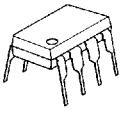
NJM4250

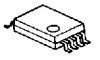
The NJM4250 is extremely versatile programmable monolithic operational amplifiers. A single external master bias current setting resistor programs the input bias current, input offset current, quiescent power consumption, slew rate, input noise, and the gain-bandwidth product. The device is a truly general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

■ Package Outline



NJM4250D

NJM4250M



NJM4250V

■ Absolute Maximum Ratings (Ta=25°C)

Supply Voltage	V^+/V^-	±18V
Differential Input Voltage	V_{ID}	±30V
Input Voltage(note)	V_{IC}	±15V
Power Dissipation	P_D(D-Type)	500mW
	(M-Type)	300mW
	(V-Type)	250mw
Set Current	I_{SET}	150μA
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.

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■ 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_{IO} 1	R_S≦100kΩ	—	5	—	6	mV
Input Offset Voltage 2	V_{IO} 2	V^+/V^-=±1.5V, R_S≦100kΩ	—	5	—	6	mV
Input Offset Current	I_{IO}		—	6	—	20	nA
Input Bias Current 1	I_B 1		—	10	—	75	nA
Input Bias Current 2	I_B 2	V^+/V^-=±1.5V	—	10	—	75	nA
Large Signal Voltage Gain 1	Av 1	V_o=±10V, R_L≧100kΩ	96	—	—	—	dB
Large Signal Voltage Gain 2	Av 2	V_o=±10V, R_L≧10kΩ	—	—	96	—	dB
Supply Current 1	I_{CC} 1		—	11	—	100	μA
Supply Current 2	I_{CC} 2	V^+/V^-=±1.5V	—	8	—	90	μA
Input Common Mode Voltage Range 1	V_{ICM} 1		±13.5	—	±13.5	—	V
Input Common Mode Voltage Range 2	V_{ICM} 2	V^+/V^-=±1.5V	±0.6	—	±0.6	—	V
Maximum Output Voltage Swing 1	V_{OM} 1	R_L≧100kΩ	±12	—	—	—	V
Maximum Output Voltage Swing 2	V_{OM} 2	V^+/V^-=±1.5V, R_L≧100kΩ	±0.6	—	—	—	V
Maximum Output Voltage Swing 3	V_{OM} 3	R_L≧10kΩ	—	—	±12	—	V
Maximum Output Voltage Swing 4	V_{OM} 4	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

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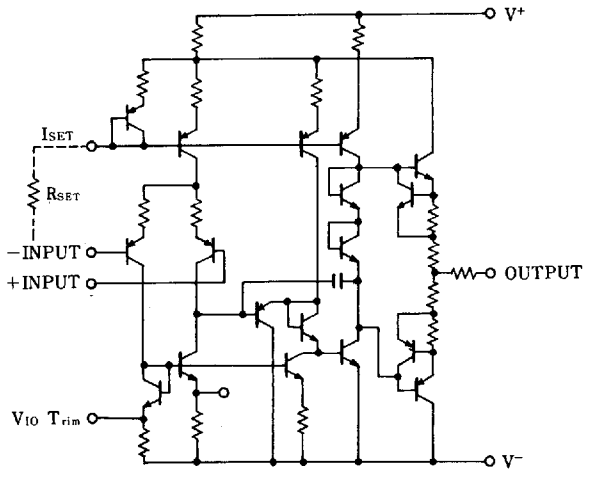
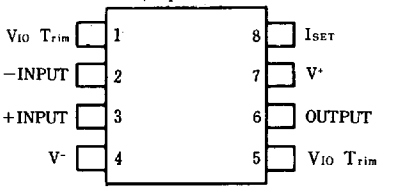
■ Equivalent Circuit



■ Connection Diagram

(D, M, V-Type)
(Top View)



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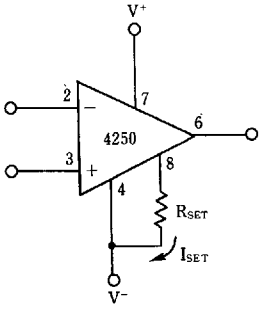
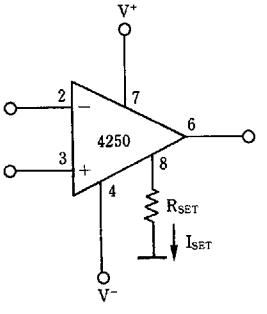
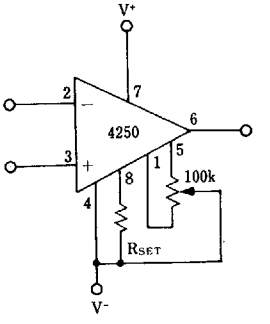
■ Typical Applications (I_{SET}, V_{IO} Adjustment)



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



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

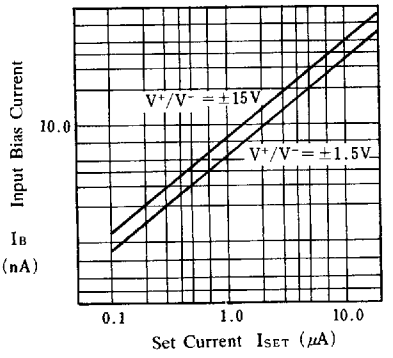


Offset Adjustment

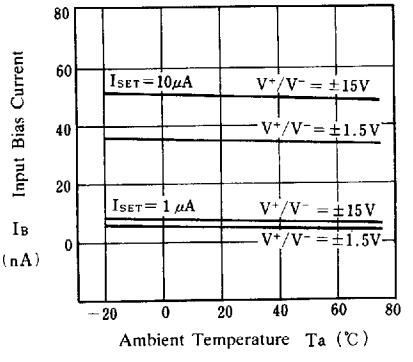
■ Typical Characteristics

Input Bias Current vs. Set Current

(Ta=25℃)



Input Bias Current vs. Temperature



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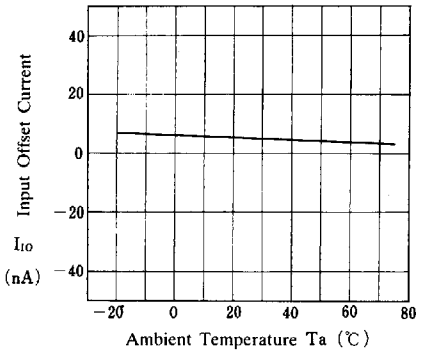
■ Typical Characteristics

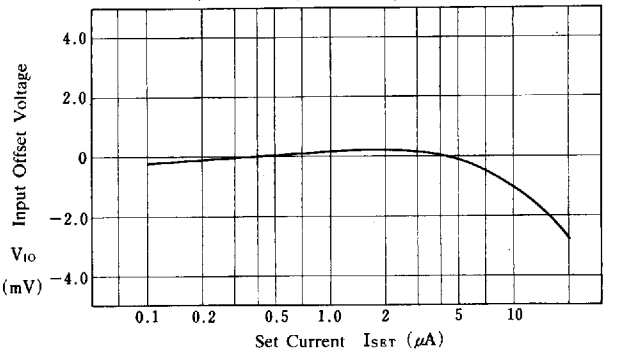
Input Offset Current vs. Ambient Temperature

(I_{SET}=10μA, ±1.5V≦V^+/V^-≦±15V)



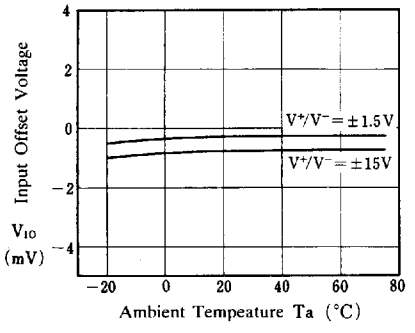
Input Offset Voltage vs. Set Current

(±1.5V≦V^+/V^-≦±15V, Ta=25℃)



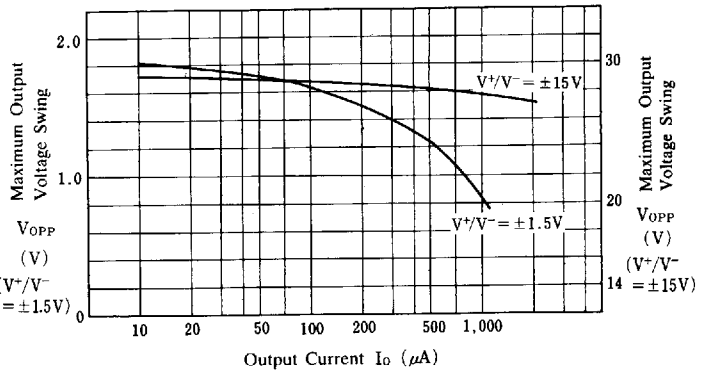
Input Offset Voltage vs. Ambient Temperature

(I_{SET}=10μA)



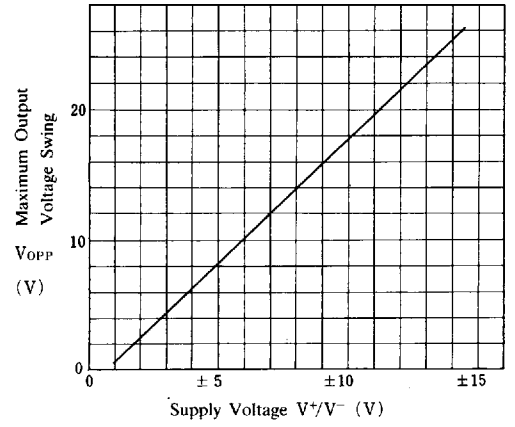
Maximum Output Voltage Swing vs. Output Current

(I_{SET}=10μA, Ta=25℃)



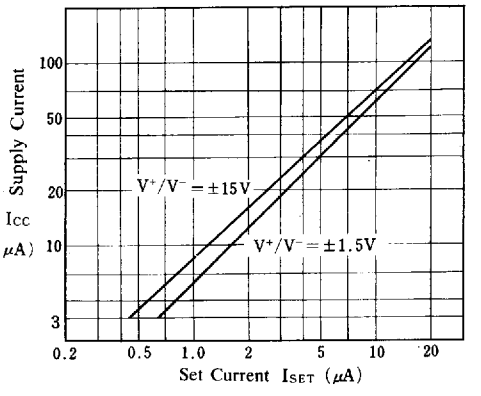
Maximum Output Voltage Swing vs. Supply Voltage

(1μA≦I_{SET}≦10μA, R_L=10kΩ, Ta=25℃)



Supply Current vs. Set Current

(Ta=25℃)



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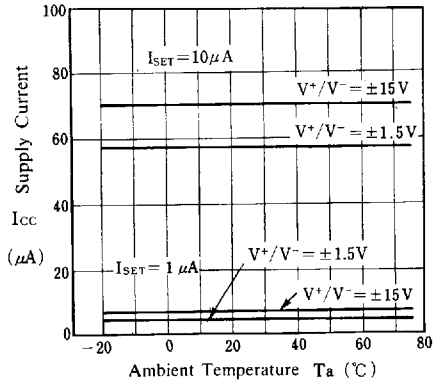
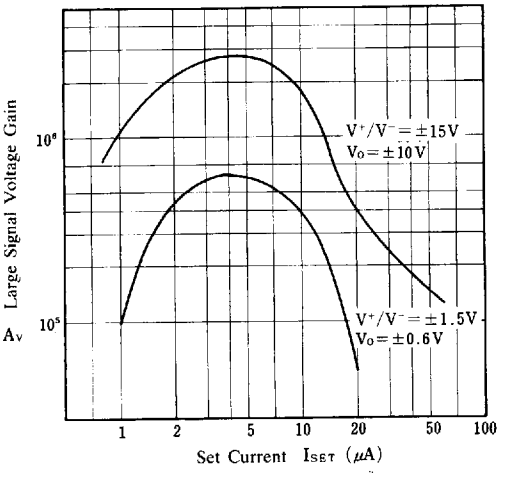
■ Typical Characteristics

Supply Current vs. Ambient Temperature



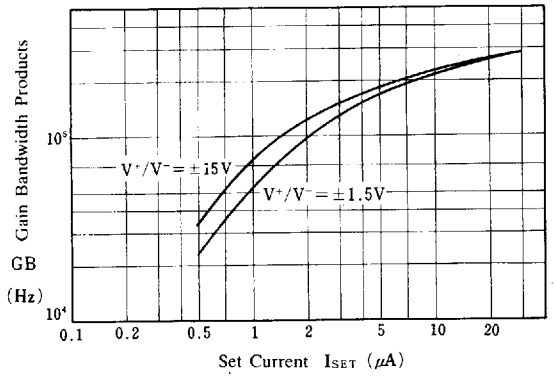
Open Loop Voltage Gain vs. Set Current

(RL=10kΩ, Ta=25℃)



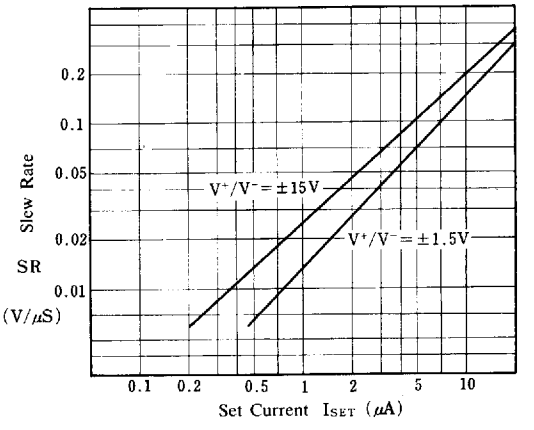
Gain Bnadwidth Product vs. Set Current

(Ta=25℃)

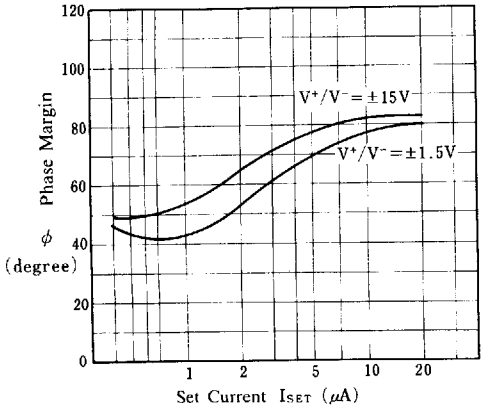


Slew Rate vs. Set Current

(RL=10kΩ, Ta=25℃)

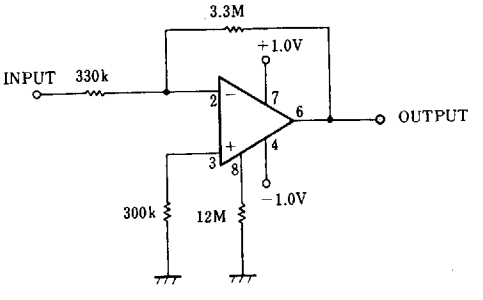


Phase Margin vs. Set Current



■ Typical Applications

500nW 10times Inverting Amplifier



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