

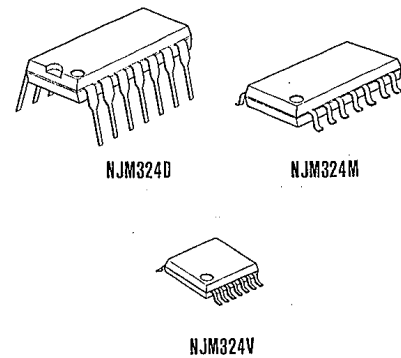
SINGLE-SUPPLY QUAD OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM324 consists of four independent, high gain, internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.

Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits which now can be more easily implemented in single power supply systems. For example, the NJM324 can be directly operated off of the standard +5V_{DC} power supply voltage which is used in digital systems and will easily provide the required interface electronics without requiring the additional ±15V_{DC} power supplies.

■ PACKAGE OUTLINE

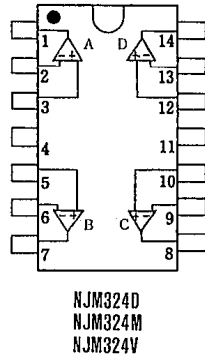


■ FEATURES

- Single Supply Operation
- Operating Voltage (+3V ~ +32V)
- Low Operating Current (0.7mA typ.)
- Package Outline DIP14, DMP14, SSOP14
- Bipolar Technology

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■ PIN CONFIGURATION

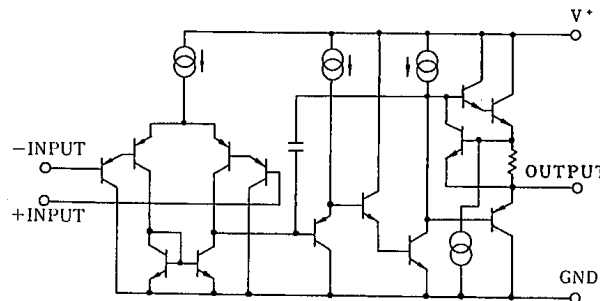


PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V⁺
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. C OUTPUT
9. C -INPUT
10. C +INPUT
11. GND
12. D +INPUT
13. D -INPUT
14. D OUTPUT

■ EQUIVALENT CIRCUIT

(1/4 Shown)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V ⁻	32(or ± 16)	V
Differential Input Voltage	V _{ID}	32	V
Input Voltage	V _{IC}	-0.3 ~ +32	V
Power Dissipation	P _D	(DIP14) 570	mW
		(DIM14) 300	mW
		(SSOP14) 300	mW
Operating Temperature Range	T _{opr}	-40 ~ +85	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

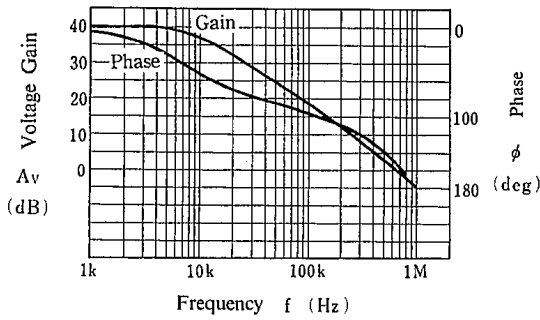
(Ta =25°C, V⁺=5V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	R _S =0Ω, V ⁺ =5~30V _{DC}	—	2	7	mV
Input Offset Current	I _{IO}		—	5	50	nA
Input Bias Current	I _B		—	20	250	nA
Input Common Mode Voltage Range	V _{ICM}		0~3.5	—	—	V
Operating Current	I _{CC}	R _L =∞	—	0.7	1.2	mA
Large-signal Voltage Gain	A _V	R _L ≥2kΩ, V ⁺ =15V	88	100	—	dB
Maximum Peak-to-peak Output Voltage Swing	V _{OPP}	R _L =2kΩ	3.5	—	—	V
Common Mode Rejection Ratio	CMR	DC	65	70	—	dB
Supply Voltage Rejection Ratio	SVR	DC	65	100	—	dB
Output Source Current	I _{SOURCE}	V _{IN} ⁺ /V _{IN} ⁻ =1/0V, V ⁺ =15V	20	40	—	mA
Output Sink Current 1	I _{SINK1}	V _{IN} ⁺ /V _{IN} ⁻ =0/1V, V ⁺ =15V	10	20	—	mA
Output Sink Current 2	I _{SINK2}	V _{IN} ⁺ /V _{IN} ⁻ =0/1V, V _O =200mV	12	50	—	μA
Channel Separation	CS	f=1kHz~20kHz, Input Referred	—	120	—	dB

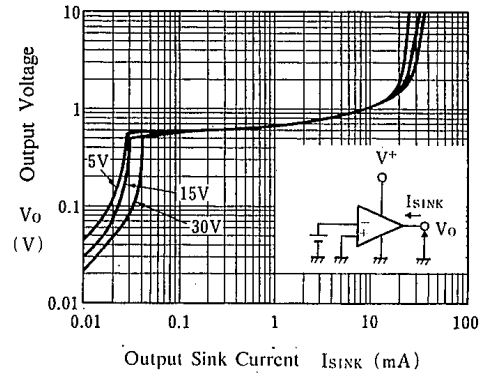


TYPICAL CHARACTERISTICS

Voltage Gain, Phase vs. Frequency

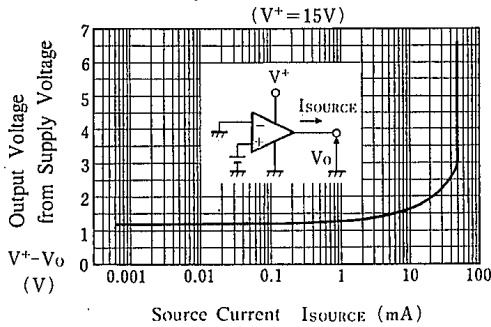


Output Sink Current

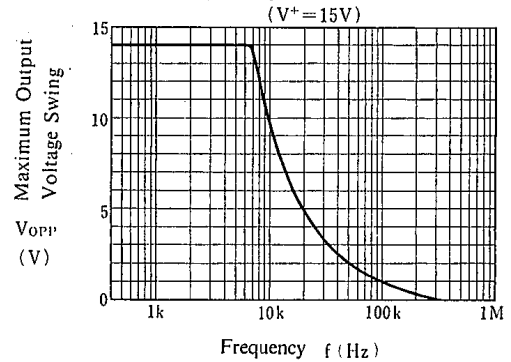


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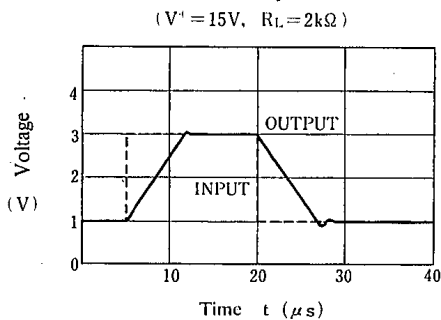
Output Source Current



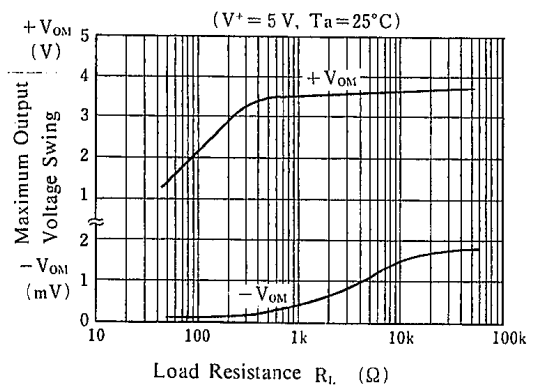
Maximum Output Voltage Swing vs. Frequency



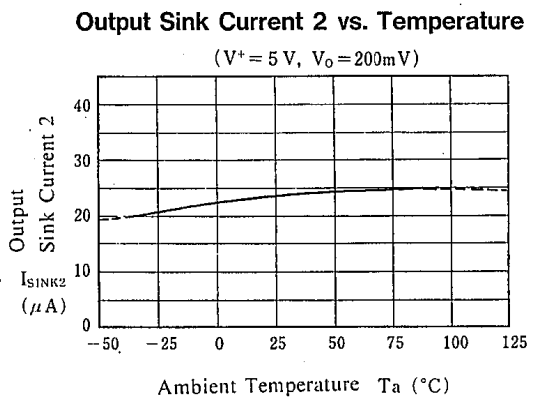
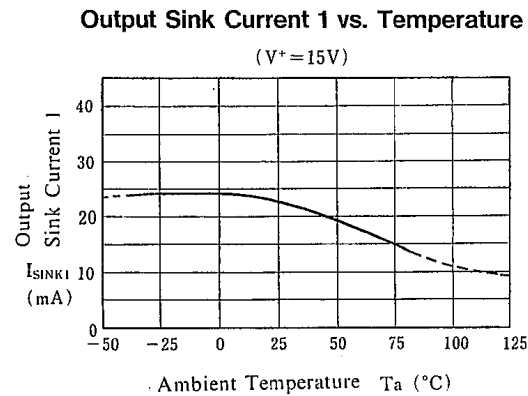
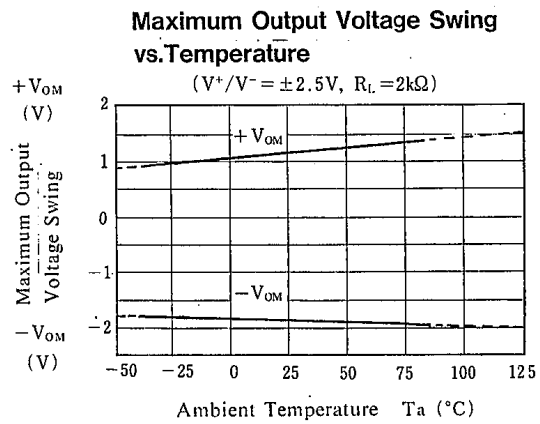
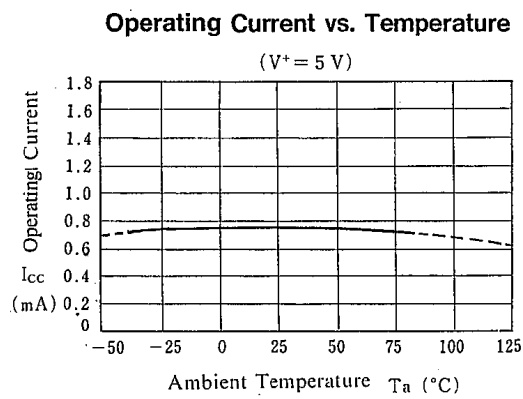
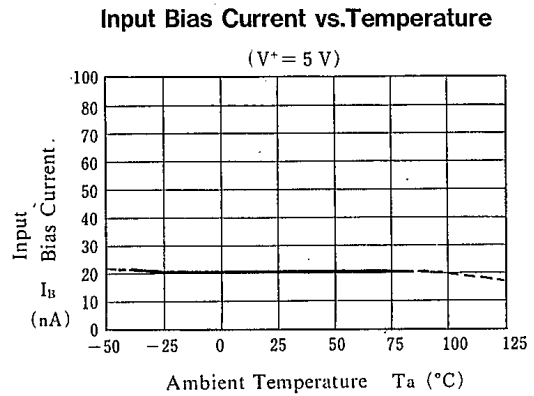
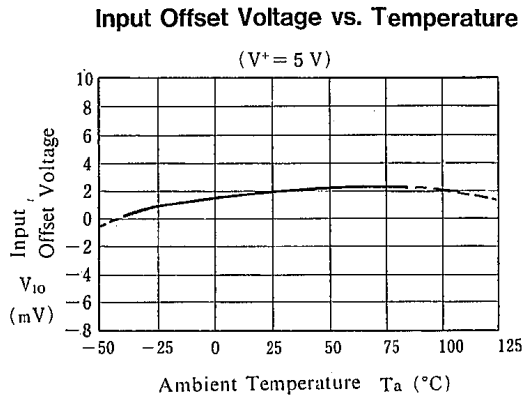
Pulse Response



Maximum Output Voltage Swing vs. Load Resistance



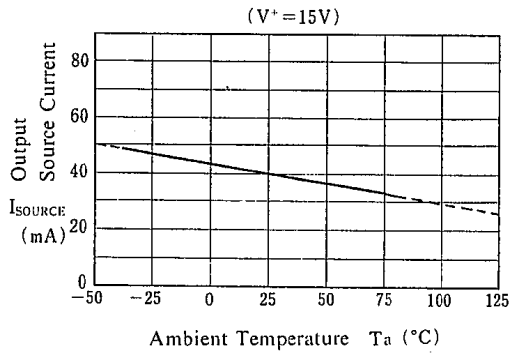
■ TYPICAL CHARACTERISTICS



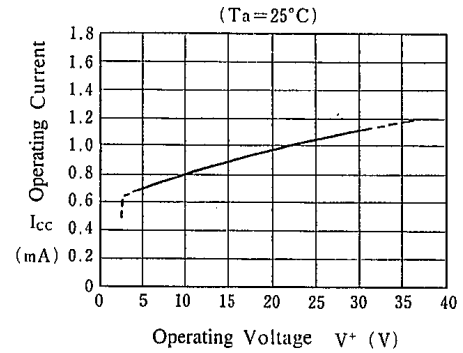
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■ TYPICAL CHARACTERISTICS

Output Source Current vs. Temperature

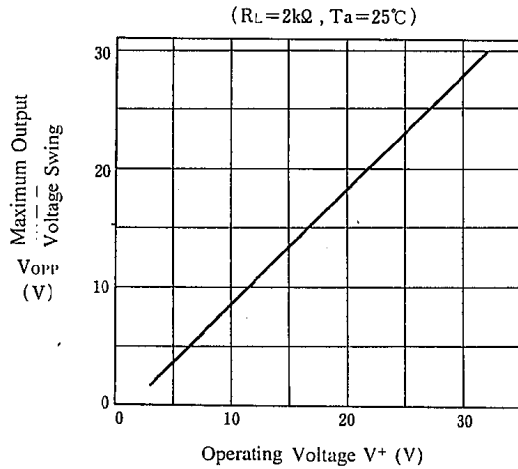


Operating Current vs. Operating Voltage



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Maximum Output Voltage Swing vs. Operating Voltage



NJM324

MEMO

[CAUTION]

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