

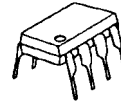
## DUAL HIGH VOLTAGE AND LOW POWER OPERATIONAL AMPLIFIER

### ■ 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

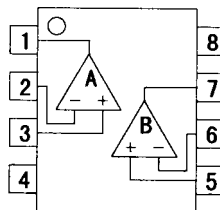


NJM2147M

### ■ FEATURES

- High Operating Voltage (  $\pm 8V \sim \pm 28V$  )
- High Slew Rate (  $0.5V/\mu s$  typ. )
- Low Operating Current (  $175\mu A$  typ. )
- Short-Circuit Protection
- Package Outline DIP8, DMP8
- Bipolar Technology

### ■ PIN CONFIGURATION

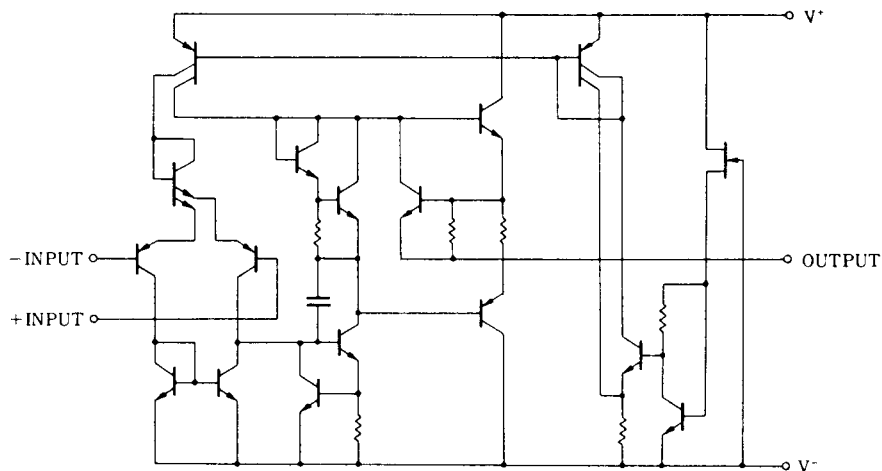


NJM2147D  
NJM2147M

### PIN FUNCTION

- 1.A OUTPUT
- 2.A -INPUT
- 3.A +INPUT
- 4.V<sup>-</sup>
- 5.B +INPUT
- 6.B -INPUT
- 7.B OUTPUT
- 8.V<sup>+</sup>

### ■ EQUIVALENT CIRCUIT



# NJM2147

## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25°C )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+V^-$	$\pm 30$	V
Input Voltage	$V_{IC}$	$\pm 28$ ( note )	V
Differential Input Voltage	$V_{ID}$	$\pm 30$	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

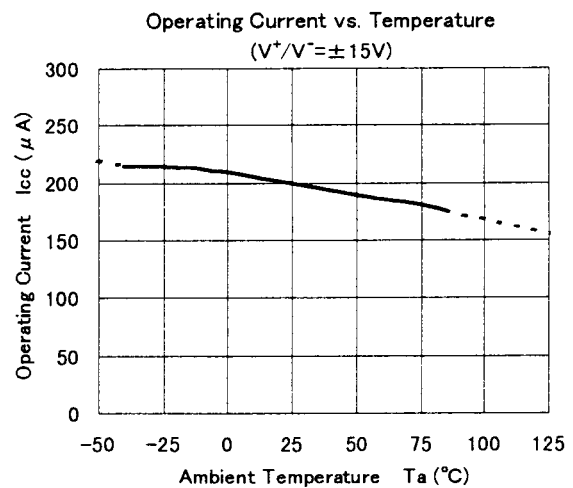
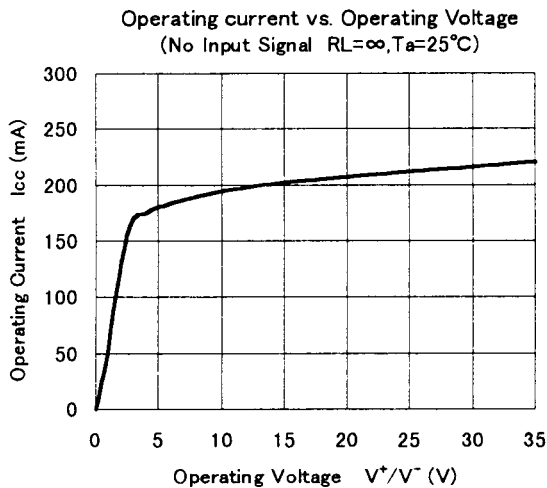
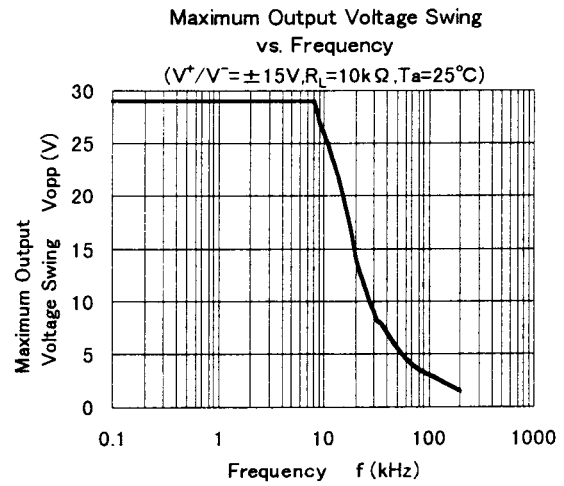
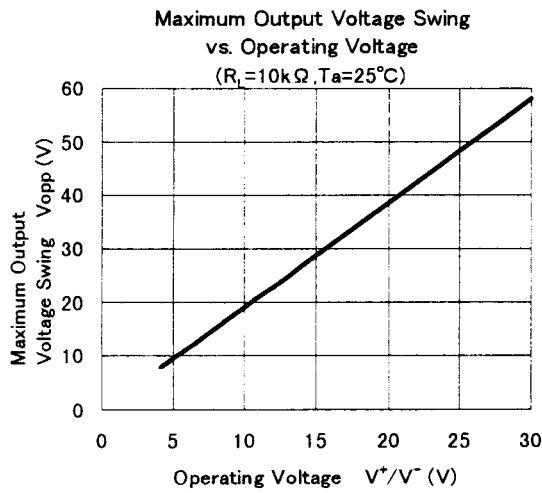
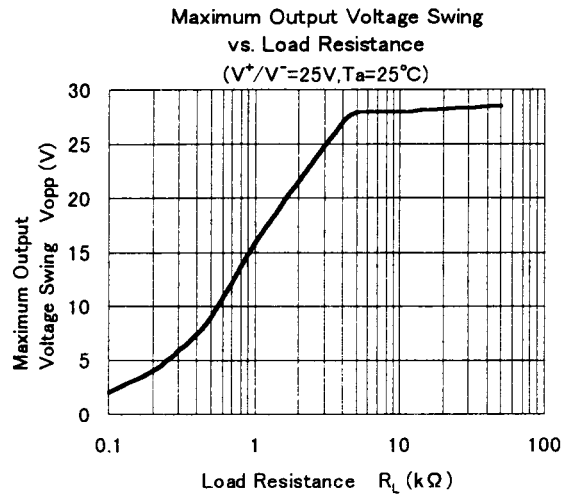
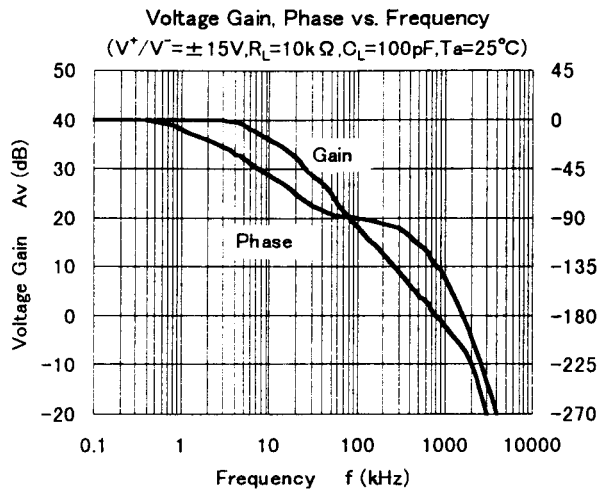
( note ) When supply voltage is less than  $\pm 15V$ , the absolute maximum input voltage is equal to the supply voltage.

## ■ ELECTRICAL CHARACTERISTICS

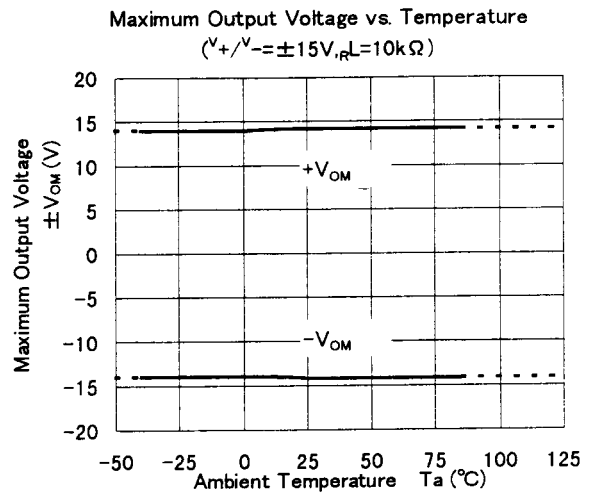
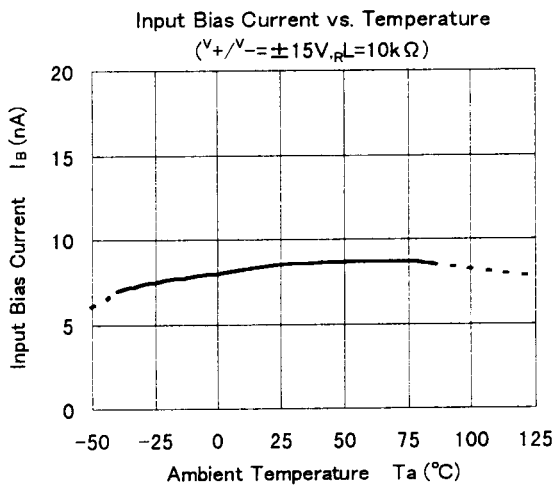
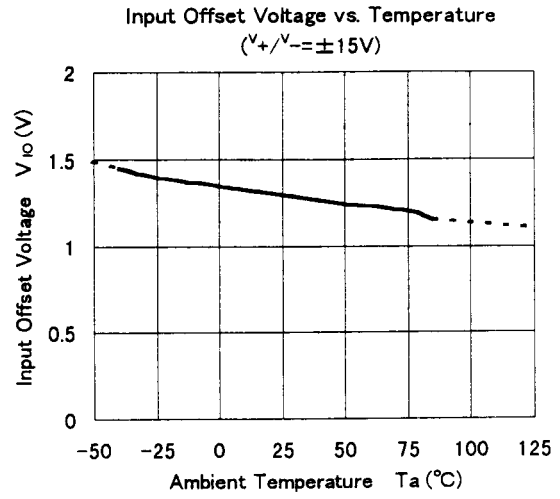
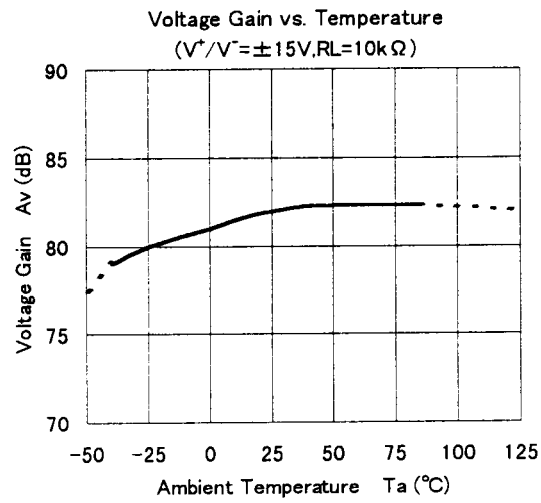
(  $V^+V^-=\pm 15V, Ta=25^\circ C$  )

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	$V^+$		$\pm 8$	$\pm 15$	$\pm 28$	V
Input Offset Voltage	$V_{IO}$	$R_S \leq 10k\Omega$	-	1.0	5.0	mV
Input Bias Current	$I_B$		-	15	250	nA
Input Offset Current	$I_{IO}$		-	1	80	nA
Large Signal Voltage Gain	$A_V$	$R_L \geq 10k\Omega, V_O = \pm 10V$	60	88	-	dB
Input Common Mode Voltage Range	$V_{ICM}$		$\pm 12$	$\pm 13$	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega, V_{IC} = \pm 12V$	60	90	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega, V^+V^- = \pm 14V \sim \pm 28V$	74	110	-	dB
Maximum Peak-to-peak Output Voltage Swing 1	$V_{OM1}$	$R_L \geq 10k\Omega$	$\pm 10$	$\pm 14$	-	V
Maximum Peak-to-peak Output Voltage Swing 2	$V_{OM2}$	$R_L \geq 50k\Omega$	$\pm 13$	$\pm 14$	-	V
Operating Current	$I_{CC}$	$R_L = \infty$ ( All Circuit )	-	175	300	$\mu A$
Short-circuit Output Current	$I_{OS}$		-	$\pm 6$	-	mA
Slew Rate	SR	$R_L = 10k\Omega, C_L = 100pF, V_{IN} = 10V$	-	0.5	-	V/ $\mu s$
Response Time ( Rise Time )	$t_R$	$R_L = 10k\Omega, C_L = 100pF, V_{IN} = 20mV$	-	0.3	-	$\mu s$
Equivalent Input Noise Voltage	$e_n$	$A_V = 20dB, f = 1kHz$	-	50	-	nV/ $\sqrt{Hz}$

## ■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS



**[CAUTION]**

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