

SINGLE-SUPPLY DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

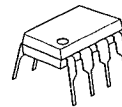
The NJM3404A is high performance single supply dual operational amplifier. The NJM3404A is a half type of the NJM3403A, quad operational amplifier.

The NJM3404A is improved version of the NJM2904 on slew rate & cross-over distortion.

■ FEATURES

- Single Supply
- Operating Voltage (+4V ~ +36V)
- Low Operating Current (2.0mA typ.)
- Slew Rate (1.2V/μs typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PACKAGE OUTLINE



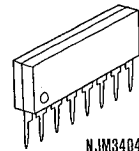
NJM3404AD



NJM3404AM



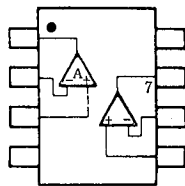
NJM3404AV



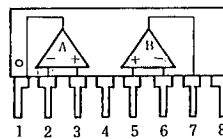
NJM3404AL

*S-Type (SIP-9) available

■ PIN CONFIGURATION



NJM3404AD
NJM3404AM
NJM3404AV

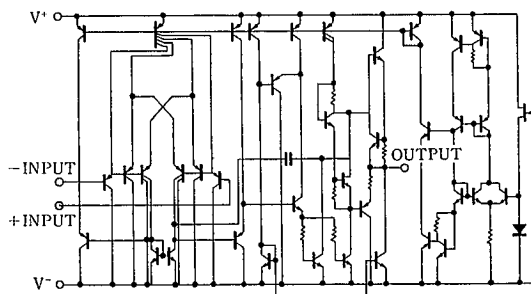


NJM3404AL

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°C)

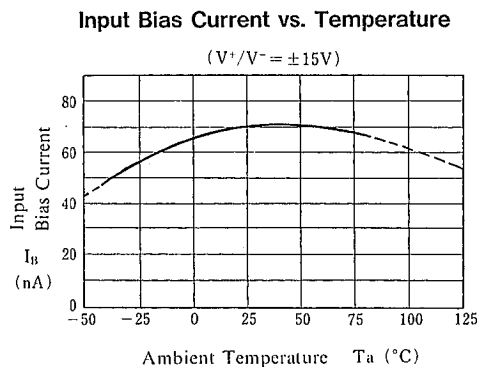
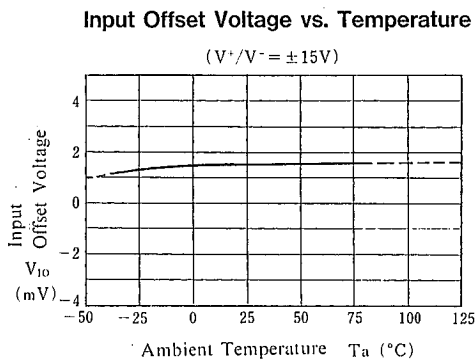
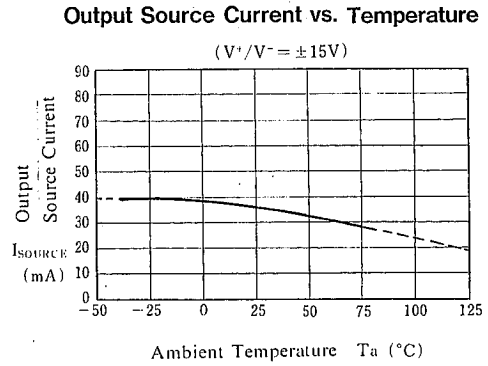
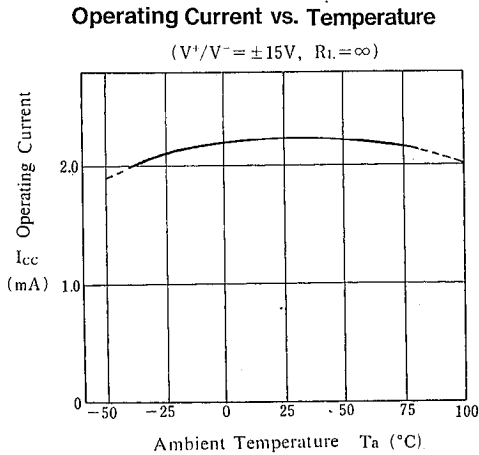
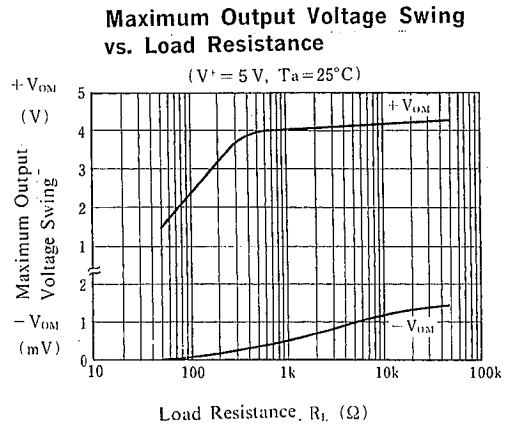
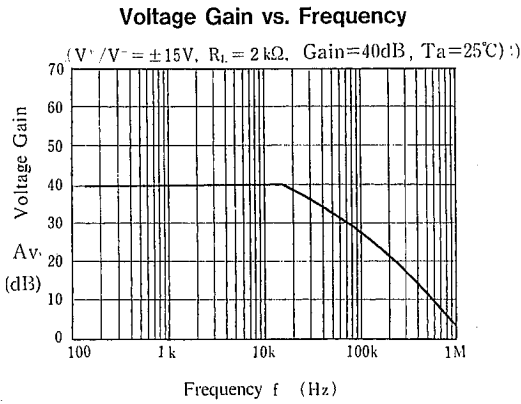
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*(V+/V-)	36V(or ±18)	V
Differential Input Voltage	V _{ID}	36	V
Input Voltage	V _{IC}	-0.3 ~ 36	V
Power Dissipation	P _D	(DIP8) 500	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW
		(SIP8) 800	mW
Operating Temperature Range	T _{opr}	-40 ~ +85	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V+/V- = ±15V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	R _S = 0Ω	—	2	5	mV
Input Offset Current	I _{IO}		—	5	50	nA
Input Bias Current	I _B		—	70	200	nA
Large Signal Voltage Gain	A _V	R _L > 2KΩ	88	100	—	dB
Maximum Output Voltage Swing	V _{OM}	R _L = 2kΩ	±13	±14	—	V
Input Common Mode Voltage Range	V _{ICM}		-15 ~ +13	—	—	V
Common Mode Rejection Ratio	CMR	DC	70	90	—	dB
Supply Voltage Rejection Ratio	SVR		80	94	—	dB
Operating Current	I _{CC}	R _L = ∞	—	2.0	3.5	mA
Output Source Current	I _{SOURCE}	V _{IN+} = 1V, V _{IN-} = 0V	20	30	—	mA
Output Sink Current	I _{SINK}	V _{IN+} = 0V, V _{IN-} = 1V	10	20	—	mA
Slew Rate	SR		—	1.2	—	v/μS
Unity Gain Bandwidth	f _T	—	—	1.2	—	MHz

■ TYPICAL CHARACTERISTICS

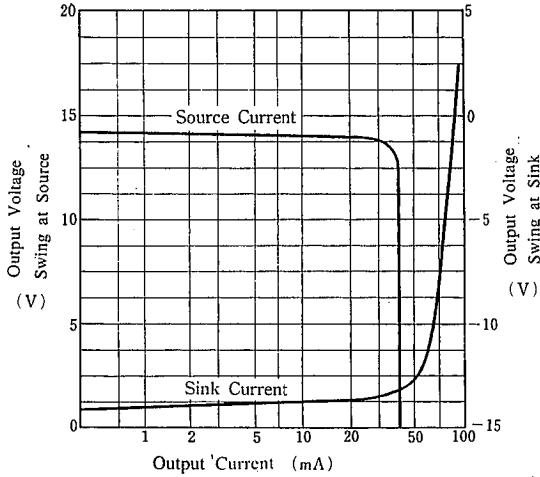


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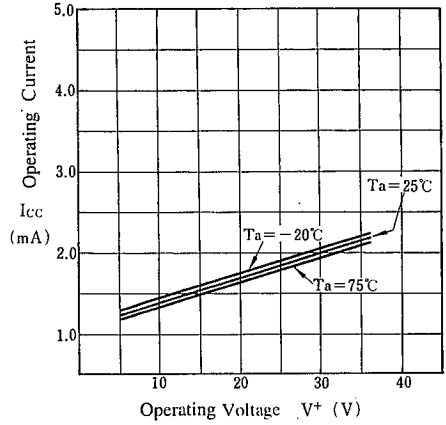
■ TYPICAL CHARACTERISTICS

**Output Source Current
Output Sink Current
vs. Output Voltage Swing**

($V^+/V^- = \pm 15V$, $T_a = 25^\circ C$)

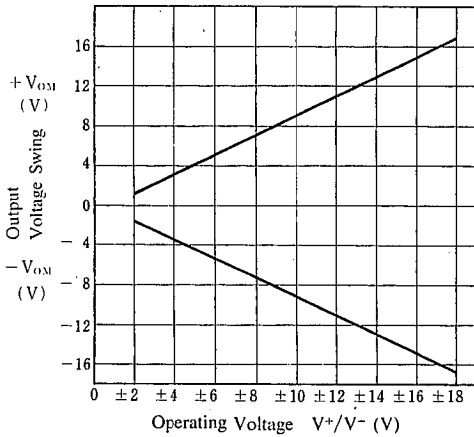


**Operating Current
vs. Operating Voltage**



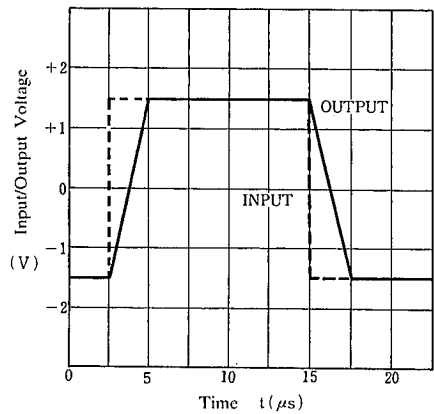
Output Voltage Swing vs. Operating Voltage

($R_L = 2k\Omega$, $T_a = 25^\circ C$)



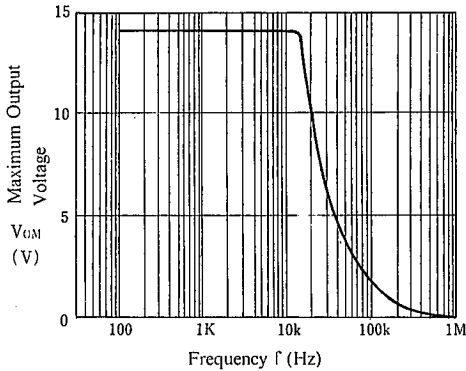
Pulse Response

($V^+/V^- = \pm 15V$, $R_L > 2k\Omega$, $A_v = 1$, $T_a = 25^\circ C$)



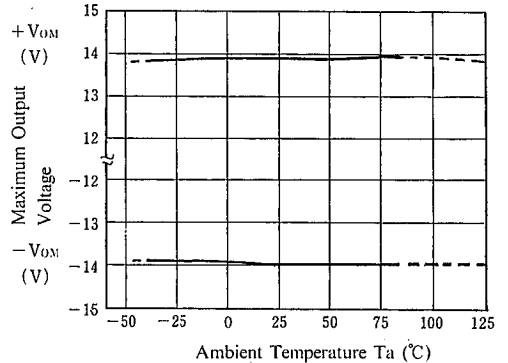
Maximum Output Voltage vs. Frequency

($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $T_a = 25^\circ C$)



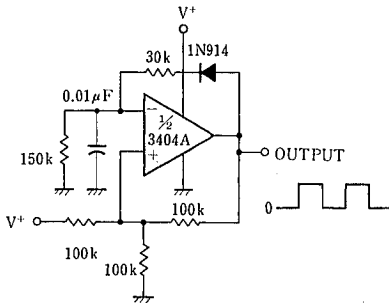
Maximum Output Voltage vs. Temperature

($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$)

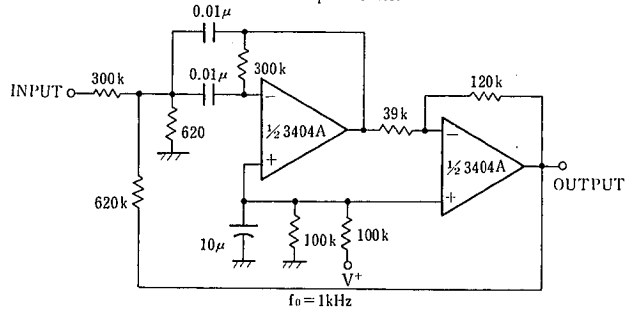


■ TYPICAL APPLICATIONS

Square Wave Oscillator



Bandpass Filter



MEMO

[CAUTION]

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