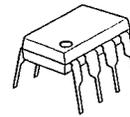


LOW-NOISE DUAL PRE-AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2043 is a bipolar operational amplifier which is designed as low noise version of the NJM4558 with high output current and fast slew rate ( $6V/\mu s$ ) and wide unity gain bandwidth (14MHz) constructed using New JRC Planar epitaxial process.

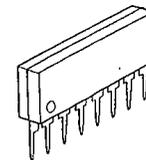
■ PACKAGE OUTLINE



NJM2043D



NJM2043M

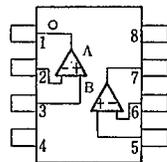


NJM2043L

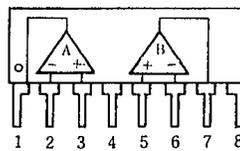
■ FEATURES

- Operating Voltage (±4V ~ ±22V)
- High Output Current (25mA.)
- Slew Rate (6V/μs typ.)
- Unity Gain Bandwidth (14MHz typ.)
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

■ PIN CONFIGURATION



NJM2043D  
NJM2043M

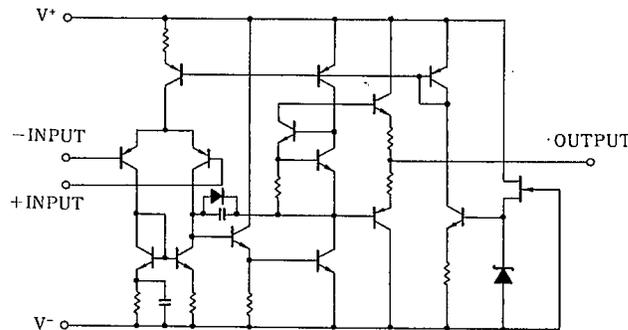


NJM2043L

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 <sup>+</sup> /V <sup>-</sup>	±22	V
Differential Input Voltage	V <sub>ID</sub>	±30	V
Input Voltage	V <sub>IC</sub>	±15 (note)	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500	mW
		(DIM8) 300	mW
		(SIP8) 800	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-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<sup>+</sup>/V<sup>-</sup>=±15V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	R <sub>S</sub> ≤ 10kΩ	—	0.3	3	mV
Input Offset Current	I <sub>IO</sub>		—	10	200	nA
Input Bias Current	I <sub>B</sub>		—	400	1000	nA
Input Resistance	R <sub>IN</sub>		30	100	—	kΩ
Large signal Voltage Gain	A <sub>V</sub>	R <sub>L</sub> ≥ 2kΩ, V <sub>O</sub> = ±10V	86	100	—	dB
Maximum Output Voltage Swing 1	V <sub>OM1</sub>	R <sub>L</sub> ≥ 10kΩ	±12	±14	—	V
Maximum Output Voltage Swing 2	V <sub>OM2</sub>	I <sub>O</sub> = 25mA	±10	±11.5	—	V
Input Common Mode Voltage Range	V <sub>ICM</sub>		±12	±14	—	V
Common Mode Rejection Ratio	CMR	R <sub>S</sub> ≤ 10kΩ	70	100	—	dB
Supply Voltage Rejection Ratio	SVR	R <sub>S</sub> ≤ 10kΩ	76	100	—	dB
Operating Current	I <sub>CC</sub>		—	6	8	mA
Slew Rate	SR		—	6	—	V/μs
Gain, Bandwidth Product	GB		—	14	—	MHz
Equivalent Input Noise Voltage	V <sub>NI</sub>	FLAT+JISA R <sub>S</sub> = 300Ω	—	0.4	0.51	μV <sub>rms</sub>

(note 1) Closed loop gain should be more than 20dB at use.

(note 2) New JRC's general selected products D rank are also prepared for the noise standard (R<sub>S</sub> = 2.2kΩ, RIAA,

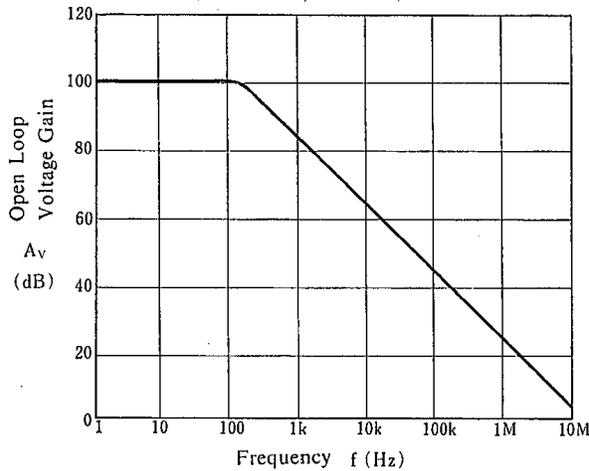
V<sub>NI</sub> = 1.4μV Max.)

4

## ■ TYPICAL CHARACTERISTICS

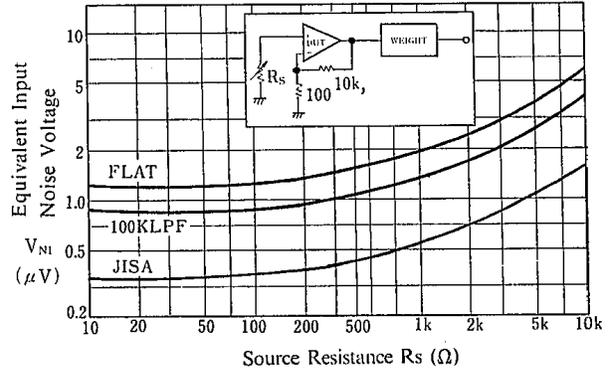
### Open Loop Voltage Gain vs. Frequency

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



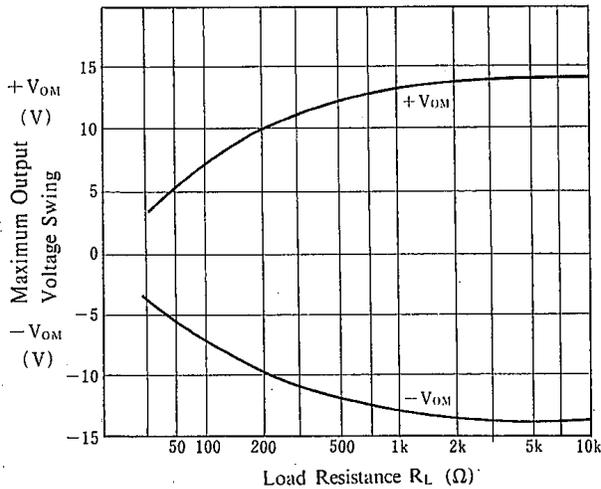
### Equivalent Input Noise Voltage

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



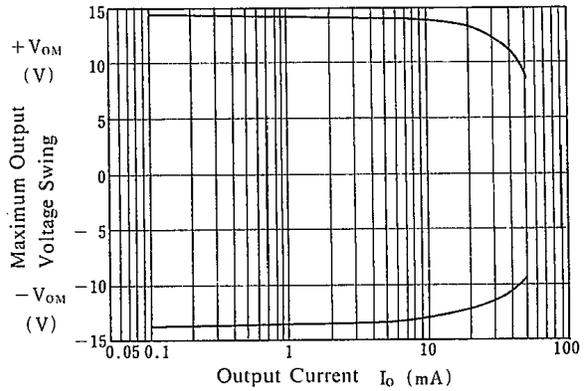
### Maximum Output Voltage Swing vs. Load Resistance

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

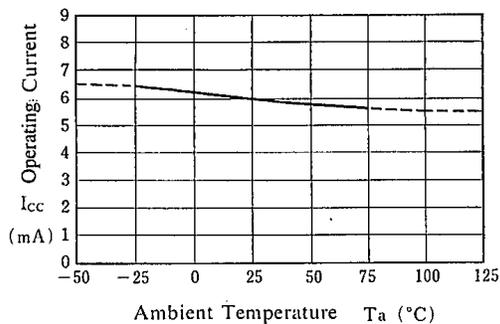


### Maximum Output Voltage Swing vs. Output Current

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

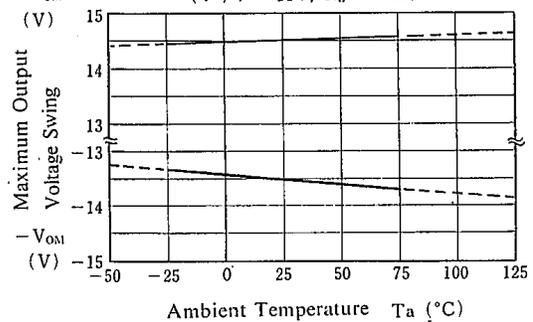


### Operating Current vs. Temperature



### Maximum Output Voltage Swing vs. Temperature

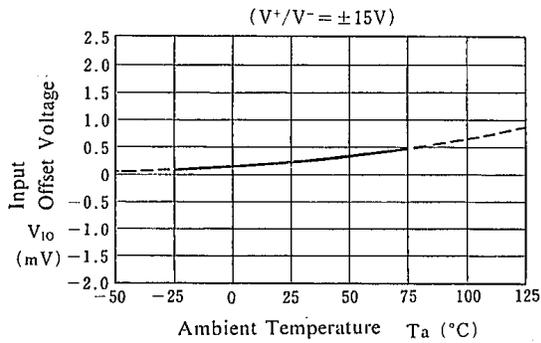
( $V^+/V^- = 15V$ ,  $R_L = 10k\Omega$ )



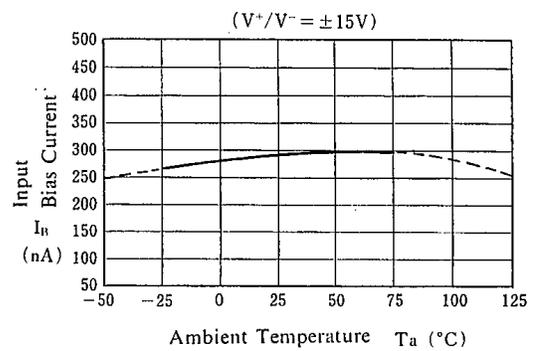
4

## TYPICAL CHARACTERISTICS

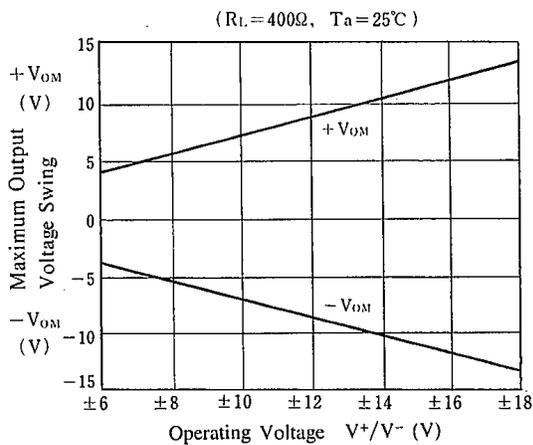
### Input Offset Voltage vs. Temperature



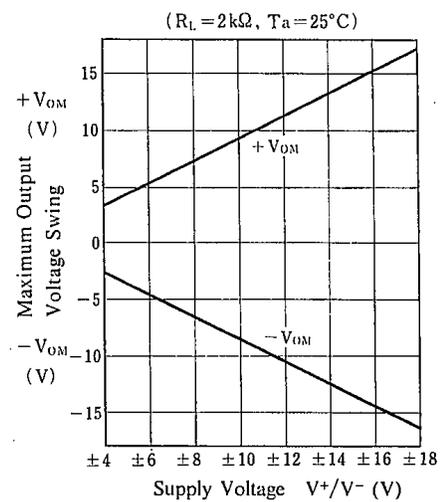
### Input Bias Current vs. Temperature



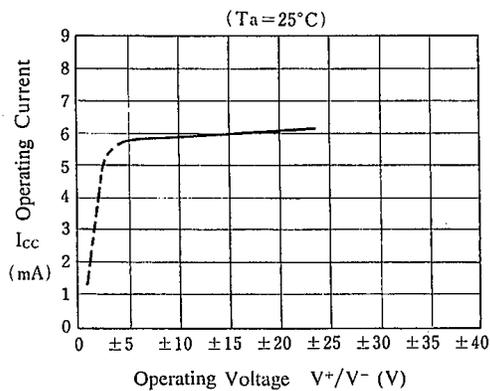
### Maximum Output Voltage Swing vs. Operating Voltage



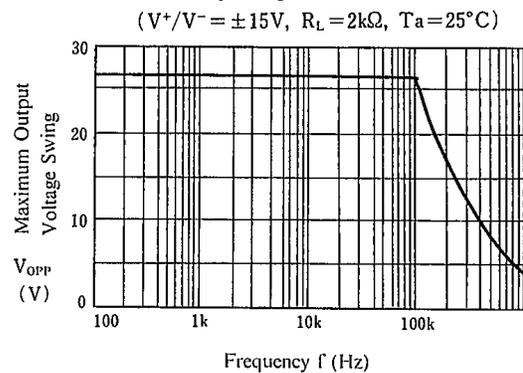
### Maximum Output Voltage Swing vs. Supply Voltage



### Operating Current vs. Operating Voltage



### Maximum Output Voltage Swing vs. Frequency



4

## MEMO

**[CAUTION]**

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