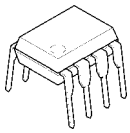
HIGH PERFORMANCE LOW-NOISE DUAL OPERATIONAL AMPLIFIER

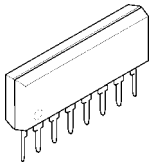
■ GENERAL DESCRIPTION

NJM2114 is a high performance dual low noise operational amplifier that could be replaced in application with NJM5532.Comparing to NJM5532; it has superior specifications on Slew Rate, Bandwidth and Offset Voltage. Furthermore lower noise and distortion are achieved, it is applicable for Hi-Fi audio equipments.

■ PACKAGE OUTLINE



NJM2114D



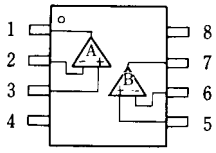
NJM2114L

NJM2114M

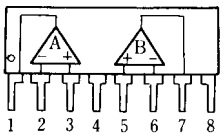
■ FEATURES

- Operating Voltage (±3.0V~±22.0V)
- High Slew Rate (15V/μs typ.)
- Wide Unity Gain Bandwidth (13MHz typ.)
- Low Noise Voltage (0.9μVrms typ.)
- High Output Current (60mA typ.)
- Package Outline DIP8,DMP8,SIP8
- Bipolar Technology

■ PIN CONFIGURATION



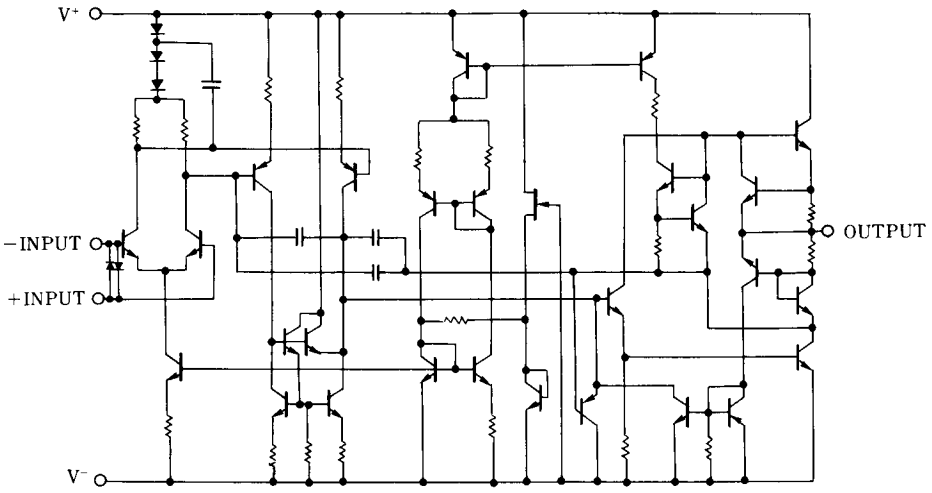
NJM2114D
NJM2114M



NJM2114L

PIN FUNCTION
1.A OUTPUT
2.A –INPUT
3.A +INPUT
4.V^-
5.B +INPUT
6.B –INPUT
7.B OUTPUT
8.V^+

■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25˚C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	± 22	V
Input Voltage	V_{IC}	V^+/V^-	V
Differential Input Voltage	V_{ID}	± 0.5	V
Power Dissipation	P_D	(DIP8) 800 (SIP8) 800 (DMP8) 600 (note)	mW
Operating Temperature Range	T_{opr}	-20~+75	˚C
Storage Temperature Range	T_{stg}	-40~+125	˚C

(note) At on PC board

■ ELECTRICAL CHARACTERISTICS

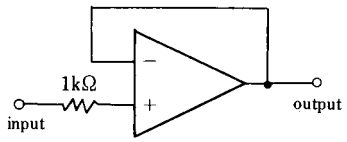
Direct Current Characteristics (V^+/V^-=±15V,Ta=25˚C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}		-	9	16	mA
Input Offset Voltage	V_{IO}		-	0.2	3	mV
Input Offset Current	I_{IO}		-	0.01	0.3	uA
Input Bias Current	I_B		-	0.5	1.8	uA
Common Mode Input Voltage Range	V_{ICM}		± 12	± 13	-	V
Common Mode Rejection Ratio	CMR	V_{ICM}=12V	70	100	-	dB
Supply Voltage Rejection Ratio	SVR	V^+/V^-=±22→±11V	80	100	-	dB
Large Swing Voltage Gain 1	A_{V1}	R_L≥2kΩ,V_O=±10V	88	110	-	dB
Large Swing Voltage Gain 2	A_{V2}	R_L≥600Ω,V_O=±10V	83	104	-	dB
Maximum Output Voltage 1	V_{OM1}	R_L≥600Ω	± 12	+14/-13	-	V
Maximum Output Voltage 2	V_{OM2}	R_L≥600Ω,V^+/V^-=±18V	± 15	+17/-16	-	V
Input Resistance	R_{IN}		-	100	-	kΩ
Output Current	I_O		-	60	-	mA
Slew Rate	SR	G_V=20dB,R_L=2kΩ	-	15	-	V/μs
Gain Bandwidth product	GB		-	13	-	MHz
Equivalent Input Noise Voltage	V_{NI}	20Hz~20kHz	-	0.9	-	μVrms
Equivalent Input Noise Voltage	e_N	f_O=30Hz	-	5.5	-	nV/√Hz
Equivalent Input Noise Voltage	e_N	f_O=1kHz	-	3.3	-	nV/√Hz
Equivalent Input Noise Current	I_{NI}	f_O=30Hz	-	1.5	-	pA/√Hz
Equivalent Input Noise Current	I_{NI}	f_O=1kHz	-	0.4	-	pA/√Hz
Total Harmonic Distortion	THD	f=1kHz,V_O=5V	-	0.0005	-	%

■ NOTE

In the application as a voltage follower, there might be the case the inputs are damaged especially the moment the supply voltage is switched on.

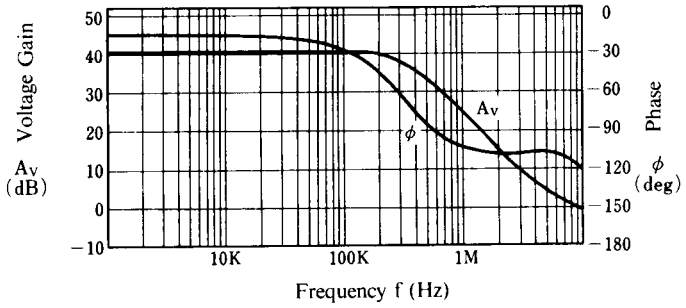
That's why we recommend you to put the current limiting resistor at the input pin.



■ TYPICAL CHARACTERISTICS

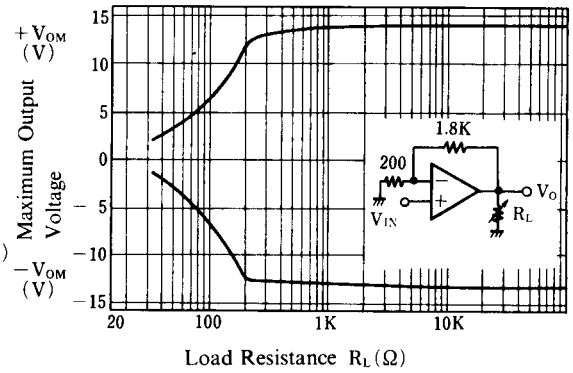
Voltage Gain, Phase vs. Frequency

($V^+/V^-=\pm15V$, $R_L=2K\Omega$, 40dBAmp, Ta=25°C)



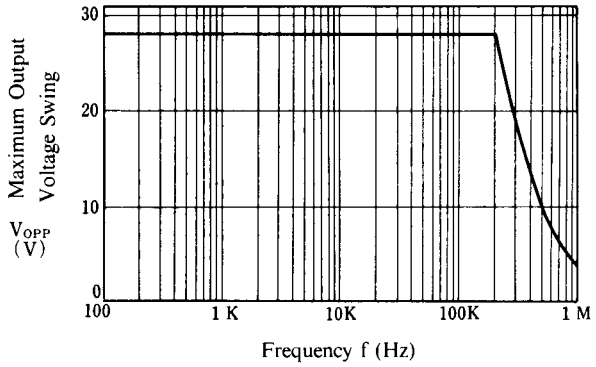
Maximum Output Voltage vs. Load Resistance

($V^+/V^-=\pm15V$, Ta=25°C)



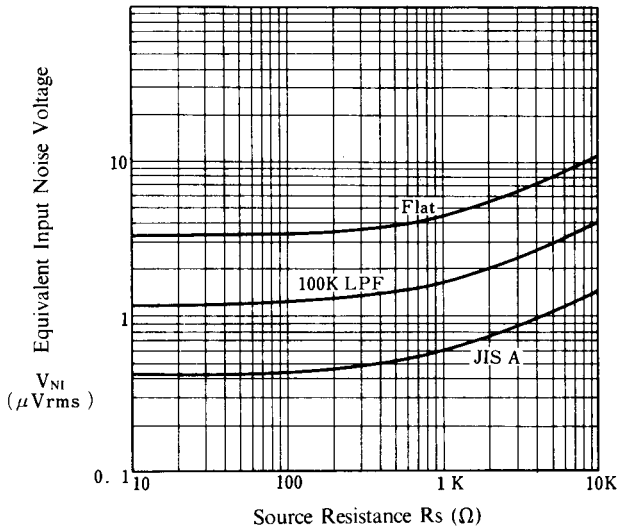
Maximum Output Voltage Swing vs. Frequency

($V^+/V^-=\pm15V$, Ta=25°C)



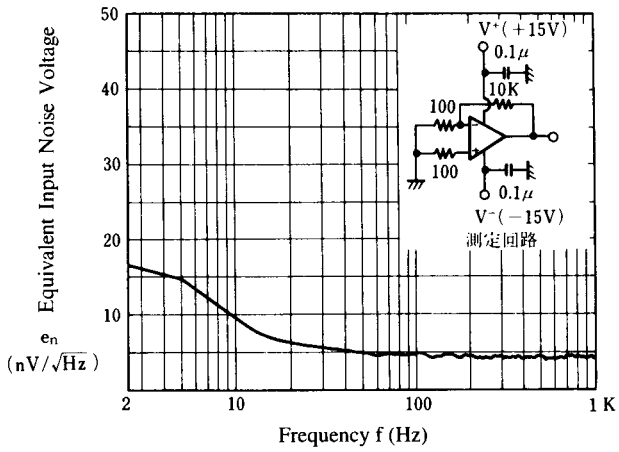
Equivalent Input Noise Voltage vs. Source Resistance

($V^+/V^-=\pm15V$, Ta=25°C)



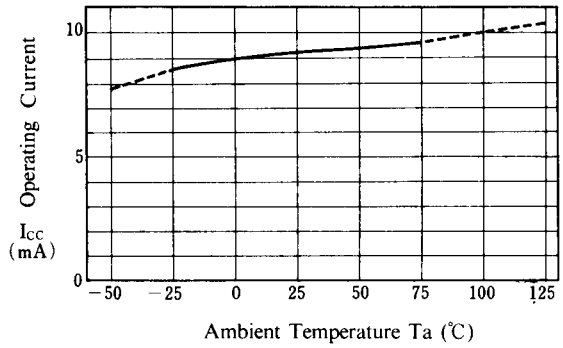
Equivalent Input Noise Voltage vs. Frequency

($V^+/V^-=\pm15V$, $A_V=40dB$)



Operating Current vs. Temperature

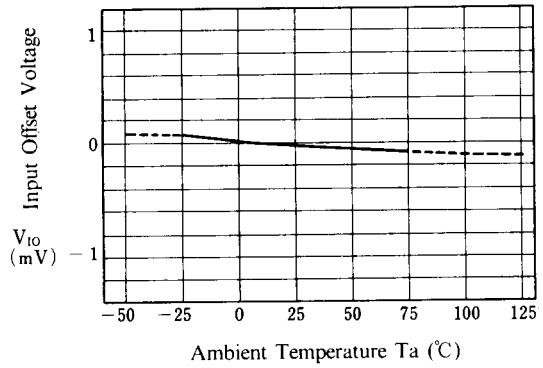
($V^+/V^-=\pm15V$)



■ TYPICAL CHARACTERISTICS

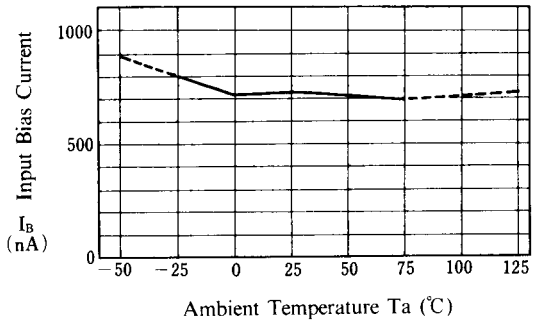
Input Offset Voltage vs. Temperature

($V^+/V^- = \pm 15V$)



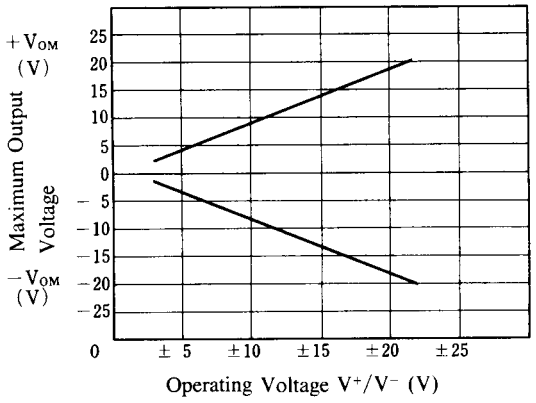
Input Bias Current vs. Temperature

($V^+/V^- = \pm 15V$)



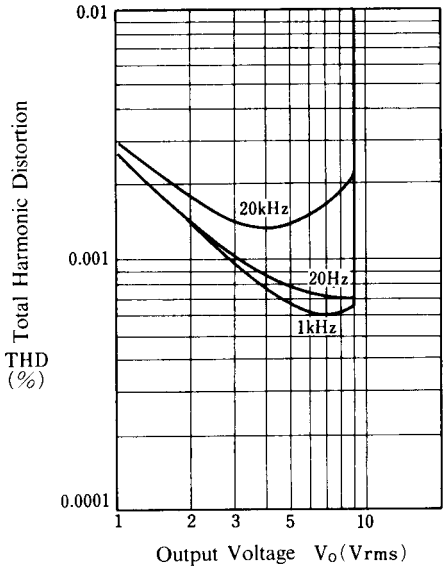
Maximum Output Voltage vs. Operating Voltage

($R_L = 600\Omega$, $Ta = 25°C$)



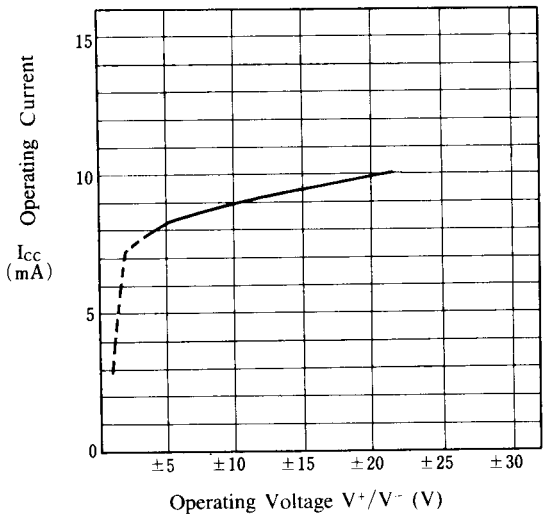
Total Harmonic distortion vs. Output Voltage

($V^+/V^- = \pm 15V$, $R_L = 10k\Omega$, Gain = 20dB, $Ta = 25°C$)



Operating Current vs. Operating Voltage

($Ta = 25°C$)



[CAUTION]
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NJR:

NJM2114M-TE2 NJM2114M-TE1 NJM2114M-TE3 NJM2114MD-TE3 NJM2114DD NJM2114MD NJM2114L NJM2114M NJM2114D

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- Поставка образцов и прототипов;
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Как с нами связаться

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