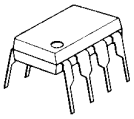
DUAL LOW POWER OPERATIONAL AMPLIFIER

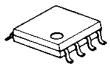
■ GENERAL DESCRIPTION

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.

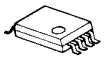
■ PACKAGE OUTLINE



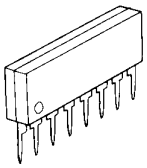
NJM022D



NJM022M



NJM022V

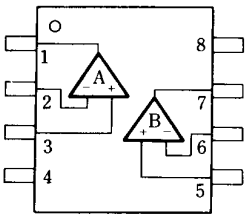


NJM022L

■ FEATURES

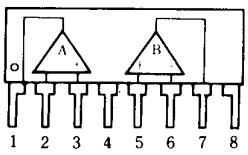
- Operating Voltage (±2V~±18V)
- Low Operating Current (130μA typ.)
- Slew Rate (0.5V/μs typ.)
- Short-Circuit Protection
- Package Outline DIP8,DMP8,SSOP8,SIP8
- Bipolar Technology

■ PIN CONFIGURATION



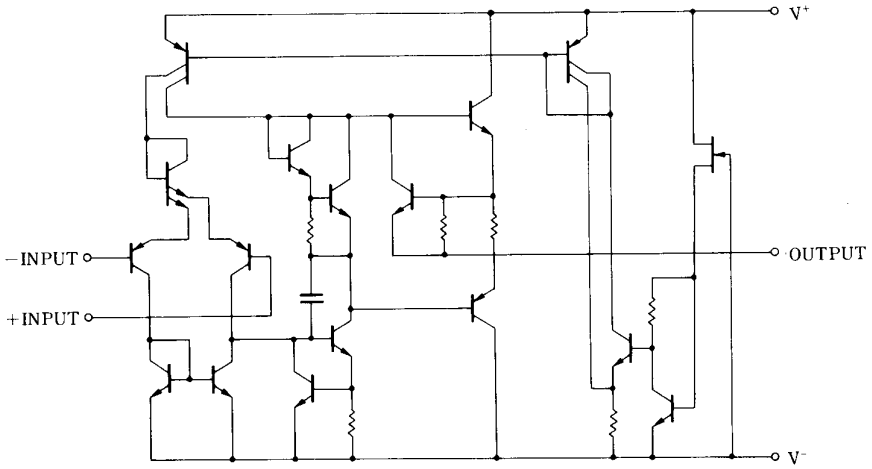
PIN FUNCTION
1.A OUTPUT
2.A –INPUT
3.A +INPUT
4.V^-
5.B +INPUT
6.B –INPUT
7.B OUTPUT
8.V^+

NJM022D
NJM022M
NJM022V



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.

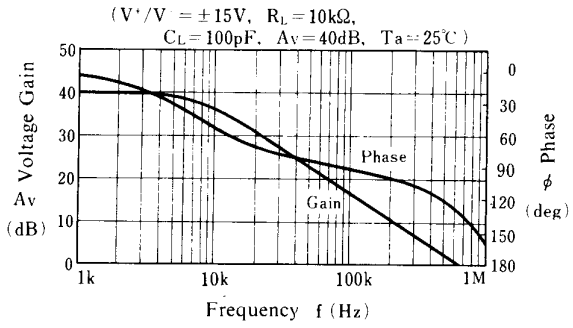
■ ELECTRICAL CHARACTERISTICS

(Ta=+25˚C,V^+/V^-=±15V)

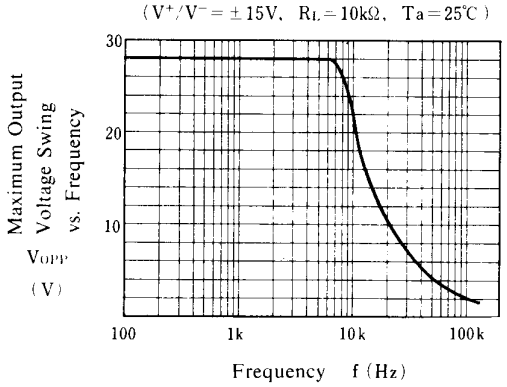
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	1	5	mV
Input Offset Current	I_{IO}		-	1	80	nA
Input Bias Current	I_{IB}		-	15	250	nA
Large Signal Voltage Gain	A_V	R_L≥10kΩ,V_O=±10V	60	88	-	dB
Common Mode Rejection Ratio	CMR	R_S≤10kΩ	60	90	-	dB
Response Time (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

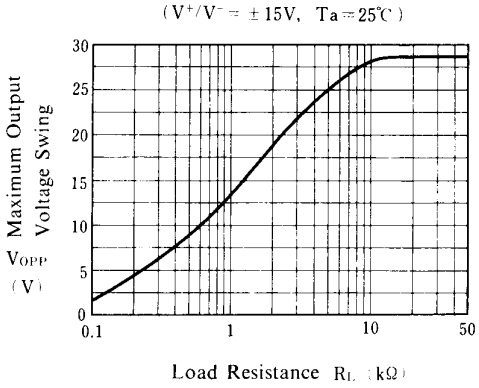
Voltage Gaim, Phase vs. Frequency



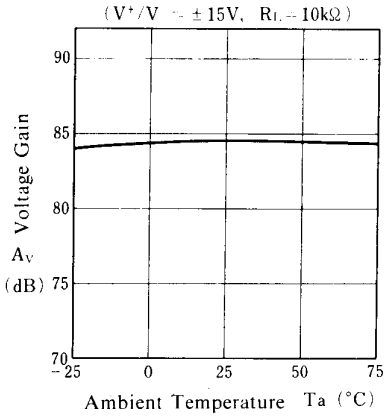
Maximum Output Voltage Swing vs. Frequency



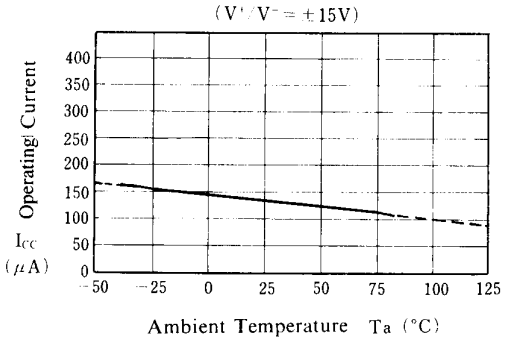
Maximum Output Voltage Swing vs. Load Resistance



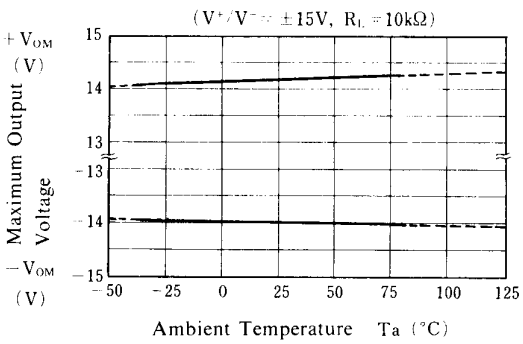
Voltage Gain vs. Temperature



Operating Current vs. Temperature

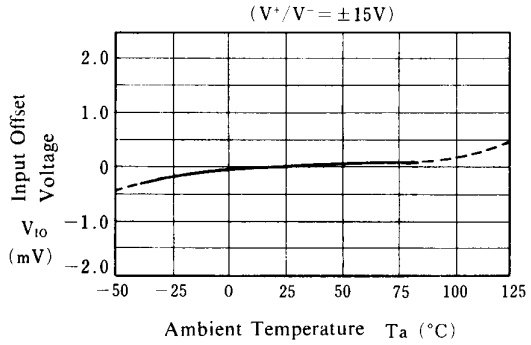


Maximum Output Voltage vs. Temperature

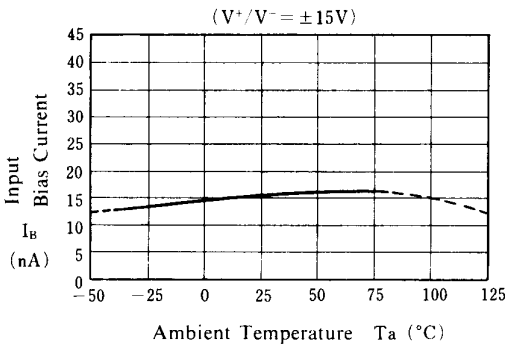


■ TYPICAL CHARACTERISTICS

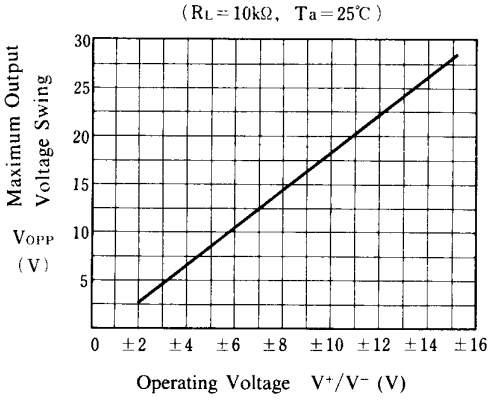
Input Offset Voltage vs. Temperatare



Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Operating Voltage



Operating Current vs. Operating Voltage