DUAL HIGH VOLTAGE AND LOW POWER OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2147 is a dual high voltage and Low power operational amplifier IC.

The feature of high operating voltage is suitable for high supply voltage items, such as PBX, and others.

■ PACKAGE OUTLINE

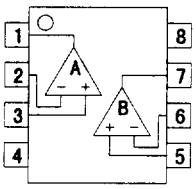
NJM2147D

NJM2147M

■ FEATURES

- High Operating Voltage (±8V～±28V)
- High Slew Rate (0.5V/us typ.)
- Low Operating Current (175uA typ.)
- Short-Circuit Protection
- Package Outline DIP8, DMP8
- Bipolar Technology

■ PIN CONFIGURATION

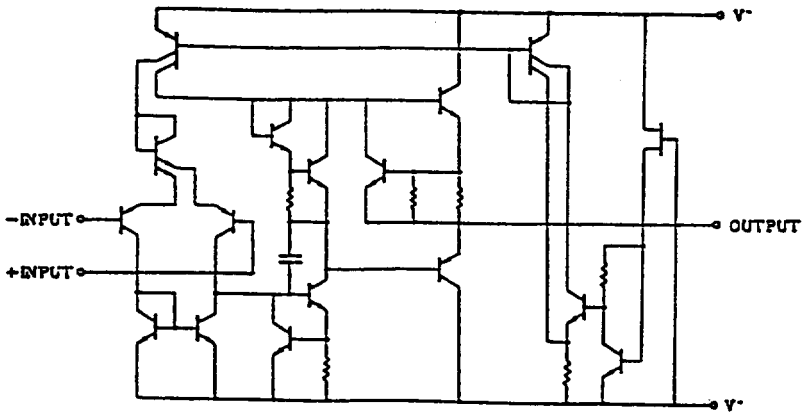


NJM2147D
NJM2147M

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^-	±30	V
Input Voltage	V_{IC}	±28 (note)	V
Differential Input Voltage	V_{ID}	±30	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300	mW
Operating Temperature Range	T_{opr}	-40 ~ +85	°C
Storage Temperature Range	T_{stg}	-40 ~ +125	°C

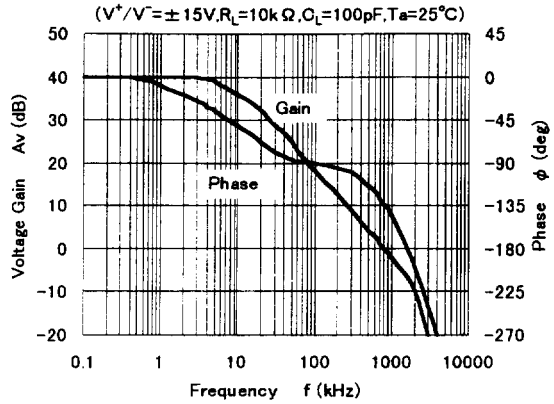
(note) When supply voltage is less than ±15V,
the absolute maximum input voltage is equal supply voltage.

■ ELECTRICAL CHARACTERISTICS (V^+/V^-=±15V, Ta=25°C)

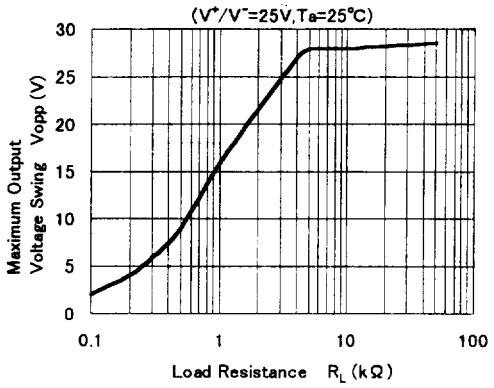
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+		±8	±15	±28	V
Input Offset Voltage	V_{IO}	$R_S \leqq 10k\Omega$	—	1.0	5.0	mV
Input Bias Current	I_B		—	15	250	nA
Input Offset Voltage	I_{IO}		—	1	80	nA
Large Signal Voltage Gain	A_V	$R_L \geqq 10k\Omega$, V_O=±10V	60	88	—	dB
Input Common Mode Voltage Range	V_{ICM}		±12	±13	—	V
Common Mode Rejection Ratio	CMR	$R_S \leqq 10k\Omega$, V_{IC}=±12V	60	90	—	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leqq 10k\Omega$, V^+/V^-=±14V~±28V	74	110	—	dB
Maximum Peak-to-peak Output Voltage Swing 1	$V_{OM}1$	$R_L \geqq 10k\Omega$	±10	±14	—	V
Maximum Peak-to-peak Output Voltage Swing 2	$V_{OM}2$	$R_L \geqq 50k\Omega$	±13	±14	—	V
Operating Current	Icc	R_L=∞ (All Circuit)	—	175	300	uA
Short-circuit Output Current	Ios		—	±6	—	mA
Slew Rate	SR	R_L=10kΩ, C_L=100pF, V_{IN}=10V	—	0.5	—	V/us
Response Time (Rise Time)	t_R	R_L=10kΩ, C_L=100pF, V_{IN}=20mV	—	0.3	—	us
Equivalent Input Noise Voltage	e_n	Av=20dB, f=1kHz	—	50	—	nV/√Hz

■ TYPICAL CHARACTERISTICS

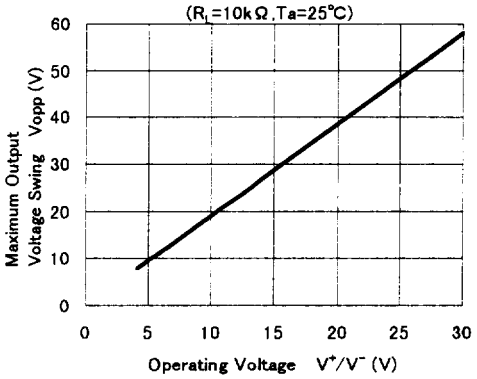
Voltage Gain, Phase vs. Frequency
($V^+/V^-=\pm15V, R_L=10k\Omega, C_L=100pF, Ta=25°C$)



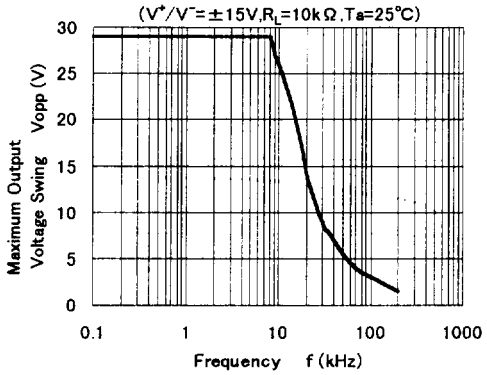
Maximum Output Voltage Swing vs. Load Resistance
($V^+/V^-=25V, Ta=25°C$)



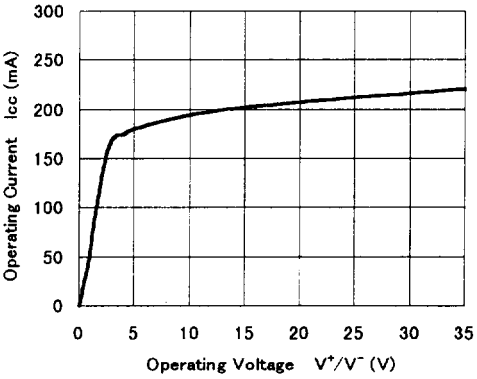
Maximum Output Voltage Swing vs. Operating Voltage
($R_L=10k\Omega, Ta=25°C$)



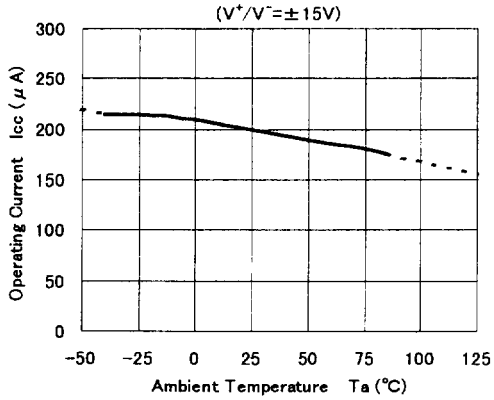
Maximum Output Voltage Swing vs. Frequency
($V^+/V^-=\pm15V, R_L=10k\Omega, Ta=25°C$)



Operating current vs. Operating Voltage
(No Input Signal $RL=\infty, Ta=25°C$)

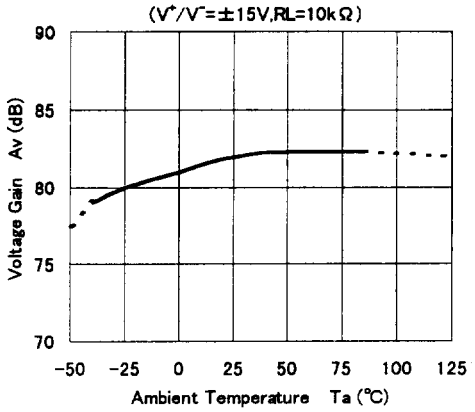


Operating Current vs. Temperature
($V^+/V^-=\pm15V$)

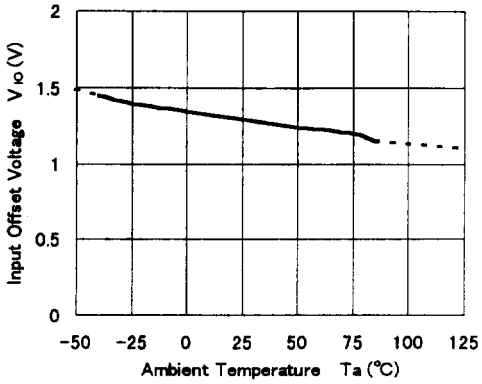


■ TYPICAL CHARACTERISTICS

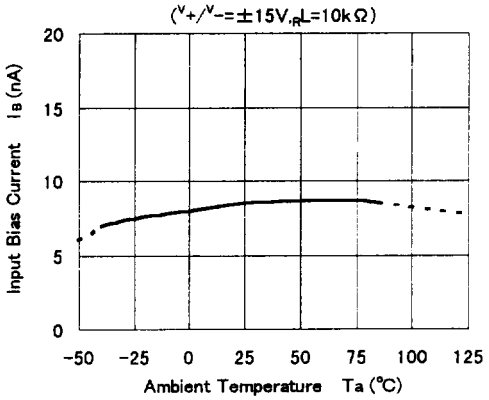
Voltage Gain vs. Temperature
(V^+/V^-=±15V,RL=10kΩ)



Input Offset Voltage vs. Temperature
(V^+/V^-=±15V)



Input Bias Current vs. Temperature
(V^+/V^-=±15V,RL=10kΩ)



Maximum Output Voltage vs. Temperature
(V^+/V^-=±15V,RL=10kΩ)