

## DUAL SINGLE-SUPPLY OPERATIONAL AMPLIFIER

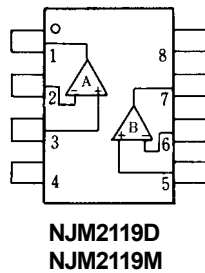
### ■ GENERAL DESCRIPTION

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

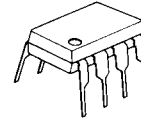
### ■ FEATURES

- 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

### ■ PIN CONFIGURATION



### ■ PACKAGE OUTLINE



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>

# NJM2119

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup> (V <sup>+</sup> /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 ( DMP8 ) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-40~+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.

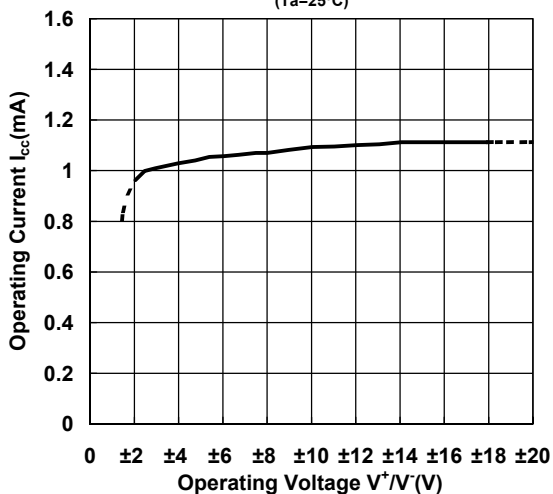
## ■ ELECTRICAL CHARACTERISTICS

( V<sup>+</sup>=5.0V, Ta=25±2°C )

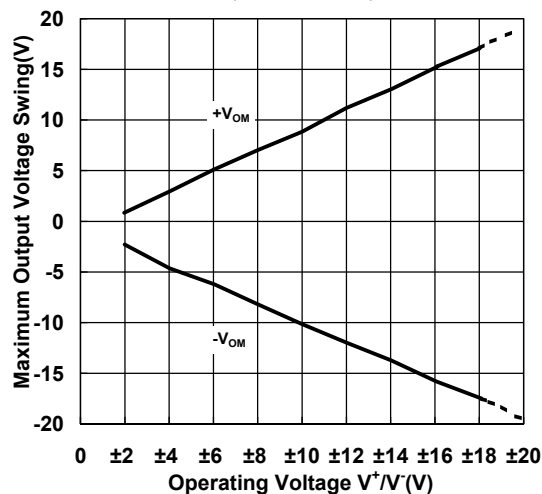
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	R <sub>S</sub> ≤50Ω	-	90	450	μV
V <sub>IO</sub> Drift	ΔV <sub>IO</sub> /ΔT	Ta=-30~+85°C	-	4.0	-	μV/°C
Input Offset Current	I <sub>IO</sub>		-	0.3	7.0	nA
Input Bias Current	I <sub>B</sub>		-	18	50	nA
Operating Current	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

## ■ TYPICAL CHARACTERISTICS

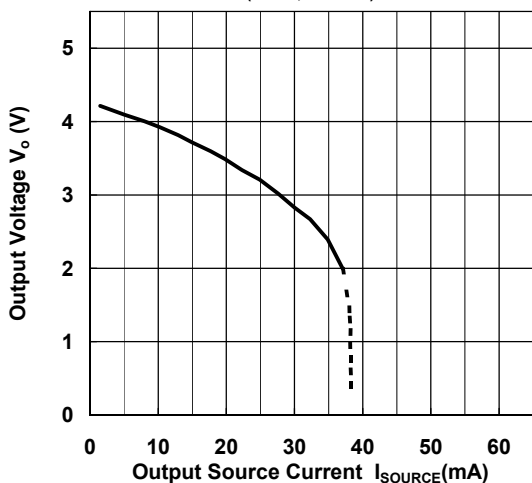
Operating Current vs. Operating Voltage  
( $T_a=25^\circ\text{C}$ )



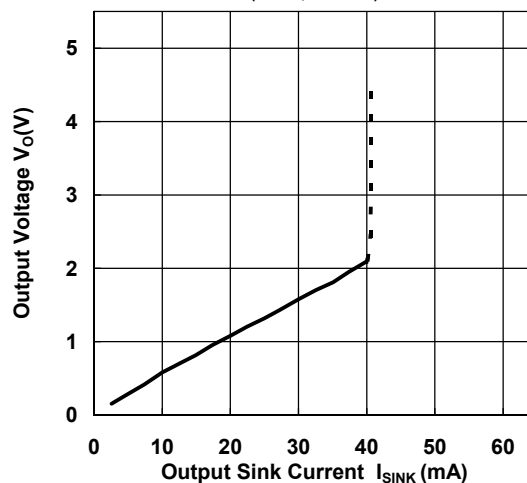
Maximum Output Voltage Swing vs. Operating Voltage  
( $T_a=25^\circ\text{C}$ ,  $R_L=2\text{k}\Omega$ )



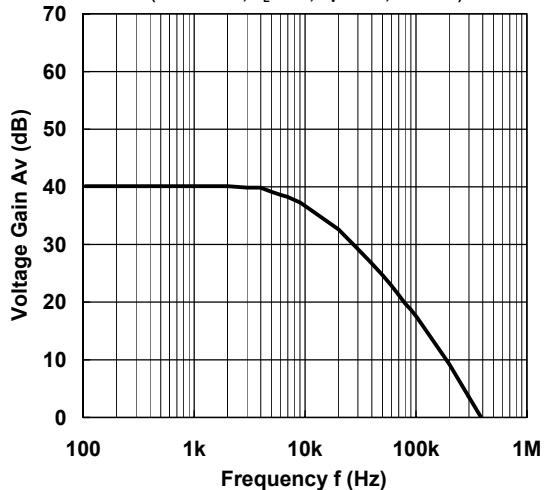
Output Source Current  
( $V^+=5\text{V}$ ,  $T_a=25^\circ\text{C}$ )



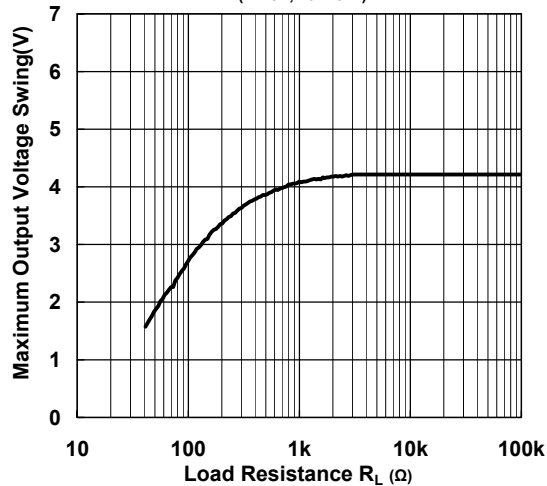
Output Sink Current  
( $V^+=5\text{V}$ ,  $T_a=25^\circ\text{C}$ )



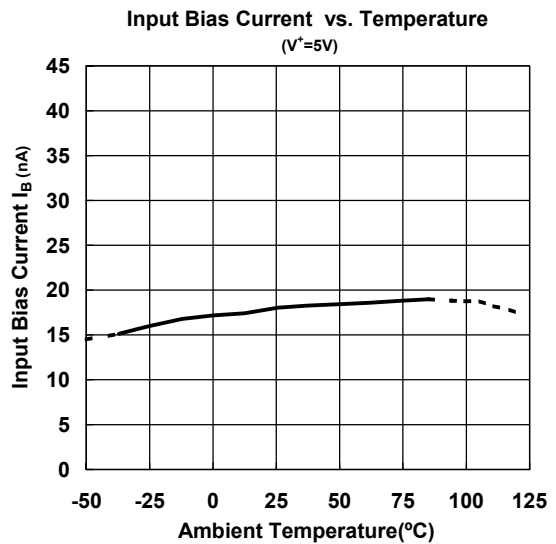
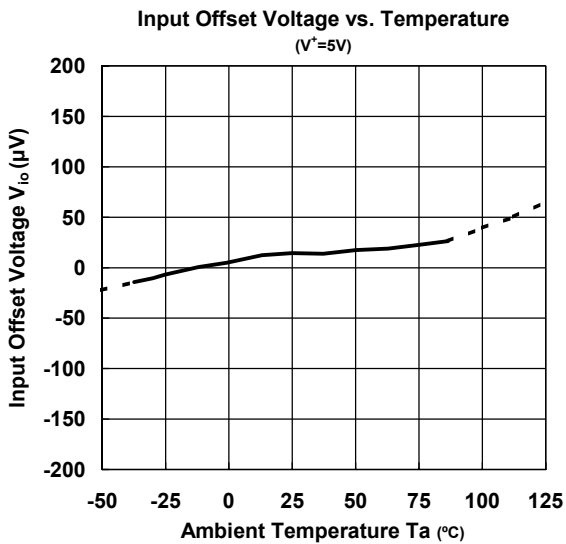
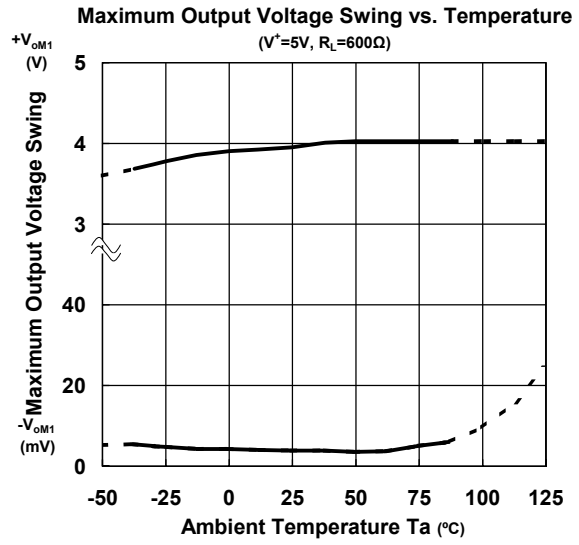
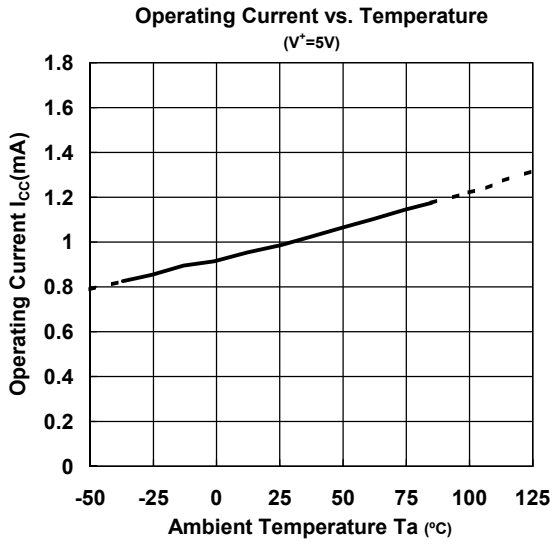
Voltage Gain vs. Frequency  
( $V^+/V^-=\pm 2.5\text{V}$ ,  $R_L=2\text{k}\Omega$ ,  $A_v=40\text{dB}$ ,  $T_a=25^\circ\text{C}$ )



Maximum Output Voltage Swing vs. Load Resistance  
( $V^+=5\text{V}$ ,  $T_a=25^\circ\text{C}$ )



## ■ TYPICAL CHARACTERISTICS



[CAUTION]  
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