



## LOW-NOISE DUAL PRE-AMPLIFIER

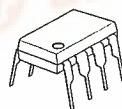
### ■ GENERAL DESCRIPTION

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.

### ■ FEATURES

- Operating Voltage ( $\pm 4V \sim \pm 22V$ )
- High Output Current (25mA.)
- Slew Rate ( $6V/\mu s$  typ.)
- Unity Gain Bandwidth (14MHz typ.)
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

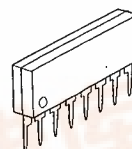
### ■ PACKAGE OUTLINE



NJM2043D

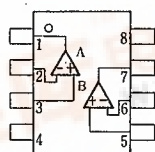


NJM2043M

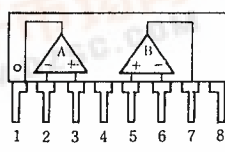


NJM2043L

### ■ PIN CONFIGURATION



NJM2043D  
NJM2043M

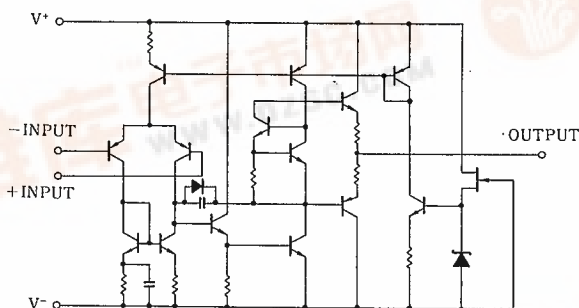


NJM2043L

#### 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	μVrms

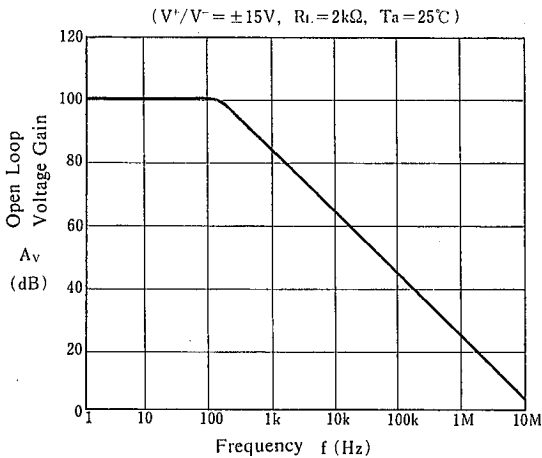
(note 1) Closed loop gain should be more than 20dB at use.

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

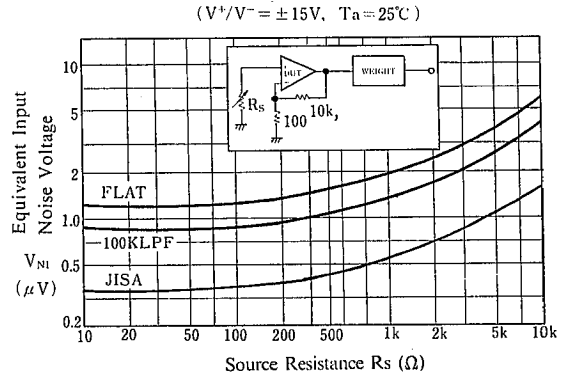
V<sub>NI</sub>=1.4μV Max.)

## TYPICAL CHARACTERISTICS

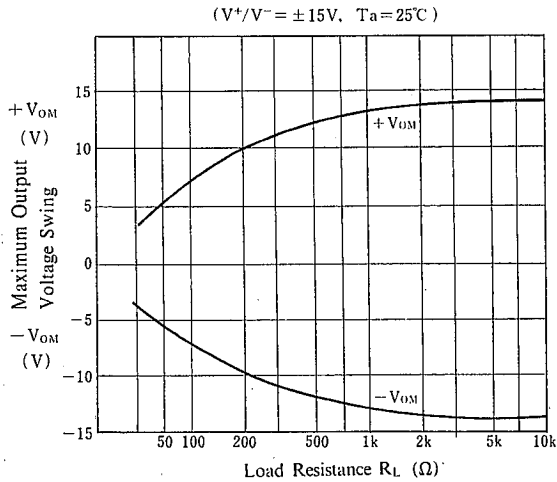
Open Loop Voltage Gain  
vs. Frequency



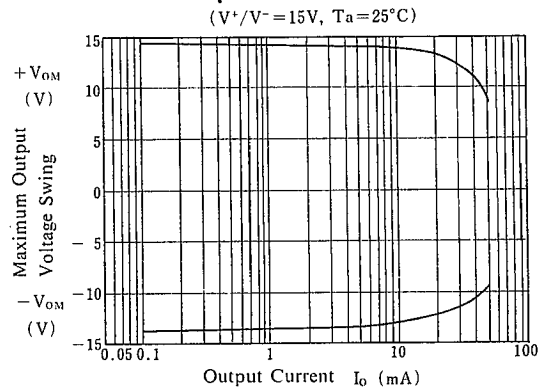
Equivalent Input Noise Voltage



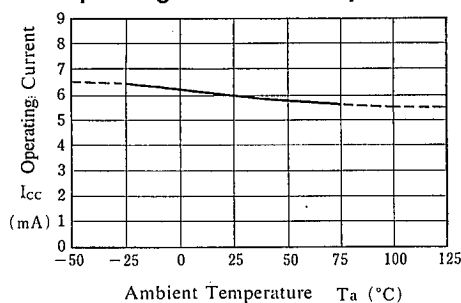
Maximum Output Voltage Swing  
vs. Load Resistance



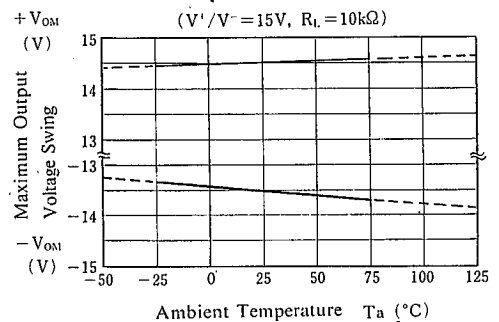
Maximum Output Voltage Swing  
vs. Output Current



Operating Current vs. Temperature

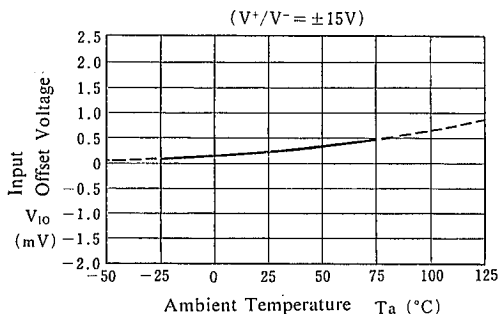


Maximum Output Voltage Swing  
vs. Temperature

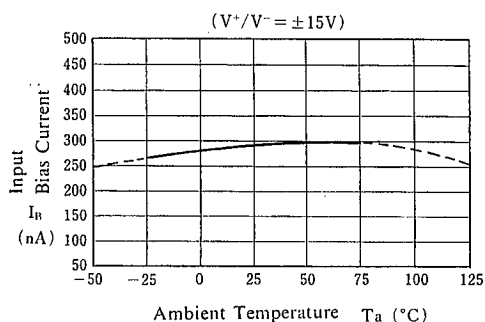


## TYPICAL CHARACTERISTICS

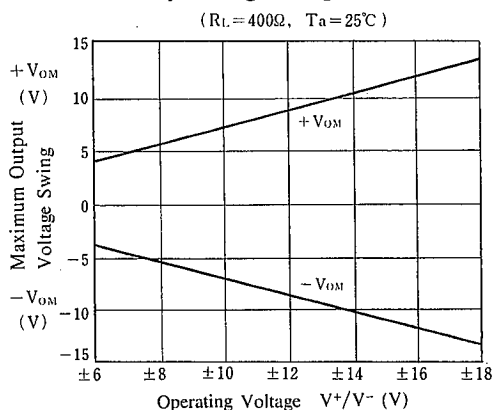
Input Offset Voltage vs. Temperature



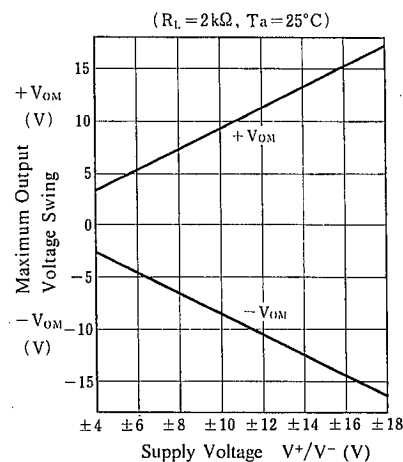
Input Bias Current vs. Temperature



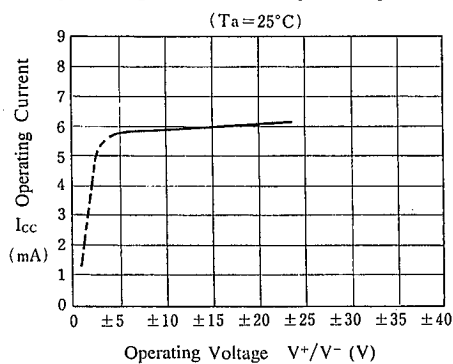
Maximum Output Voltage Swing vs. Operating Voltage



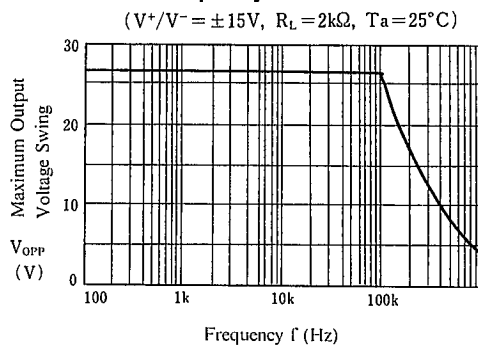
Maximum Output Voltage Swing vs. Supply Voltage



Operating Current vs. Operating Voltage



Maximum Output Voltage Swing vs. Frequency



# NJM2043

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## MEMO

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