

J-FET INPUT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

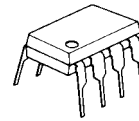
The NJM2162/64 combines feature of the NJM062/064 as well as and providing the capability of wider bandwidth and higher slew rate.

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 ($0.3mA/ch$ 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

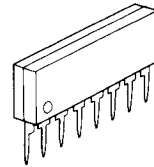
■ PACKAGE OUTLINE



NJM2162D



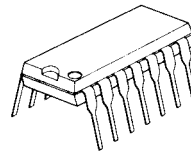
NJM2162M



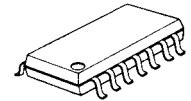
NJM2162L



NJM2162V



NJM2164D

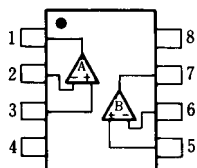


NJM2164M



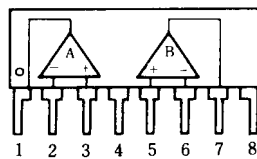
NJM2164V

■ PIN CONFIGURATION



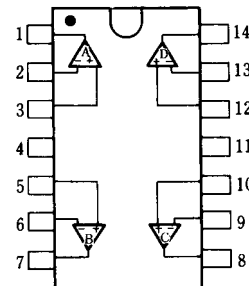
NJM2162D
NJM2162M
NJM2162V

- PIN FUNCTION**
- 1.A OUTPUT
 - 2.A -INPUT
 - 3.A +INPUT
 - 4.V⁺



NJM2162L

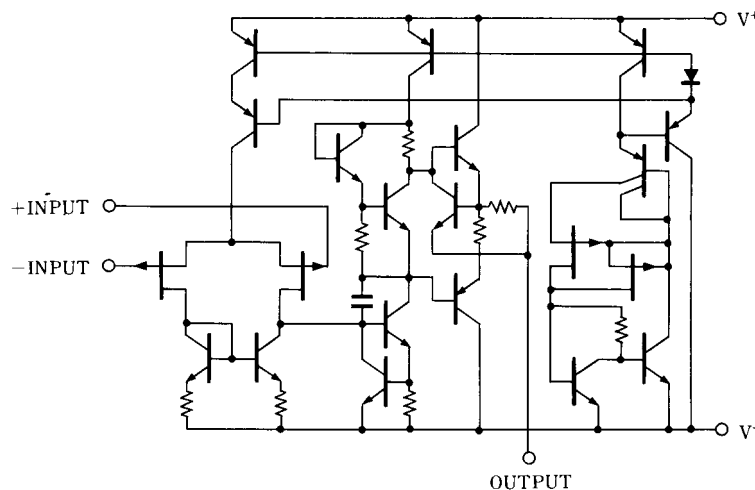
- 5.B +INPUT
- 6.B -INPUT
- 7.B OUTPUT
- 8.V⁺



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 ±15V, the absolute maximum input voltage is equal to the supply voltage.

(note2) At on PC board

■ ELECTRICAL CHARACTERISTICS

(V⁺/V=±15V, Ta=25°C)

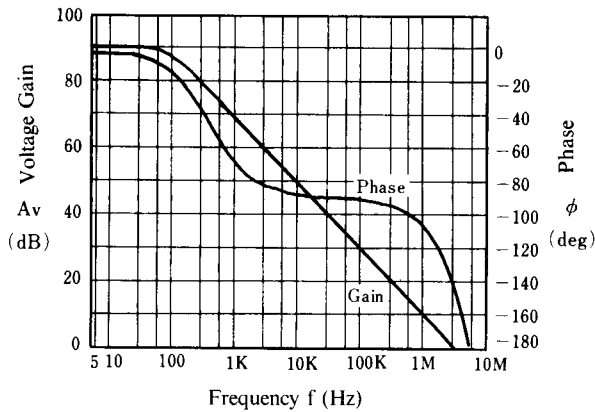
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V ⁺ /V		± 2	-	± 18	V
Input Offset Voltage	V _{IO}	R _S =50Ω	-	5	15	mV
Input Offset Current	I _{IO}		-	1	200	pA
Input Bias Current	I _B		-	2	400	pA
Input Common Mode Voltage Range	V _{ICM}		± 13	+15 -13.5	-	V
Maximum Output Voltage Swing	V _{OM}	R _L =10kΩ	± 13	+14 -14.0	-	V
Large Signal Voltage Gain	A _V	R _L ≥10kΩ, V _O =±10V	70	80	-	dB
Unity Gain Bandwidth	f _T	R _L =10Ω	-	3	-	MHz
Input Resistance	R _{IN}		-	10 ¹²	-	Ω
Common Mode Rejection Ratio	CMR	R _S ≤10kΩ	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	R _S ≤10kΩ	70	100	-	dB
Operating Current	I _{CC}	R _L =∞ (1 circuit)	-	0.3	0.45	mA
Slew Rate	SR	R _L =10kΩ	-	10	-	V/μs
Equivalent Input Noise Voltage	e _n	R _S =100Ω, f=1kHz	-	40	-	nV/√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

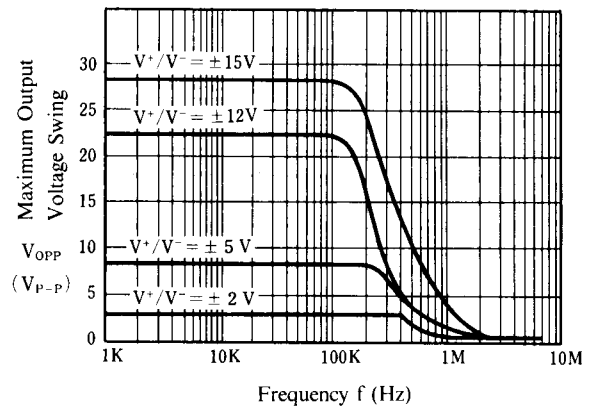
Voltage Gain, Phase Shift vs. Frequency

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



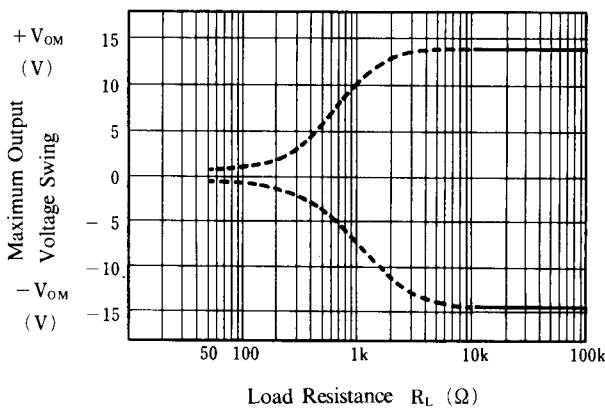
Maximum Output Voltage Swing vs. Frequency

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



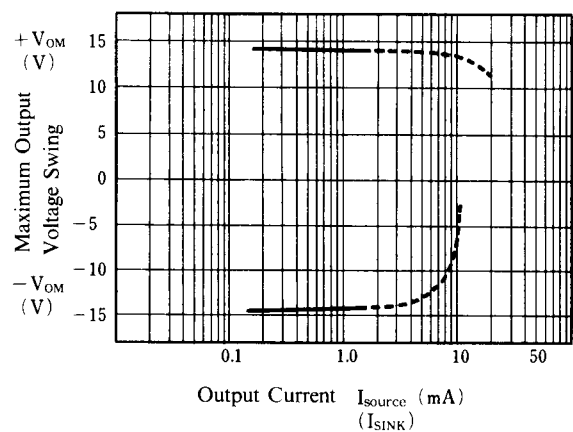
Maximum Output Voltage Swing vs. Load Resistance

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



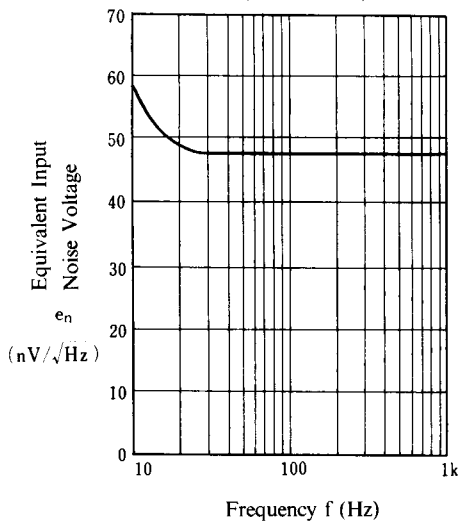
Maximum Output Voltage Swing vs. Output Current

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



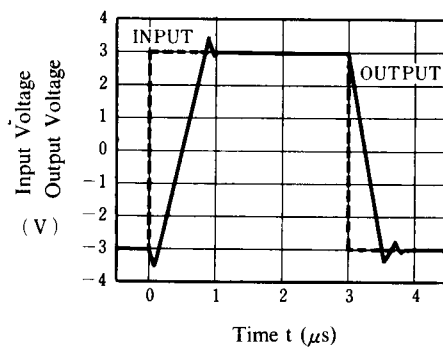
Equivalent Input Noise Voltage vs. Frequency

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



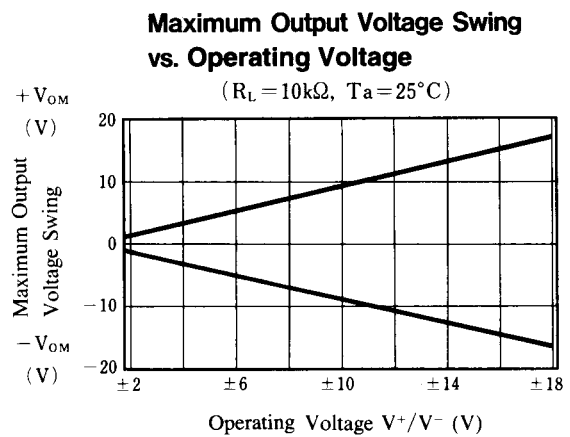
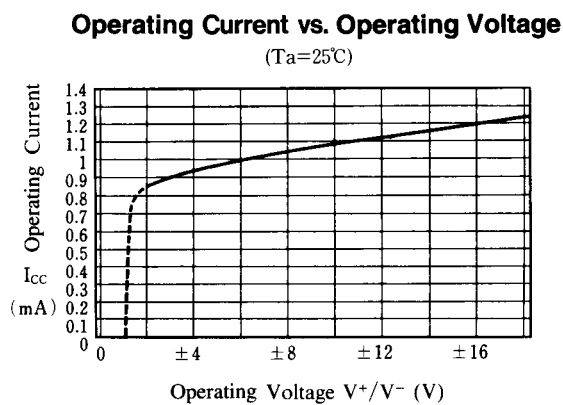
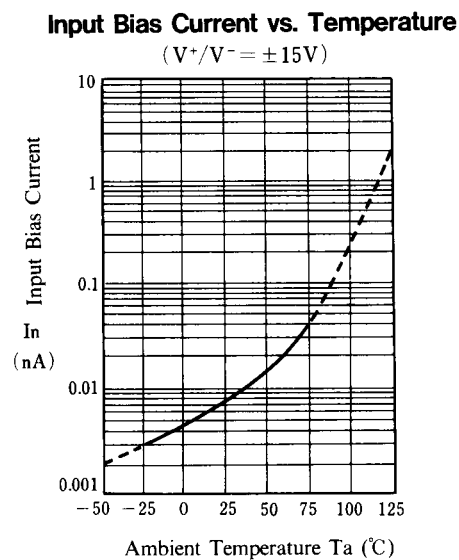
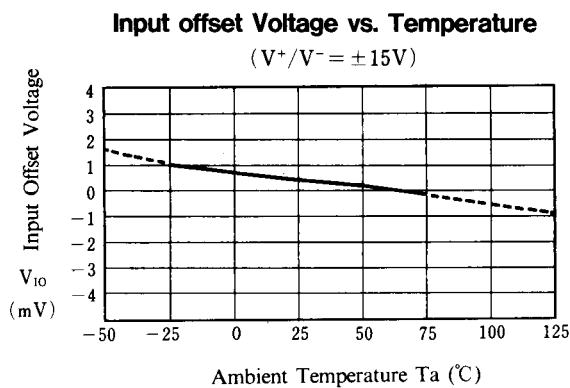
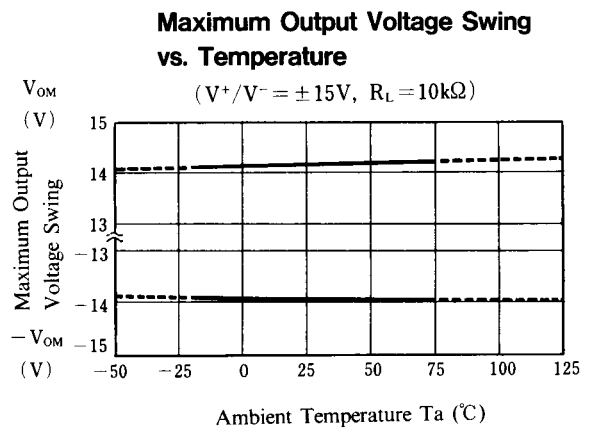
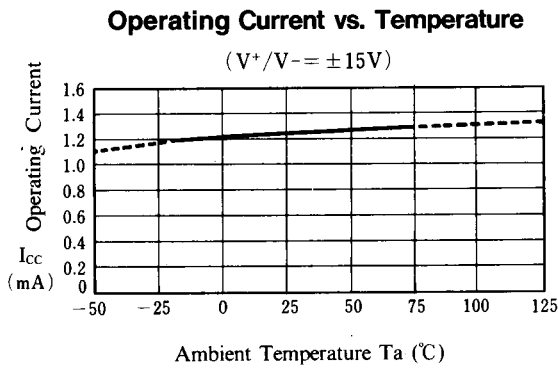
Voltage Follower Large Signal Pulse Response

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



NJM2162/2164

■ TYPICAL CHARACTERISTICS



[CAUTION]

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