
Designated client product

This product will be discontinued its production in the near term.
And it is provided for customers currently in use only, with a time limit.
It can not be available for your new project. Please select other new or existing products.

For more information, please contact our sales office in your region.

New Japan Radio Co.,Ltd.

<http://www.njr.com/>

SINGLE LOW VOLTAGE C-MOS POWER AMPLIFIER

■ GENERAL DESCRIPTION

The NJU7081 is a single C-MOS Power Amplifier which is available to operate with single power supply and low voltage.

The NJU7081 realizes nearly full-swing output with low voltage operation (2.4V). An output voltage is kept more than $V_{DD}-0.3V$ or less than $V_{SS}+0.3V$ when output current is 40mA, therefore it is suitable for an ear-set and a small size speaker driver of the battery operated audio items, especially cellular phone.

■ PACKAGE OUTLINE



NJU7081M



NJU7081V



NJU7081R

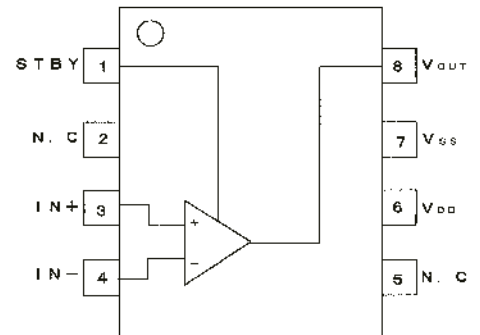


NJU7081RB1

■ FEATURES

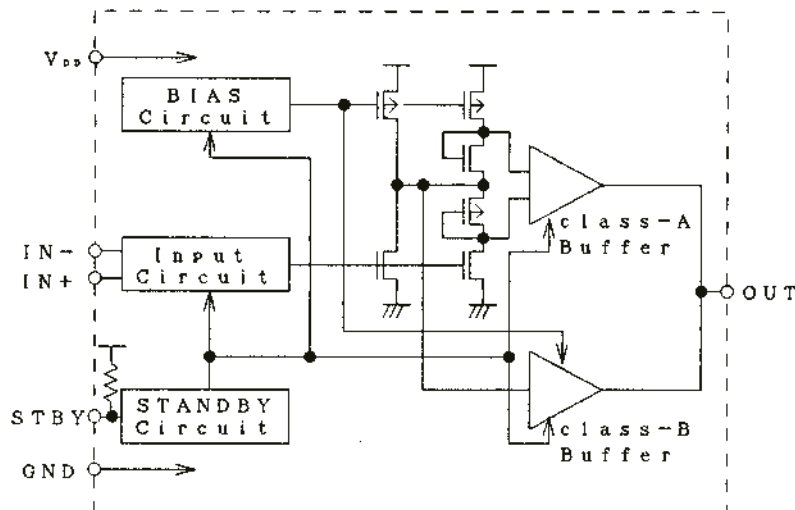
- Single Power Supply
- Wide Operation Voltage Range (V_{DD} 2.4V ~ 5.5V)
- Nearly Full-Swing Output
($V_{SS}+0.3V \sim V_{DD}-0.3V$ at $I_{out}=\pm 40mA$)
- Low Distortion
(0.05% at $R_L=38\Omega$, 1.0Vp-p)
- Low Operating Current
(1.5mA at $V_{DD}=3V$)
- Stand-by Function
($1.0\mu A$ at $V_{DD}=3V$)
- Package Outline — DMP8 / SSOP8 / VSP8 / TVSP8
- C-MOS Technology

■ PIN CONFIGURATION



Note1) STBY terminal
 "H" or "OPEN" : Stand-by operation
 "L" : Normal operation

■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{DD}	7	V
Input Voltage	V _{ID}	V _{SS} -0.3 ~ V _{DD} +0.3	V
Power Dissipation	P _D	250 (VSP8, TVSP8, SSOP8) 300 (DMP8)	mW
Operating Temperature	T _{OPR}	-25 ~ +75	°C
Storage Temperature	T _{STG}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS 1

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage Range	V _{DD}		2.4		5.5	V

■ ELECTRICAL CHARACTERISTICS 2 (V_{DD}=3V)

(Ta=25°C, V_{DD}=3V, V_{SS}=0V, f=1kHz)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Current	I _{OD}	No Load Condition : Voltage Follower V _o =1.5V		1.5	2	mA
Standby Current	I _{SRB}				1.0	μA
Standby terminal Current	I _{PTN}	V _{DD} =3V, V _{stb} =0V		10		μA
Standby terminal Input Voltage	V _{SIH}		0.8V _{DD}			V
	V _{SIL}				0.2V _{DD}	
Input Offset Voltage	V _{IO}		-10		10	mV
Input Offset Current	I _{IO}			10		pA
Input Bias Current	I _{IB}			10		pA
Input Resistor	R _{IN}			10 ¹¹		Ω
Input Common Mode Voltage Range	V _{ICM}		0.2~2			V
Maximum Output Voltage Range	V _{OM}	I _{out} =40mA	2.6	2.7		V
		I _{out} =-40mA		0.3	0.4	
Maximum Output Current	I _{OM}	(D+N)/S<0.1% Source		30		mA
		(D+N)/S<0.1% Sink		-30		
Large-Signal Voltage gain	A _v		55			dB
Common Mode Rejection ration	CMRR	V _{ICM} =0.2~2.0V	53			dB
Supply Voltage Rejection ration	PSRR	V _{DD} =2.7~3.3V	55			dB
Total Harmonic Distortion	(D+N)/S	V _o =1.0V _{p-p} 0~10dB, 38Ω		0.05		%
Equivalent Input Noise Voltage	Ent	IEC-A		3		μVrms
Signal to Noise Ratio	S/N			110		dB
Unity Gain Bandwidth	F _t	C _L =10pF, OPEN LOOP		1.5		MHz
Slew Rate	SR	Unity Gain Turn Over, C _L =32pF R _L =2kΩ		1		V/μs

NOTE2) The NJU7081 should be operated gaining of triple or more for stable operation.

NOTE3) When the NJU7081 using no-current-load and low gain application (voltage follower, etc.), oscillation will be worst. In this case, the stray capacitance of the output terminal should be less than 100pF.

■ ELECTRICAL CHARACTERISTICS 3 ($V_{DD}=5V$)

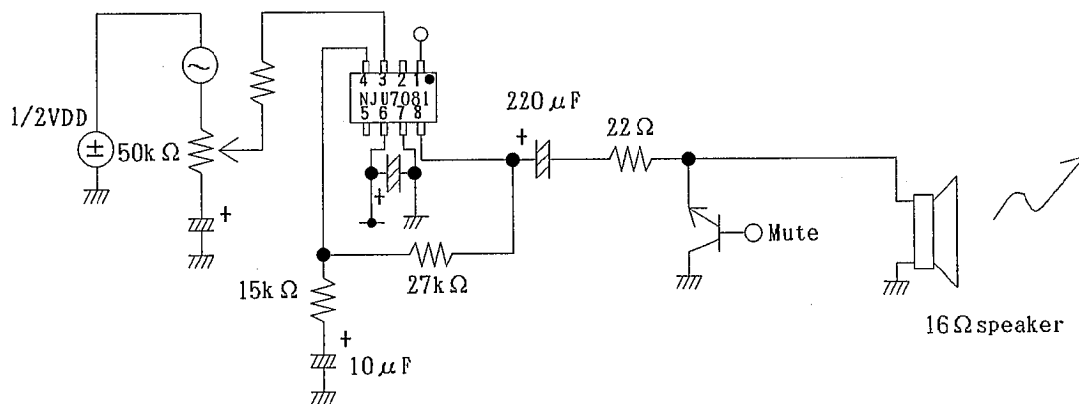
($T_a=25^\circ C$, $V_{DD}=5V$, $V_{SS}=0V$, $f=1kHz$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Current	I_{DD}	No Load Condition : Voltage Follower $V_o=2.5V$		3	4	mA
Standby Current	I_{STB}				1	μA
Standby terminal Current	I_{PIN}	$V_{DD}=3V, V_{STB}=0V$		30		μA
Standby terminal Input Voltage	V_{SIH}		0.8 V_{DD}			V
	V_{SIL}				0.2 V_{DD}	
Input Offset Voltage	V_{IO}		-10		10	mV
Input Offset Current	I_{IO}			10		pA
Input Bias Current	I_{IB}			10		pA
Input Resistor	R_{IN}			10^{11}		Ω
Input Common Mode Voltage Range	V_{ICM}		0.4~4			V
Maximum Output Voltage Range	V_{OM}	$I_{out}=40mA$	4.6	4.7		V
		$I_{out}=-40mA$		0.3	0.4	
Maximum Output Current	I_{OM}	(D+N)/S<0.1% Source		30		mA
		(D+N)/S<0.1% Sink		-30		
Large-Signal Voltage gain	A_v		55			dB
Common Mode Rejection ration	CMRR	$V_{ICM}=0.4\sim 4.0V$	53			dB
Supply Voltage Rejection ration	PSRR	$V_{DD}=4.5\sim 5.5V$	55			dB
Total Harmonic Distortion	(D+N)/S	$V_o=1.0V_{p-p}$ 0~10dB, 38 Ω		0.05		%
Equivalent Input Noise Voltage	E_{nt}	IEC-A		3		μV_{rms}
Signal to Noise Ratio	S/N			110		dB
Unity Gain Bandwidth	F_t	CL=10pF, OPEN LOOP		1.5		MHz
Slew Rate	SR	Unity Gain Turn Over, CL=32pF RL=2k Ω		1		V/ μs

NOTE4) The NJU7081 should be operated gaining of triple or more for stable operation.

NOTE5) When the NJU7081 using no-current-load and low gain application (voltage follower, etc.), oscillation will be worst. In this case, the stray capacitance of the output terminal should be less than 100pF.

■ APPLICATION CIRCUIT



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.