

DUAL LOW POWER OPERATIONAL AMPLIFIER

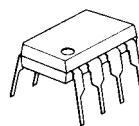
■ GENERAL DESCRIPTION

The NJM022B is a dual low-power operational amplifier. Like the NJM022, the NJM022B is the wide operating voltage range, high input impedance, low operating current, low input noise voltage, internally frequency compensated, latch-up free, high slew rate amplifier with the short circuit protection. The NJM022B is twice the slew rate and half the input noise voltage comparing to the NJM022 with increased operating current.

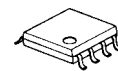
■ FEATURES

- Operating Voltage ($\pm 2V \sim \pm 18V$)
- Low Operating Current ($250\mu A$ typ.)
- Slew Rate ($1V/\mu s$ typ.)
- Short-Circuit Protection
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

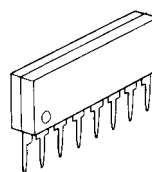
■ PACKAGE OUTLINE



NJM022BD

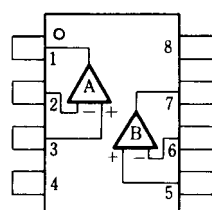
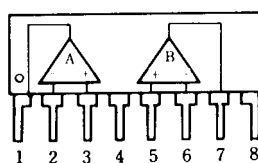


NJM022BM



NJM022BL

■ PIN CONFIGURATION

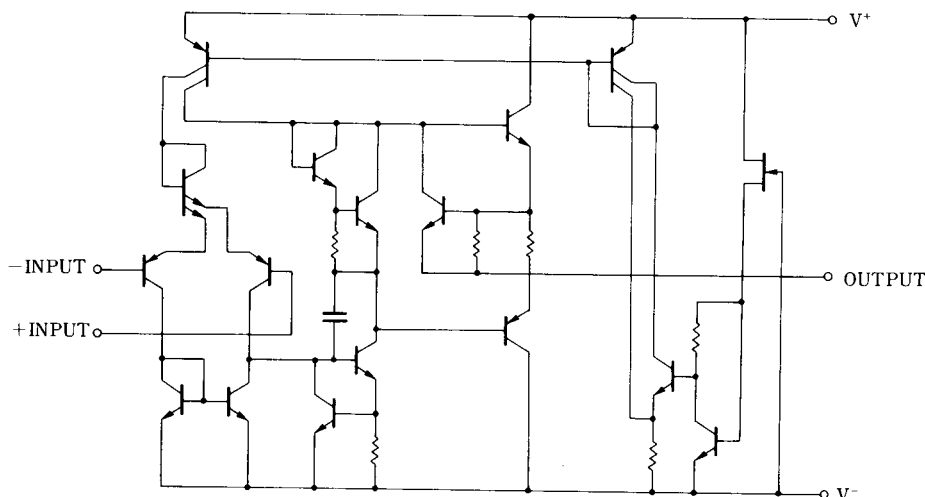
NJM022BD
NJM022BM

NJM022BL

PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V^-
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. V^+

■ EQUIVALENT CIRCUIT (1/2 Shown)



NJM022B

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+ / V^-	± 18	V
Input Voltage	V_{IC}	± 15	V
Differential Input Voltage	V_{ID}	± 30	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (SIP8) 800	mW
Operating Temperature Range	T_{opr}	-40~+85	°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.

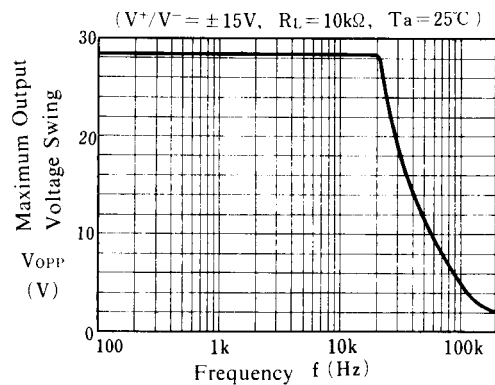
■ ELECTRICAL CHARACTERISTICS

(Ta=+25°C, $V^+ / V^- = \pm 15V$)

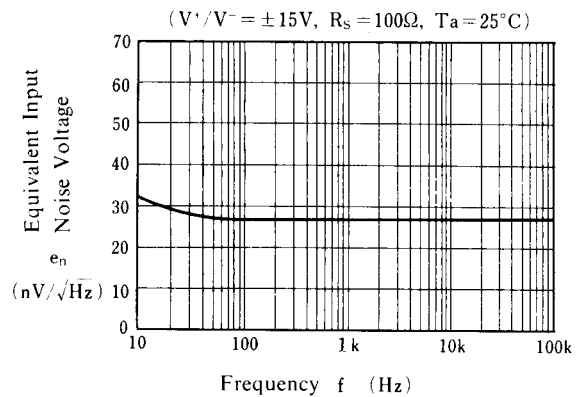
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	1	5	mV
Input Offset Current	I_{IO}		-	1	80	nA
Input Bias Current	I_B		-	20	250	nA
Large Singal Voltage Gain	A_V	$R_L \geq 10k\Omega, V_O = \pm 10V$	60	88	-	dB
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	60	92	-	dB
Response Time (Rise Time)	t_R	$V_{IN} = 20mV, R_L = 10k\Omega, C_L = 100pF$	-	0.18	-	μs
Slew Rate	SR	$V_{IN} = 10V, R_L = 10k\Omega, C_L = 100pF$	-	1	-	V/ μs
Input Common Mode Voltage Range	V_{ICM}		± 12	± 13	-	V
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	74	110	-	dB
Equivalent Input Noise Voltage	e_n	$A_V = 20dB, f = 1kHz$	-	25	-	nV/ $\sqrt{Hz}$
Short-circuit Output Current	I_{OS}		-	± 8	-	mA
Operating Current	I_{CC}		-	250	500	μA
Maximum Peak-to-Peak Output Voltage	V_{OM}	$R_L = 10k\Omega$	± 10	± 14	-	V

■ TYPICAL CHARACTERISTICS

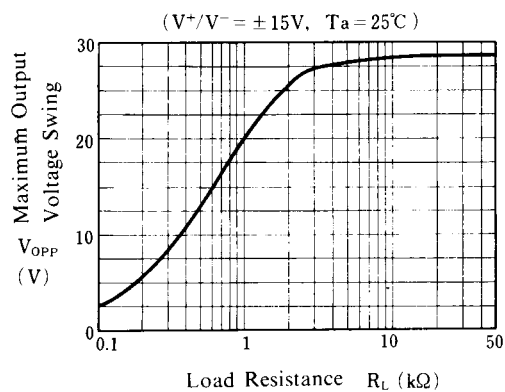
Maximum Output Voltage Swing vs. Frequency



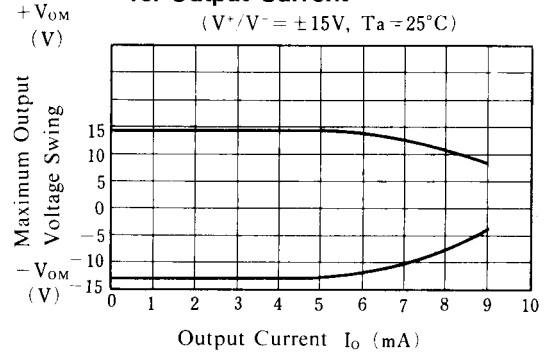
Equivalent Input Noise Voltage vs. Frequency



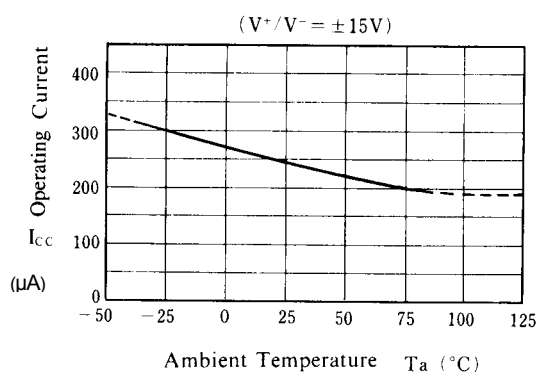
Maximum Output Voltage Swing vs. Load Resistance



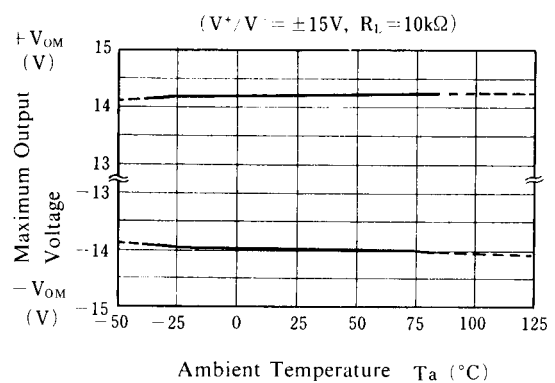
Maximum Output Voltage Swing vs. Output Current



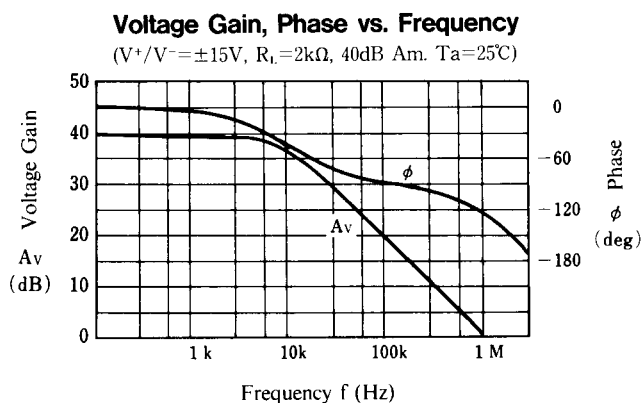
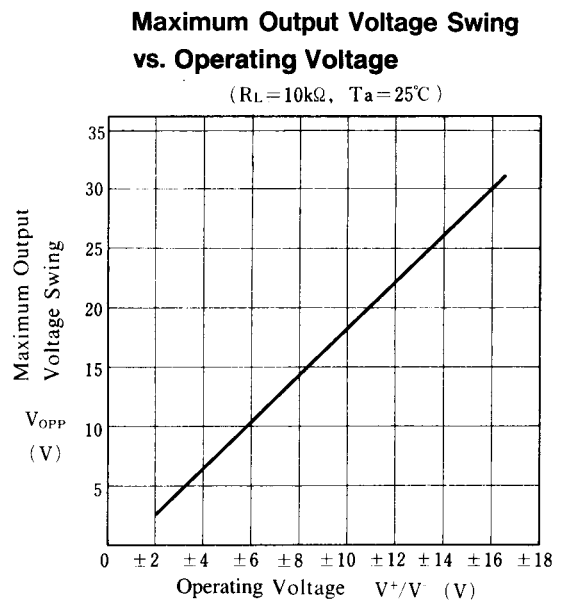
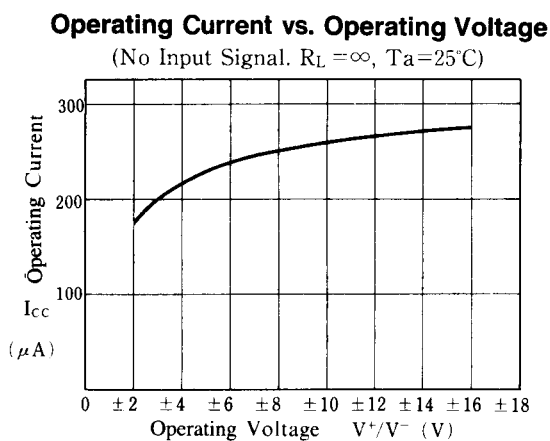
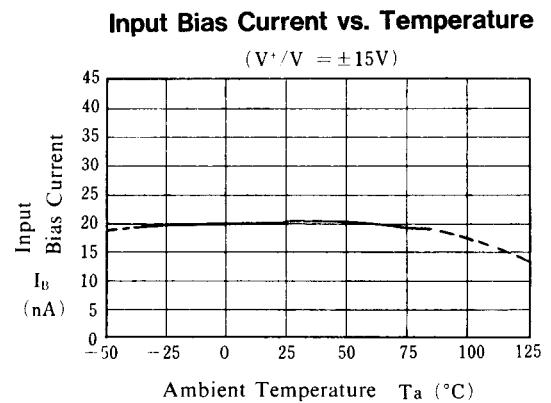
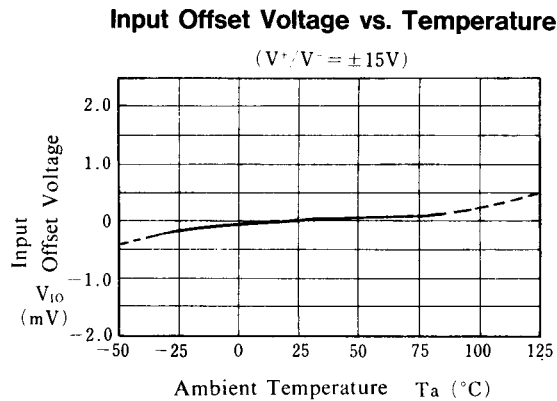
Operating Current vs. Temperature



Maximum Output Voltage vs. Temperature



■ TYPICAL CHARACTERISTICS



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