# 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

■ Absolute Maximum Ratings (Ta=25℃)

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℃
Storage Temperature Range	T_{stg}	−40~+125℃

(note) For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
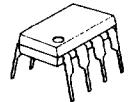
NJM4250D

NJM4250M
NJM4250E

NJM4250V

■ Electrical Characteristics (Ta=25℃ , $V^+/V^- = \pm 15V$)

Parameter	Symbol	Test Condition	$I_{SET}=1\mu A$ Min.	$I_{SET}=1\mu A$ Max.	$I_{SET}=10\mu A$ Min.	$I_{SET}=10\mu A$ Max.	Unit
Input Offset Voltage 1	$V_{IO}1$	$R_S \leqq 100k\Omega$	—	5	—	6	mV
Input Offset Voltage 2	$V_{IO}2$	$V^+/V^- = \pm 1.5V$, $R_S \leqq 100k\Omega$	—	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	$I_B 2$	$V^+/V^- = \pm 1.5V$	—	10	—	75	nA
Large Signal Voltage Gain 1	$Av 1$	$V_o = \pm 10V$, $R_L \geqq 100k\Omega$	96	—	—	—	dB
Large Signal Voltage Gain 2	$Av 2$	$V_o = \pm 10V$, $R_L \geqq 10k\Omega$	—	—	96	—	dB
Supply Current 1	$I_{CC} 1$		—	11	—	100	μA
Supply Current 2	$I_{CC} 2$	$V^+/V^- = \pm 1.5V$	—	8	—	90	μA
Input Common Mode Voltage Range 1	$V_{ICM} 1$		±13.5	—	±13.5	—	V
Input Common Mode Voltage Range 2	$V_{ICM} 2$	$V^+/V^- = \pm 1.5V$	±0.6	—	±0.6	—	V
Maximum Output Voltage Swing 1	$V_{OM} 1$	$R_L \geqq 100k\Omega$	±12	—	—	—	V
Maximum Output Voltage Swing 2	$V_{OM} 2$	$V^+/V^- = \pm 1.5V$, $R_L \geqq 100k\Omega$	±0.6	—	—	—	V
Maximum Output Voltage Swing 3	$V_{OM} 3$	$R_L \geqq 10k\Omega$	—	—	±12	—	V
Maximum Output Voltage Swing 4	$V_{OM} 4$	$V^+/V^- = \pm 1.5V$, $R_L \geqq 10k\Omega$	—	—	±0.6	—	V
Common Mode Rejection Ratio	CMR	$R_S \leqq 10k\Omega$	70	—	70	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leqq 10k\Omega$	74	—	74	—	dB

NJM4250

■ **Equivalent Circuit**
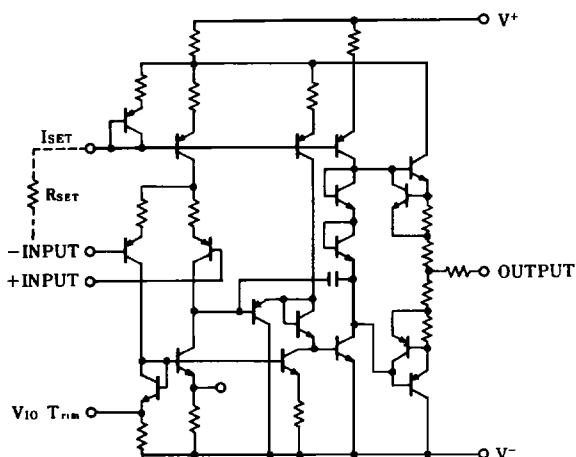
■ **Connection Diagram**

(D, M, V-Type)
(Top View)
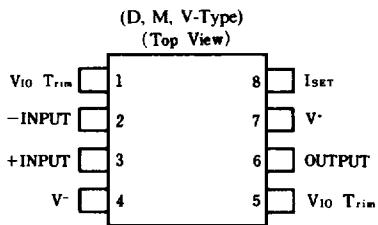
■ **Typical Applications** (I$_{SET}$, V$_{IO}$ Adjustment)
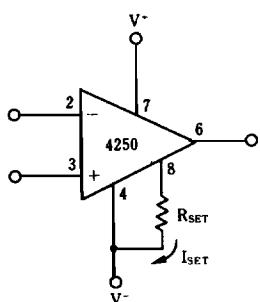
$$I_{SET} = \frac{V^+ + |V^-| - 0.5}{R_{SET}}$$
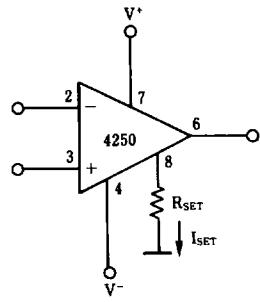
$$I_{SET} = \frac{V^+ - 0.5}{R_{SET}}$$
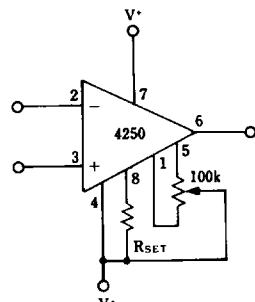

Offset Adjustment

■ **Typical Characteristics**

Input Bias Current vs. Set Current
(Ta = 25℃)
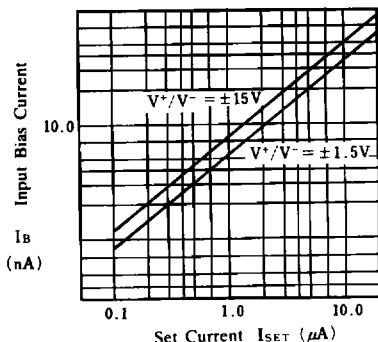
Input Bias Current vs. Temperature
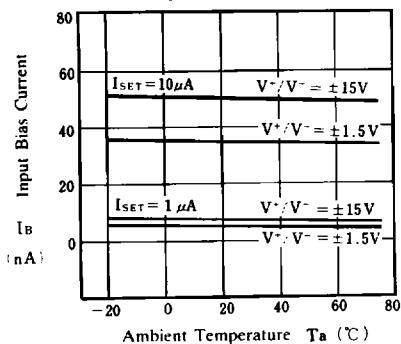
■ **Typical Characteristics**

Input Offset Current vs. Ambient Temperature
($I_{SET}=10\mu A$, $\pm 1.5V \leq V^+/V^- \leq \pm 15V$)
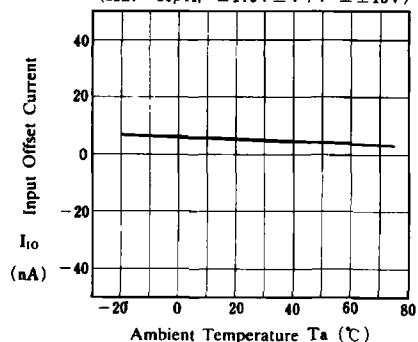
Input Offset Voltage vs. Set Current
($\pm 1.5V \leq V^+/V^- \leq \pm 15V$, $Ta=25°C$)
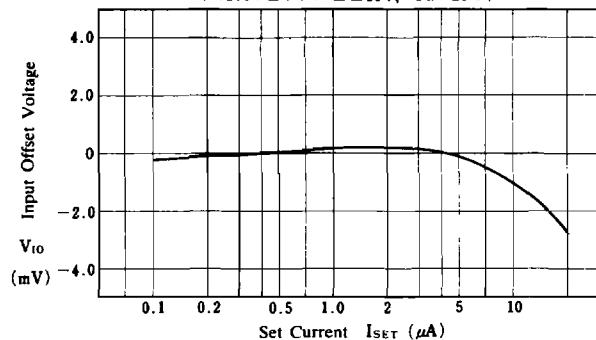
Input Offset Voltage vs. Ambient Temperature
($I_{SET}=10\mu A$)
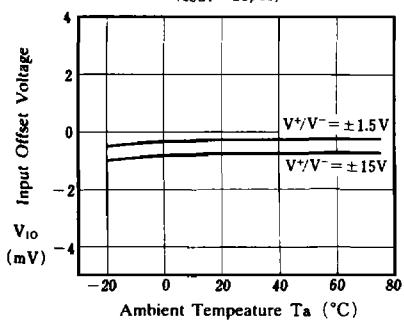
Maximum Output Voltage Swing vs. Output Current
($I_{SET}=10\mu A$, $Ta=25°C$)
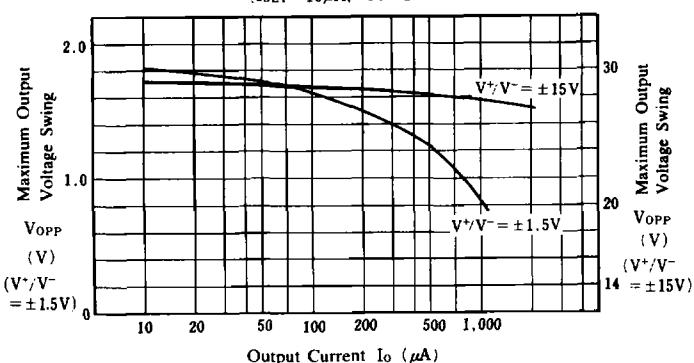
Maximum Output Voltage Swing vs. Supply Voltage
($1\mu A \leq I_{SET} \leq 10\mu A$, $R_L=10k\Omega$, $Ta=25°C$)
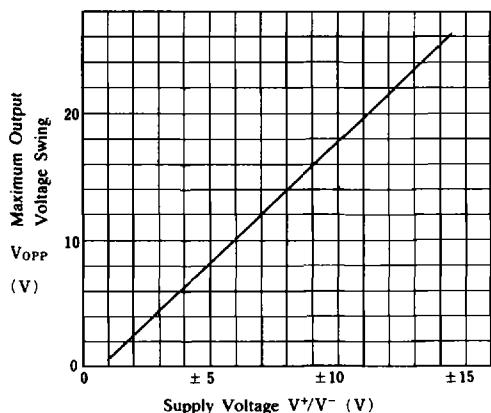
Supply Current vs. Set Current
($Ta=25°C$)

■ **Typical Characteristics**

Supply Current
vs.
Ambient Temperature

Open Loop Voltage Gain
vs.
Set Current
($R_L = 10k\Omega$, $Ta = 25°C$)

Gain Bnadwidth Product
vs.
Set Current
($Ta = 25°C$)

Slew Rate
vs.
Set Current
($R_L = 10k\Omega$, $Ta = 25°C$)

Phase Margin
vs.
Set Current
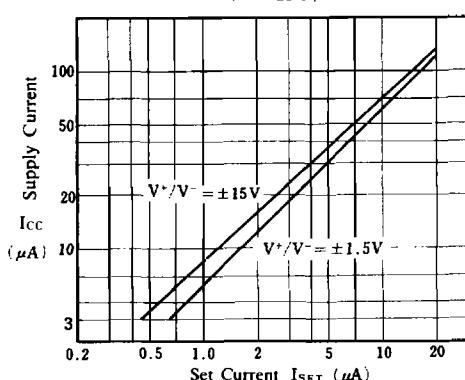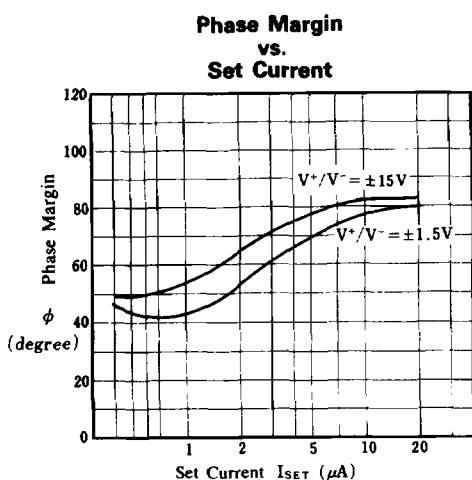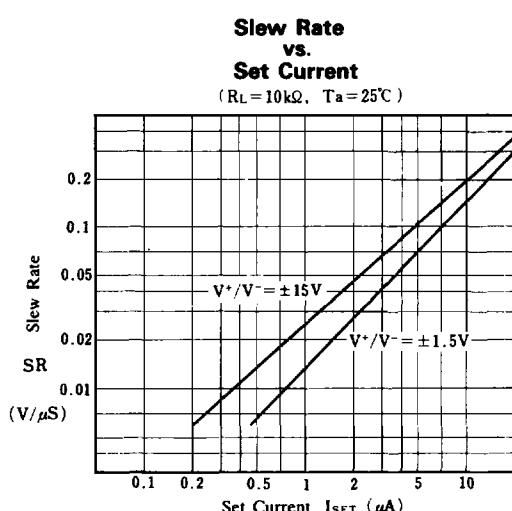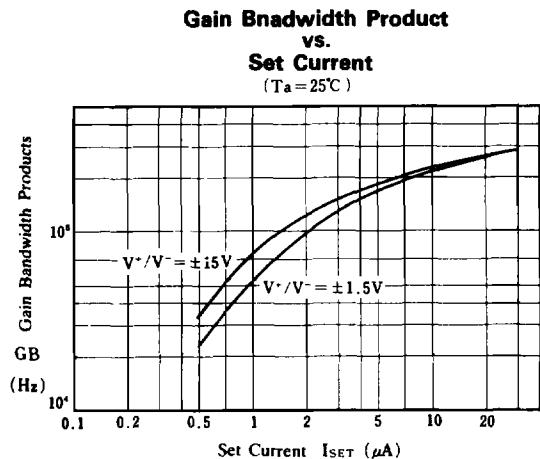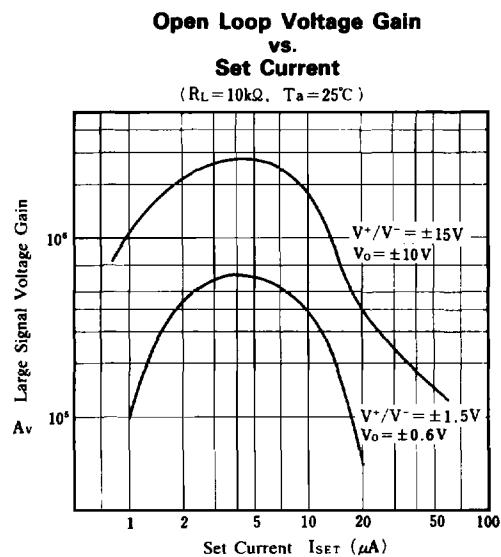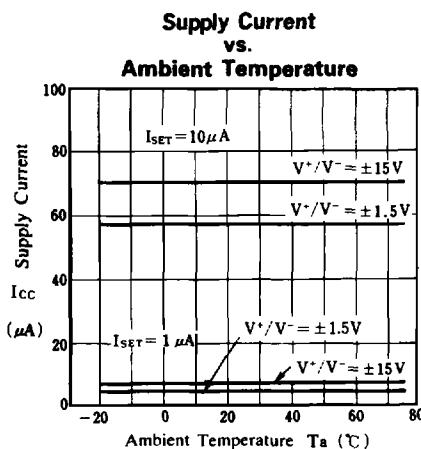
■ **Typical Applications**

500nW 10times Inverting Amplifier