

# SUPER LOW OPERATING CURRENT AND LOW OFFSET VOLTAGE TINY SINGLE C-MOS OPERATIONAL AMPLIFIER

## ■ GENERAL DESCRIPTION

The NJU7006 is a super low operating current and low offset voltage tiny single C-MOS operational amplifier.

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

The operating current is 3μA ( typ ),and the output stage permits output signals to swing between both of the supply rails.

Furthermore, the NJU7006 is packaged with very small SOT-23-5,therefore it can be especially applied to battery operated portable items.

## ■ PACKAGE OUTLINE

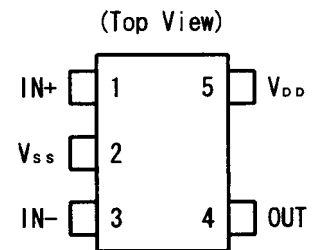


NJU7006F

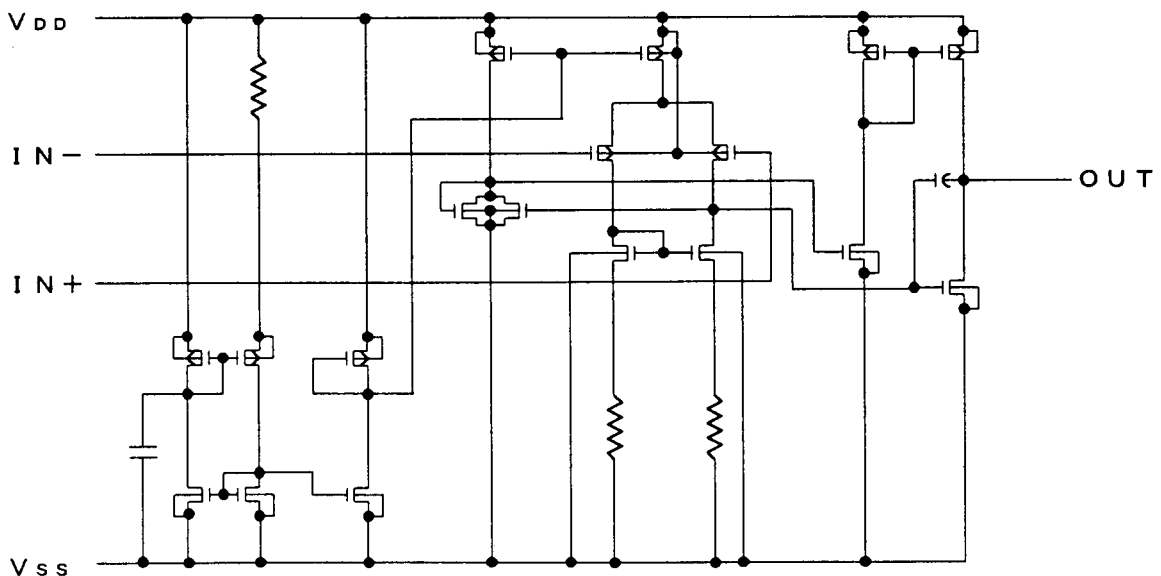
## ■ FEATURES

- Super Low Operating Current (  $I_{DD}=3.0\mu A$  typ. )
- Single Power Supply (  $V_{DD}=1.8\sim 3.6V$  )
- Low Offset Voltage (  $V_{IO}=2mV$  max.@ 3.0V )
- Wide Output Swing Range (  $V_{OM}=2.9V$  min.@ 3.0V )
- Low Bias Current (  $I_B=1pA$  typ. )
- Compensation Capacitor Incorporated
- Package Outline SOT-23-5
- C-MOS Technology

## ■ PIN CONFIGURATION



## ■ EQUIVALENT CIRCUIT



# NJU7006

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{IN}$	7	V
Differential Input Voltage	$V_{ID}$	$\pm 7$ ( note1 )	V
Common Mode Input Voltage	$V_{IC}$	-0.3~7	V
Power Dissipation	$P_D$	200	mW
Operating Temperature Range	$T_{opr}$	-40~+85	°C
Storage Temperature Range	$T_{stg}$	-55~+125	°C

( note1 ) If the supply voltage (  $V_{DD}$  ) is less than 7V, the input voltage must not over the  $V_{DD}$  level though 7V is limit specified.

( note2 ) Decoupling capacitor should be connected between  $V_{DD}$  and  $V_{SS}$  for the stable operation.

## ■ ELECTRICAL CHARACTERISTICS

( Ta=25°C,  $V_{DD}=3.0V, R_L=\infty$  )

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$V_{IN}=1/2V_{DD}$	-	-	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	$A_{VD}$		60	70	-	dB
Input Common Mode Voltage Range	$V_{ICM}$		0~2.5	-	-	V
Maximum Output Swing Voltage	$V_{OM1}$	$R_L=10M\Omega$	$V_{DD}-0.1$	-	-	V
	$V_{OM2}$	$R_L=10M\Omega$	-	-	$V_{SS}+0.1$	V
Common Mode Rejection Ratio	CMR	$V_{IN}=1/2V_{DD}$	55	65	-	dB
Supply Voltage Rejection Ratio	SVR	$V_{DD}=3.0\sim 3.6V$	60	70	-	dB
Operating Current	$I_{DD}$		-	3.0	4.5	μA
Slew Rate	SR	$C_L=10pF$	0.02	0.04	-	V/μs
Unity Gain Bandwidth	$F_t$	$A_v=40dB, C_L=10pF$	-	95	-	kHz

( note3 ) The source current is less than 0.29μA ( at  $V_{OM}/R_L=2.9V/10M\Omega$  ).

( note4 ) The load capacitance (  $C_L$  ) is less than 200pF.

**[CAUTION]**

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