

Tiny, Rail-to-Rail Input/Output Single CMOS Operational Amplifier

■GENERAL DESCRIPTION

The NJU7042 is a tiny Rail-to-Rail Input/Output single CMOS operational amplifier

The operating voltage is 2.7V to 5.5V and the input and output stage permits signal to swing between both of the supply rails.

The input offset voltage is lower than 5mV, and the input bias current is as low as than 1pA, consequently very small signal around the ground level can be amplified.

Furthermore, The NJU7042 is packaged with very small MTP-5, therefore it can be especially applied to portable applications.

■PACKAGE INFORMATION



NJU7042F

■FEATURES

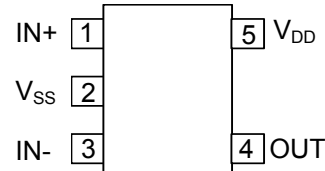
- Rail-to-Rail Input
- Rail-to-Rail Output
- Low Input Offset Voltage
- Single-Power-Supply
- Low Operating Current
- High Load Current
- Low Bias Current
- Compensation Capacitor Incorporated
- Package Outline
- C-MOS Technology

$V_{IN}=V_{SS}$ to V_{DD}
 $V_{OM} \geq 2.7V$ min
 $V_{IO}=5mV$ max
 $V_{DD}=2.7$ to $5.5V$
 $I_{DD}=15\mu A$ typ
 $I_{OH}/I_{OL}=200\mu A$ typ
 $I_{IB}=1pA$ typ

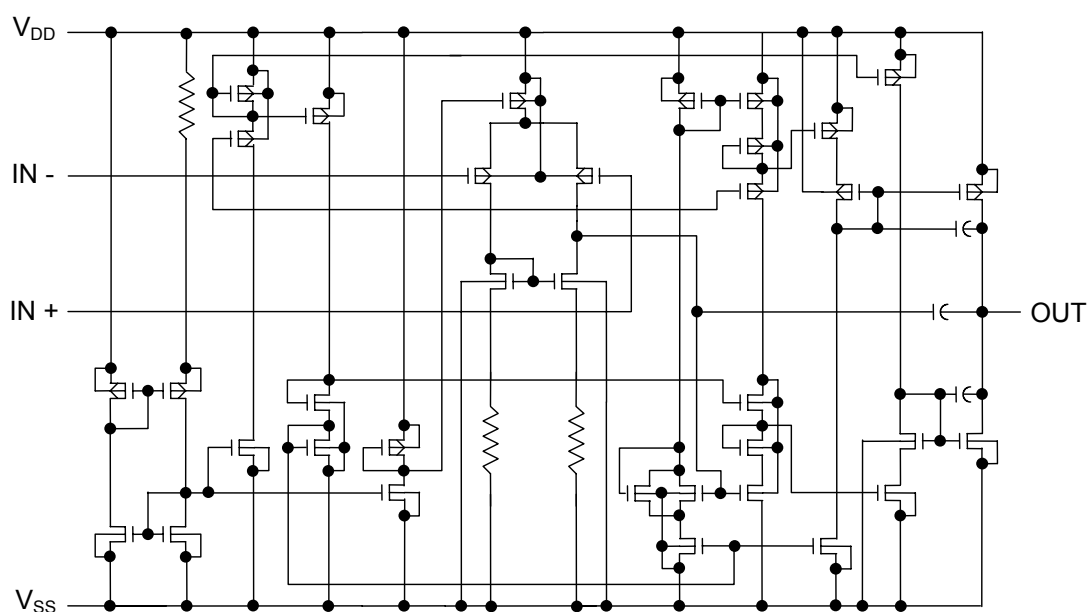
MTP-5

■PIN CONFIGURATION

(Top View)



■EQUIVALENT CIRCUIT



■ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	7.0	V
Differential Input Voltage	V_{ID}	± 7.0 (Note1)	V
Common Mode Input Voltage	V_{IC}	-0.3~7.0	V
Power Dissipation	P_D	200	mW
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-55~+125	°C

Note1) If the supply voltage (V_{DD}) is less than 7.0V, the input voltage must not over the V_{DD} level though 7.0V is limit specified.

Note2) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

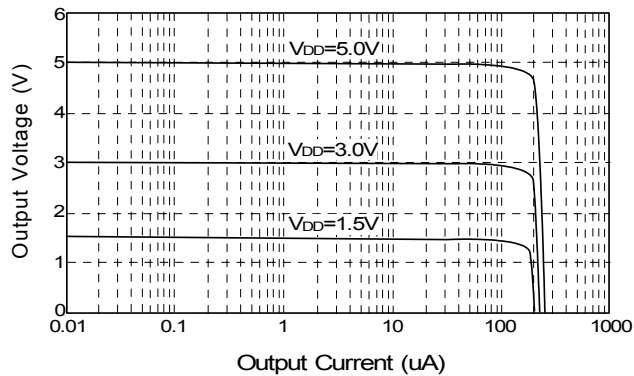
■ELECTRICAL CHARACTERISTICS

(V_{DD}=3.0V, R_L=∞, Ta=25°C)

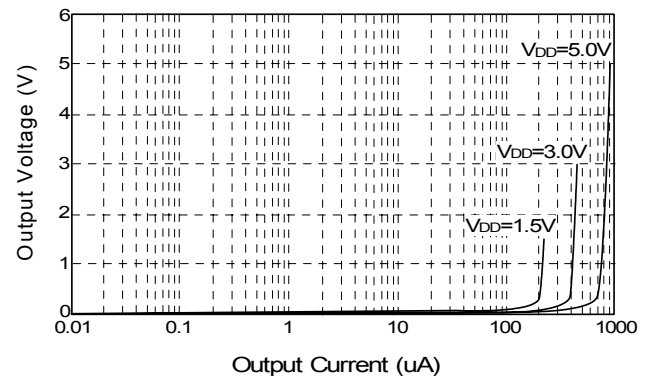
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{DD}		2.7	-	5.5	V
Input Offset Voltage	V_{IO}	$V_{IN}=V_{DD}/2$	-	-	5	mV
Input Offset Current	I_{IO}		-	1	-	pA
Input Bias Current	I_{IB}		-	1	-	pA
Input Impedance	R_{IN}		-	1	-	TΩ
Large Signal Voltage Gain	A_{VD}		60	70	-	dB
Input Common Mode Voltage Range	V_{ICM}		V_{SS} to V_{DD}	-	-	V
Maximum Output Swing Voltage	V_{OM1}	$R_L=30k\Omega$	$V_{DD}-0.3$	-	-	V
	V_{OM2}	$R_L=30k\Omega$	-	-	$V_{SS}+0.3$	
Output Source Current	I_{OH}	$V_{OH}=V_{DD}-0.3$	100	200	-	uA
Output Sink Current	I_{OH}	$V_{OL}=V_{DD}+0.3$	100	200	-	
Common Mode Rejection Ratio	CMR	$V_{IN}=V_{DD}/2$	60	70	-	dB
Supply Voltage Rejection Ratio	SVR	$V_{DD}=2.7\sim 5.5V$	60	70	-	dB
Operating Current	I_{DD}		-	15	30	uA
Slew Rate	SR		-	0.03	-	V/us
Unity Gain Bandwidth	Ft	$A_V=40dB, C_L=10pF$	-	47	-	kHz

■ TYPICAL CHARACTERISTICS

Output Voltage vs. Output Current (SOURCE)



Output Voltage vs. Output Current (SINK)



[CAUTION]

The specifications on this data book are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this data book 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.