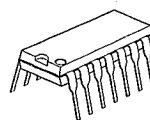


QUAD OPERATIONAL AMPLIFIER

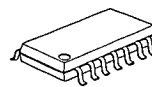
■ GENERAL DESCRIPTION

NJM 2112 is low operating voltage (± 1.0 V min.) and low saturation output voltage (± 2.0 V p-p at operating voltage ± 25 V) operational amplifier. It is applicable to HANDY TYPE CD, RADIO CASSETTE CD, and PORTABLE DAT, that are digital audio apparatus which require the 5 V single supply operation and high output voltage. The NJM2112 is quad operational amplifier. Each amplifier of the NJM2112 has the same electrical characteristic of the NJM2115.

■ PACKAGE OUTLINE



NJM2112D



NJM2112M

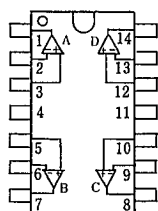


NJM2112V

■ FEATURES

- Operating Voltage (± 1.0 V $\sim$ ± 7.0 V)
- Low Saturation Output Voltage (± 2.0 V_{p-p} @ $V^+ = \pm 2.5$ V)
- Package Outline DIP14, DMP14, SSOP14
- Bipolar Technology

■ PIN CONFIGURATION

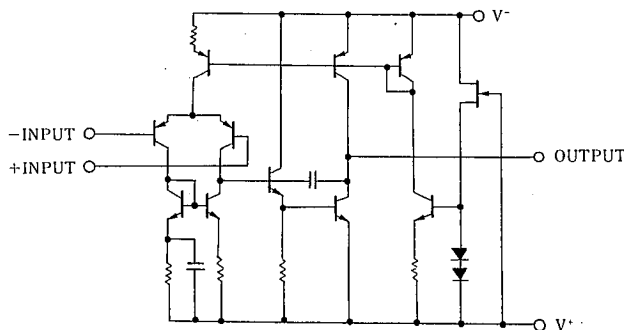


NJM2112D
NJM2112M
NJM2112V

PIN FUNCTION

- | | |
|-------------------|--------------------|
| 1. A OUTPUT | 8. C OUTPUT |
| 2. A -INPUT | 9. C -INPUT |
| 3. A +INPUT | 10. C +INPUT |
| 4. V ⁺ | 11. V ⁻ |
| 5. B +INPUT | 12. D +INPUT |
| 6. B -INPUT | 13. D -INPUT |
| 7. B OUTPUT | 14. D OUTPUT |

■ EQUIVALENT CIRCUIT (1/4 Shown)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V ⁻	±7.0	V
Differential Input Voltage	V _{ID}	±14	V
Power Dissipation	P _D	(DIP14) 500	mW
		(DIM14) 300	mW
		(SSOP14) 300	mW
Operating Temperature Range	T _{opr}	-40 ~ +85	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

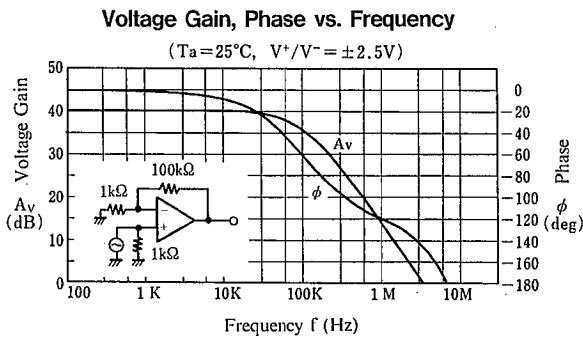
(V⁺/V⁻=±2.5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	R _S ≤ 10kΩ	—	1	6	mV
Input Bias Current	I _B		—	100	300	nA
Large Signal Voltage Gain	A _V	R _L ≥ 10kΩ	60	80	—	dB
Maximum Output Voltage Swing	V _{OM}	R _L ≥ 2.5kΩ	±2	±2.2	—	V
Input Common Mode Voltage Range	V _{ICM}		±1.5	—	—	V
Common Mode Rejection Ratio	CMR		60	74	—	dB
Supply Voltage Rejection Ratio	SVR		60	80	—	dB
Operating Current	I _{CC}	V _{IN} =0, R _L =∞	—	8	11	mA
Slew Rate	SR	A _U =1, V _{IN} =±1V	—	3.2	—	V/μs
Gain Bandwidth product	GB	f=10kHz	—	9	—	MHz

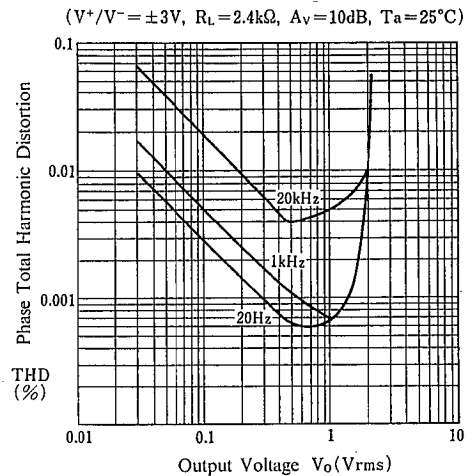
(note 1) Applied circuit voltage gain is desired to be operated within the range of 3 dB to 30 dB.

(note 2) Special care being required for input common mode voltage range and the oscillation due to the capacitive load when operating follower.

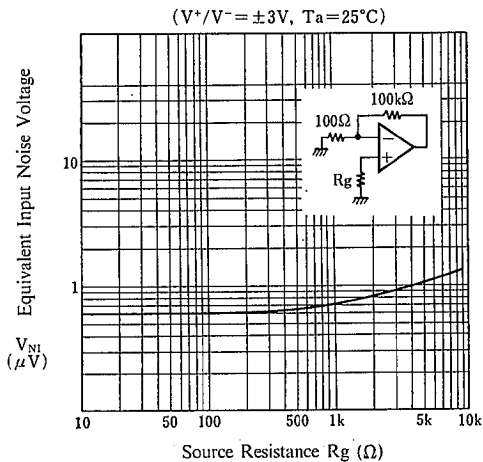
■ TYPICAL CHARACTERISTICS



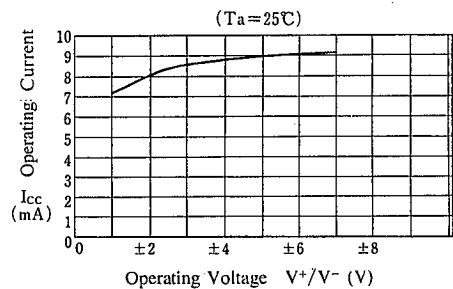
Total Harmonic Distortion vs. Output Voltage



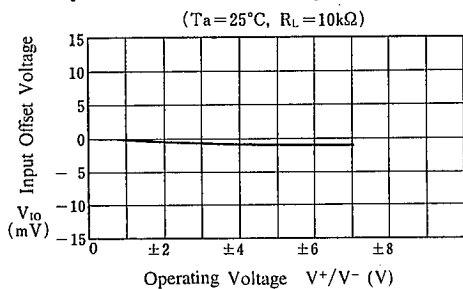
Equivalent Input Noise Voltage vs. Source Resistance



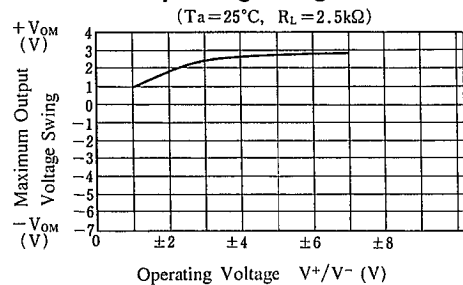
Operating Current vs. Operating Voltage



Input Offset Voltage vs. Operating Voltage

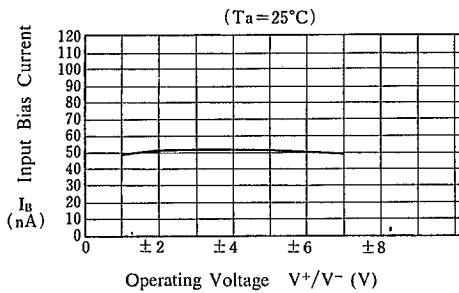


Maximum Output Voltage Swing vs. Operating Voltage



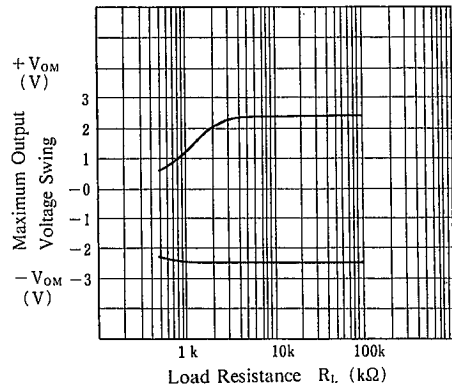
TYPICAL CHARACTERISTICS

Input Bias Current vs. Operating Voltage

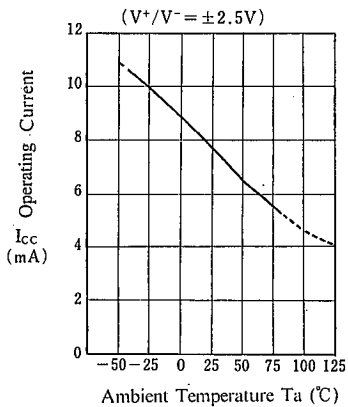


Maximum Output Voltage Swing vs. Load Resistance

($V^+/V^- = \pm 2.5\text{V}$, $T_a = 25^\circ\text{C}$)

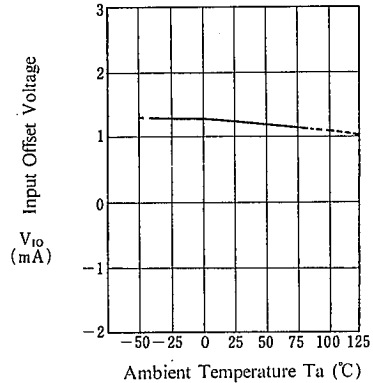


Operating Current vs. Temperature

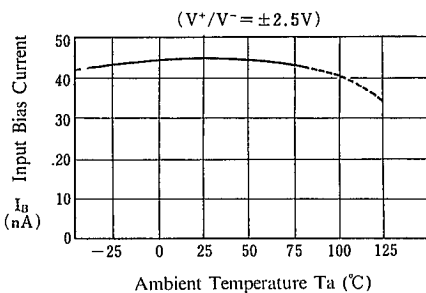


Input Offset Voltage vs. Temperature

($V^+/V^- = \pm 2.5\text{V}$, $R_L = 10\text{k}\Omega$)

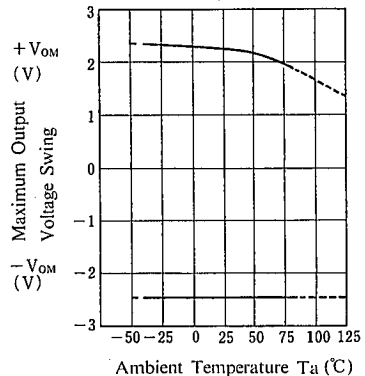


Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Temperature

($V^+/V^- = \pm 2.5\text{V}$, $R_L = 2.5\text{k}\Omega$)



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.