

# J-FET INPUT OPERATIONAL AMPLIFIER

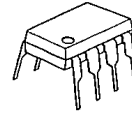
## GENERAL DESCRIPTION

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<sup>12</sup>Ω 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

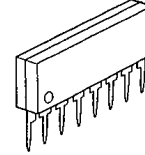
## PACKAGE OUTLINE



NJM2162D



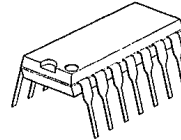
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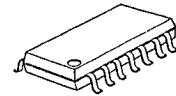
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NJM2162V



NJM2164D



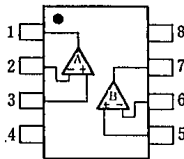
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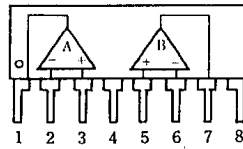
NJM2164V

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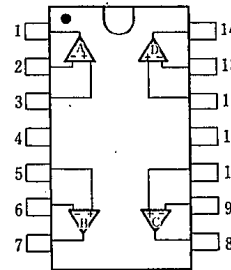
## PIN CONFIGURATION



NJM2162D  
NJM2162M  
NJM2162V



NJM2162L



NJM2164D  
NJM2164M  
NJM2164V

### PIN FUNCTION

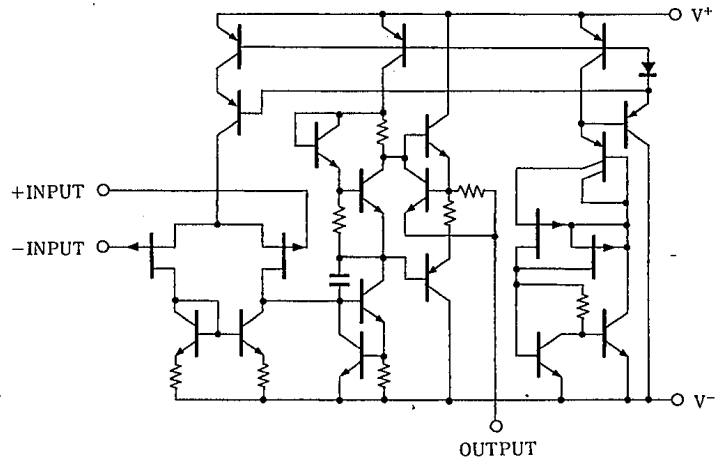
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V<sup>+</sup>
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. C OUTPUT
9. C-INPUT
10. C+INPUT
11. V<sup>-</sup>
12. D+INPUT
13. D-INPUT
14. D OUTPUT

### 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

(2162 is 1/2 Shown, 2164 is 1/4 Shown)



## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup> /V <sup>-</sup>	±18	V
Differential Input Voltage	V <sub>ID</sub>	±30	V
Input Voltage	V <sub>IC</sub>	±15 (note 1)	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500	mW
		(DMP) 300	mW
		(SIP8) 800	mW
		(SSOP8) 250	mW
		(DIP14) 700	mW
		(DMP14) 700 (note2) (SSOP14) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

(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

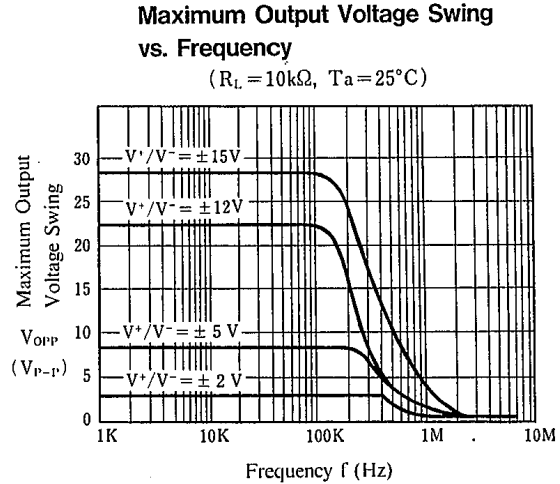
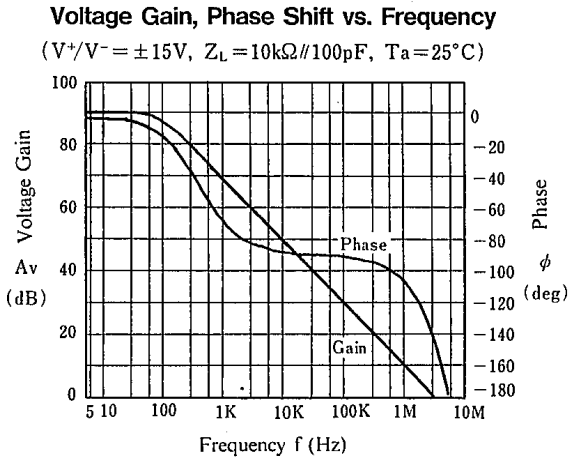
(V<sup>+</sup>/V<sup>-</sup> = ±15V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V <sup>+</sup> /V <sup>-</sup>		±2	—	±18	V
Input Offset Voltage	V <sub>IO</sub>	R <sub>s</sub> = 50Ω	—	5	15	mV
Input Offset Current	I <sub>IO</sub>		—	1	200	pA
Input Bias Current	I <sub>B</sub>		—	2	400	pA
Input Common Mode voltage Range	V <sub>ICM</sub>		±13	+15	—	V
Maximum Output Voltage Swing	V <sub>OM</sub>	R <sub>L</sub> = 10Ω	±13	+14	—	V
				-14.0	—	—
Large signal Voltage Gain	A <sub>V</sub>	R <sub>L</sub> ≥ 10kΩ, V <sub>O</sub> = ±10V	70	80	—	dB
Unity Gain Bandwidth	f <sub>r</sub>	R <sub>L</sub> = 10Ω	—	3	—	MHz
Input Resistance	R <sub>IN</sub>		—	10 <sup>12</sup>	—	Ω
Common Mode Rejection Ratio	CMR	R <sub>s</sub> ≤ 10kΩ	70	90	—	dB
Supply voltage Rejection Ratio	SVR	R <sub>s</sub> ≤ 10kΩ	70	100	—	dB
Operating Current	I <sub>CC</sub>	R <sub>L</sub> = ∞ (1 circuit)	—	0.3	0.45	mA
Slew Rate	SR	R <sub>L</sub> = 10kΩ	—	10	—	V/μs
Equivalent Input Noise Voltage	e <sub>n</sub>	R <sub>S</sub> = 100Ω, f = 1kHz	—	40	—	nV√Hz

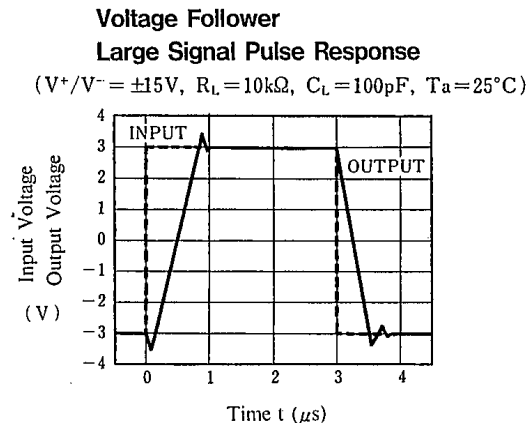
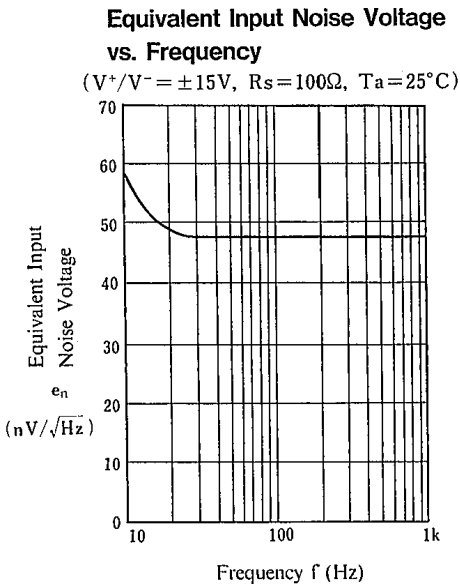
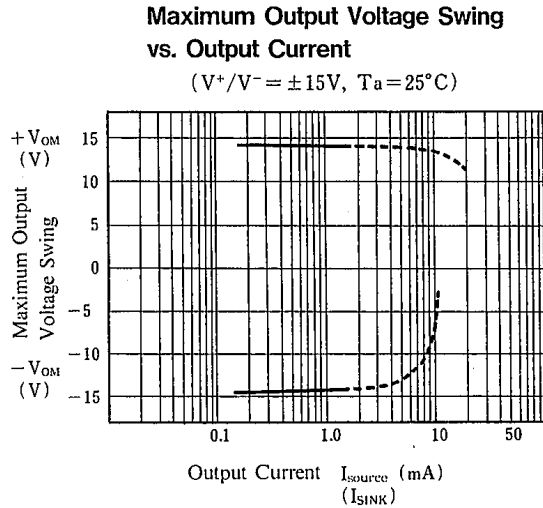
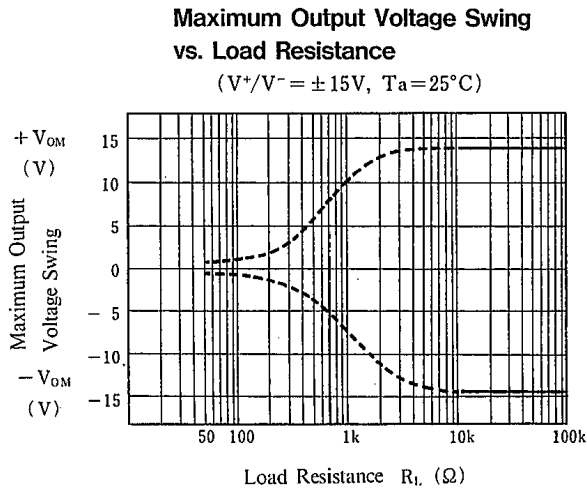
(Note) The NJM 2162/64 is the produc in which the AC feature have been made much higher comparing to NJM062/64. Therefore special care being required for the oscillation due to the capacitive load when operation on voltage follower.

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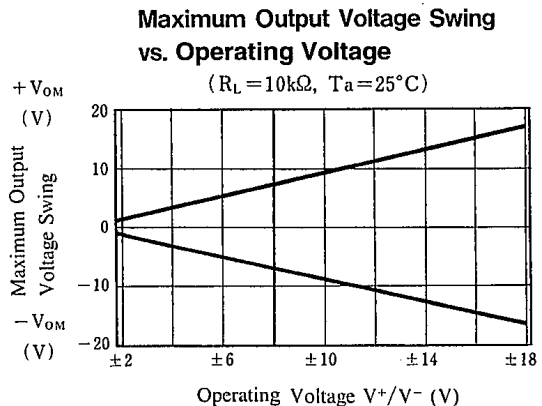
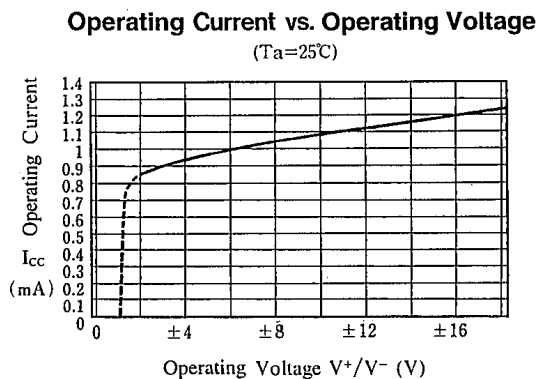
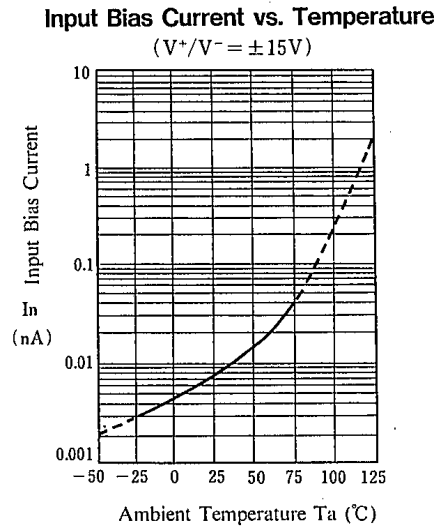
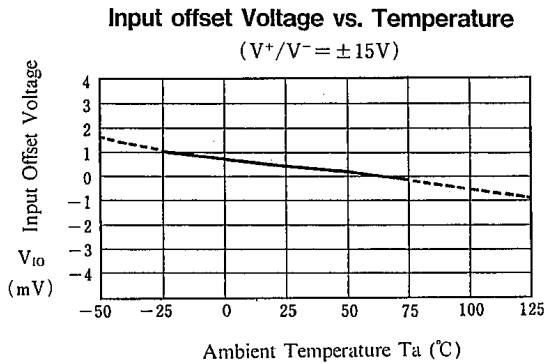
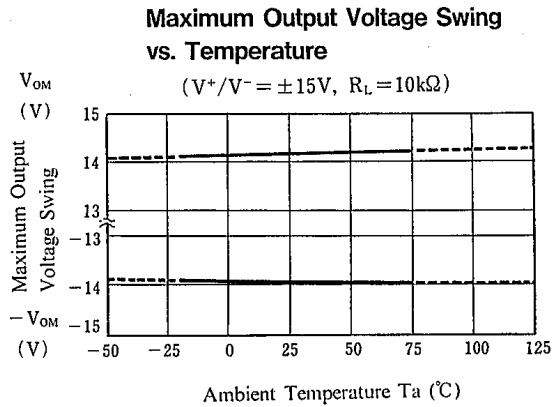
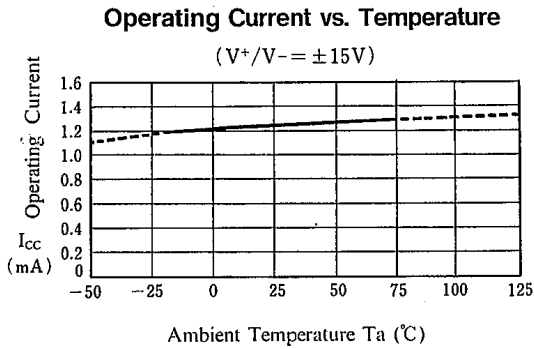
## TYPICAL CHARACTERISTICS



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■ TYPICAL CHARACTERISTICS



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## MEMO

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