

LOW VOLTAGE DUAL POWER AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2096 is a dual power amplifier, which operates with 1.0V minimum supply voltage. The NJM2096 is suitable to small radio and head-phone stereo. The NJM2096 is resemble to the NJM2076, but two amplifiers are the same.

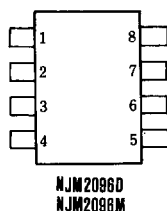
■ FEATURES

- Low Operating Voltage (1.0V min)
- Minimum external components
- Low Operating Current
- Package Outline DIP8, DMP8, SIP9
- Bipolar Technology

■ APPLICATION

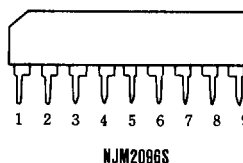
- Head-phone Stereo, Portable Radio, Portable TV, Hand-carry Tele-communication Set.

■ PIN CONFIGURATION



PIN FUNCTION

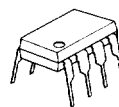
1. Non-Inverting Amp. Input (A)
2. Non-Inverting Amp. Input (B)
3. V⁺
4. Base (B)
5. (B) Output
6. GND
7. (A) Output
8. Base (A)



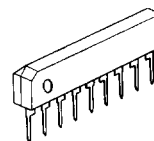
PIN FUNCTION

1. V⁺
2. Base (B)
3. (B) Output
4. Power GND
5. GND
6. (A) Output
7. Base (A)
8. Non-Inverting Amp. Input (A)
9. Non-Inverting Amp. Input (B)

■ PACKAGE OUTLINE



NJM 2096 D



NJM 2096 S



NJM 2096 M



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

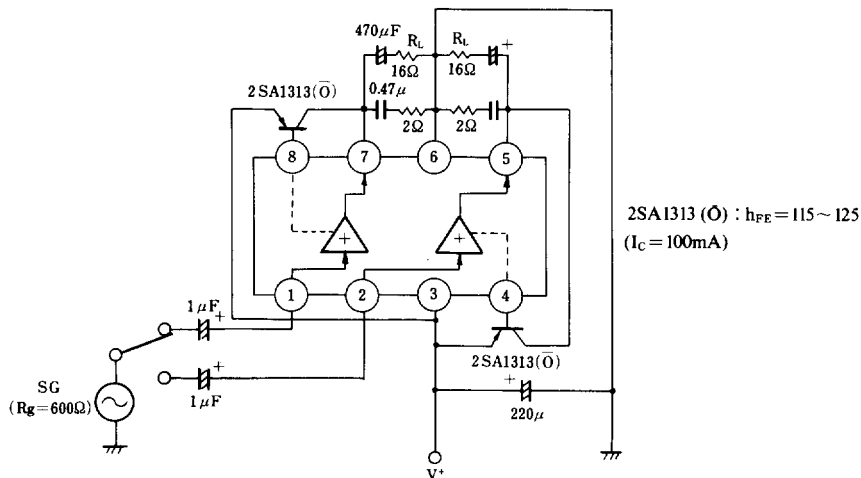
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	4.5	V
Power Dissipation	P _D	(DIP8) 500	mW
		(SIP9) 500	mW
		(DMP8) 300	mW
Maximum Input Signal	V _{IN}	200	mVrms
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

■ ELECTRICAL CHARACTERISTICS

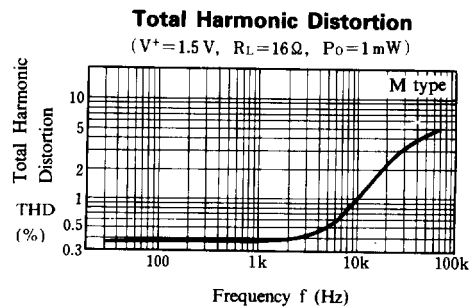
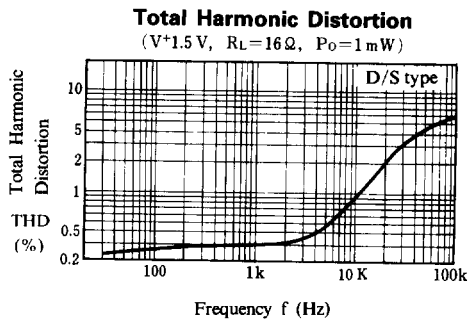
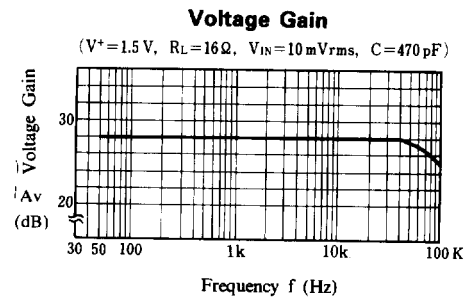
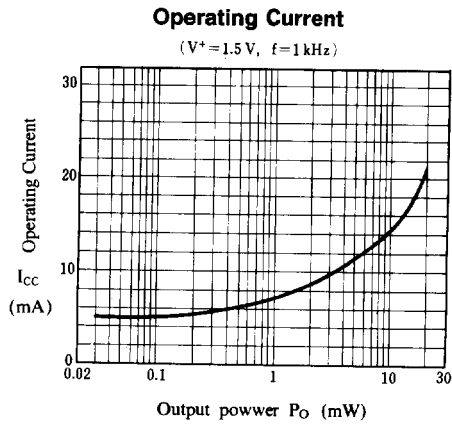
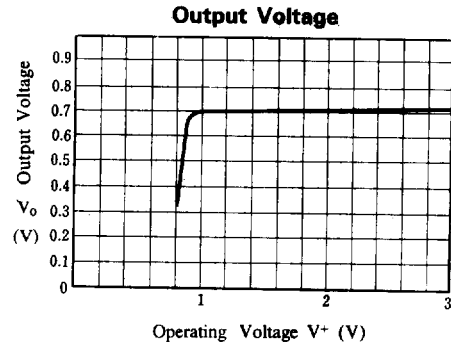
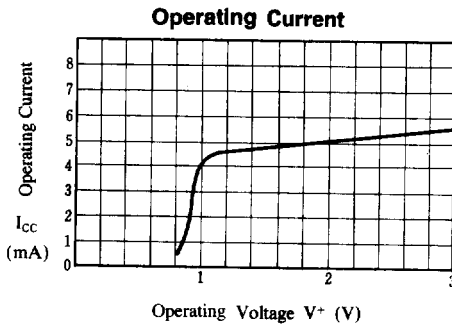
(Ta=25°C, V⁺=1.5V, R_L=16Ω)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I _{cc}	V _{IN} =Open	—	4.7	7	mA
Maximum Output Power	P _{O1}	THD=10% D&S	15	20	—	mW
		M	15	17.5	—	mW
Max. Output Power at Low Supply Voltage	P _O	THD=10%, V ⁺ =1.0V	—	3	—	mW
Voltage Gain	A _v	V _{IN} =10mVrms	26.5	28	29.5	dB
Total Harmonic Distortion	THD	P _O =1mW	—	0.4	0.8	%
Ripple Rejection Ratio	RR	R _g =0Ω, V _r =30mVrms, F _r =1kHz	25	35	—	dB
Input Resistance	R _{IN}		25	33	43	kΩ
Output Noise Voltage	V _{NO}	R _g =0Ω, A Curve	—	40	150	μV
Output Pin Voltage	V _O (DC)		0.62	0.70	0.77	V
Voltage Difference between Two Output Pins	ΔV _O (DC)		—	—	50	mV

■ TEST CIRCUIT

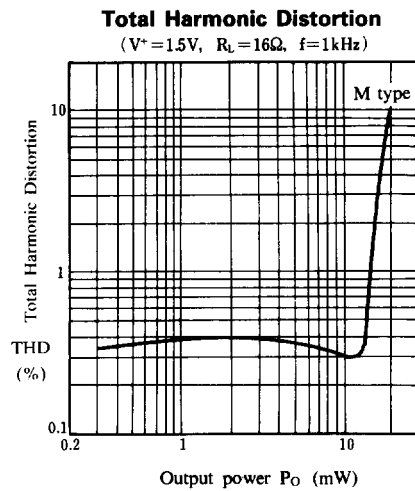
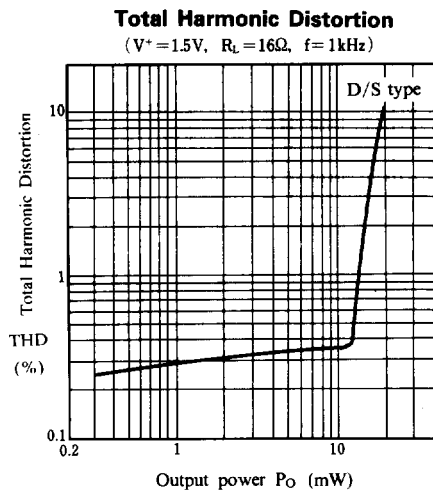


■ TYPICAL CHARACTERISTICS





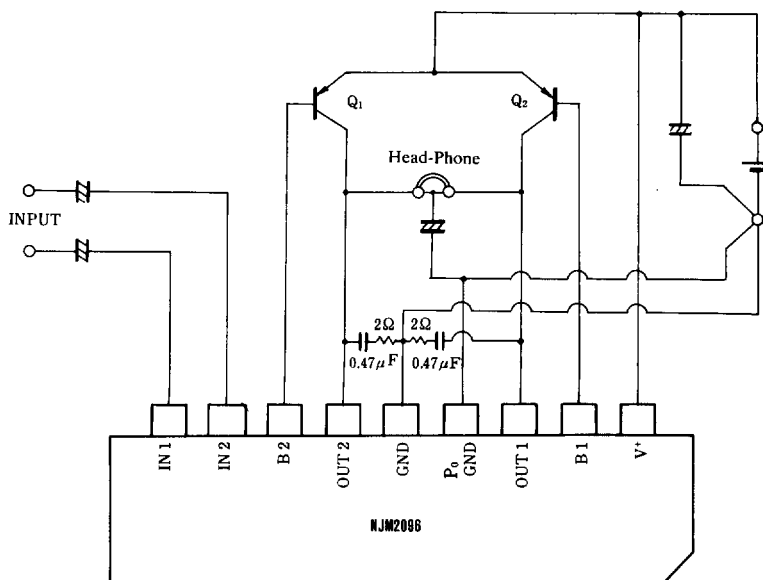
■ TYPICAL CHARACTERISTICS





■ TYPICAL APPLICATION

Stereo Head-Phone



■ NOTICE

(1) External PNP Transistor

Maximum output power becomes large with low saturation voltage transistor, and so select transistor of low saturation voltage.
 h_{FE} : 120

(2) External Frequency Compensation

Recommend tantalum capacitor with low $\tan \delta$ (less than 0.25 at $f=10\text{kHz}$) and 2Ω resistor. Stable with large capacitor of less high frequency distortion and worse $\tan \delta$. For example: $1\mu\text{F}$, $\tan \delta \leq 0.6$

(3) Layout on PCB

Be careful to get maximum output power and low distortion set.

DIP/DMP: Signal ground has to be close to IC ground pin. Impedance of ground line must be low.

SIP: Two terminals (Power GND, GND) are connected at one point on PCB.