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 ±1.0V (min.) and low saturation output voltage of ±2.0Vp-p (at supply voltage ±2.5V). The NJM2140 is available in both 8-lead MSOP and thin type MSOP packages.

■ PACKAGE OUTLINE

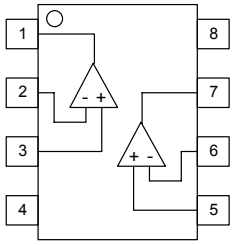
NJM2140R
(MSOP8 (VSP8))

NJM2140RB1
(MSOP8 (TVSP8))

■ FEATURES

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

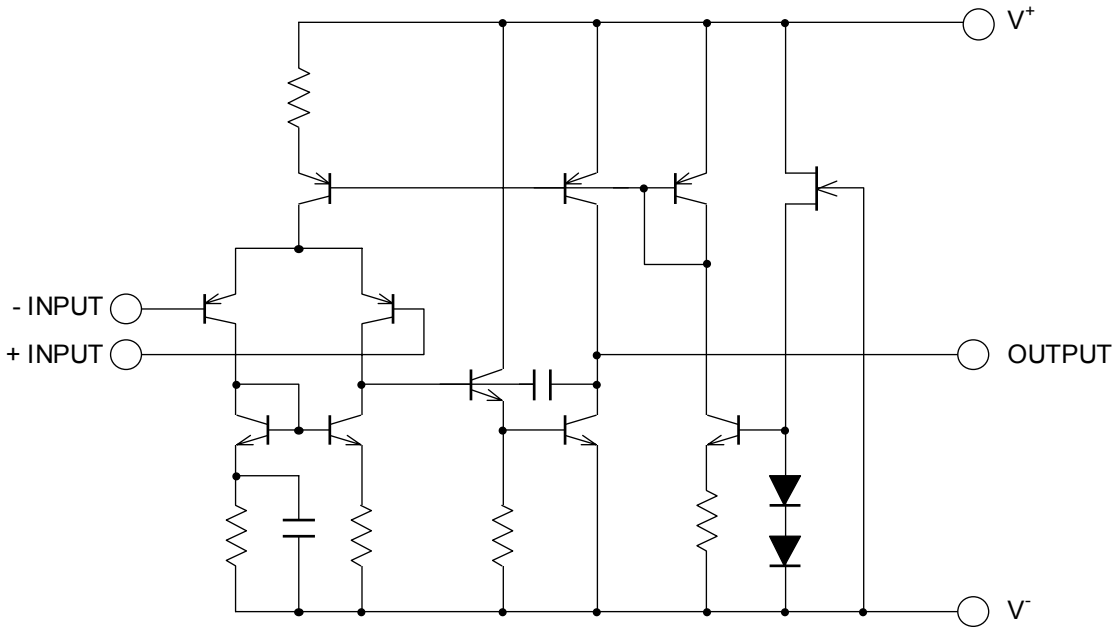
■ PIN CONFIGURATION



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



■ 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

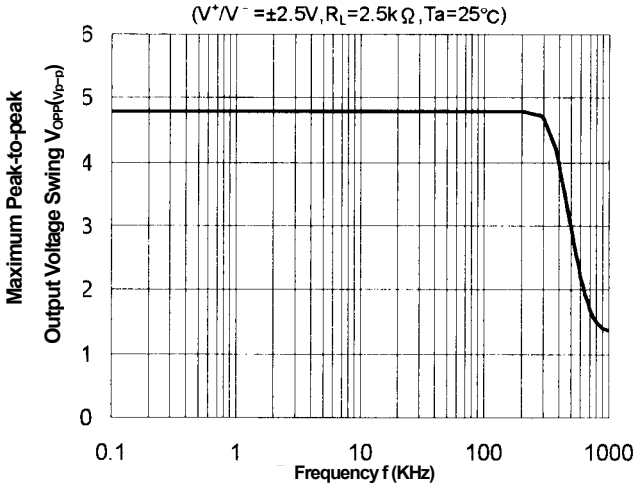
■ ELECTRICAL CHARACTERISTICS

(V^+/V^-=±2.5V,Ta=25˚C)

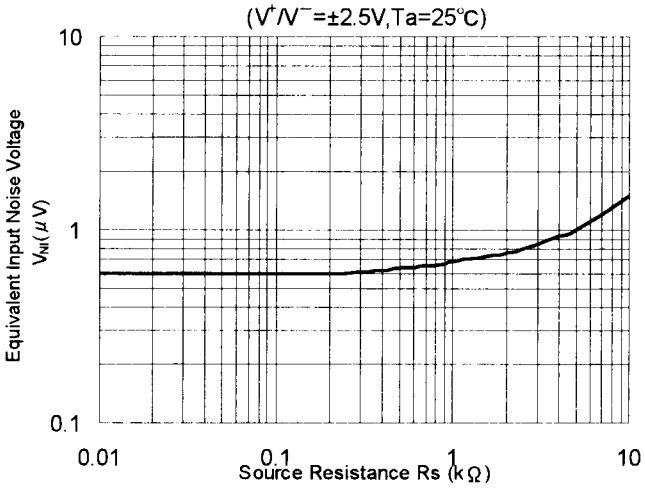
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	1	6	mV
Input Offset Current	I_{IO}		-	10	200	nA
Input Bias Current	I_B		-	100	300	nA
Large Signal Voltage Gain	A_V	R_L≥10kΩ	60	80	-	dB
Maximum Output Voltage Swings 1	V_{OM1}	R_L=2.5kΩ	± 2.0	± 2.2	-	V
Maximum Output 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

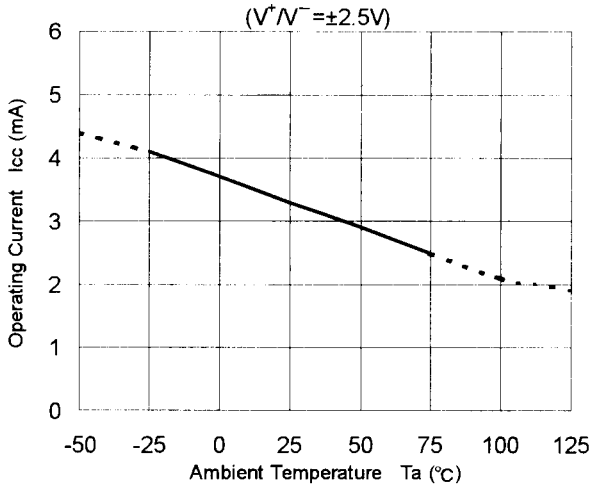
Maximum Peak-to-peak Output Voltage Swing vs. Frequency
(V^+/V^-=±2.5V, R_L=2.5kΩ, Ta=25°C)



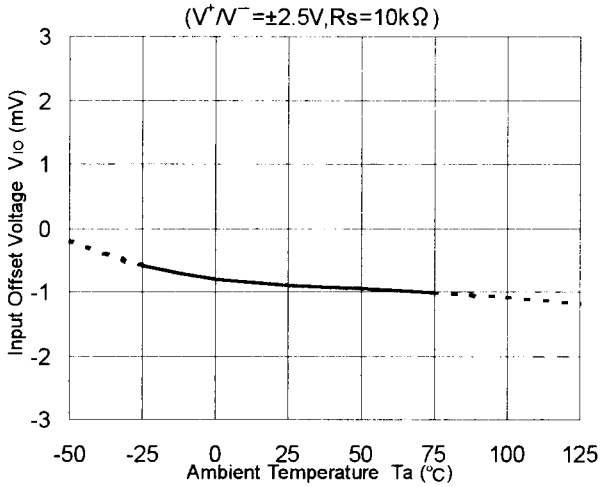
Equivalent Input Noise Voltage vs. Source Resistance
(V^+/V^-=±2.5V, Ta=25°C)



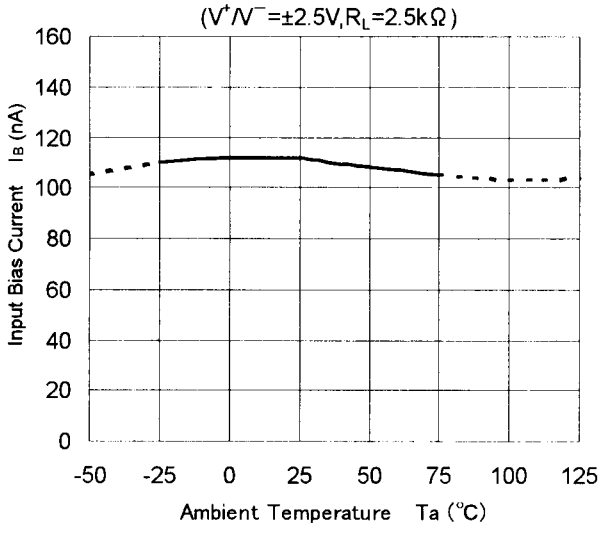
Operating Current vs. Temperature
(V^+/V^-=±2.5V)



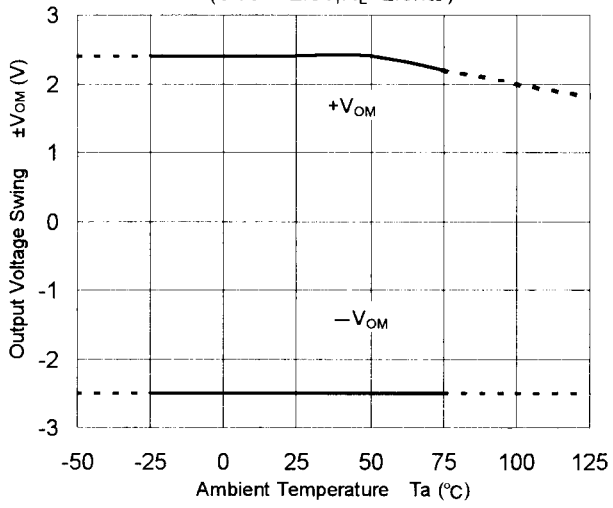
Input Offset Voltage vs. Temperature
(V^+/V^-=±2.5V, Rs=10kΩ)



Input Bias Current vs. Temperature
(V^+/V^-=±2.5V, R_L=2.5kΩ)

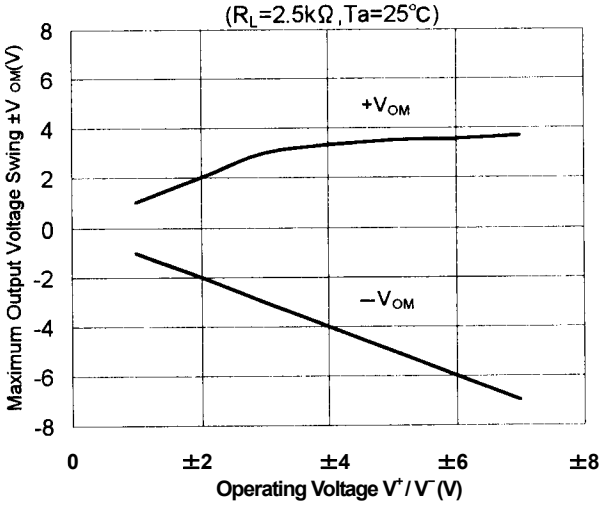


Output Voltage Swing vs. Temperature
(V^+/V^-=2.5V, R_L=2.5kΩ)

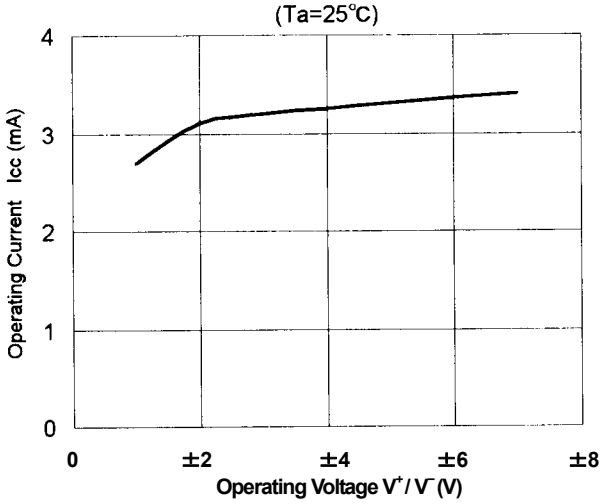


■ TYPICAL CHARACTERISTICS

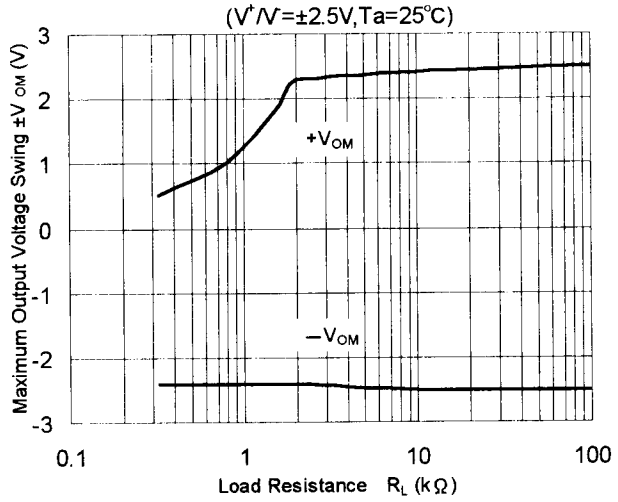
Maximum Output Voltage Swing vs.Operating Voltage
(R_L=2.5kΩ,Ta=25°C)



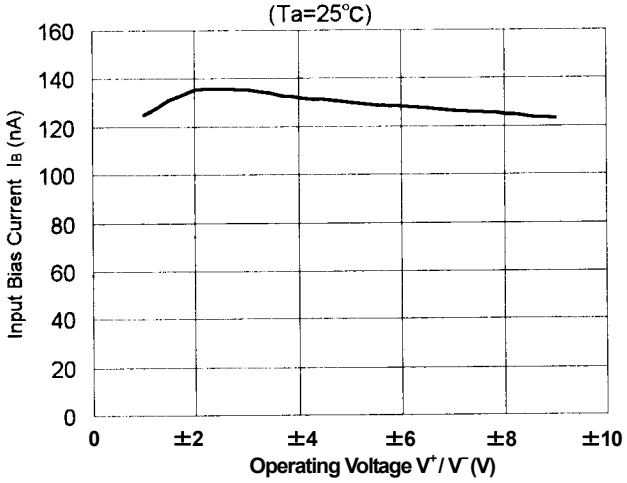
Operating Current vs. Operating Voltage
(Ta=25°C)



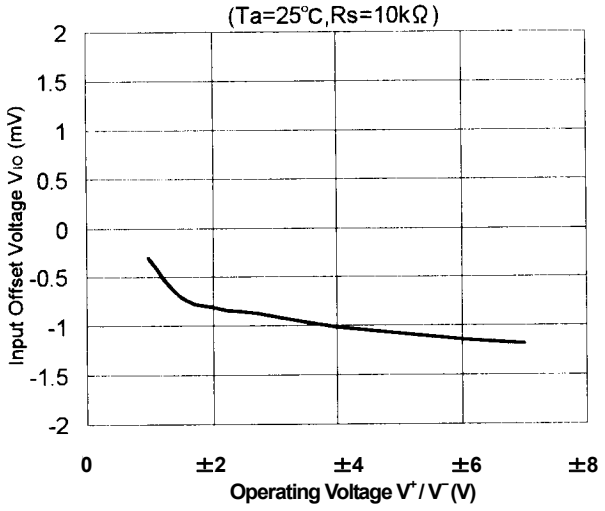
Maximum Output Voltage Swing vs. Load Resistance
(V^+/V^-=±2.5V,Ta=25°C)



Input Bias Current vs. Operating Voltage
(Ta=25°C)



Input Offset Voltage vs. Operating Voltage
(Ta=25°C,Rs=10kΩ)



Total Harmonic Distortion vs. Output Voltage
(V^+/V^-=±2.5V,R_L=2.5kΩ,Gain=10dB)