

## SINGLE-SUPPLY DUAL OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

The NJM2143 is a single-supply operational amplifier in VSP8. Its input stage of Darlington PNP detects GND level.

There is no crossover distortion in single supply operation when the load is direct-coupled to ground.

### ■ PACKAGE OUTLINE



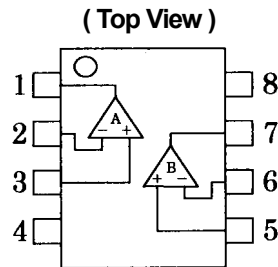
NJM2143R

NJM2143RB1

### ■ FEATURES

- Single-Supply Operation
- Operating Voltage ( +3~+20V )
- Low Operating Current ( 0.7mA typ. )
- Bipolar Technology
- Package Outline VSP8,TVSP8

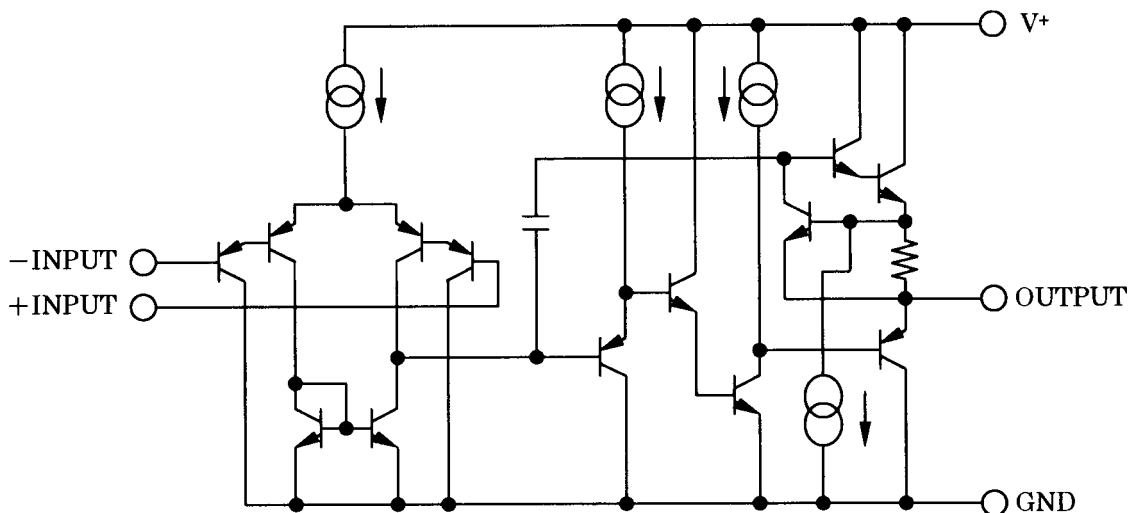
### ■ PIN CONFIGURATION



#### PIN FUNCTION

- 1.A OUTPUT
- 2.A -INPUT
- 3.A +INPUT
- 4.GND
- 5.B +INPUT
- 6.B -INPUT
- 7.B OUTPUT
- 8.V<sup>+</sup>

### ■ EQUIVALENT CIRCUIT ( 1/2 Shown )



# NJM2143

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+(V^-/V)$	20 ( ± 10 )	V
Differential Input Voltage	$V_{ID}$	20	V
Input Voltage	$V_{IC}$	-0.3~+20 ( note1 )	V
Power Dissipation	$P_D$	320	mW
Operating Temperature Range	$T_{opr}$	-40~+85	°C
Storage Temperature Range	$T_{stg}$	-50~+125	°C

( note1 ) When input voltage is less than +20V, the absolute maximum control voltage is equal to the input voltage.

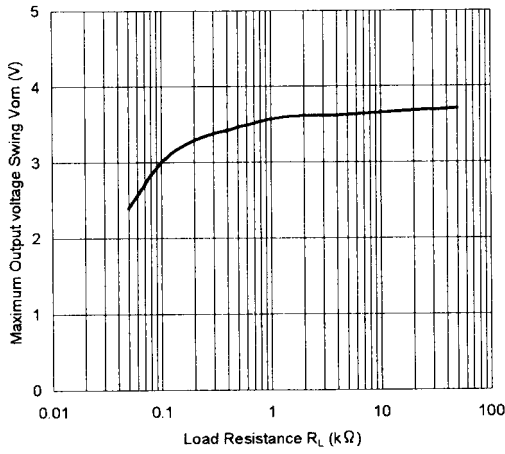
## ■ ELECTRICAL CHARACTERISTICS

(  $V^+=5.0V, Ta=25°C$  )

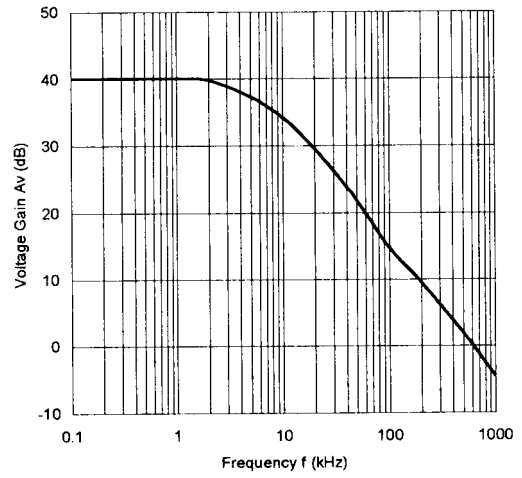
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_S=0\Omega$	-	2	7	mV
Input Offset Current	$I_{IO}$		-	5	50	nA
Input Bias Current	$I_B$		-	25	250	nA
Large Signal Voltage Gain	$A_V$	$R_L \geq 2k\Omega$	-	100	-	dB
Maximum Output Voltage Swings	$V_{OM1}$	$R_L=2k\Omega$	3.5	-	-	$V_{P-P}$
Input Common Mode Voltage Range	$V_{ICM}$		0~3.5	-	-	V
Common Mode Rejection Ratio	CMRR		-	85	-	dB
Supply Voltage Rejection Ratio	PSRR		-	100	-	dB
Output Source Current	$I_{SOURCE}$	$V_{IN}^+=1V, V_{IN}^-=0V$	20	30	-	mA
Output Sink Current	$I_{SINK}$	$V_{IN}^+=0V, V_{IN}^-=1V$	8	20	-	mA
Channel Separation	CS		-	120	-	dB
Operating Current	$I_{CC}$		-	0.7	1.2	mA
Slew Rate	SR		-	0.5	-	V/ $\mu$ s
Gain Bandwidth Product	GB		-	0.6	-	MHz

## TYPICAL CHARACTERISTICS

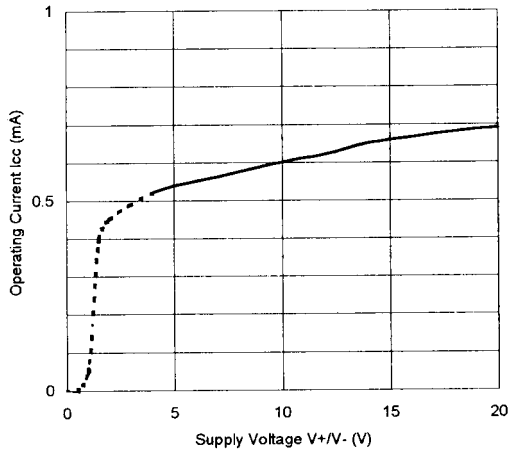
Maximum Output Voltage Swing vs. Load Resistance  
( $V^+=5V$ ,  $T_a=25^\circ C$ )



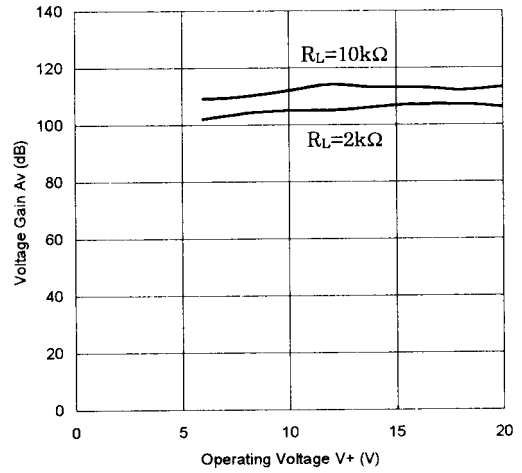
Voltage Gain vs. Frequency



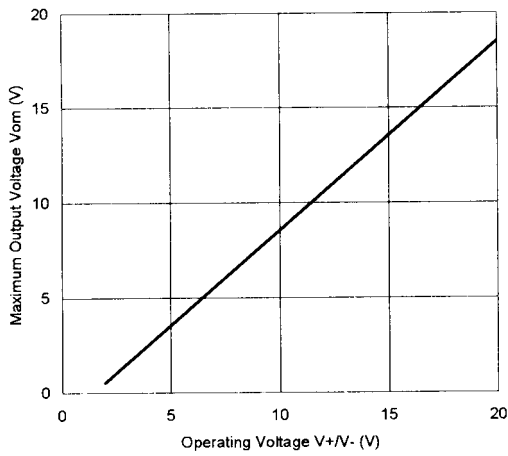
Operating Current vs. Operating Voltage  
( $T_a=25^\circ C$ )



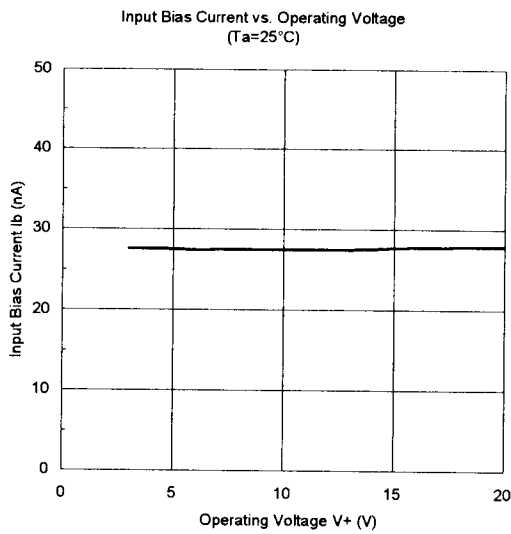
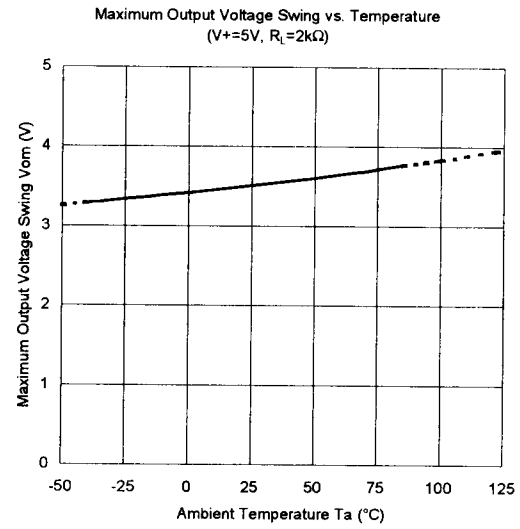
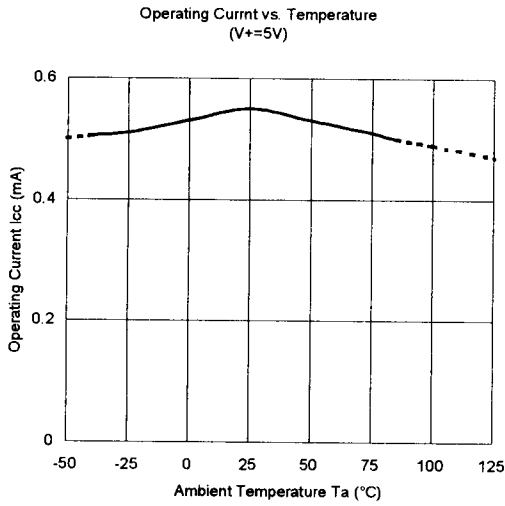
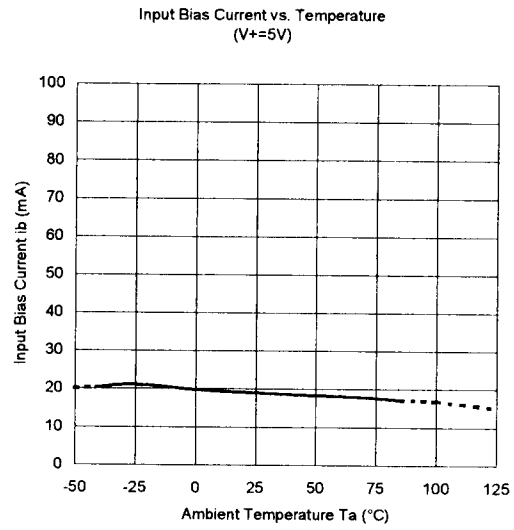
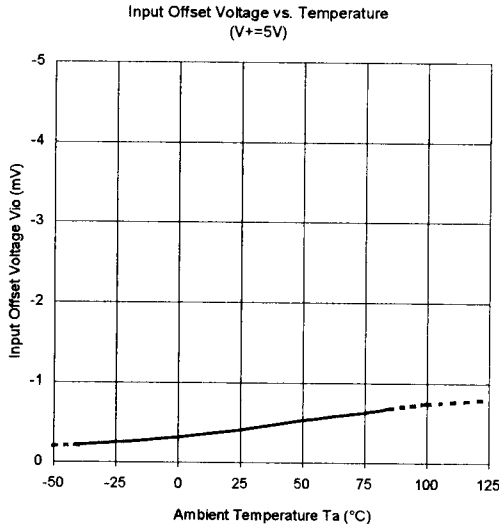
Voltage Gain vs. Operating Voltage



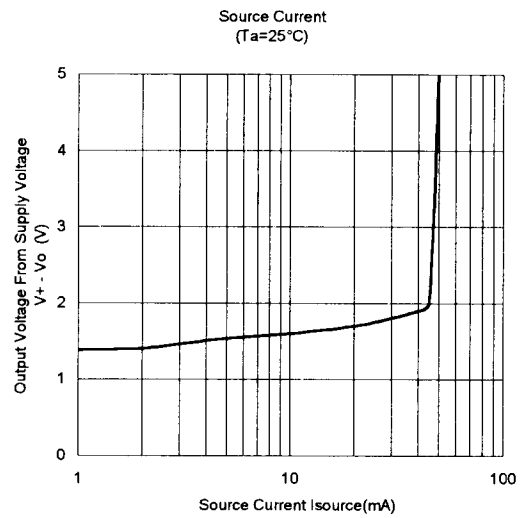
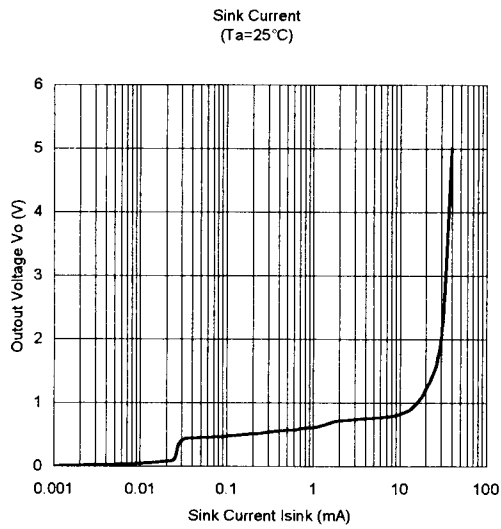
Maximum Output Voltage vs. Operating Voltage  
( $R_L=2k\Omega$ ,  $T_a=25^\circ C$ )



## ■ TYPICAL CHARACTERISTICS



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**[CAUTION]**

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