

DUAL LOW POWER OPERATIONAL AMPLIFIER

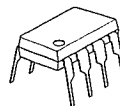
■ GENERAL DESCRIPTION

The NJM022 is a dual low-power operational amplifier which was designed to replace higher-power devices in many applications without sacrificing system performance. High input impedance, low supply currents, and low equivalent input noise voltage over a wide range of operating supply voltages result in an extremely versatile operational amplifier for use in a variety of analog applications including battery-operated circuit. Internal frequency compensation, absence of latch-up, high slew rate, and short-circuit protection assure ease of use.

■ FEATURES

- Operating Voltage $(\pm 2V \sim \pm 18V)$
- Low Operating Current $(130 \mu A \text{ typ.})$
- Slew Rate $(0.5V/\mu s \text{ typ.})$
- Short-Circuit Protection
- Package Outline DIP8, DMP8, SSOP8, SIP8
- Bipolar Technology

■ PACKAGE OUTLINE



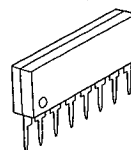
NJM022D



NJM022M

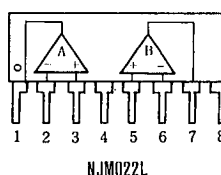
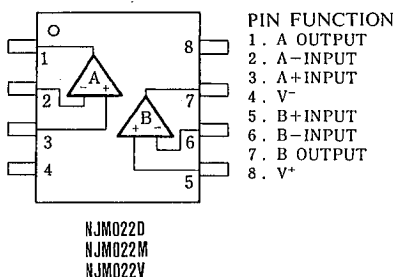


NJM022V

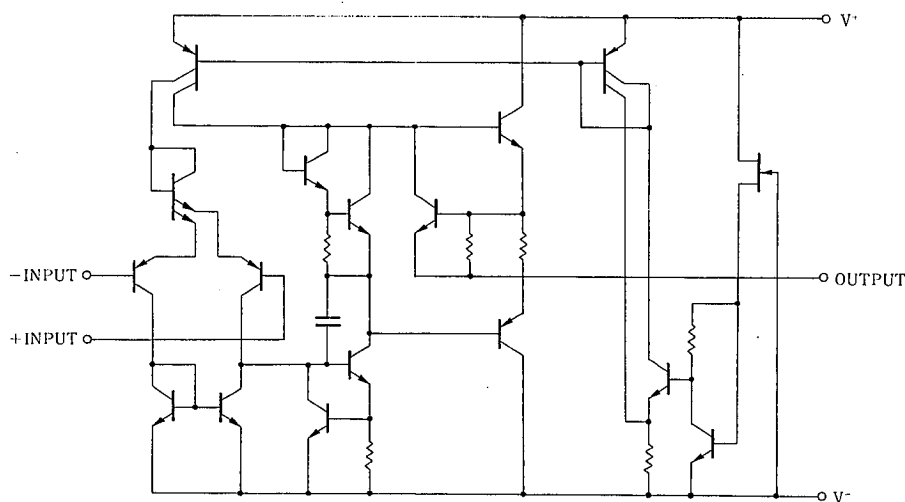


NJM022L

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT (1/2 Shown)



■ 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	mW
		(DMP8) 300	mW
		(SSOP8) 300	mW
		(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 ±15V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

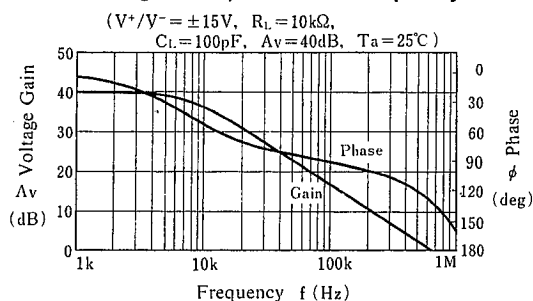
(Ta=+25°C, V⁺/V⁻=±15V)

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 _{IB}		—	15	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	90	—	dB
Response Time (Rise Time)	t _R	V _{IN} = 20mV, R _L = 10kΩ, C _L = 100pF	—	0.3	—	μs
Slew Rate	SR	V _{IN} = 10V, R _L = 10kΩ, C _L = 100pF	—	0.5	—	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	—	50	—	nV/√Hz
Short-circuit Output Current	I _{OS}		—	±6	—	mA
Operating Current	I _{CC}		—	130	250	μA
Maximum Peak-to-peak Output Voltage Swing	V _{OM}	R _L = 10kΩ	±10	±14	—	V

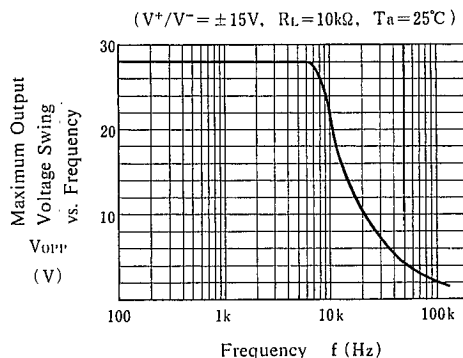
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TYPICAL CHARACTERISTICS

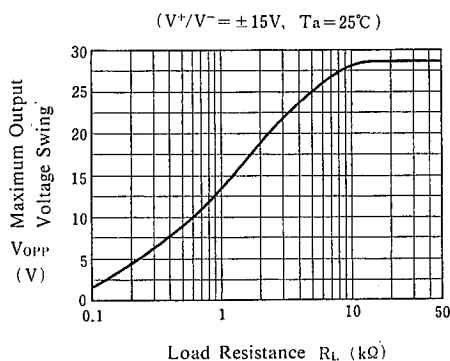
Voltage Gain, Phase vs. Frequency



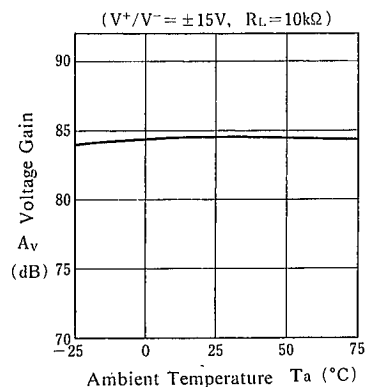
Maximum Output Voltage Swing vs. Frequency



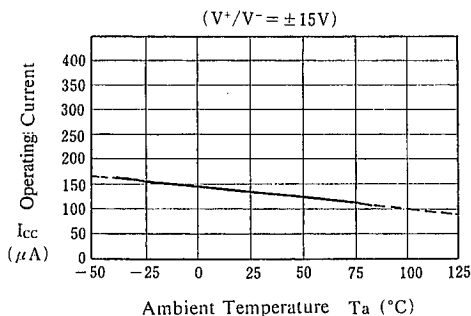
Maximum Output Voltage Swing vs. Load Resistance



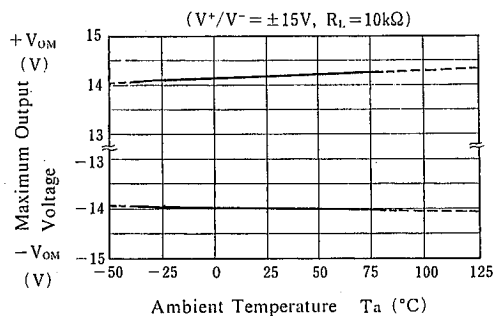
Voltage Gain vs. Temperature



Operating Current vs. Temperature

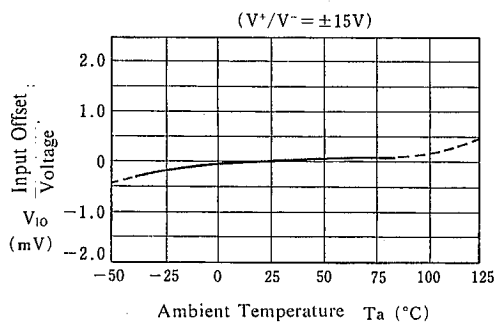


Maximum Output Voltage vs. Temperature

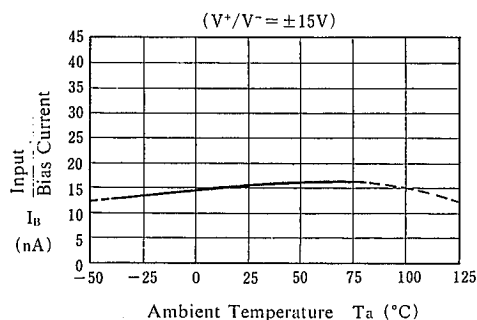


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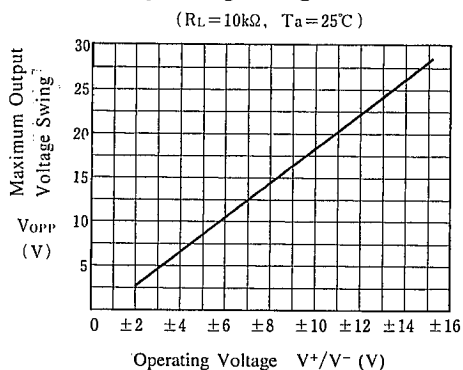
Input Offset Voltage vs. Temperature



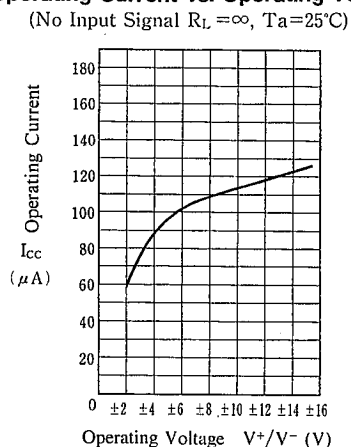
Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Operating Voltage



Operating Current vs. Operating Voltage



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MEMO

[CAUTION]

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