

## LOW INPUT OFFSET VOLTAGE C-MOS OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

The NJU7071,72 and 74 are single, dual and quad C-MOS Operational Amplifiers operated on a single-power-supply 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.

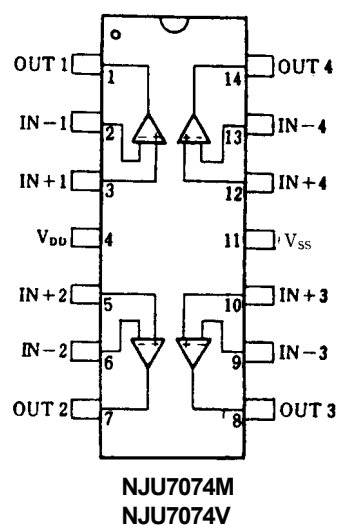
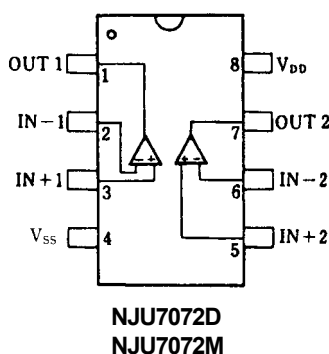
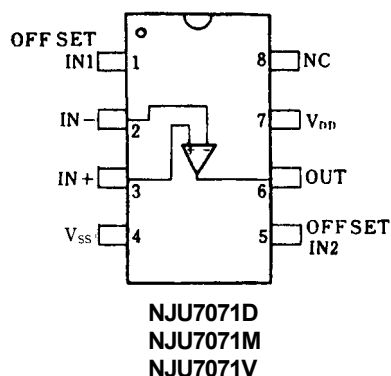
The minimum operating voltage is 5V and the output stage permits output signal to swing between both of the supply rails.

Furthermore, the operating current is also as low as 0.6mA (typ.) per circuit, therefore it can be applied especially to battery-operated items.

### ■ FEATURES

- Single-Power-Supply
- Low Input Offset Voltage ( $V_{IO}=2\text{mV max}$ )
- Wide Operating Voltage ( $V_{DD}=5\sim 16\text{V}$ )
- Wide Output Swing Range ( $V_{OM}\geq 9.98\text{V typ. @ } V_{DD}=10\text{V}$ )
- Low Operating Current ( $0.6\text{mA/circuit typ.}$ )
- Low Bias Current ( $I_B=1\text{pA typ.}$ )
- Internal Compensation Capacitor
- External Offset Null Adjustment (Only NJU7071)
- Package Outline DIP/DMP/SSOP8 (NJU7071)  
DIP/DMP8 (NJU7072)  
DMP/SSOP14 (NJU7074)
- C-MOS Technology

### ■ PIN CONFIGURATION



### ■ PACKAGE OUTLINE



NJU7071D  
NJU7072D



NJU7071M  
NJU7072M



NJU7071V

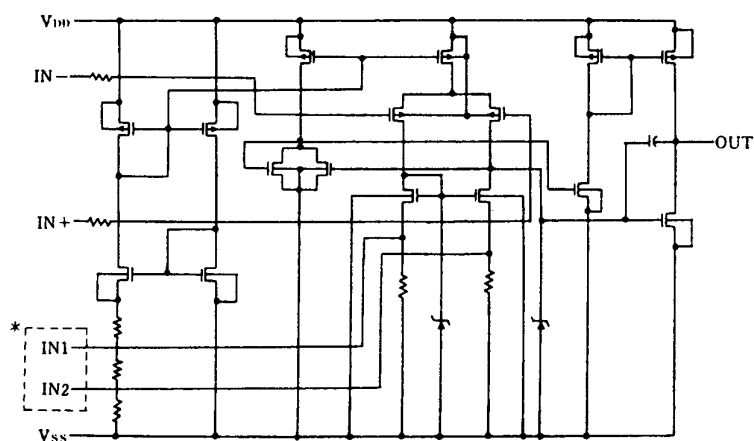


NJU7074M



NJU7074V

## ■ EQUIVALENT CIRCUIT



\*The terminals  $IN1$ ,  $IN2$  are only for NJU7071 (NJU7072/74 don't have these terminals).

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	18	V
Differential Input Voltage	$V_{ID}$	$\pm 18$ ( note1 )	V
Common Mode Input Voltage	$V_{IC}$	-0.3~18	mV
Power Dissipation	$P_D$	( DIP8 ) 500 ( DMP8,14 ) 300 ( SSOP8 ) 250 ( SSOP14 ) 300	mW
Operating Temperature Range	$T_{opr}$	-20~+75	°C
Storage Temperature Range	$T_{stg}$	-40~+125	°C

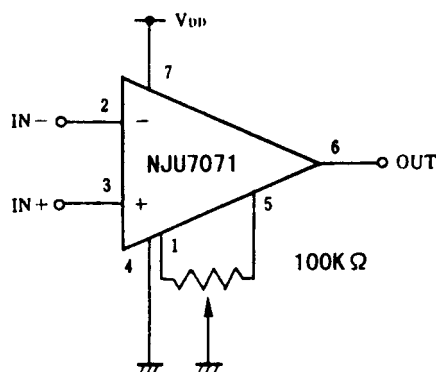
( note1 ) If the supply voltage (  $V_{DD}$  ) is less than 18V, the input voltage must not over the  $V_{DD}$  level though 18V is limit specified.

## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V_{DD}=10V$ ,  $R_L=\infty$  )

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_S=50\Omega$	-	-	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	95	-	dB
Input Common Mode Voltage Range	$V_{ICM}$		0~9	-	-	V
Maximum Output Swing Voltage	$V_{OM}$	$R_L=1M\Omega$	9.80	9.98	-	V
Common Mode Rejection Ratio	CMR		60	75	-	dB
Supply Voltage Rejection Ratio	SVR		60	75	-	dB
Operating Current/Circuit	$I_{DD}$		-	0.6	1.2	mA
Slew Rate	SR		-	1.1	-	V/μs
Unity Gain Bandwidth	$F_t$	$A_V=40dB, C_L=10pF$	-	1.0	-	MHz

## ■ OFFSET ADJUSTMENT CIRCUIT ( Only For NJU7071 )



### [CAUTION]

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