log <sub>10</sub> V <sub>os(B)</sub> /V <sub>is(A)</sub> =-50dB	10	3.0		MHz	
	Control and Out		R <sub>i</sub> =1kΩ, R <sub>L</sub> =10kΩ, CONTROL/INHIBIT tr=tf=20ns	10	30		mV	

MEASUREMENT CIRCUITS

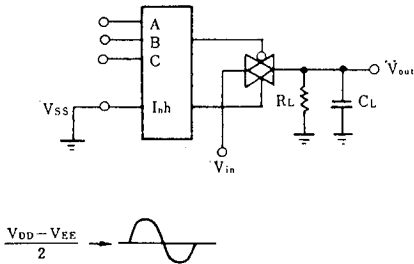
1. Noise Margin



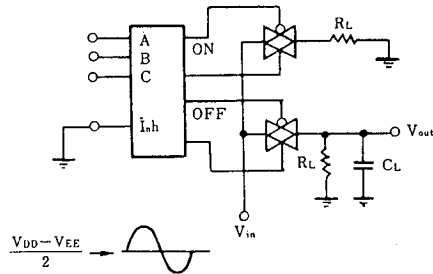
2. Propagation Delay



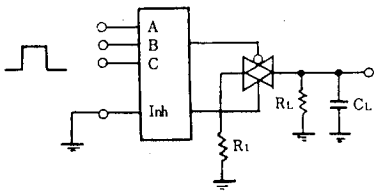
3. Feedthrough



4. Crosstalk (Switch A and B)



5. Crosstalk (Control and Out)



## 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.