J-FET INPUT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

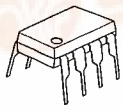
The NJM2162/64 combines feature of the NJM062/064 as well as and providing the capability of wider bandwidth and higher slew rate.

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

■ FEATURES

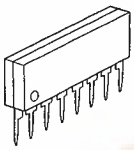
- Operating Voltage (±2V～±18V)
- High Input Resistance ($10^{12}\Omega$ typ.)
- Low Operating Current (1.2mA typ.)
- High Slew Rate (10V/μs typ.)
- J-FET Input
- Wide Unity Gain Bandwidth (3MHz typ.)
- Bipolar Technology
- Package Outline DIP8/14, DMP8/14, SIP8, SSOP8/14

■ PACKAGE OUTLINE



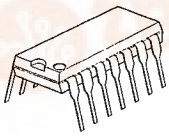
NJM2162D

NJM2162M

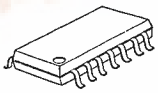


NJM2162L

NJM2162V



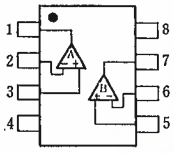
NJM2164D



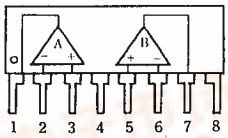
NJM2164M

NJM2164V

■ PIN CONFIGURATION

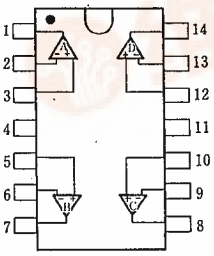


NJM2162D
NJM2162M
NJM2162V



NJM2162L

PIN FUNCTION
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

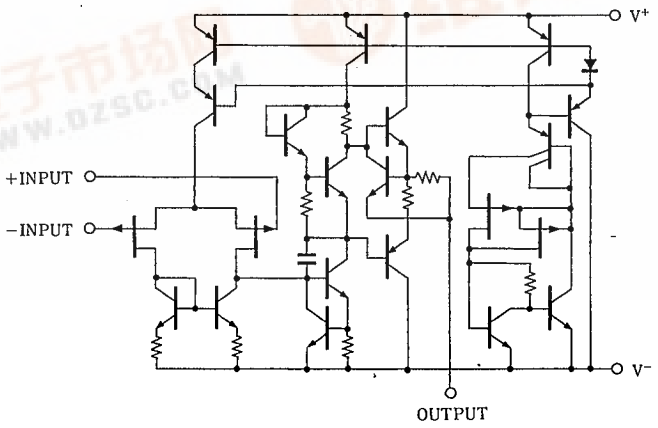


NJM2164D
NJM2164M
NJM2164V

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)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	±18	V
Differential Input Voltage	V_{ID}	±30	V
Input Voltage	V_{IC}	±15 (note 1)	V
Power Dissipation	P_D	(DIP8) 500	mW
		(DMP) 300	mW
		(SIP8) 800	mW
		(SSOP8) 250	mW
		(DIP14) 700	mW
		(DMP14) 700 (note2)	mW
		(SSOP14) 300	mW
Operating Temperature Range	T_{opr}	−20～+75	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

(note 1) For supply voltage less than ±15V. the absolute maximum input voltage is equal to the supply voltage.
(note 2) at on PC board

■ ELECTRICAL CHARACTERISTICS

(V^+/V^-=±15V, Ta=25℃)

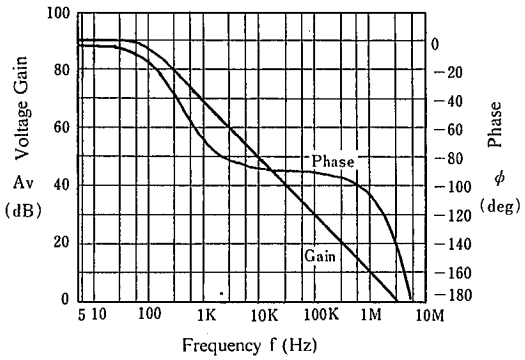
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+/V^-		±2	—	±18	V
Input Offset Voltage	V_{IO}	R_S =50Ω	—	5	15	mV
Input Offset Current	I_{IO}		—	1	200	pA
Input Bias Current	I_B		—	2	400	pA
Input Common Mode voltage Range	V_{ICM}		±13	+15 −13.5	—	V
Maximum Output Voltage Swing	V_{OM}	R_L=10Ω	±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	en	RS=100Ω, f=1kHz	—	40	—	$nv\sqrt{Hz}$

(Note) The NJM 2162/64 is the produc 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

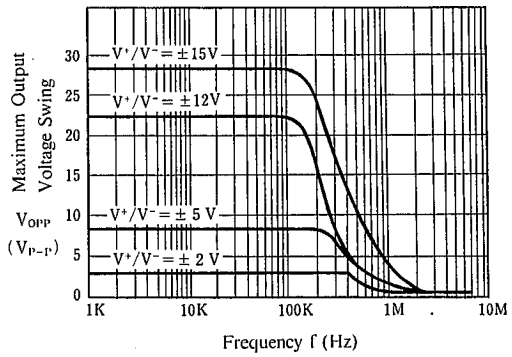
Voltage Gain, Phase Shift vs. Frequency

($V^+/V^-=\pm15V$, $Z_L=10k\Omega//100pF$, Ta=25°C)



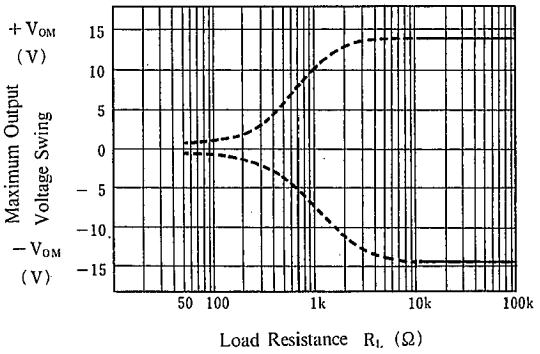
Maximum Output Voltage Swing vs. Frequency

($R_L=10k\Omega$, Ta=25°C)



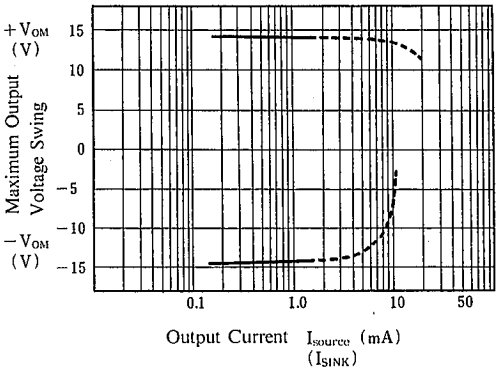
Maximum Output Voltage Swing vs. Load Resistance

($V^+/V^-=\pm15V$, Ta=25°C)



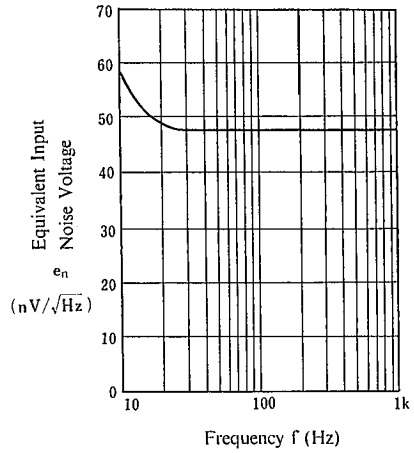
Maximum Output Voltage Swing vs. Output Current

($V^+/V^-=\pm15V$, Ta=25°C)



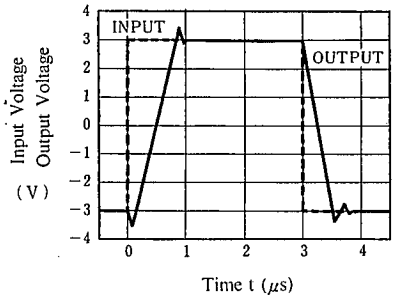
Equivalent Input Noise Voltage vs. Frequency

($V^+/V^-=\pm15V$, Rs=100Ω, Ta=25°C)



Voltage Follower Large Signal Pulse Response

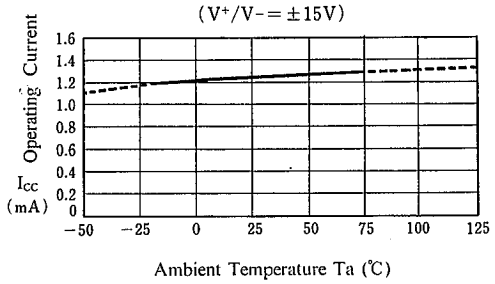
($V^+/V^-=\pm15V$, $R_L=10k\Omega$, $C_L=100pF$, Ta=25°C)



■ TYPICAL CHARACTERISTICS

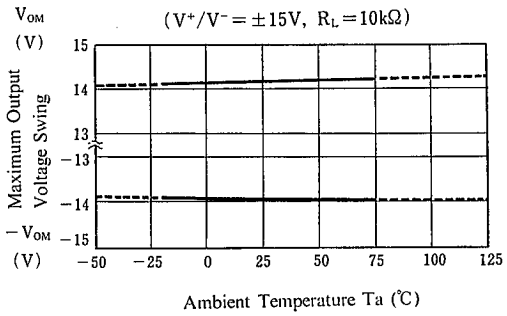
Operating Current vs. Temperature

($V^+/V^-=\pm15V$)



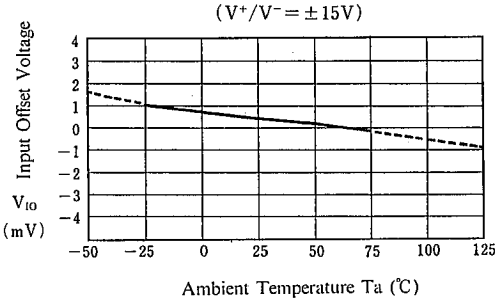
Maximum Output Voltage Swing vs. Temperature

($V^+/V^-=\pm15V$, $R_L=10k\Omega$)



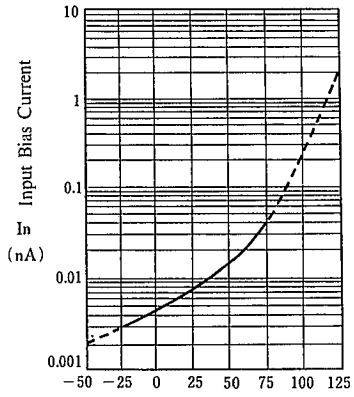
Input offset Voltage vs. Temperature

($V^+/V^-=\pm15V$)



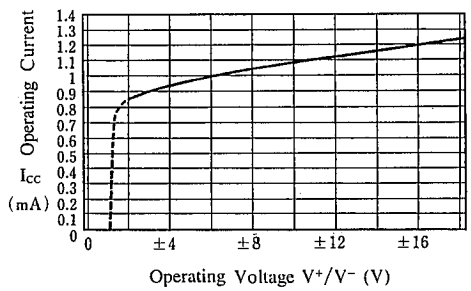
Input Bias Current vs. Temperature

($V^+/V^-=\pm15V$)



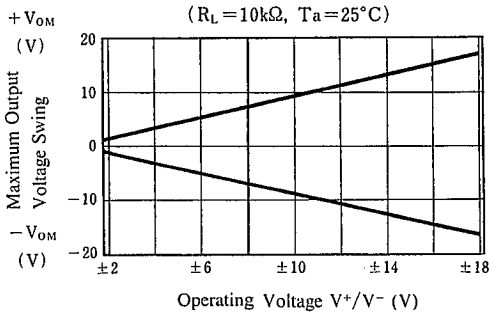
Operating Current vs. Operating Voltage

(Ta=25℃)



Maximum Output Voltage Swing vs. Operating Voltage

($R_L=10k\Omega$, Ta=25°C)



MEMO