

LOW SATURATION DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2140 is a low saturation output voltage dual operational amplifier in small packages. It features a low voltage operation of $\pm 1.0V$ (min.) and low saturation output voltage of $\pm 2.0V_{p-p}$ (at supply voltage $\pm 2.5V$). The NJM2140 is available in both 8-lead MSOP and thin type MSOP packages.

■ PACKAGE OUTLINE



NJM2140R
(MSOP8 (VSP8))

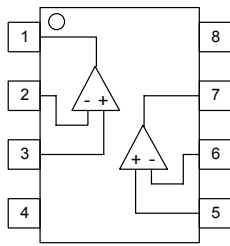


NJM2140RB1
(MSOP8 (TVSP8))

■ FEATURES

- Operating Voltage $\pm 1V$ to $\pm 7V$
- High Slew Rate $4V/\mu s$ typ.
- Wide Band $12MHz$ typ.
- Low Saturation Output Voltage $\pm 2.4V$ typ. (at $V^+V^- = \pm 2.5V, R_L = 10k\Omega$)
- Package Outline MSOP8 (VSP8) MEET JEDEC MO-187-DA
MSOP8 (TVSP8) MEET JEDEC MO-187-DA / THIN TYPE
- Bipolar Technology

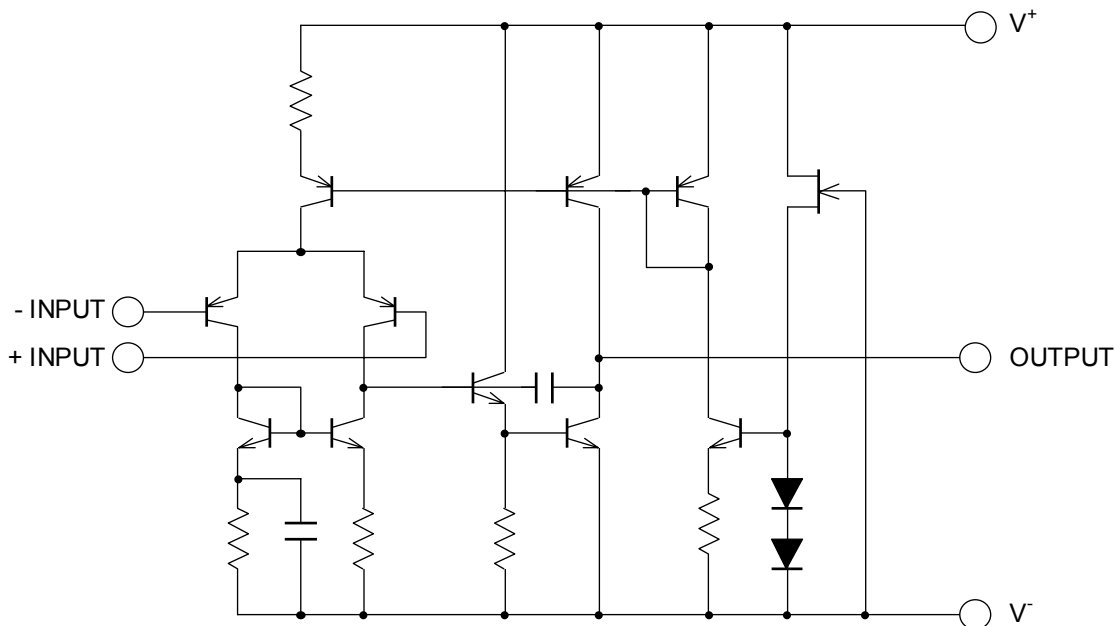
■ PIN CONFIGURATION



NJM2140R/RB1

- 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



NJM2140

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V	± 7.0	V
Differential Input Voltage	V _{ID}	± 14	V
Power Dissipation	P _D	(MSOP8(VSP/TVSP8)) 320	mW
Operating Temperature Range	T _{opr}	-40~+85	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

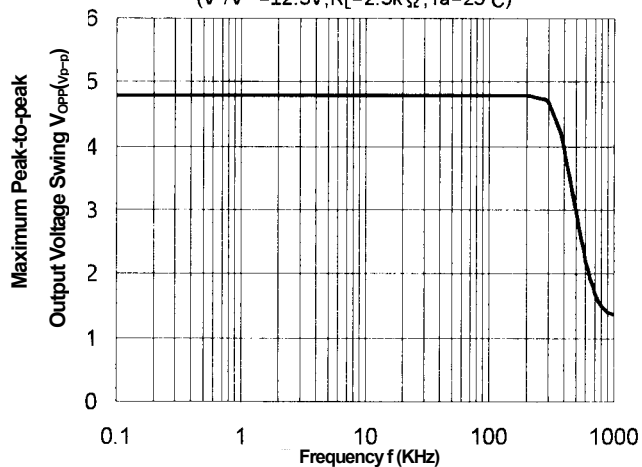
■ ELECTRICAL CHARACTERISTICS

(V⁺/V⁻=±2.5V, Ta=25°C)

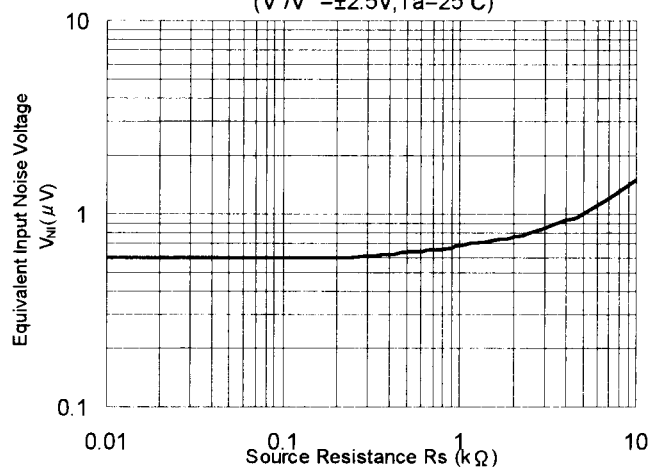
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	R _S ≤10kΩ	-	1	6	mV
Input Offset Current	I _{IO}		-	10	200	nA
Input Bias Current	I _B		-	100	300	nA
Large Signal Voltage Gain	A _V	R _L ≥10kΩ	60	80	-	dB
Maximum Output Voltage Swings 1	V _{OM1}	R _L =2.5kΩ	± 2.0	± 2.2	-	V
Maximum Output Voltage Swings 2	V _{OM2}	R _L ≥10kΩ	± 2.3	± 2.4	-	V
Input Common Mode Voltage Range	V _{ICM}		± 1.5	-	-	V
Common Mode Rejection Ratio	CMRR		60	74	-	dB
Supply Voltage Rejection Ratio	PSRR		60	80	-	dB
Operating Current	I _{CC}		-	3.5	5	mA
Slew Rate	SR		-	4	-	V/μs
Unity Gain Frequency	f _T		-	12	-	MHz

■ TYPICAL CHARACTERISTICS

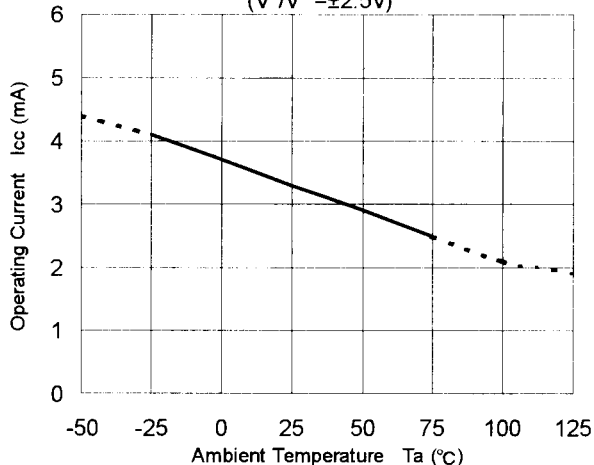
Maximum Peak-to-peak Output Voltage Swing vs. Frequency
($V^+/V^- = \pm 2.5V, R_L = 2.5k\Omega, T_a = 25^\circ C$)



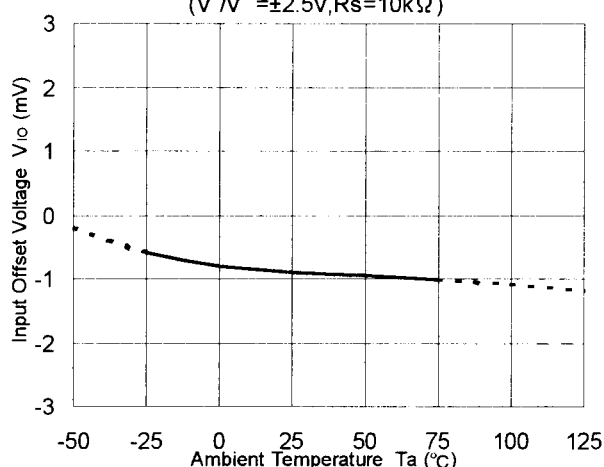
Equivalent Input Noise Voltage vs. Source Resistance
($V^+/V^- = \pm 2.5V, T_a = 25^\circ C$)



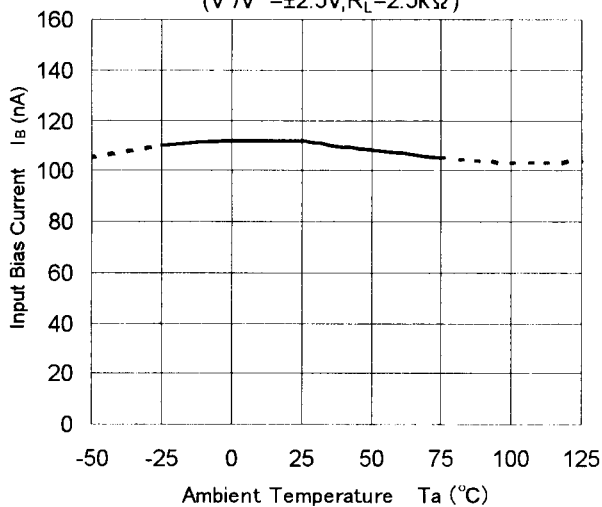
Operating Current vs. Temperature
($V^+/V^- = \pm 2.5V$)



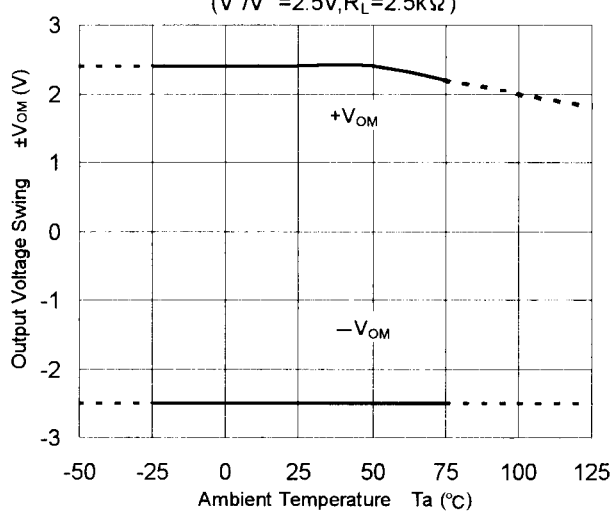
Input Offset Voltage vs. Temperature
($V^+/V^- = \pm 2.5V, R_s = 10k\Omega$)



Input Bias Current vs. Temperature
($V^+/V^- = \pm 2.5V, R_L = 2.5k\Omega$)



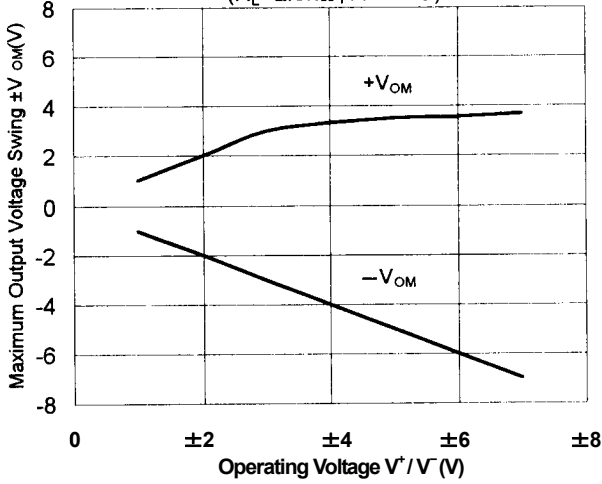
Output Voltage Swing vs. Temperature
($V^+/V^- = 2.5V, R_L = 2.5k\Omega$)



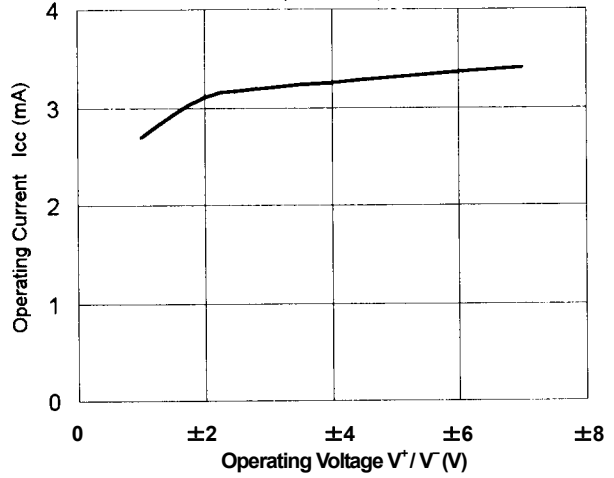
NJM2140

■ TYPICAL CHARACTERISTICS

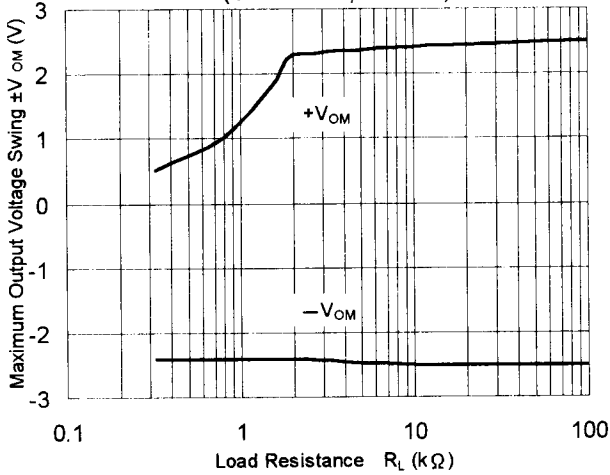
Maximum Output Voltage Swing vs. Operating Voltage
($R_L=2.5k\Omega, T_a=25^\circ C$)



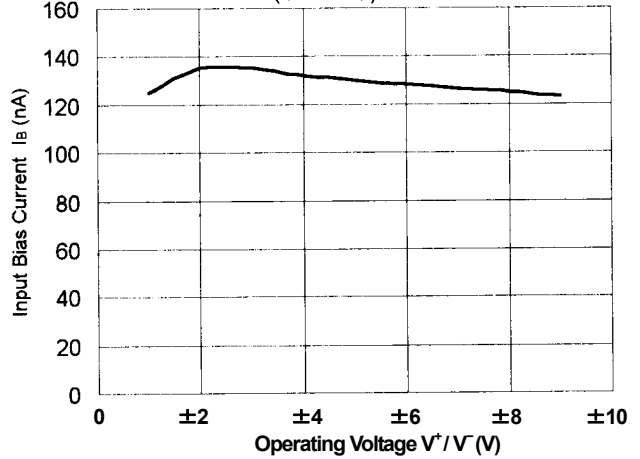
Operating Current vs. Operating Voltage
($T_a=25^\circ C$)



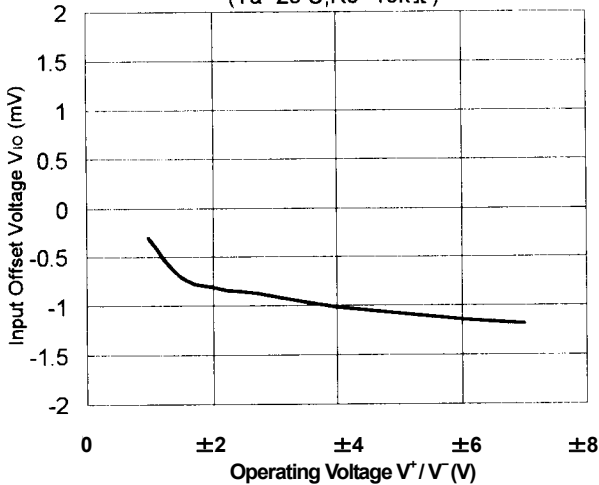
Maximum Output Voltage Swing vs. Load Resistance
($V^+/V^-=\pm 2.5V, T_a=25^\circ C$)



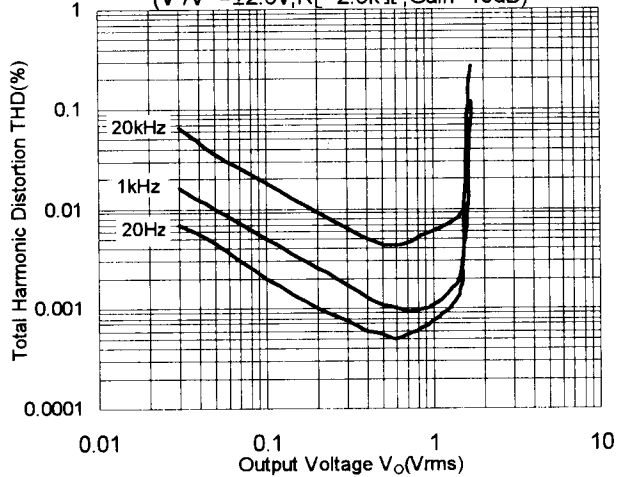
Input Bias Current vs. Operating Voltage
($T_a=25^\circ C$)



Input Offset Voltage vs. Operating Voltage
($T_a=25^\circ C, R_s=10k\Omega$)





Total Harmonic Distortion vs. Output Voltage
($V^+/V^-=\pm 2.5V, R_L=2.5k\Omega, \text{Gain}=10\text{dB}$)



[CAUTION]
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