DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2140 is a low operating voltage (±1.0V min.) and low output saturation voltage operational amplifier of ultra miniature surface mount package.

Applications include Portable CD, Boom Box, Portable DAT and other digital audio systems which require single 5V operation and high output voltage swing.

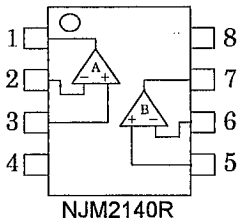
■ PACKAGE OUTLINE

NJM2140R

■ FEATURES

- ●Low Operating Voltage (±1V~±7V)
- ●Slew Rate (4V/μs typ.)
- ●Bandwidth (12MHz typ.)
- ●Maximum Output Voltage Swings (±2.4V typ. at V^+/V^-=±2.5, R_L=10kΩ)
- ●Bipolar Technology
- ●Package Outline VSP8

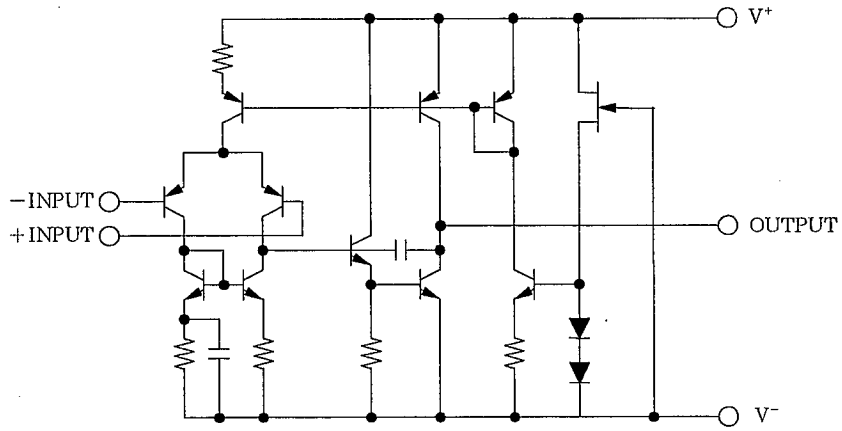
■ PIN CONFIGURATION



NJM2140R

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)

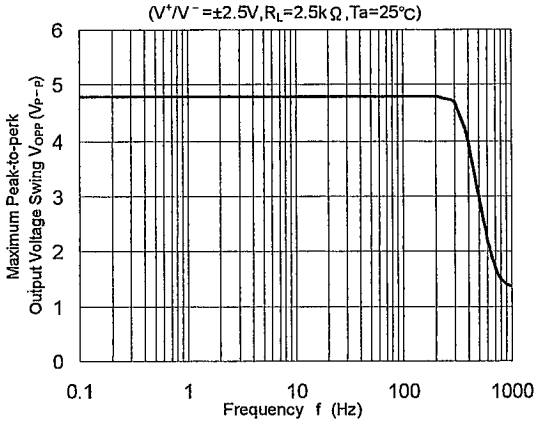
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	±7.0	V
Differential Input Voltage	V_{ID}	±14	V
Power Dissipation	P_D	320	mW
Operating Temperature Range	Topr	−40~85	°C
Storage Temperature Range	Tstg	−50~125	°C

■ ELECTRICAL CHARACTERISTICS (V^+/V^-=2.5V, Ta=25°C)

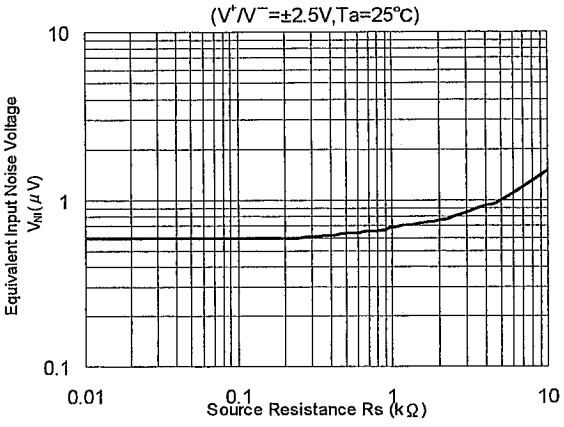
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	Rs=0Ω	−	1	6	mV
Input Offset Current	I_{IO}		−	10	200	nA
Input Bias Current	I_B		−	100	300	nA
Large Signal Voltage Gain	Av	R_L≧10kΩ	60	80	−	dB
Maximum Output Voltage Swing1	V_{OM1}	R_L=2.5kΩ	±2.0	±2.2	−	V
Maximum Output Voltage Swing2	V_{OM2}	R_L≧10kΩ	±2.3	±2.4	−	V
Input Common Mode Voltage Range	V_{ICM}		±1.5	−	−	V
Common Mode Rejection Ratio	CMR		60	74	−	dB
Supply Voltage Rejection Ratio	SVR		60	80	−	dB
Operating Current	Icc		−	3.5	5	mA
Slew Rate	SR		−	4	−	V/μs
Gain Bandwidth Product	GB		−	12	−	MHz

■ TYPICAL CHARACTERISTICS

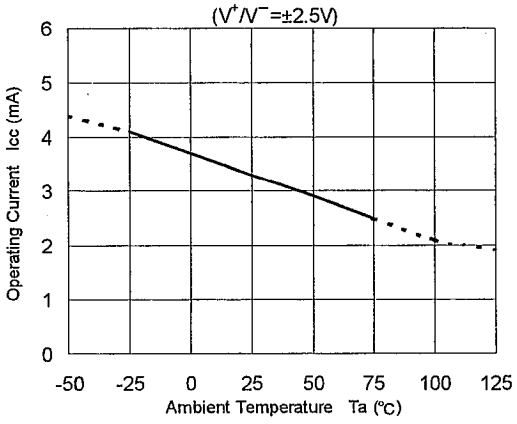
Maximum Peak-to-peak Output Voltage Swing vs. Frequency
(V^+/V^-=±2.5V,R_L=2.5kΩ,Ta=25°C)



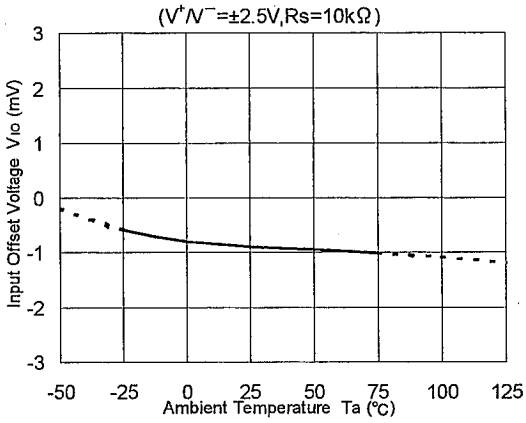
Equivalent Input Noise Voltage vs.Source Resistance
(V^+/V^-=±2.5V,Ta=25°C)



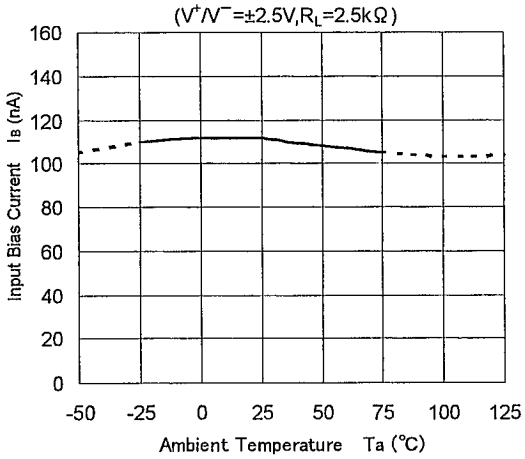
Operating Current vs.Temperature
(V^+/V^-=±2.5V)



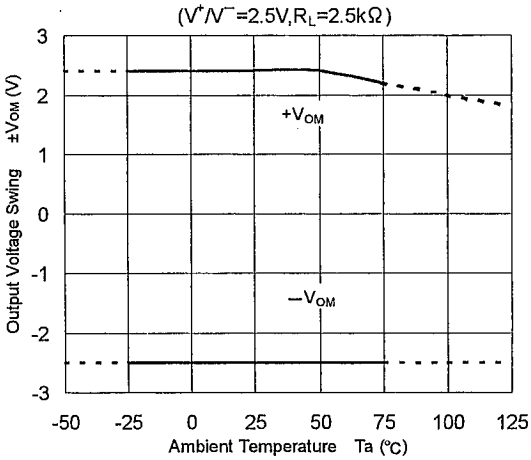
Input Offset Voltage vs. Temperature
(V^+/V^-=±2.5V,Rs=10kΩ)



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

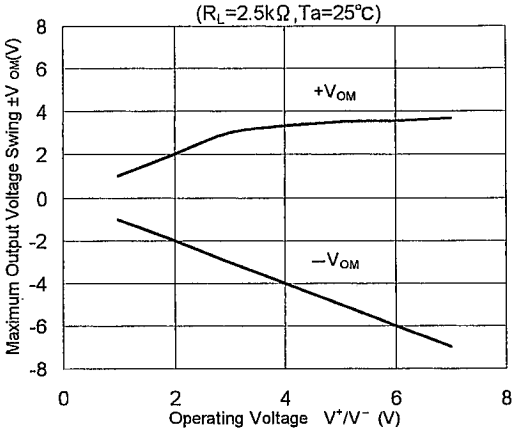


Output Voltage Swing vs. Temperature
(V^+/V^-=2.5V,R_L=2.5kΩ)

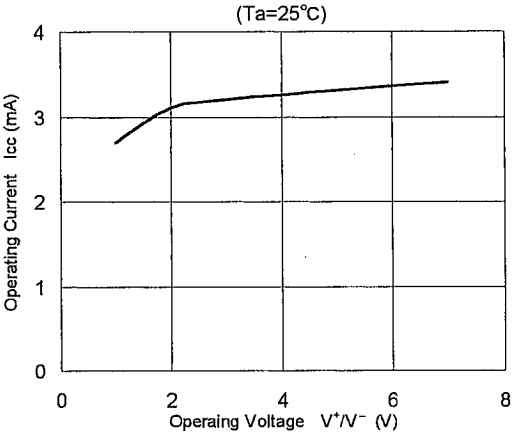


■ TYPICAL CHARACTERISTICS

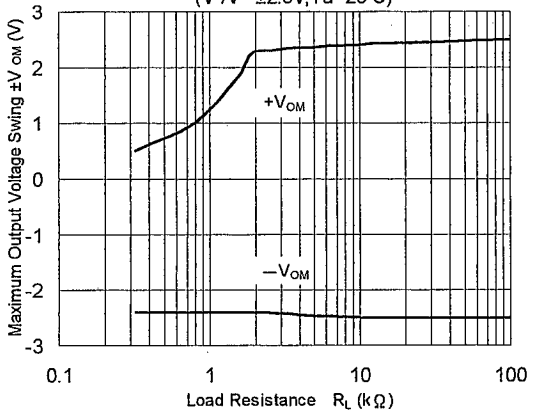
Maximum Output Voltage Swing vs.Operating Voltage
(R_L=2.5kΩ,Ta=25°C)



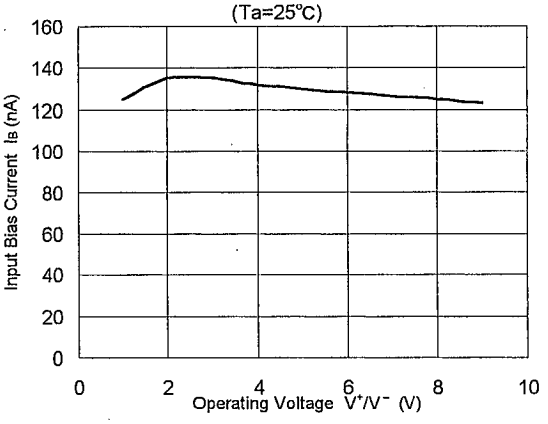
Operating Current vs. Operating Voltage
(Ta=25°C)



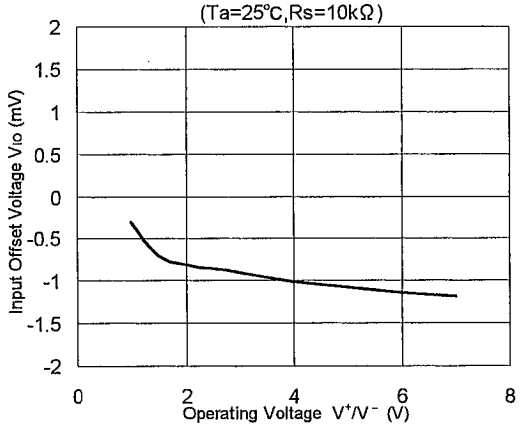
Maximum Output Voltage Swing vs. Load Resistance
(V^+/V^-=±2.5V,Ta=25°C)



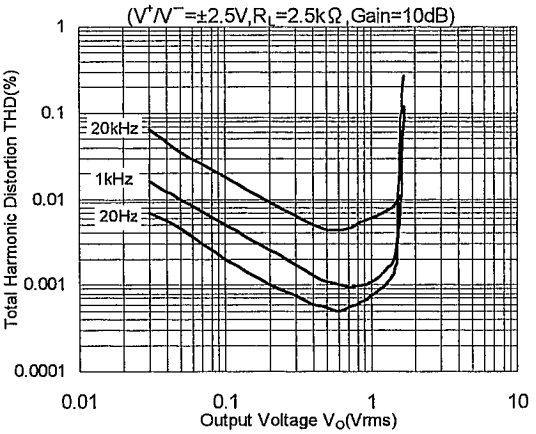
Input Bias Current vs. Operating Voltage
(Ta=25°C)



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)



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