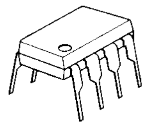
DUAL LOW POWER OPERATIONAL AMPLIFIER

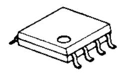
■ GENERAL DESCRIPTION

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.

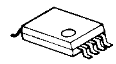
■ PACKAGE OUTLINE



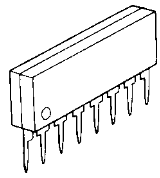
NJM022D



NJM022M



NJM022V

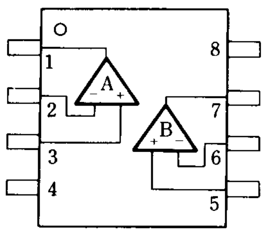


NJM022L

■ FEATURES

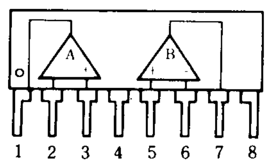
- Operating Voltage (±2V~±18V)
- Low Operating Current (130µA typ.)
- Slew Rate (0.5V/µs typ.)
- Short-Circuit Protection
- Package Outline DIP8,DMP8,SSOP8,SIP8
- Bipolar Technology

■ PIN CONFIGURATION



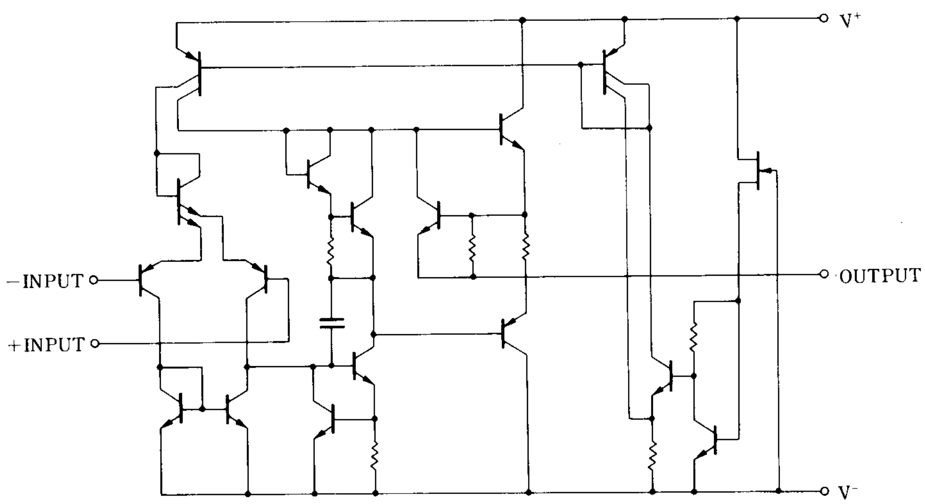
NJM022D
NJM022M
NJM022V

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



NJM022L

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

■ ELECTRICAL CHARACTERISTICS

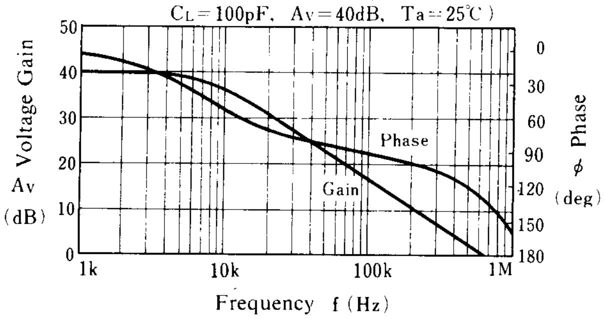
(Ta=+25˚C,V^+/V^-=±15V)

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

■ TYPICAL CHARACTERISTICS

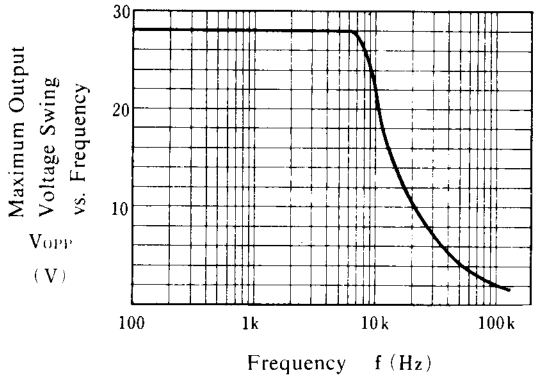
Voltage Gaim, Phase vs. Frequency

(V⁺/V⁻ = ±15V, RL = 10kΩ, CL = 100pF, Av = 40dB, Ta = 25°C)



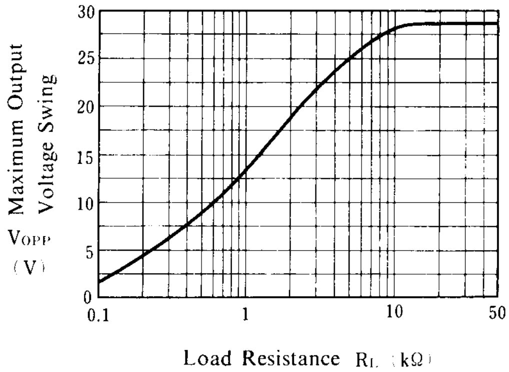
Maximum Output Voltage Swing vs. Frequency

(V⁺/V⁻ = ±15V, RL = 10kΩ, Ta = 25°C)



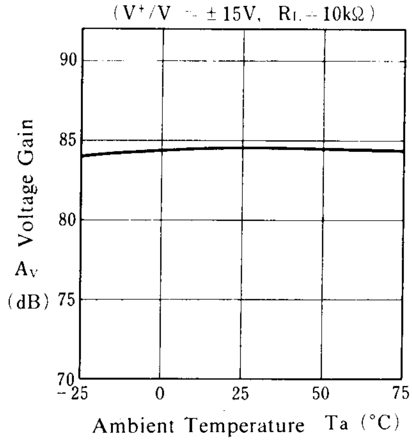
Maximum Output Voltage Swing vs. Load Resistance

(V⁺/V⁻ = ±15V, Ta = 25°C)



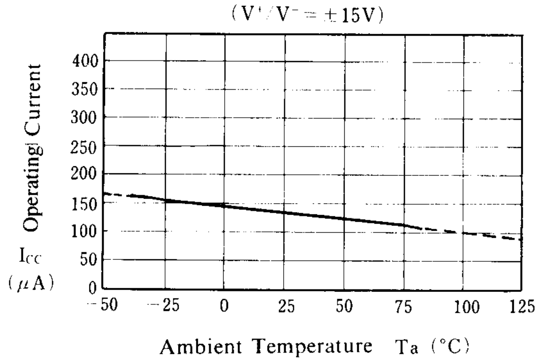
Voltage Gain vs. Temperature

(V⁺/V⁻ = ±15V, RL = 10kΩ)



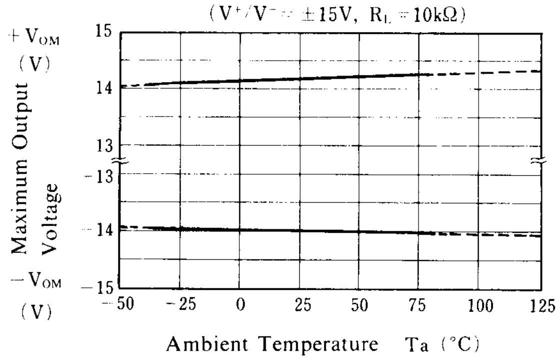
Operating Current vs. Temperature

(V⁺/V⁻ = ±15V)



Maximum Output Voltage vs. Temperature

(V⁺/V⁻ = ±15V, RL = 10kΩ)



■ TYPICAL CHARACTERISTICS