

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



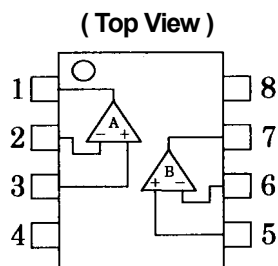
NJM2143R

NJM2143RB1

■ FEATURES

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

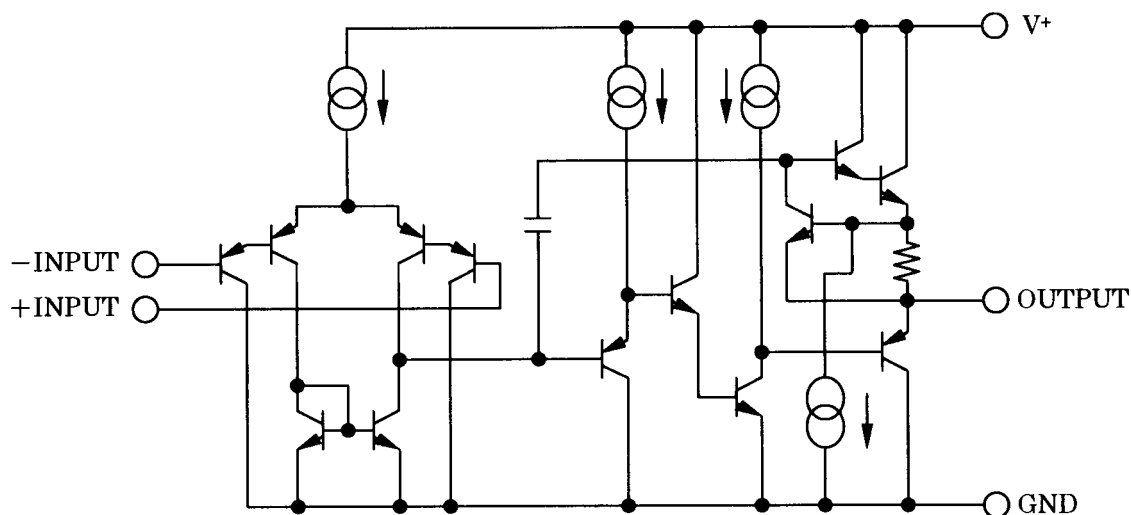
■ PIN CONFIGURATION



PIN FUNCTION

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

■ 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.

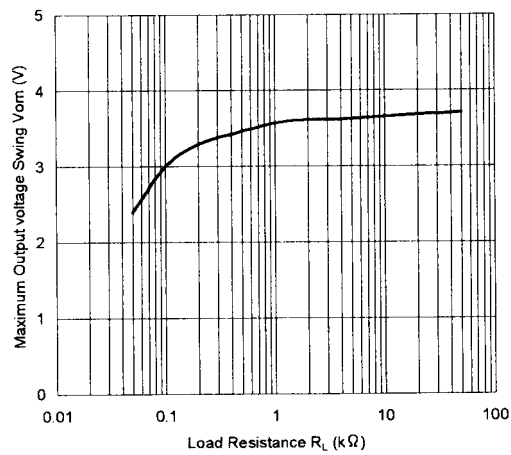
■ ELECTRICAL CHARACTERISTICS

($V^+=5.0V$, Ta=25°C)

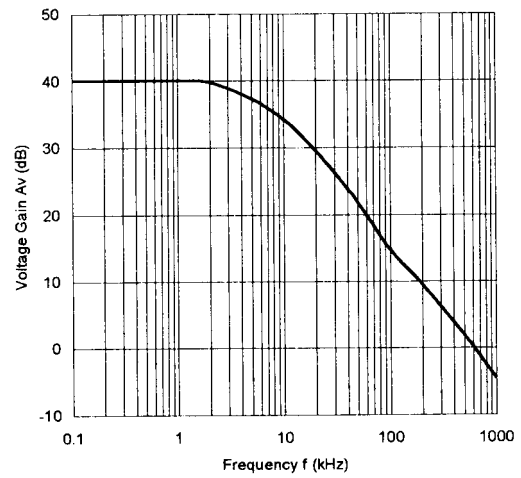
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S=0\Omega$	-	2	7	mV
Input Offset Current	I_{IO}		-	5	50	nA
Input Bias Current	I_B		-	25	250	nA
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega$	-	100	-	dB
Maximum Output Voltage Swings	V_{OM1}	$R_L=2k\Omega$	3.5	-	-	V_{P-P}
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/ μ s
Gain Bandwidth Product	GB		-	0.6	-	MHz

■ TYPICAL CHARACTERISTICS

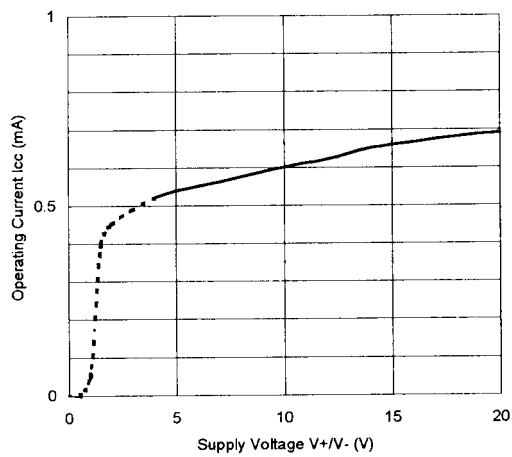
Maximum Output Voltage Swing vs. Load Resistance
($V_+ = 5V$, $T_a = 25^\circ C$)



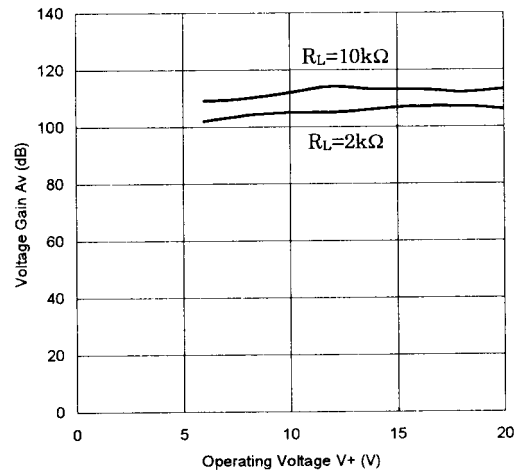
Voltage Gain vs. Frequency



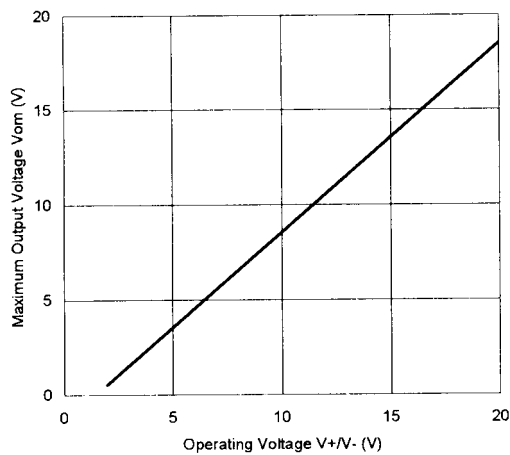
Operating Current vs. Operating Voltage
($T_a = 25^\circ C$)



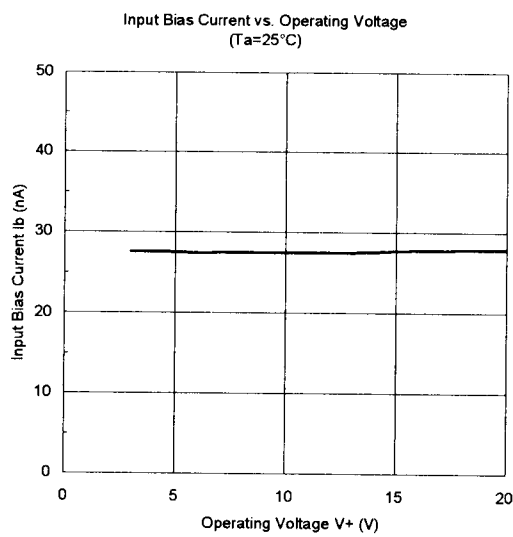
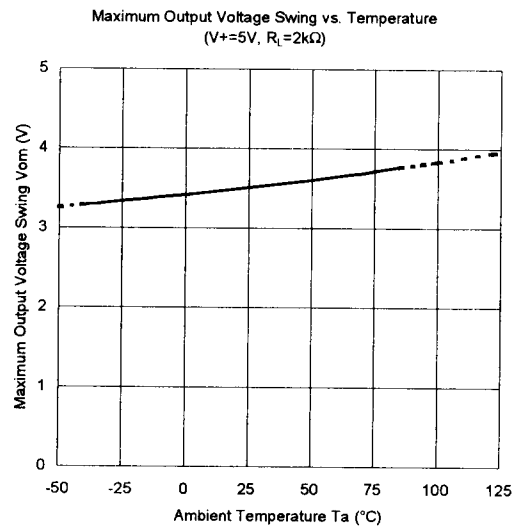
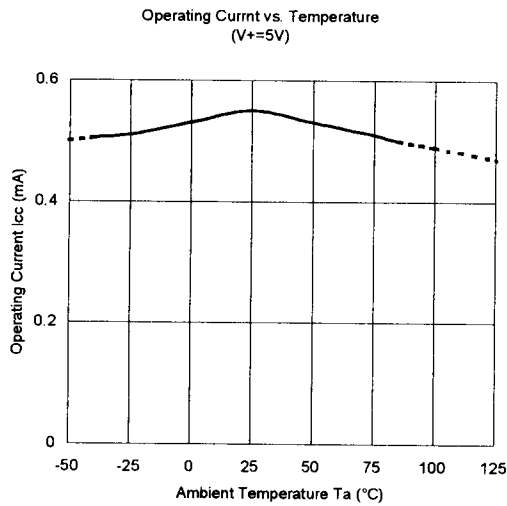
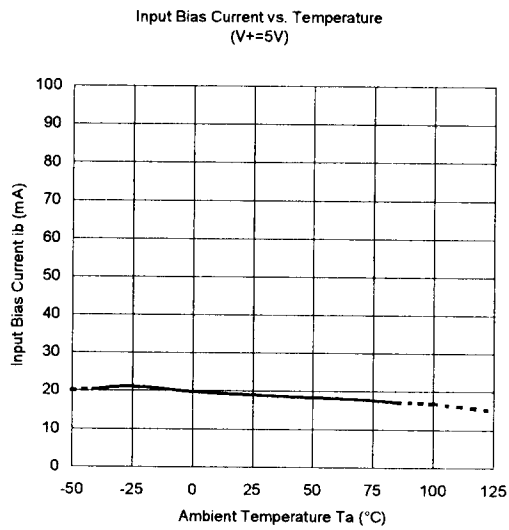
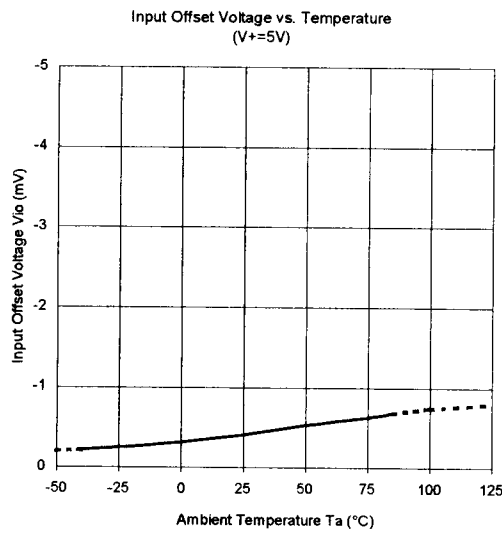
Voltage Gain vs. Operating Voltage



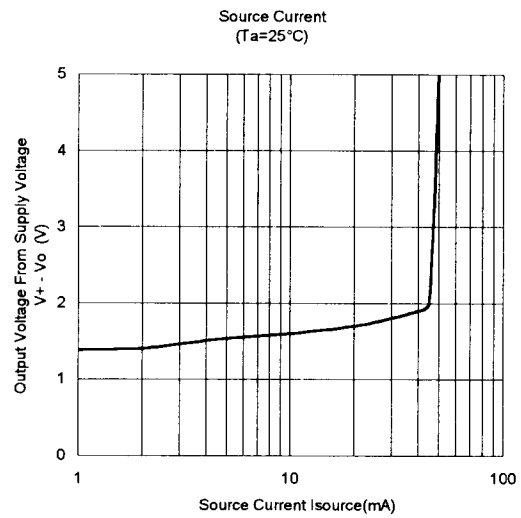
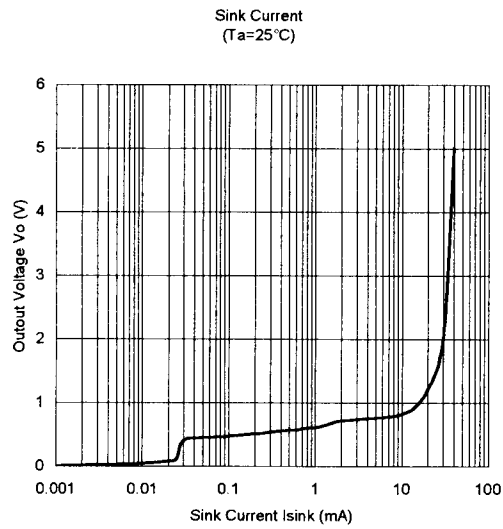
Maximum Output Voltage vs. Operating Voltage
($R_L = 2k\Omega$, $T_a = 25^\circ C$)



■ TYPICAL CHARACTERISTICS



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[CAUTION]

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