



# NJM2068

## ■ ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V <sup>+</sup> /V	±18	V
Differential Input Voltage Range	V <sub>ID</sub>	±30	V
Common Mode Input Voltage Range	V <sub>IC</sub>	±15 (Note1)	V
Power Dissipation	P <sub>D</sub>	DIP8: 500 DMP8: 300 SSOP8: 250 SIP8: 800	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

(Note1) For supply voltage less than ±15V, the absolute maximum input voltage is equal to supply voltage.

## ■ RECOMMENDED OPERATING VOLTAGE(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sup>+</sup> /V		±4	-	±18	V

## ■ ELECTRICAL CHARACTERISTICS(V<sup>+</sup>/V=±15V, Ta=25°C, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	R <sub>S</sub> ≤10kΩ	-	0.3	3	mV
Input Offset Current	I <sub>IO</sub>		-	5	200	nA
Input Bias Current	I <sub>B</sub>		-	150	1000	nA
Input Resistance	R <sub>IN</sub>		50	300	-	kΩ
Voltage Gain	A <sub>V</sub>	R <sub>L</sub> ≥2kΩ, V <sub>O</sub> =±10V	90	120	-	dB
Maximum Output Voltage	V <sub>OM</sub>	R <sub>L</sub> ≥2kΩ	±12	±13.5	-	V
Common Mode Input Voltage	V <sub>ICM</sub>		±12	±13.5	-	V
Common Mode Rejection Ratio	CMR	R <sub>S</sub> ≤10kΩ	80	110	-	dB
Supply Voltage Rejection Ratio	SVR	R <sub>S</sub> ≤10kΩ	80	120	-	dB
Slew Rate	SR	R <sub>L</sub> ≥2kΩ	-	6	-	V/μs
Gain Bandwidth Product1	G <sub>B1</sub>	f=10kHz	-	27	-	MHz
Gain Bandwidth Product2	G <sub>B2</sub>	f=100kHz	-	19	-	MHz
Unity Gain Frequency	f <sub>T</sub>	A <sub>V</sub> =1	-	5.5	-	MHz
Total Harmonic Distortion	THD	A <sub>V</sub> =20dB, V <sub>O</sub> =5V, R <sub>L</sub> =2kΩ, f=1kHz	-	0.001	-	%
Equivalent Input Noise Voltage	V <sub>NI</sub>	FLAT+JIS A, R <sub>S</sub> =300Ω	-	0.44	0.56	μV
Supply Current	I <sub>CC</sub>		-	5	8	mA

## ■ ELECTRICAL CHARACTERISTICS (D-Rank type(Note2), V<sup>+</sup>/V=±15V, Ta=25°C, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Equivalent Input Noise Voltage	V <sub>NI</sub>	RIAA, R <sub>S</sub> =2.2kΩ	-	-	1.4	μV

(Note2)D-rank type is a Equivalent Input Noise Voltage selected product. It s only DIP, DMP and SIP package.

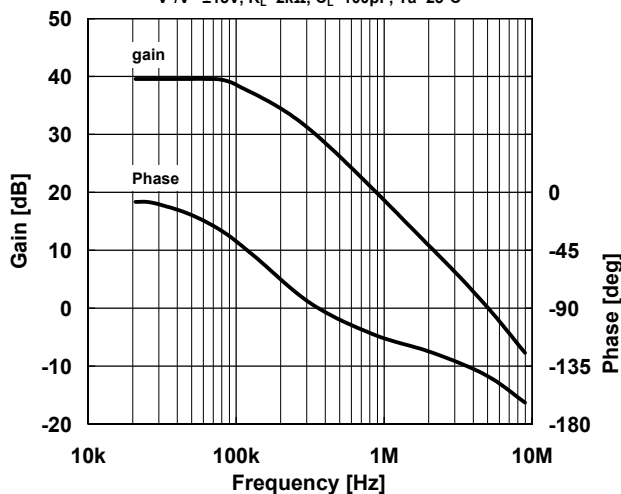
## ■ NOTICE

Oscillation might be caused when capacitor type load were connected. It is recommendable to insert series resistor (about 50Ω) at the output for preventing oscillation.

## ■ TYPICAL CHARACTERISTICS

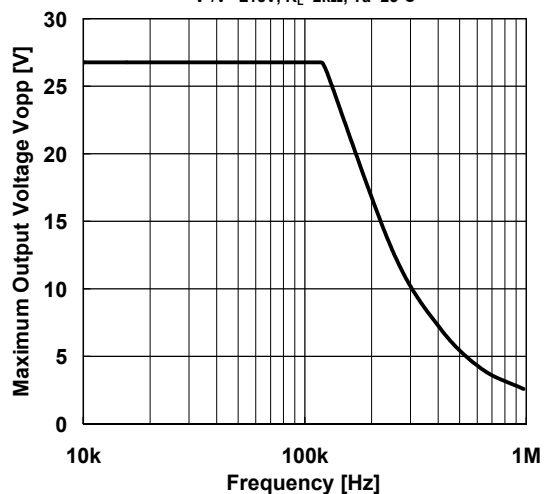
**40dB Gain/Phase vs. Frequency**

$V^+ / V^- = \pm 15V, R_L = 2k\Omega, C_L = 100pF, T_a = 25^\circ C$



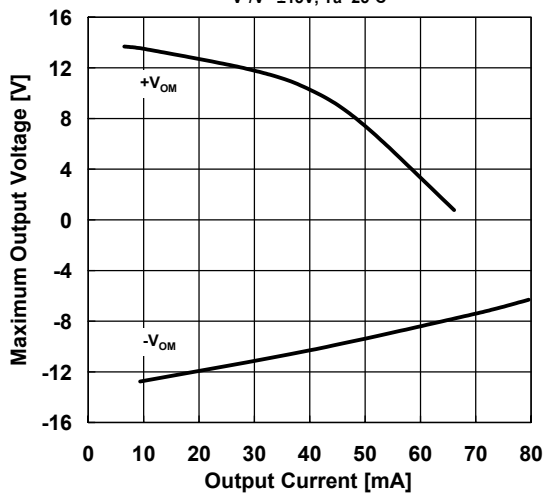
**Maximum Output Voltage vs. Frequency**

$V^+ / V^- = \pm 15V, R_L = 2k\Omega, T_a = 25^\circ C$



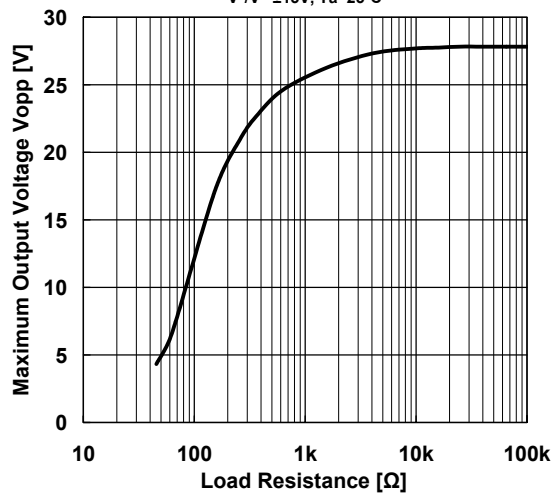
**Maximum Output Voltage vs. Output Current**

$V^+ / V^- = \pm 15V, T_a = 25^\circ C$



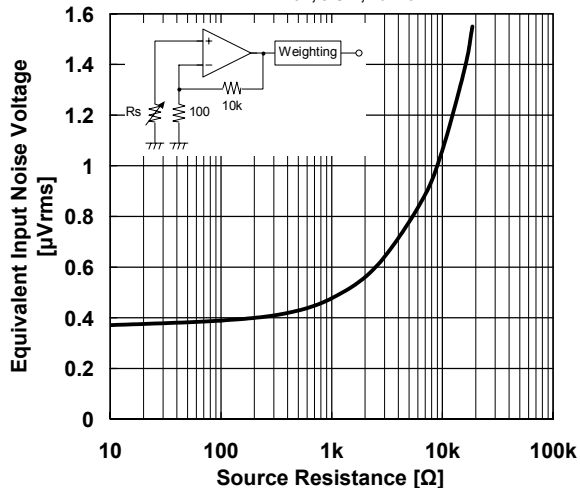
**Maximum Output Voltage vs. Load Resistance**

$V^+ / V^- = \pm 15V, T_a = 25^\circ C$



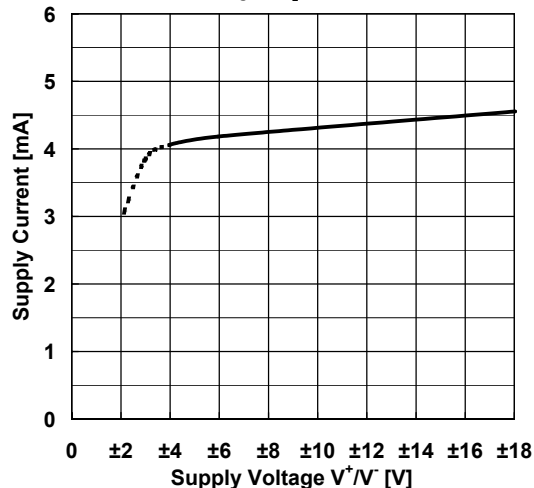
**Voltage Noises. Source Resistance**

$V^+ / V^- = \pm 15V, JIS A, T_a = 25^\circ C$



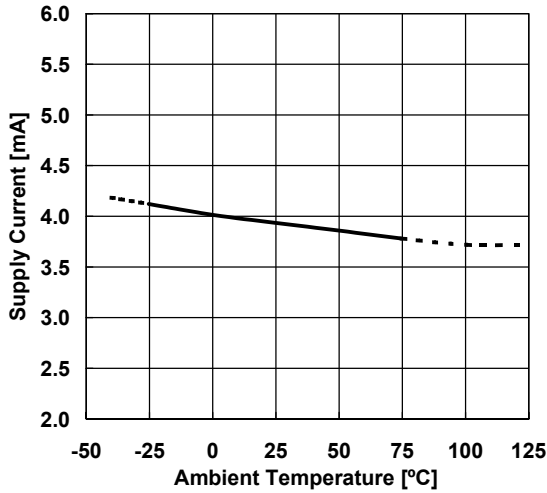
**Supply Current vs. Supply Voltage**

No Signal,  $R_L = \infty, T_a = 25^\circ C$

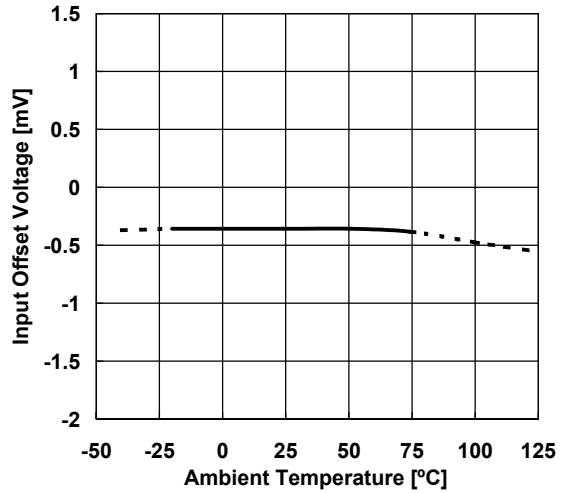


## ■ TYPICAL CHARACTERISTICS

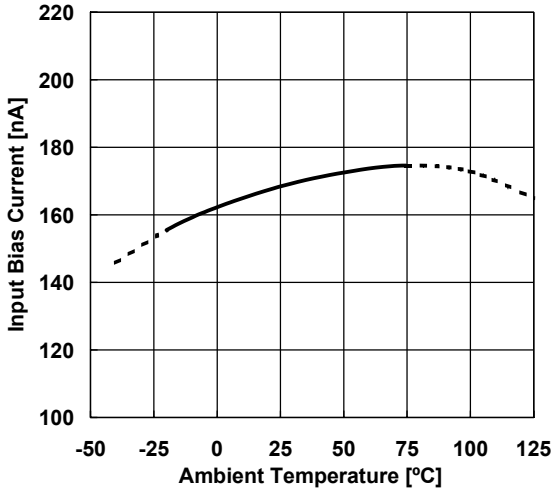
Supply Current vs. Temperature  
 $V^+/V^-=\pm 15V$



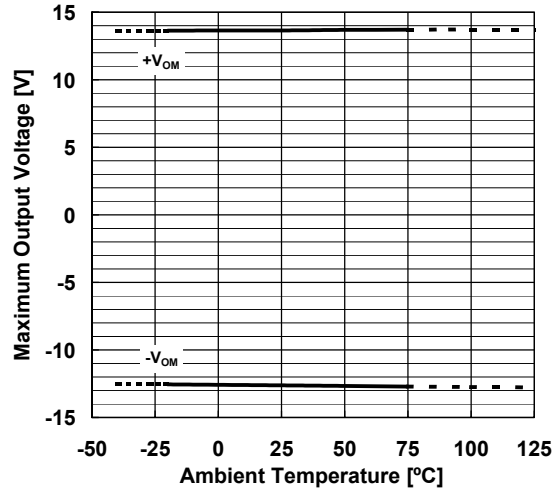
Input Offset Voltage vs. Temperature  
 $V^+/V^-=\pm 15V$



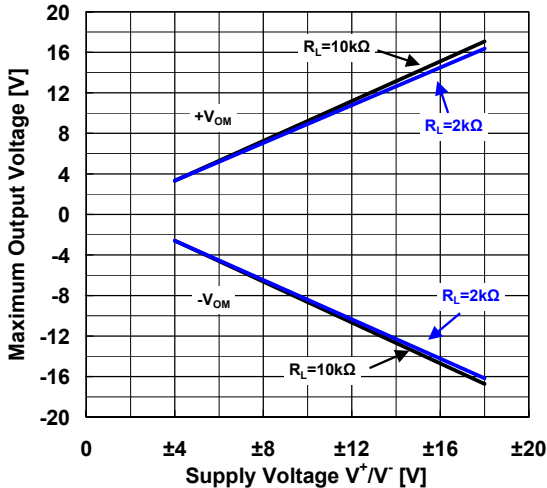
Input Bias Current vs. Temperature  
 $V^+/V^-=\pm 15V$



Maximum Output Voltage vs. Temperature  
 $V^+/V^-=\pm 15V, R_L=2k\Omega$

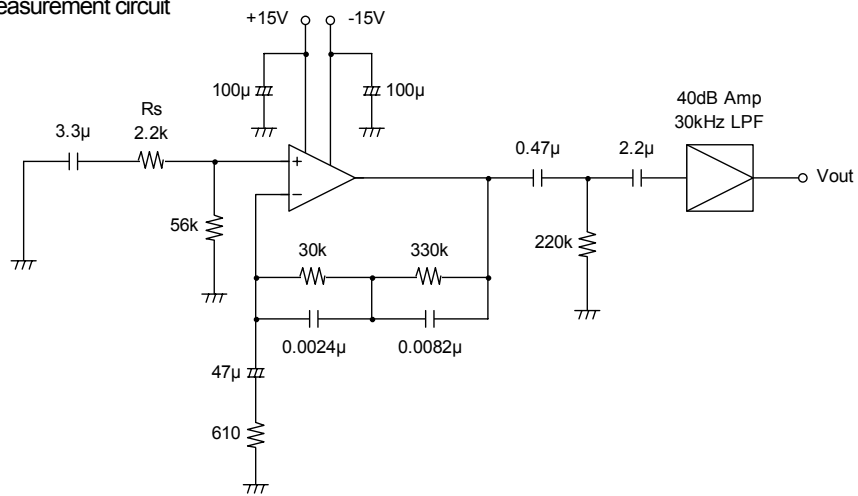


Maximum Output Voltage vs. Supply Voltage  
 $T_a=25^\circ C$



## ■ TEST CIRCUIT



Noise Voltage (RIAA) measurement circuit









[CAUTION]  
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