

J-FET INPUT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

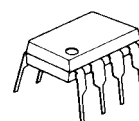
The NJM2162/64 combines feature of the NJM062/064 as well as and providing the capability of wider bandwidth and higher slew rate.

It is suitable for telecom application (active filters etc.).

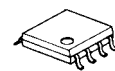
■ FEATURES

- Operating Voltage ($\pm 2V \sim \pm 18V$)
- High Input Resistance ($10^{12}\Omega$ typ.)
- Low Operating Current (1.2mA typ.)
- High Slew Rate ($10V/\mu s$ typ.)
- J-FET Input
- Wide Unity Gain Bandwidth (3MHz typ.)
- Bipolar Technology
- Package Outline DIP8/14,DMP8/14,SIP8,SSOP8/14

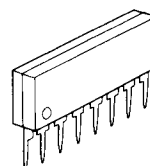
■ PACKAGE OUTLINE



NJM2162D



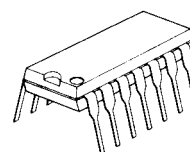
NJM2162M



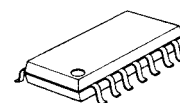
NJM2162L



NJM2162V



NJM2164D

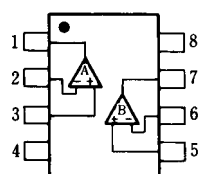


NJM2164M

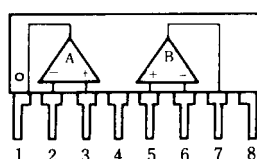


NJM2164V

■ PIN CONFIGURATION



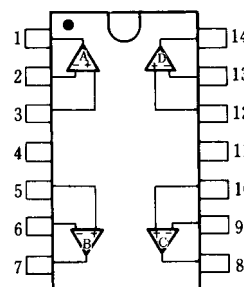
NJM2162D
NJM2162M
NJM2162V



NJM2162L

PIN FUNCTION

- | | |
|------------------|------------------|
| 1.A OUTPUT | 5.B +INPUT |
| 2.A -INPUT | 6.B -INPUT |
| 3.A +INPUT | 7.B OUTPUT |
| 4.V ⁺ | 8.V ⁺ |

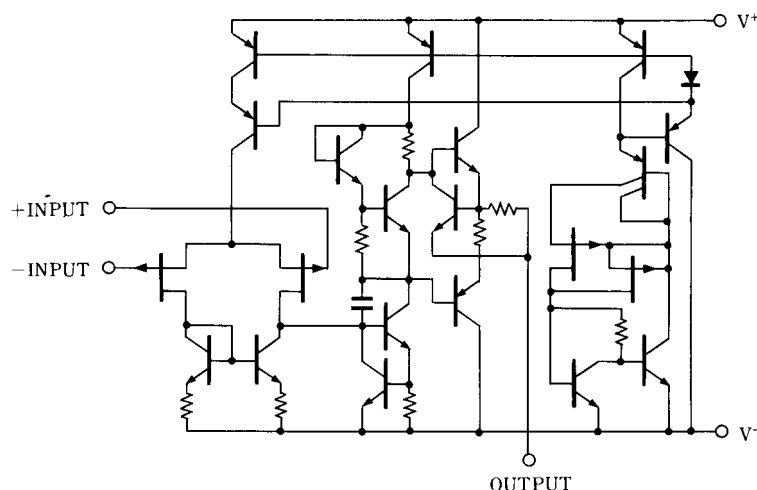


NJM2164D
NJM2164M
NJM2164V

PIN FUNCTION

- | |
|------------------|
| 1.A OUTPUT |
| 2.A -INPUT |
| 3.A +INPUT |
| 4.V ⁺ |
| 5.B +INPUT |
| 6.B -INPUT |
| 7.B OUTPUT |
| 8.C OUTPUT |
| 9.C -INPUT |
| 10.C +INPUT |
| 11. V |
| 12.D +INPUT |
| 13.D -INPUT |
| 14.D OUTPUT |

■ EQUIVALENT CIRCUIT (2162 is 1/2 Shown, 2164 is 1/4 Shown)



NJM2162/2164

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+ / V^-	± 18	V
Differential Input Voltage	V_{ID}	± 30	V
Input Voltage	V_{IC}	± 15 (note1)	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (SIP8) 800 (SSOP8) 250 (DIP14) 700 (DMP14) 700 (note2) (SSOP14) 300	mW
Operating Temperature Range	T_{opr}	-20~+75	°C
Storage Temperature Range	T_{stg}	-40~+125	°C

(note1) For supply voltage less than $\pm 15V$, the absolute maximum input voltage is equal to the supply voltage.

(note2) At on PC board

■ ELECTRICAL CHARACTERISTICS

($V^+ / V^- = \pm 15V$, Ta=25°C)

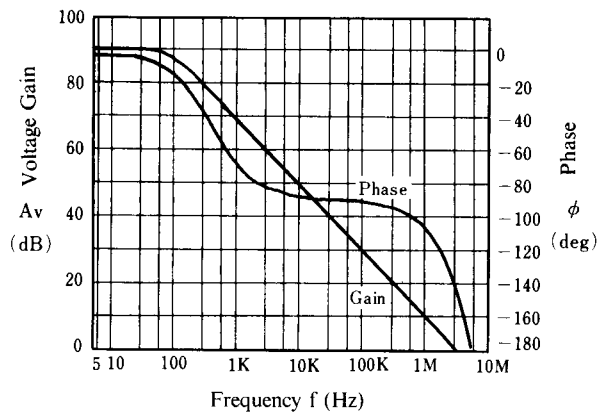
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+ / V^-		± 2	-	± 18	V
Input Offset Voltage	V_{IO}	$R_S = 50\Omega$	-	5	15	mV
Input Offset Current	I_{IO}		-	1	200	pA
Input Bias Current	I_B		-	2	400	pA
Input Common Mode Voltage Range	V_{ICM}		± 13	+15 -13.5	-	V
Maximum Output Voltage Swing	V_{OM}	$R_L = 10k\Omega$	± 13	+14 -14.0	-	V
Large Signal Voltage Gain	A_V	$R_L \geq 10k\Omega, V_O = \pm 10V$	70	80	-	dB
Unity Gain Bandwidth	f_T	$R_L = 10\Omega$	-	3	-	MHz
Input Resistance	R_{IN}		-	10^{12}	-	Ω
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	70	100	-	dB
Operating Current	I_{CC}	$R_L = \infty$ (1 circuit)	-	0.3	0.45	mA
Slew Rate	SR	$R_L = 10k\Omega$	-	10	-	V/ μs
Equivalent Input Noise Voltage	en	$R_S = 100\Omega, f = 1kHz$	-	40	-	nV/ $\sqrt{Hz}$

(Note) The NJM2162/64 is the product in which the AC feature have been made much higher comparing to NJM062/64. Therefore special care being required for the oscillation due to the capacitive load when operation on voltage follower.

■ TYPICAL CHARACTERISTICS

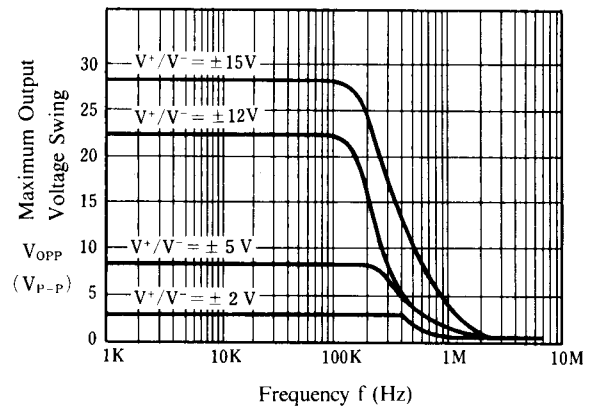
Voltage Gain, Phase Shift vs. Frequency

($V^+/V^- = \pm 15V$, $Z_L = 10k\Omega // 100pF$, $T_a = 25^\circ C$)



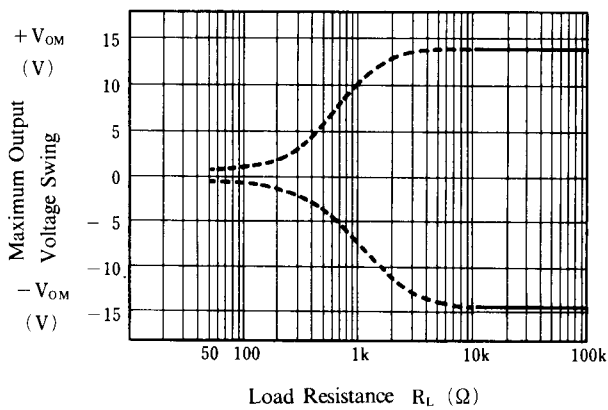
Maximum Output Voltage Swing vs. Frequency

($R_L = 10k\Omega$, $T_a = 25^\circ C$)



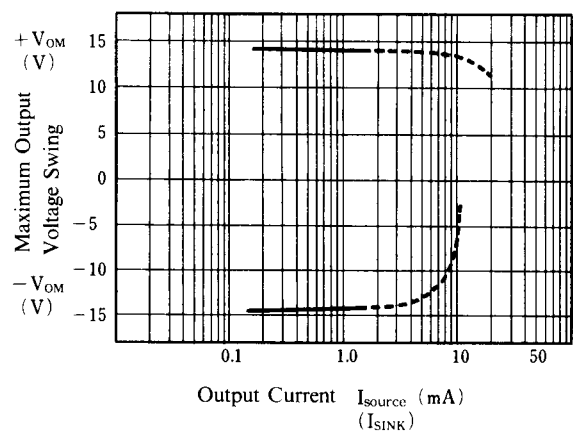
Maximum Output Voltage Swing vs. Load Resistance

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



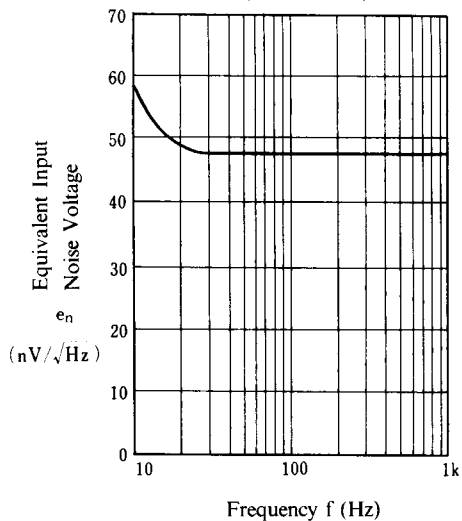
Maximum Output Voltage Swing vs. Output Current

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



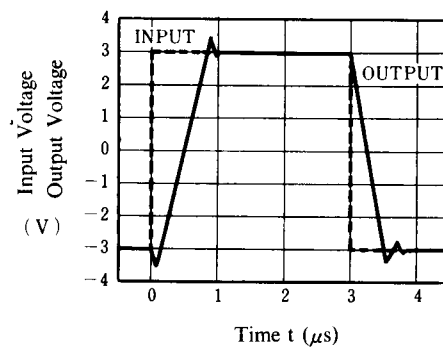
Equivalent Input Noise Voltage vs. Frequency

($V^+/V^- = \pm 15V$, $R_s = 100\Omega$, $T_a = 25^\circ C$)

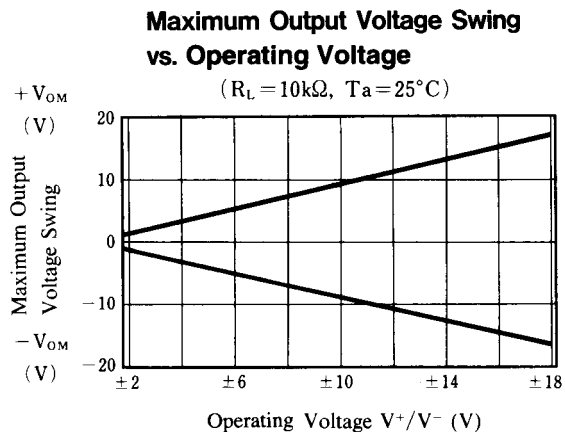
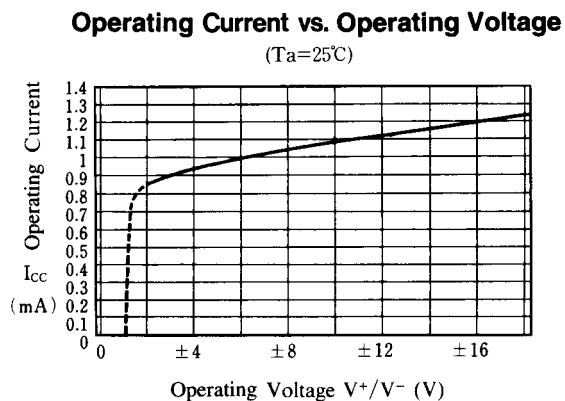
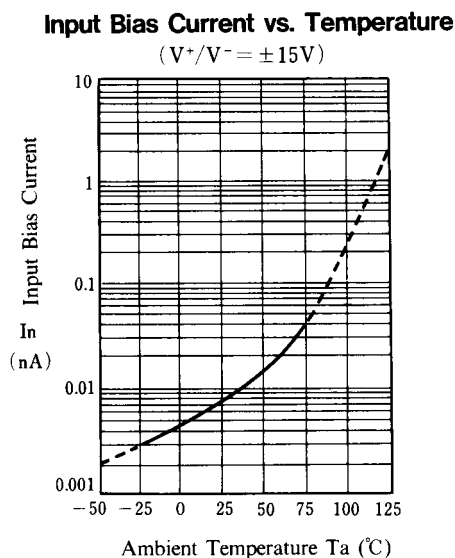
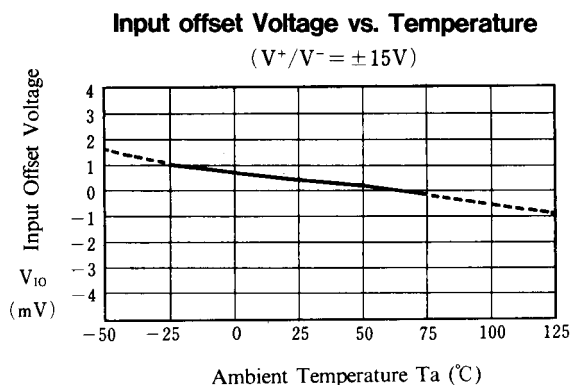
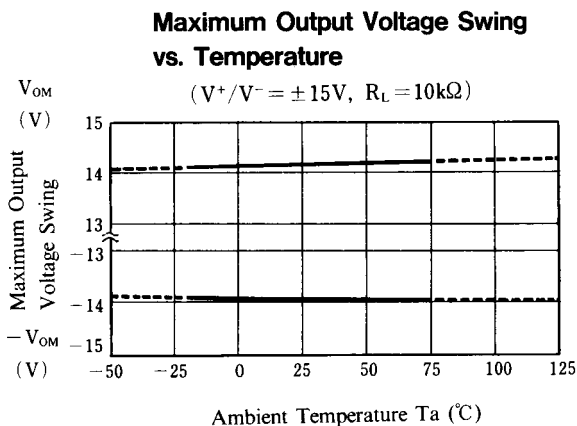
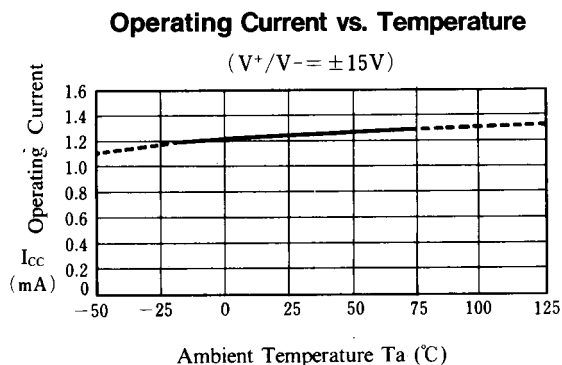


Voltage Follower Large Signal Pulse Response

($V^+/V^- = \pm 15V$, $R_L = 10k\Omega$, $C_L = 100pF$, $T_a = 25^\circ C$)



■ TYPICAL CHARACTERISTICS



[CAUTION]

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