

## DUAL SINGLE-SUPPLY OPERATIONAL AMPLIFIER

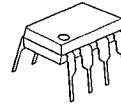
### ■ GENERAL DESCRIPTION

NJM 2119 is a ultra-low input offset voltage and bias current, low drift and single supply dual operational amplifier. NJM2119 is suitable for a high accurated instrumental amplifier and sensor amplifier.

### ■ FEATURES

- Single Supply
- Operating Voltage (4V ~ +36V)
- Low Input Offset Voltage (90  $\mu$ V Typ.)
- Low Input Bias Current (18nA Typ.)
- Low Input Offset Voltage Drift (4.0  $\mu$ V/ $^{\circ}$ C Typ.)
- Package Outline .DIP8, DMP8
- Bipolar Technology

### ■ PACKAGE OUTLINE

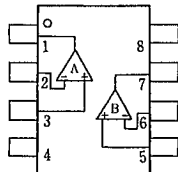


NJM2119D



NJM2119M

### ■ PIN CONFIGURATION


 NJM2119D  
 NJM2119M

### PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V<sup>-</sup>
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. V<sup>+</sup>

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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*(V+/V-)	36(±18)	V
Differential Input Voltage	V <sub>ID</sub>	-0.3~+36	V
Input Voltage	V <sub>IC</sub>	+36 (note)	V
Power Dissipation	P <sub>D</sub>	(DIP8) 700	mW
		(DMP8) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-30~+85	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

(note) For supply voltage less than ±18V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

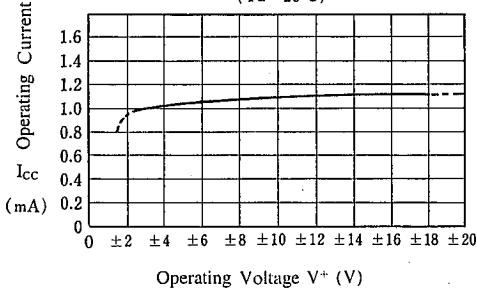
(V+=5.0V, Ta=25±2°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	R <sub>S</sub> ≤ 50Ω	—	90	450	μV
V <sub>IO</sub> Drift	ΔV <sub>IO</sub> /ΔT	T <sub>a</sub> =-30~+85°C	—	4.0	—	μV/°C
Input Offset Current	I <sub>IO</sub>		—	0.3	7.0	nA
Input Bias Current	I <sub>B</sub>		—	18	50	nA
Operating Current	I <sub>CC</sub>	R <sub>L</sub> = ∞	—	1.0	1.5	mA
Input Common Mode Voltage Range	V <sub>ICM</sub>		0~3.5	—	—	V
Common Mode Rejection Ratio	CMR		85	100	—	dB
Supply Voltage Rejection Ratio	SVR		85	100	—	dB
Large Signal Voltage Gain	A <sub>V</sub>	R <sub>L</sub> = 600Ω	90	105	—	dB
Maximum Output Voltage Swing 1	+V <sub>OM1</sub>	R <sub>L</sub> = 600Ω	3.4	4.0	—	V
Maximum Output Voltage Swing 1	-V <sub>OM1</sub>	R <sub>L</sub> = 600Ω	—	5.0	10.0	mV
Maximum Output Voltage Swing 2	-V <sub>OM2</sub>	I <sub>SINK</sub> = 1mA	—	220	350	mV
Slew Rate	SR	A <sub>V</sub> = 1	—	0.3	—	V/μs
Gain Bandwidth Product	GB		—	1.0	—	MHz

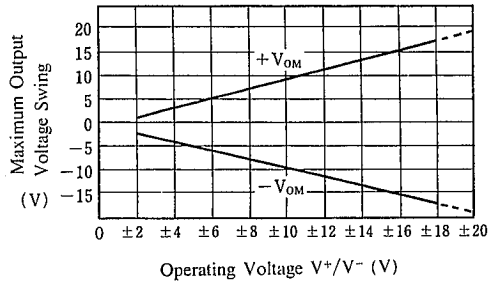
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## ■ TYPICAL CHARACTERISTICS

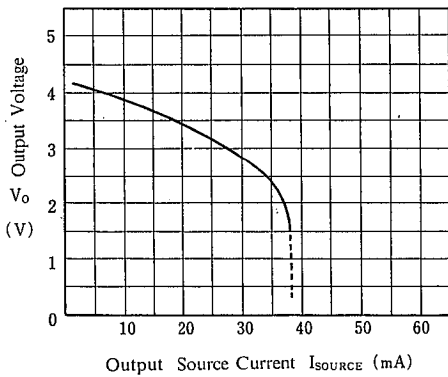
**Operating Current vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



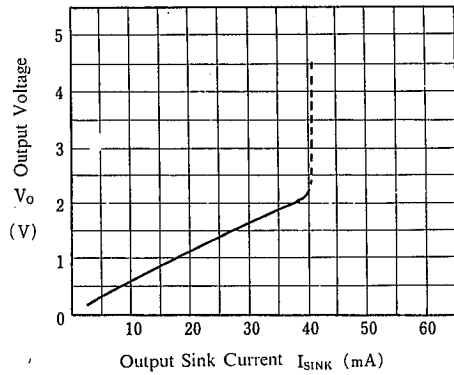
**Maximum Output Voltage Swing vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ ,  $R_L = 2\text{k}\Omega$ )



**Output Source Current**  
( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

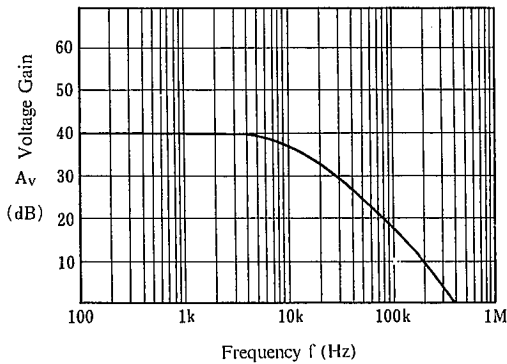


**Output Sink Current**  
( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )



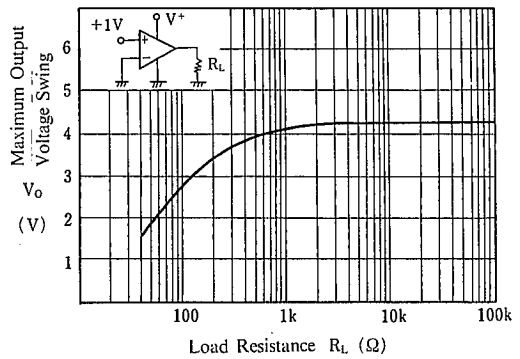
**Voltage Gain vs. Frequency**

( $V^+/V^- = \pm 2.5\text{V}$ ,  $R_L = 2\text{k}\Omega$ ,  $A_v = 40\text{dB}$ ,  $T_a = 25^\circ\text{C}$ )

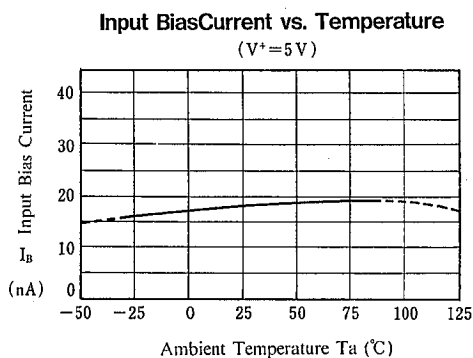
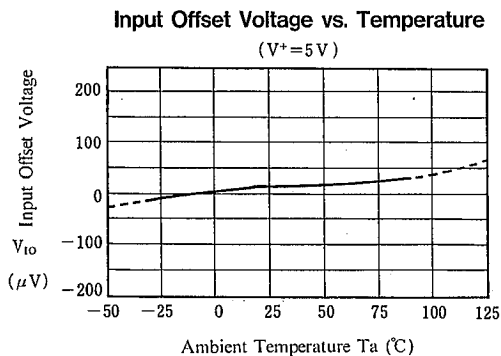
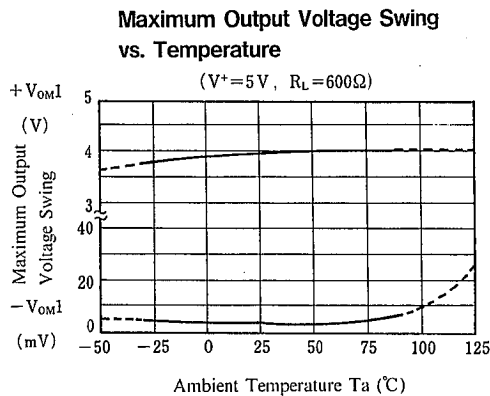
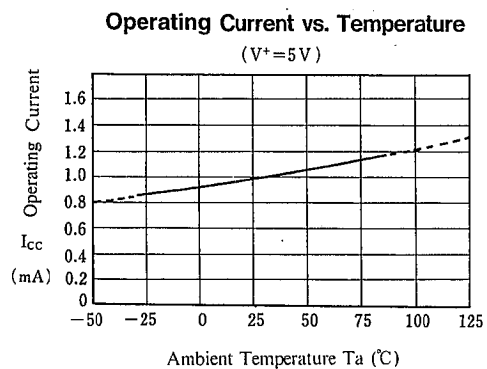


**Maximum Output Voltage Swing vs. Load Resistance**

( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )



■ TYPICAL CHARACTERISTICS



## MEMO

[CAUTION]

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