

MICRO-POWER OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM4250 is extremely versatile programmable monolithic operational amplifiers. A single external master bias current setting resistor programs the input bias current, input offset current, quiescent power consumption, slew rate, input noise, and the gain-bandwidth product. The device is a truly general purpose operational amplifier.

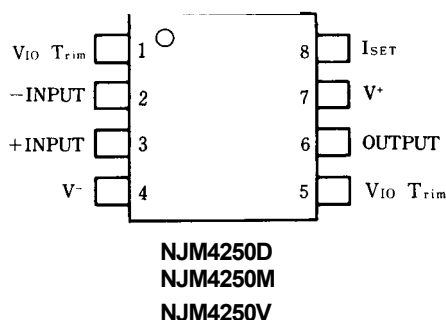
■ PACKAGE OUTLINE



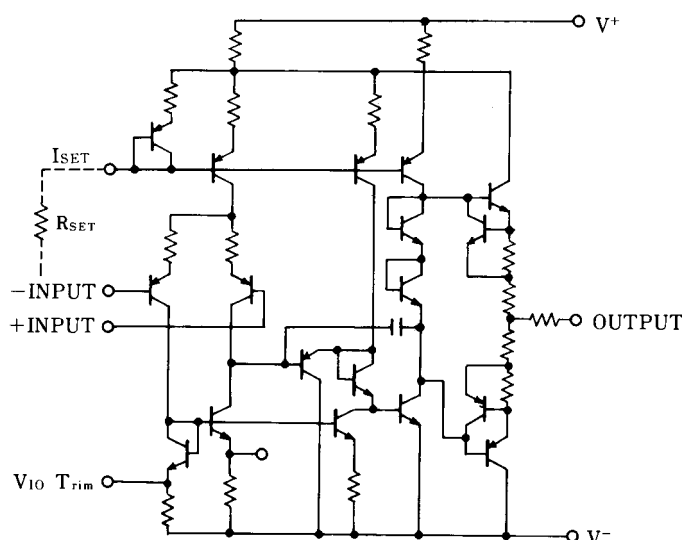
■ FEATURES

- Operating Voltage $(\pm 1V \sim \pm 18V)$
- Low Operating Current $(0.1mA \text{ max.})$
- Programmable monolithic OP-Amp
- Very Low Power Consumption
- Package Outline DIP8, DMP8, SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



NJM4250

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	± 18	V
Differential Input Voltage	V_{ID}	± 30	V
Input Voltage	V_{IC}	± 15 (note)	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (SSOP8) 250	mW
I_{SET} Current	I_{SET}	150	μA
Operating Temperature Range	T_{opr}	-20~+75	°C
Storage Temperature Range	T_{stg}	-40~+125	°C

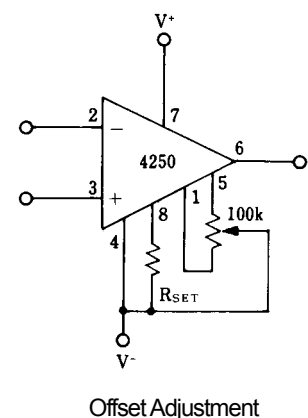
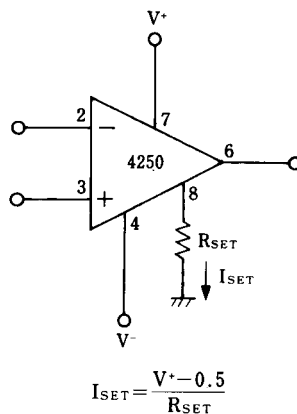
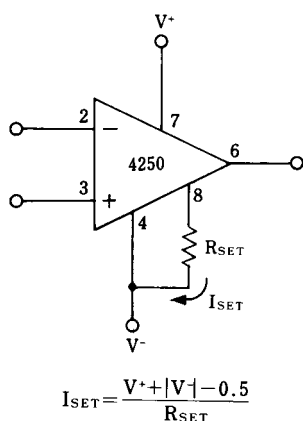
(note) For supply voltage less than $\pm 15V$, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, $V^+/V^-=\pm 15V$)

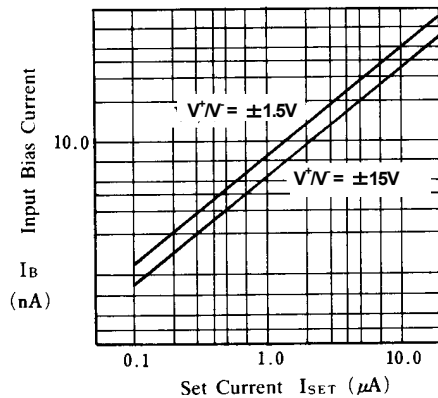
PARAMETER	SYMBOL	TEST CONDITION	$I_{SET}=1\mu A$		$I_{SET}=10\mu A$		UNIT
			MIN.	MAX.	MIN.	MAX.	
Input Offset Voltage 1	V_{IO1}	$R_S \leq 100k\Omega$	-	5	-	6	mV
Input Offset Voltage 2	V_{IO2}	$V^+/V^-=\pm 1.5V, R_S \leq 100k\Omega$	-	5	-	6	mV
Input Offset Current	I_{IO}		-	6	-	20	nA
Input Bias Current 1	I_{B1}		-	10	-	75	nA
Input Bias Current 2	I_{B2}	$V^+/V^-=\pm 1.5V$	-	10	-	75	nA
Large Signal Voltage Gain 1	A_{V1}	$V_O = \pm 10V, R_L \geq 100k\Omega$	96	-	-	-	dB
Large Signal Voltage Gain 2	A_{V2}	$V_O = \pm 10V, R_L \geq 10k\Omega$	-	-	96	-	dB
Operating Current 1	I_{CC1}		-	11	-	100	μA
Operating Current 2	I_{CC2}	$V^+/V^-=\pm 1.5V$	-	8	-	90	μA
Input Common Mode Voltage Range 1	V_{ICM1}		± 13.5	-	± 13.5	-	V
Input Common Mode Voltage Range 2	V_{ICM2}	$V^+/V^-=\pm 1.5V$	± 0.6	-	± 0.6	-	V
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geq 100k\Omega$	± 12	-	-	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$V^+/V^-=\pm 1.5V, R_L \geq 100k\Omega$	± 0.6	-	-	-	V
Maximum Output Voltage Swing 3	V_{OM3}	$R_L \geq 10k\Omega$	-	-	± 12	-	V
Maximum Output Voltage Swing 4	V_{OM4}	$V^+/V^-=\pm 1.5V, R_L \geq 10k\Omega$	-	-	± 0.6	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	70	-	70	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	74	-	74	-	dB

■ TYPICAL APPLICATION (I_{SET}, V_{IO} Adjustment)

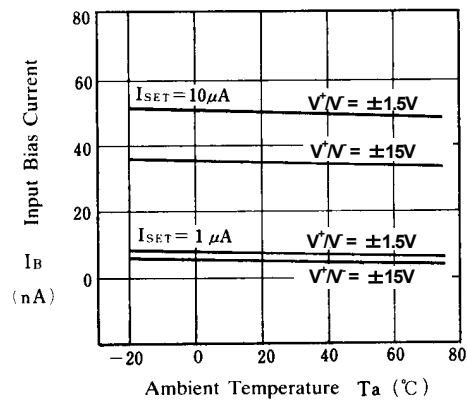


■ TYPICAL CHARACTERISTICS

Input Bias Current vs. Set Current
($T_a = 25^\circ\text{C}$)

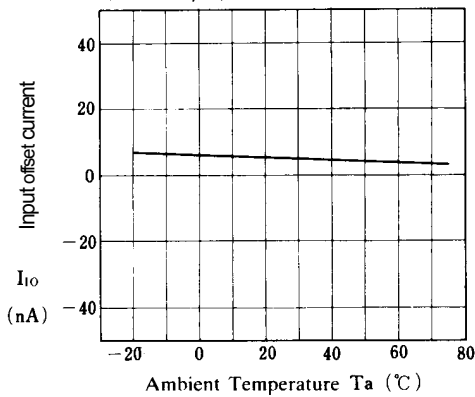


Input Bias Current vs. Temperature



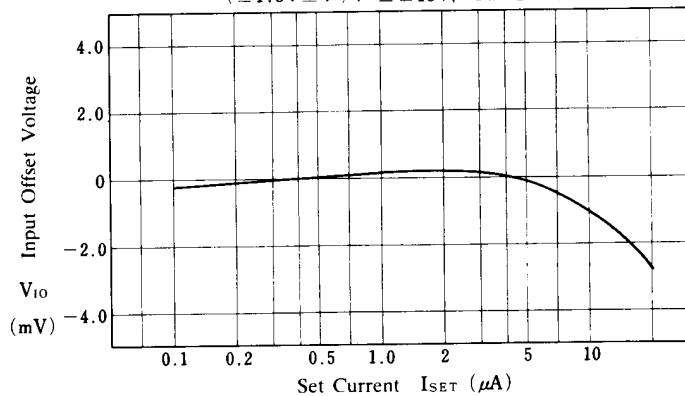
Input Offset Current vs. Ambient Temperature

($I_{SET} = 10\mu\text{A}$, $\pm 1.5\text{V} \leq V^+/V^- \leq \pm 15\text{V}$)



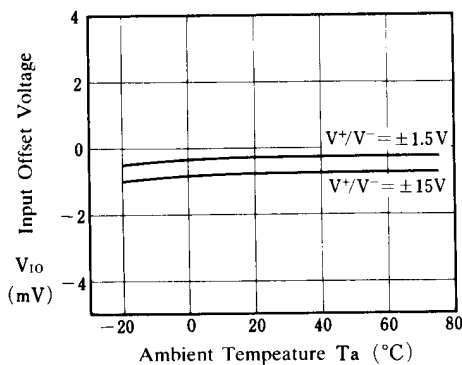
Input Offset Voltage vs. Set Current

($\pm 1.5\text{V} \leq V^+/V^- \leq \pm 15\text{V}$, $T_a = 25^\circ\text{C}$)



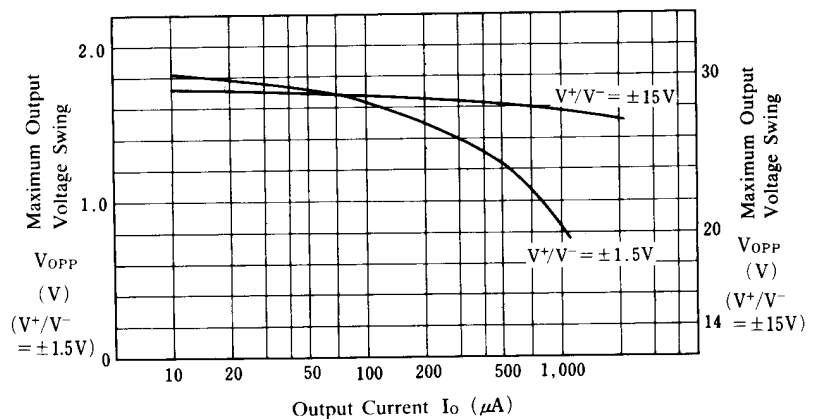
Input Offset Voltage vs. Ambient Temperature

($I_{SET} = 10\mu\text{A}$)

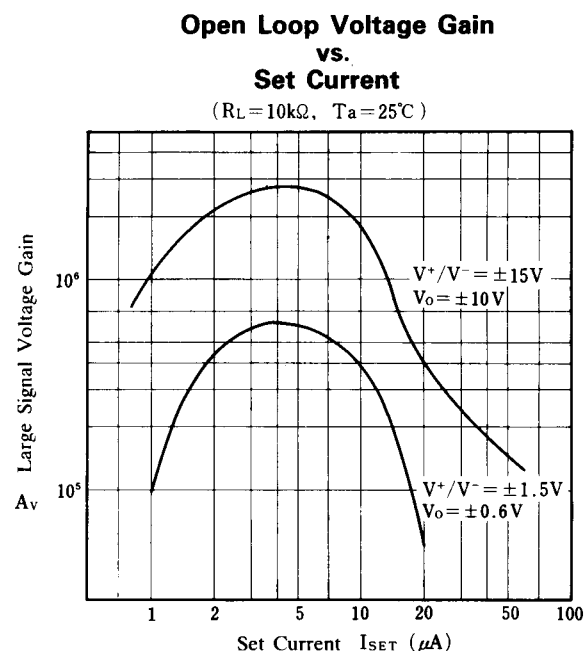
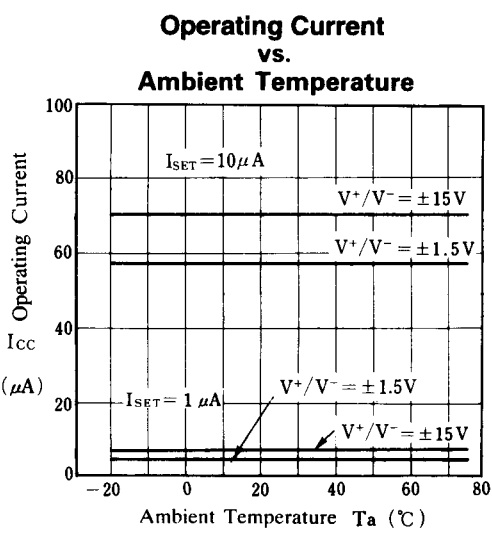
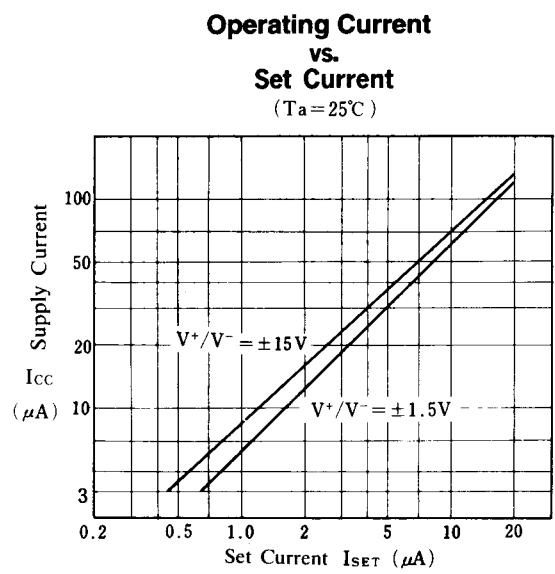
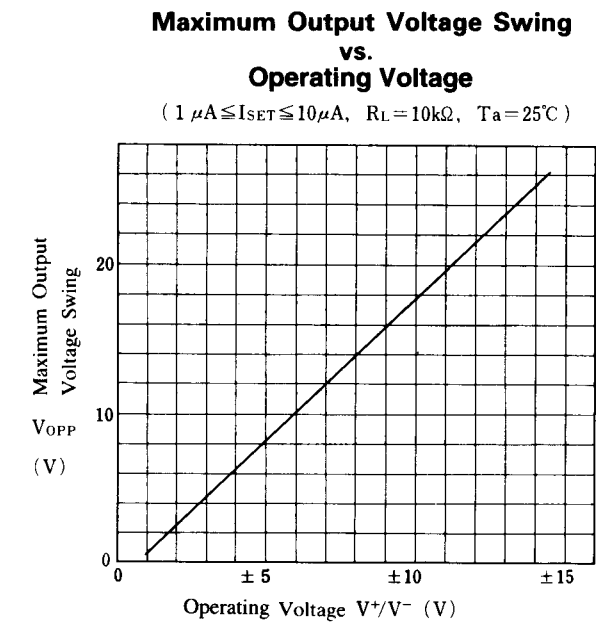


Maximum Output Voltage Swing vs. Output Current

($I_{SET} = 10\mu\text{A}$, $T_a = 25^\circ\text{C}$)

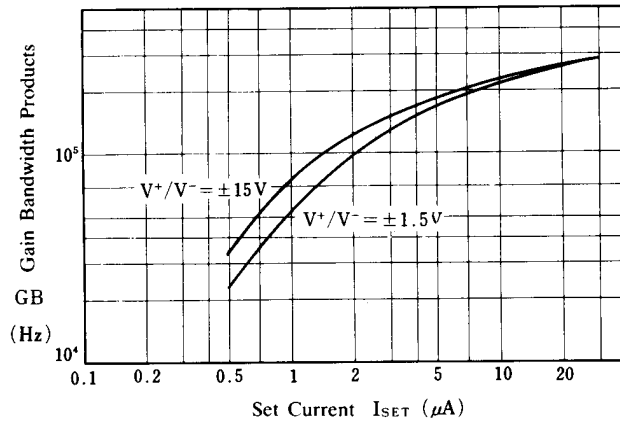


■ TYPICAL CHARACTERISTICS

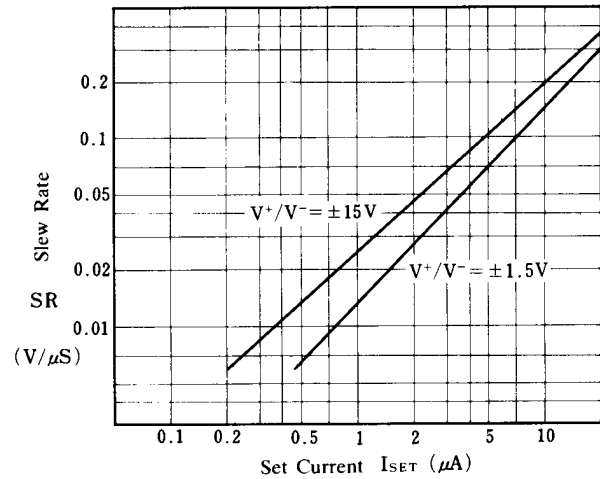


■ TYPICAL CHARACTERISTICS

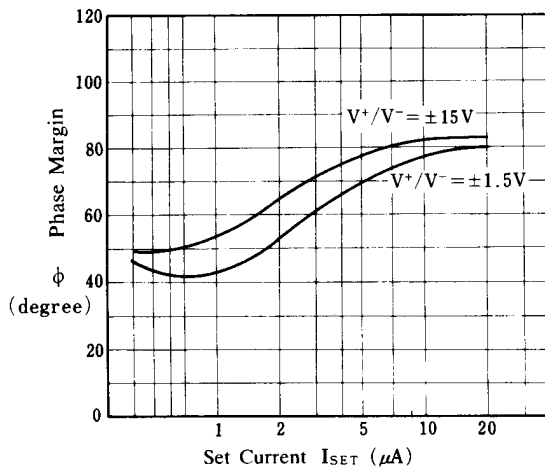
**Gain Bandwidth Product
Vs.
Set Current**
($T_a = 25^\circ\text{C}$)



**Slew Rate
vs.
Set Current**
($R_L = 10\text{k}\Omega$, $T_a = 25^\circ\text{C}$)

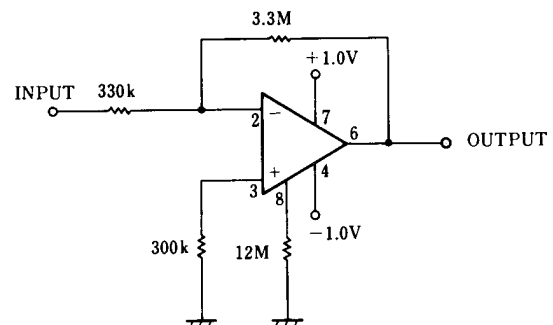


**Phase Margin
vs.
Set Current**



■ TYPICAL APPLICATIONS

Micro-power 10times Inverting Amplifier



[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Nisshinbo Micro Devices:

[NJM4250M-TE2](#) [NJM4250V-TE1](#) [NJM4250V-TE2](#) [NJM4250E](#)