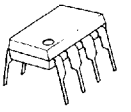
NJM2115

The NJM2115 is a low supply Voltage (±1.0V min.) and low saturation output voltage (±2.0V p-p at supply voltage ±2.5V) operational amplifier. It is applicable to HANDY TYPE CD, RADIO CASSETE CD, and PORTABLE DAT, that are digital audio apparatus which require the 5V single supply operation and high output voltage. The NJM2115 is improved version of the NJM2100 about BIAS-CIRCUIT. So, NJM2115 is low saturation compared to the NJM2100 under the condition of low supply voltage (<±2.5V). The NJM2115 is stable about the oscillation compared to the NJM2100 under the condition of V^+/V^->2.5V.

■ Absolute Maximum Ratings(Ta=25℃)

Supply Voltage	V^+/V^-	±7.0V
Differential Input Voltage	V_{ID}	±14V
Power Dissipation	P_D (D-type)	500mW
	P_D (M-type)	300mW
	P_D (L-type)	800mW
	(V-Type)	250mW
Operatin Temperature Range	T_{opr}	−20~+75℃
Storage Temperature Range	T_{stg}	−40~125℃

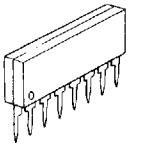
■ Package Outline



NJM2115D

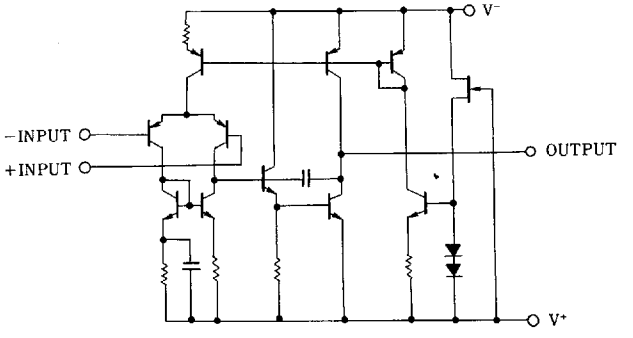
NJM2115M

NJM2115V



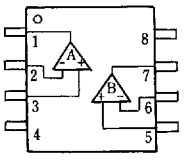
NJM2115L

■ Equivalent Circuit(1/2 Shown)

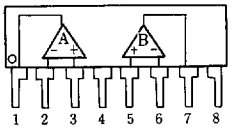


■ Connection Diagrams

D, M, V-Type
(Top View)



L-Type



PIN FUNCTION

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

4

■ Electrical Characteristics($V^+/V^-=\pm2.5V$, Ta=25℃)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Offset Voltage	V_{IO}	$R_S \leqq 10k\Omega$	—	1	6	mV
Input Bias Current	I_B		—	100	300	nA
Lage Signal Voltage Gain	A_U	$R_L \geqq 10k\Omega$	60	80	—	dB
Maximum Output Voltage Swing	V_{OM}	$R_L \geqq 2.5k\Omega$	±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
Supply Current	I_{CC}	$V_{IN}=O$, $R_L=\infty$	—	3.5	5	mA
Slew Rate	SR	$A_U=1$, $V_{IN}=\pm1V$	—	4	—	V/μs
Gain-Bandwidth product	GB	f=10kHz	—	12	—	MHz

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

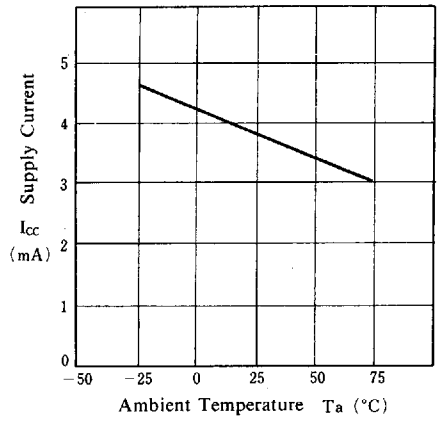
(note 2)Special care being required for input common mode voltage range and the oscillation due to the capacitive load when operating follower.

4

■ Typical Characteristics

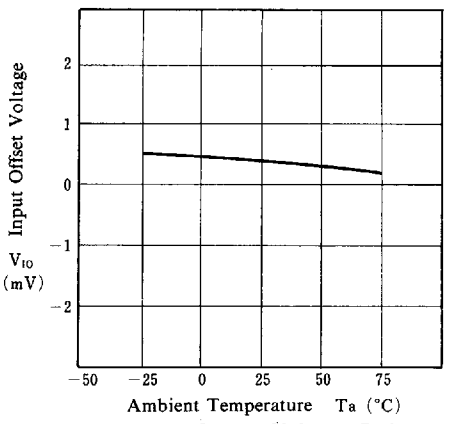
Supply Current vs. Temperature

($V^+/V^-=\pm2.5V$, Ta=25°C)



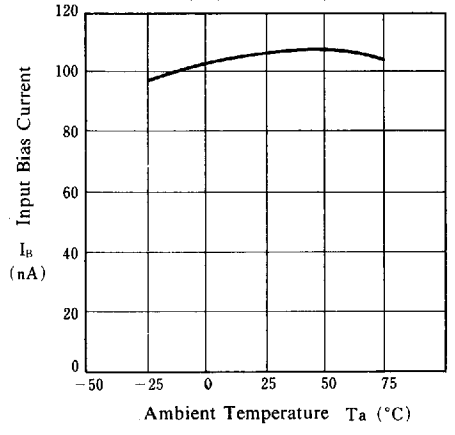
Input Offset Voltage vs. Temperature

($V^+/V^-=\pm2.5V$, $R_L=10k\Omega$)



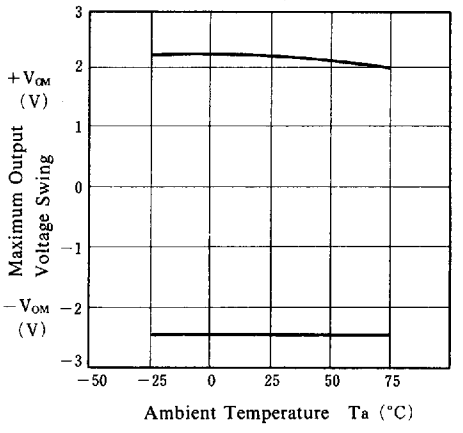
Input Bias Current vs. Temperature

($V^+/V^-=\pm2.5V$)



Maximum Output Voltage Swing vs. Temperature

($V^+/V^-=\pm2.5V$, $R_L=2.5k\Omega$)

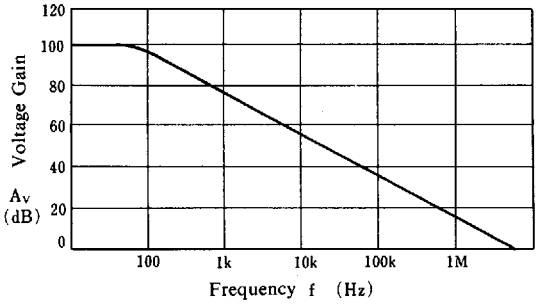


4

■ Typical Characteristics

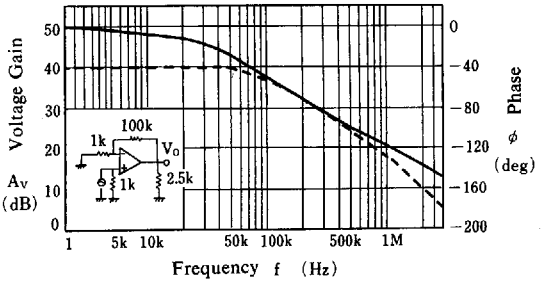
Voltage Gain vs. Frequency

($V^+/V^-=\pm12.5V$, Ta=25°C)



Voltage Gain, Phase vs. Frequency

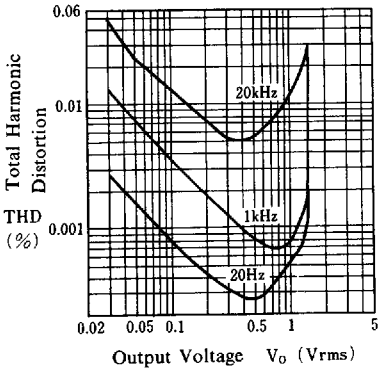
(Ta=25°C, $V^+/V^-=\pm2.5V$)



4

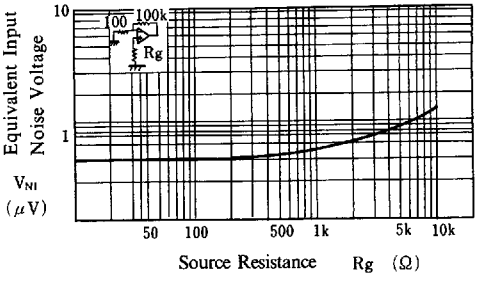
Total Harmonic Distortion vs. Output Voltage

($V^+/V^-=\pm3V$, $R_L=2.4k\Omega$, Gain=10dB, Ta=25°C)



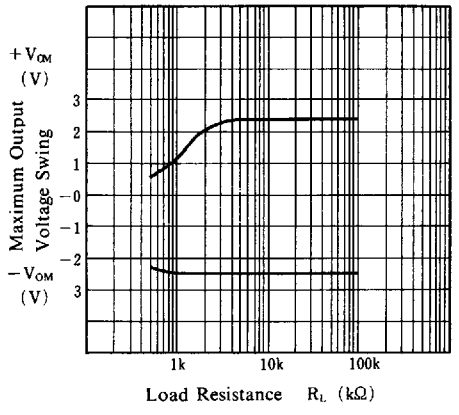
Equivalent Input Noise Voltage vs. Source Resistance

($V^+/V^-=\pm3V$, Ta=25°C)



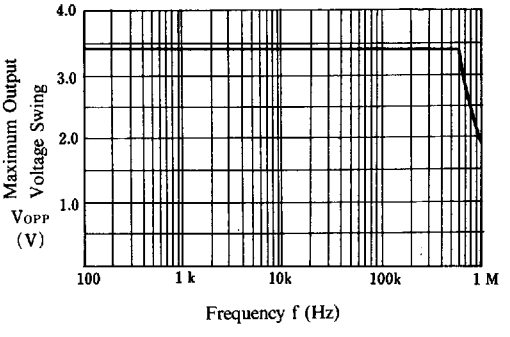
Maximum Output Voltage Swing vs. Load Resistance

($V^+/V^-=\pm2.5V$, Ta=25°C)



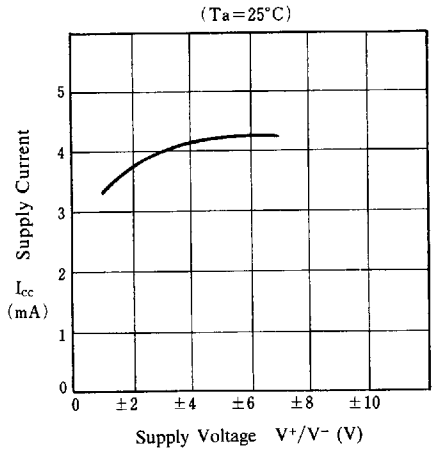
Maximum Output Voltage Swing vs. Frequency

($V^+/V^-=\pm2.5V$, $R_L=2.5k\Omega$, Ta=25°C)

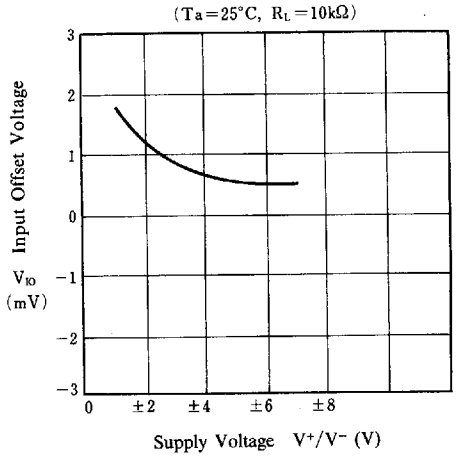


■ Typical Characteristics

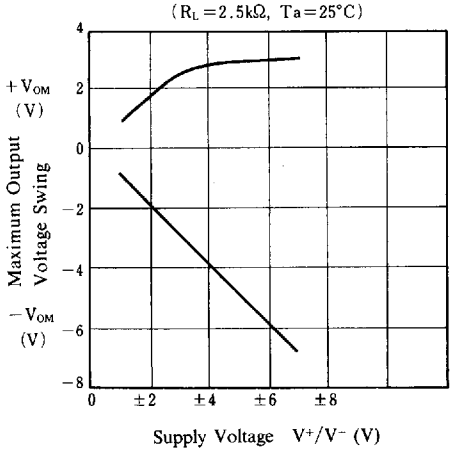
Supply Current vs. Supply Voltage



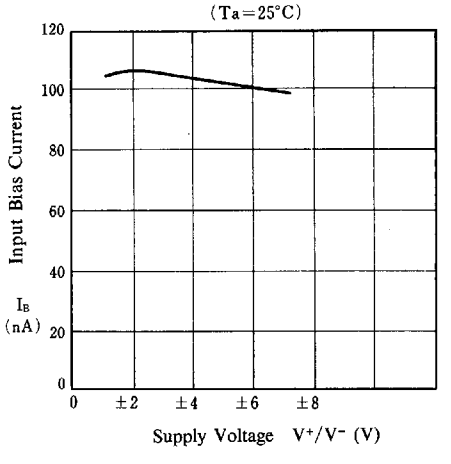
Input Offset Voltage vs. Supply Voltage



Maximum Output Voltage Swing vs. Supply Voltage



Input Bias Current vs. Supply Voltage



4