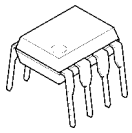
MICRO-POWER OPERATIONAL AMPLIFIER

■ 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



NJM4250D

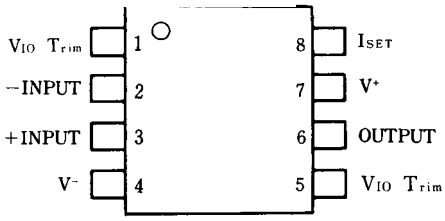
NJM4250M

NJM4250V

■ FEATURES

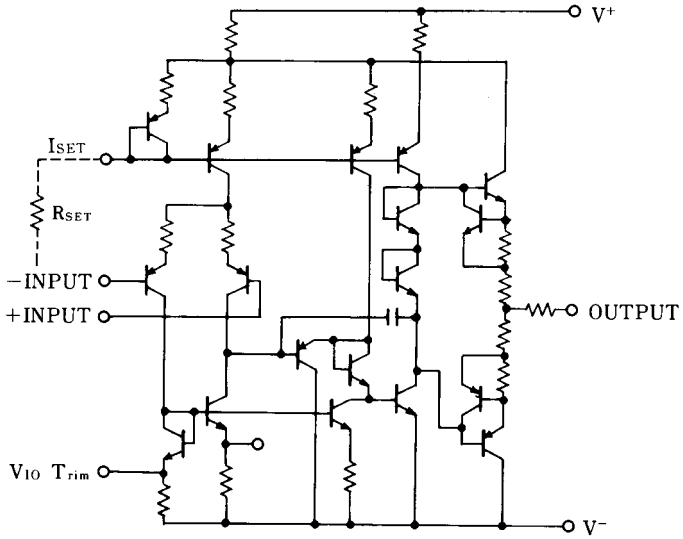
- Operating Voltage (±1V~±18V)
- Low Operating Current (0.1mA max.)
- Programmable monolithic OP-Amp
- Very Low Power Consumption
- Package Outline DIP8,DMP8,SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



NJM4250D
NJM4250M
NJM4250V

■ EQUIVALENT CIRCUIT



■ 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

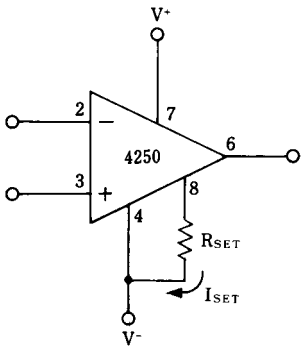
(note) For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

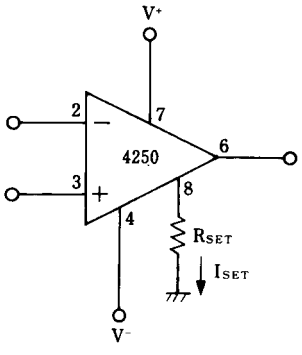
(Ta=25°C, V^+/V^-=±15V)

PARAMETER	SYMBOL	TEST CONDITION	I_{SET}=1μA		I_{SET}=10μA		UNIT
			MIN.	MAX.	MIN.	MAX.	
Input Offset Voltage 1	V_{IO1}	R_S≦100kΩ	-	5	-	6	mV
Input Offset Voltage 2	V_{IO2}	V^+/V^-=±1.5V, R_S≦100kΩ	-	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^-=±1.5V	-	10	-	75	nA
Large Signal Voltage Gain 1	A_{V1}	V_O=± 10V, R_L≧100kΩ	96	-	-	-	dB
Large Signal Voltage Gain 2	A_{V2}	V_O=± 10V, R_L≧10kΩ	-	-	96	-	dB
Operating Current 1	I_{CC1}		-	11	-	100	μA
Operating Current 2	I_{CC2}	V^+/V^-=±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^-=±1.5V	± 0.6	-	± 0.6	-	V
Maximum Output Voltage Swing 1	V_{OM1}	R_L≧100kΩ	± 12	-	-	-	V
Maximum Output Voltage Swing 2	V_{OM2}	V^+/V^-=±1.5V, R_L≧100kΩ	± 0.6	-	-	-	V
Maximum Output Voltage Swing 3	V_{OM3}	R_L≧10kΩ	-	-	± 12	-	V
Maximum Output Voltage Swing 4	V_{OM4}	V^+/V^-=±1.5V, R_L≧10kΩ	-	-	± 0.6	-	V
Common Mode Rejection Ratio	CMR	R_S≦10kΩ	70	-	70	-	dB
Supply Voltage Rejection Ratio	SVR	R_S≦10kΩ	74	-	74	-	dB

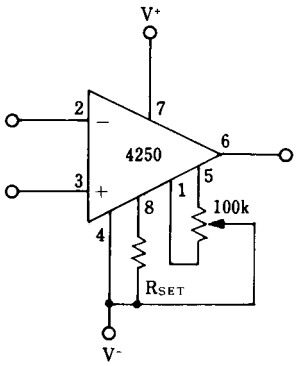
■ TYPICAL APPLICATION (I_{SET}, V_{IO} Adjustment)



$$I_{SET}=\frac{V^+ + |V^-| - 0.5}{R_{SET}}$$



$$I_{SET}=\frac{V^+ - 0.5}{R_{SET}}$$

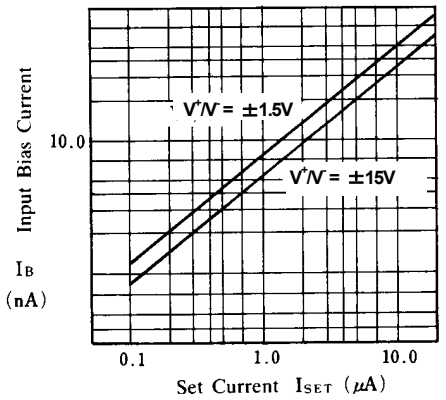


Offset Adjustment

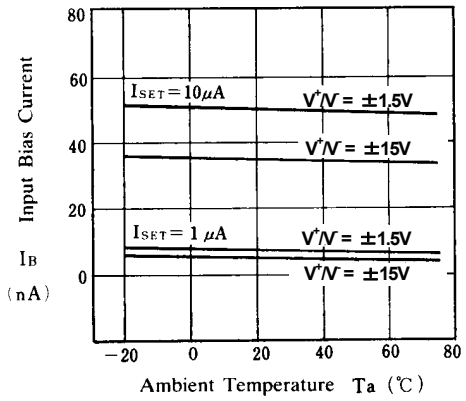
■ TYPICAL CHARACTERISTICS

Input Bias Current vs. Set Current

(Ta=25℃)

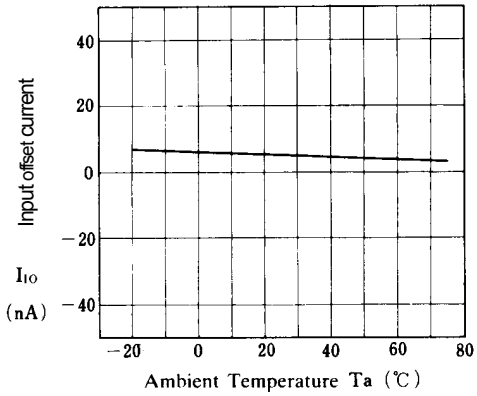


Input Bias Current vs. Temperature



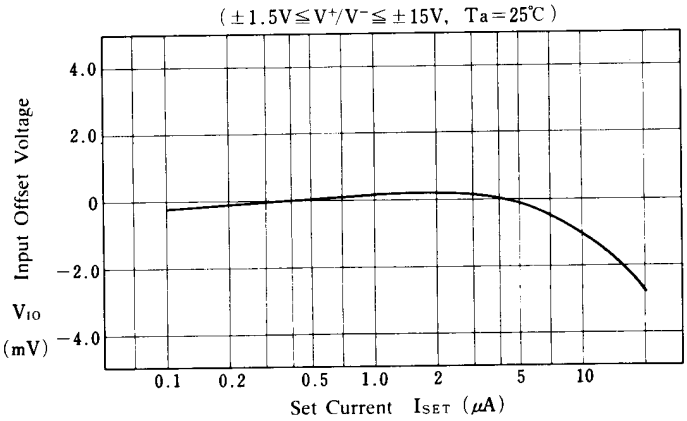
Input Offset Current vs. Ambient Temperature

(ISET=10μA, ±1.5V≦V+/V-≦±15V)



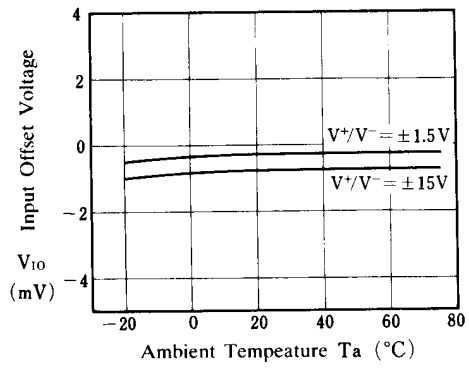
Input Offset Voltage vs. Set Current

(±1.5V≦V+/V-≦±15V, Ta=25℃)



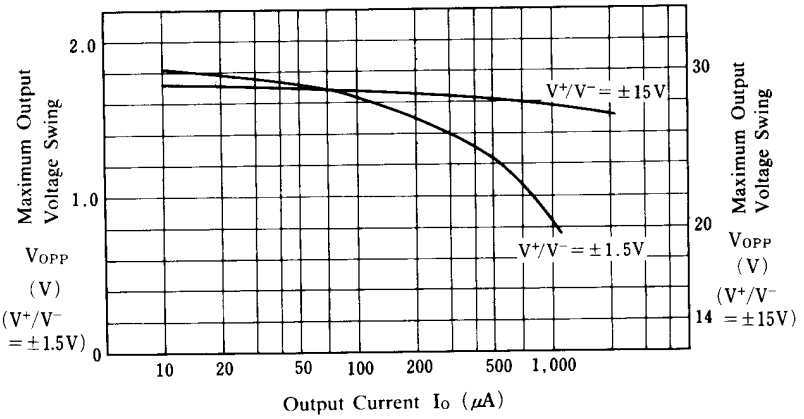
Input Offset Voltage vs. Ambient Temperature

(ISET=10μA)



Maximum Output Voltage Swing vs. Output Current

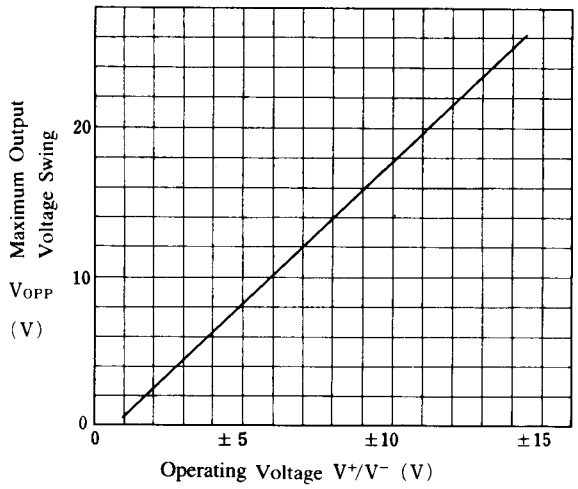
(ISET=10μA, Ta=25℃)



■ TYPICAL CHARACTERISTICS

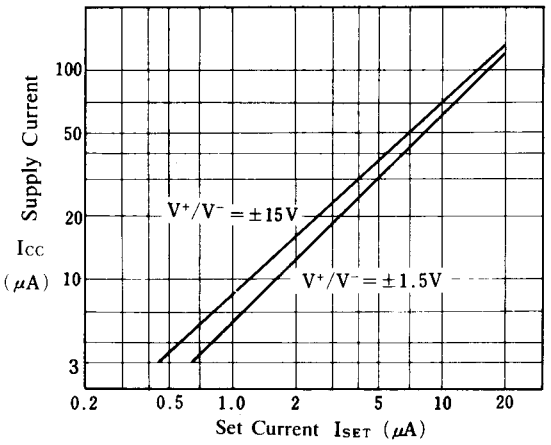
Maximum Output Voltage Swing vs. Operating Voltage

(1 μA≦ISET≦10μA, RL=10kΩ, Ta=25℃)

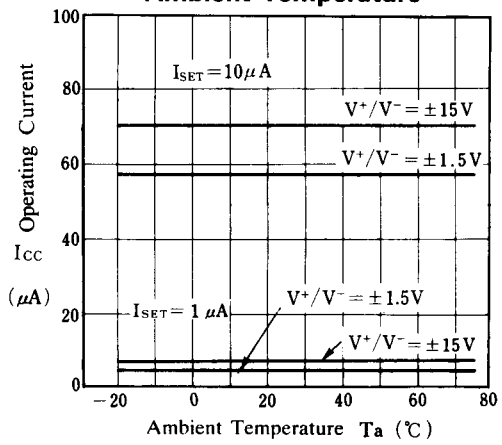


Operating Current vs. Set Current

(Ta=25℃)

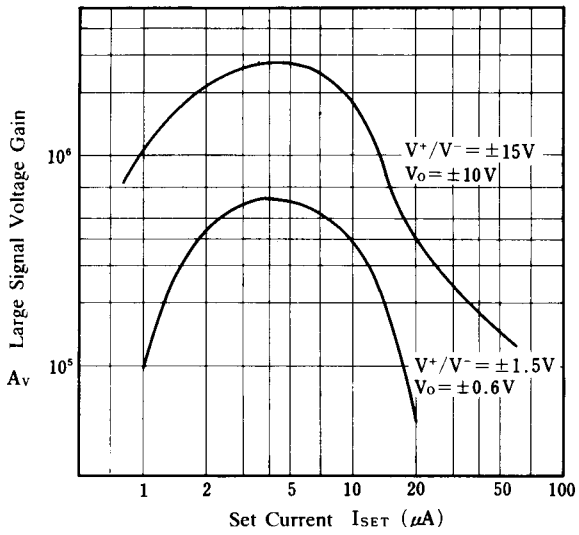


Operating Current vs. Ambient Temperature



Open Loop Voltage Gain vs. Set Current

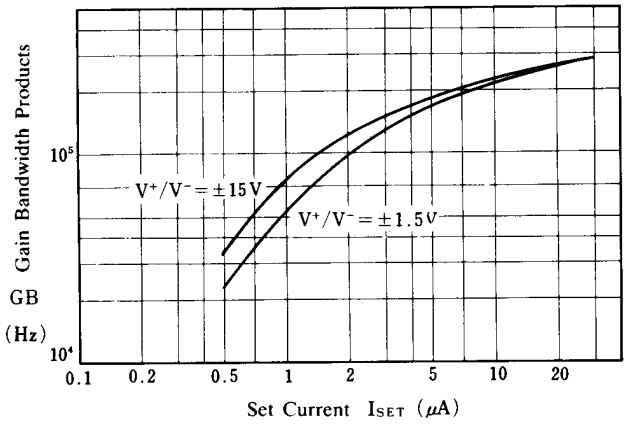
(RL=10kΩ, Ta=25℃)



■ TYPICAL CHARACTERISTICS

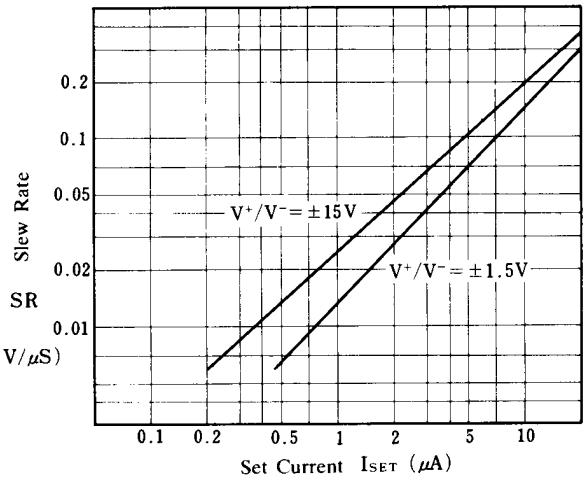
Gain Bandwidth Product Vs. Set Current

(Ta=25℃)

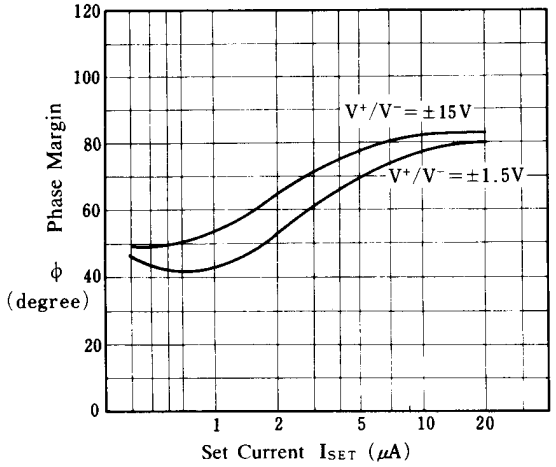


Slew Rate vs. Set Current

(R_L=10kΩ, Ta=25℃)

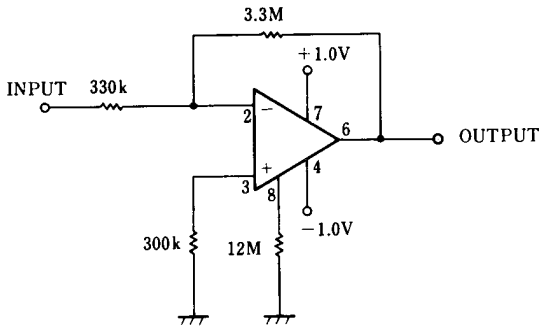


Phase Margin vs. Set Current



■ TYPICAL APPLICATIONS

Micro-power 10times Inverting Amplifier



[CAUTION]
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