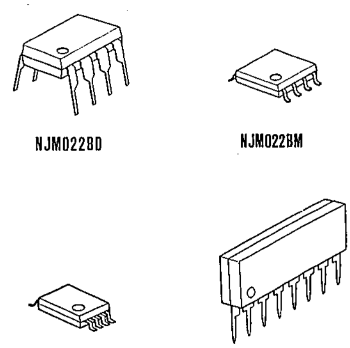
DUAL LOW POWER OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM022B is a dual low-power operational amplifier. Like the NJM022, the NJM022B is the wide operating voltage range, high input inpedance, 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.

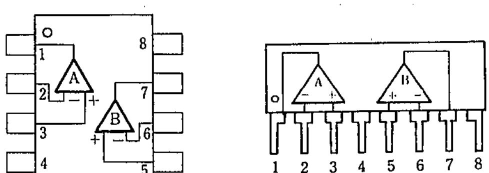
■ PACKAGE OUTLINE



■ FEATURES

- Operating Voltage (±2V～±18V)
- Low Operating Current (250 μA typ)
- Slew Rate (1V/ μs typ)
- Short-Circuit Protection
- Package Outline DIP8, DMP8, SIP8, (SSOP8)
- Bipolar Technology

■ PIN CONFIGURATION

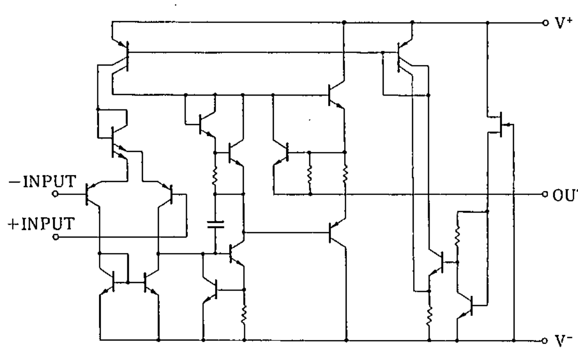


NJM022BD
NJM022BM
NJM022BV

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)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

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	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW
		(SIP8) 800	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
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.

■ ELECTRICAL CHARACTERISTICS

(Ta =+25℃, V^+/V^-=±15V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≦10kΩ	—	1	5	mV
Input Offset Current	I_{IO}		—	1	80	nA
Input Bias Current	I_B		—	20	250	nA
Large Signal Voltage Gain	A_V	R_L≧10kΩ, V_O=±10V	60	88	—	dB
Common Mode Rejection Ratio	CMR	R_S≦10kΩ	60	92	—	dB
Response Time (Rise Time)	t_R	V_{IN}=20mV, R_L=10kΩ, C_L=100pF	—	0.18	—	μs
Slew Rate	SR	V_{IN}=10V, R_L=10kΩ, C_L=100pF	—	1	—	V/μs
Input Common Mode Voltage Range	V_{ICM}		±12	±13	—	V
Supply Voltage Rejection Ratio	SVR	R_S≦10kΩ	74	110	—	dB
Equivalent Input Noise Voltage	V_{NI}	A_V=20dB, f=1kHz	—	25	—	nV/√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 =10kΩ	±10	±14	—	V

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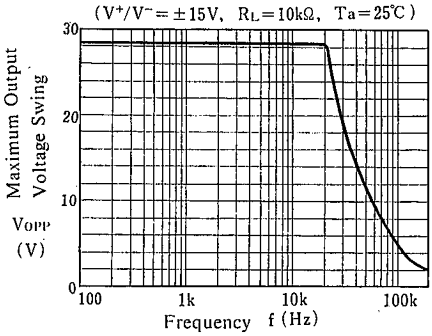
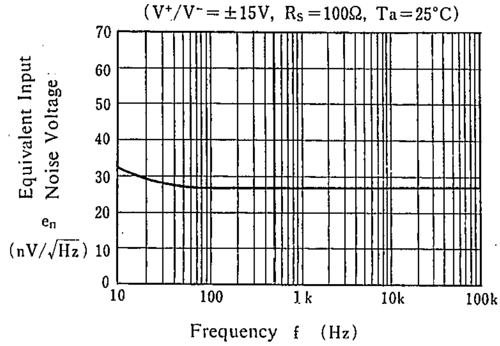
■ TYPICAL CHARACTERISTICS

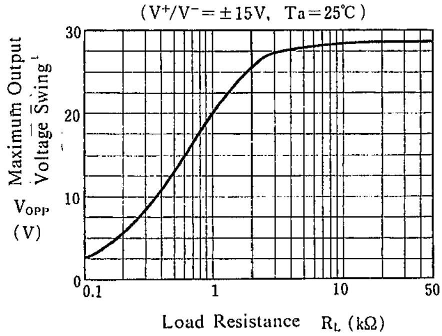
Muximum Output Voltage Swing vs. Frequency



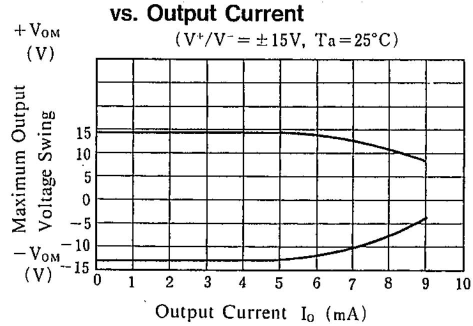
Equivalent Input Noise Voltage vs. Frequency



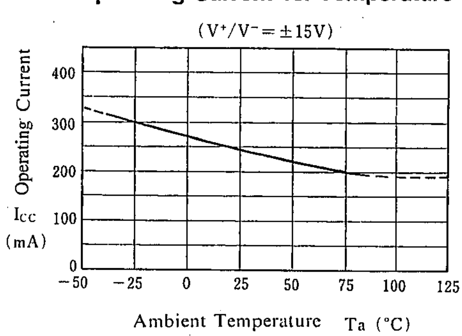
Maximum Output Voltage Swing vs. Load Resistance



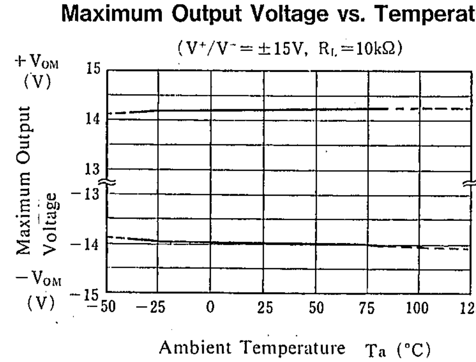
Maximum Output Voltage Swing vs. Output Current



Operating Current vs. Temperature



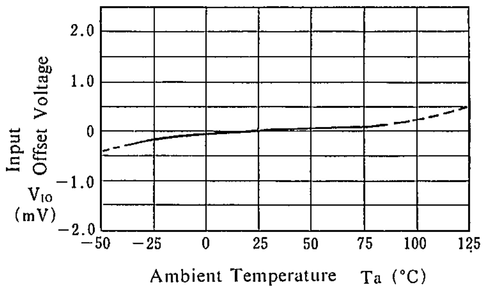
Maximum Output Voltage vs. Temperature



■ TYPICAL CHARACTERISTICS

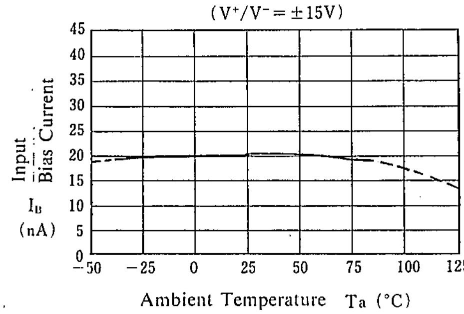
Input Offset Voltage vs. Temperature

($V^+/V^- = \pm15V$)



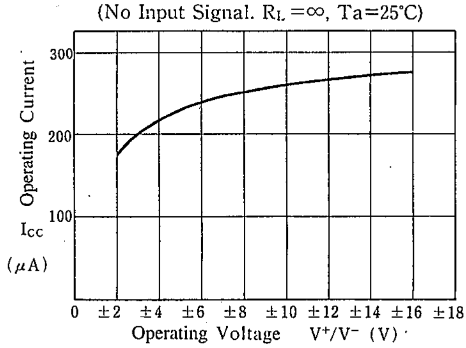
Input Bias Current vs. Temperature

($V^+/V^- = \pm15V$)



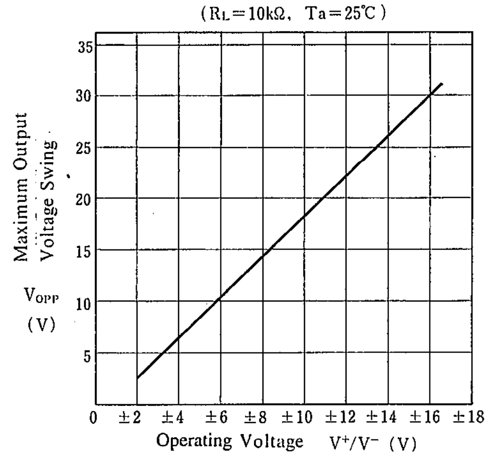
Operating Current vs. Operating Voltage

(No Input Signal. $R_L = \infty$, Ta=25°C)



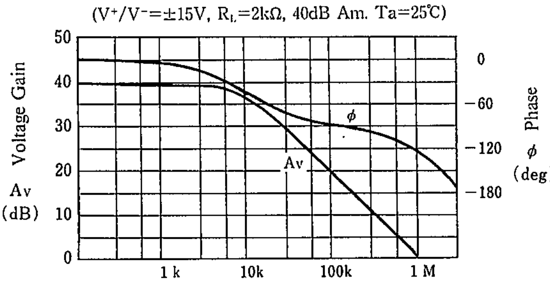
Maximum Output Voltage Swing vs. Operating Voltage

(R_L=10kΩ, Ta=25°C)



Voltage Gain, Phase vs. Frequency

(V^+/V^-=±15V, R_L=2kΩ, 40dB Am. Ta=25°C)



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