LOW INPUT OFFSET VOLTAGE C-MOS OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

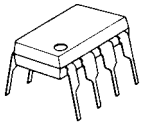
The NJU7051,52 and 54 are single,dual and quad C-MOS Operational Amplifiers operated on a single-power-supply,low voltage and low operating current.

The input offset voltage is lower than 2mV,and the input bias current is as low as less than 1pA,consequently the very small signal around the ground level can be amplified.

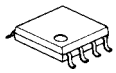
The minimum operating voltage is 1V and the output stage permits output signal to swing between both of the supply rails.

Furthermore,the operating current is also as low as 15μA (typ) per circuit,therefore it can be applied especially to battery operated items.

■ PACKAGE OUTLINE



NJU7051D
NJU7052D



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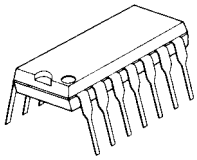

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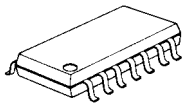

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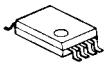

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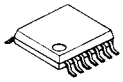
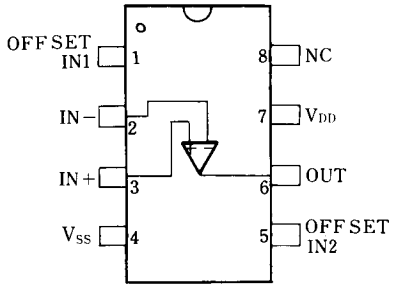


NJU7054V

■ FEATURES

- Single-Power-Supply
- Low Input Offset Voltage (V_{IO}=2mV max)
- Wide Operating Voltage (V_{DD}=1~16V)
- Wide Output Swing Range (V_{OM}=2.94V typ. @ V_{DD}=3V)
- Low Operating Current (15μA/circuit)
- Low Bias Current (I_{IB}=1pA typ.)
- Internal Compensation Capacitor
- External Offset Null Adjustment (Only NJU7051)
- Package Outline DIP/DMP/SSOP8 (NJU7051)
  DIP/DMP8 (NJU7052)
  DIP/DMP/SSOP14 (NJU7054)
- C-MOS Technology

■ PIN CONFIGURATION



NJU7051D
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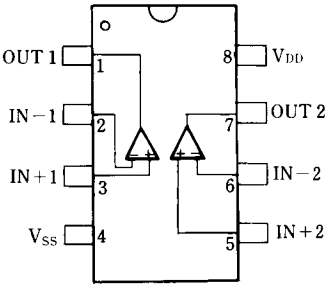

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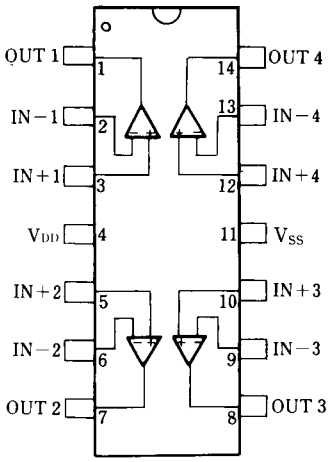

NJU7054D
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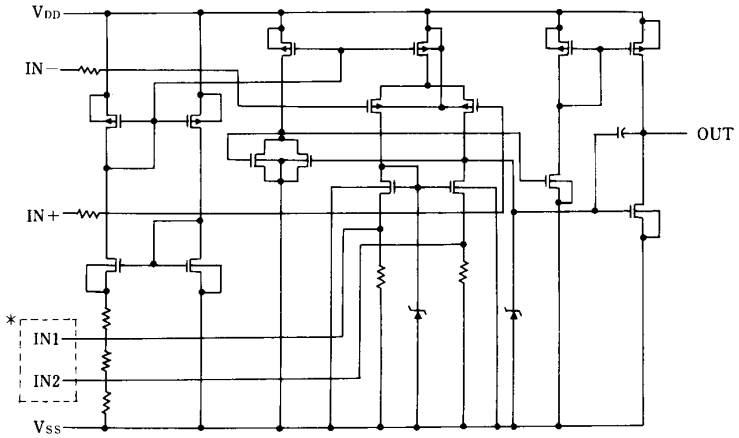
NJU7054V

■ EQUIVALENT CIRCUIT



* IN1,IN2 are only for NJU7051 (NJU7052/54 don't have these terminals).

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25˚C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	18	V
Differential Input Voltage	V_{ID}	± 18 (note1)	V
Common Mode Input Voltage	V_{IC}	-0.3~18	V
Power Dissipation	P_D	(DIP14) 700 (DIP8) 500 (DMP8,14) 300 (SSOP8,14) 300	mW
Operating Temperature Range	T_{opr}	-20~+75	˚C
Storage Temperature Range	T_{stg}	-40~+125	˚C

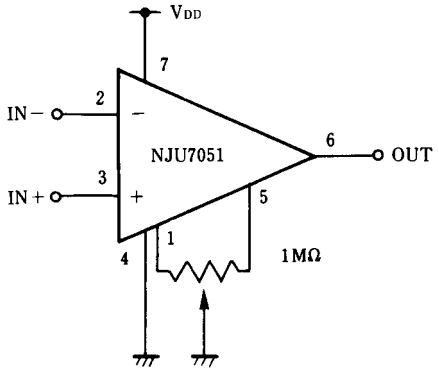
(note1) If the supply voltage (V_{DD}) is less than 18V, the input voltage must not over the V_{DD} level though 18V is limit specified.

■ ELECTRICAL CHARACTERISTICS

(Ta=25˚C,V_{DD}=3V,R_L=∞)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S=50Ω	-	-	2	mV
Input Offset Current	I_{IO}		-	1	-	pA
Input Bias Current	I_{IB}		-	1	-	pA
Input Impedance	R_{IN}		-	1	-	TΩ
Large Signal Voltage Gain	A_V		80	90	-	dB
Input Common Mode Voltage Range	V_{ICM}		0~2	-	-	V
Maximum Output Swing Voltage	V_{OM}	R_L=1MΩ	2.90	2.94	-	V
Common Mode Rejection Ratio	CMR		60	70	-	dB
Supply Voltage Rejection Ratio	SVR		60	70	-	dB
Operating Current/Circuit	I_{DD}		-	15	25	μA
Slew Rate	SR		-	0.05	-	V/μs
Unity Gain Bandwidth	F_t	A_V=40dB,C_L=10pF	-	0.1	-	MHz

■ OFFSET ADJUSTMENT CIRCUIT (Only For NJU7051)



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