

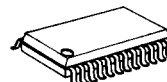


HEX OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

NJM 2097 is a high performance hex operational amplifiers featuring wide operating supply voltage (± 2 to $\pm 7.5V$), high slew rate ($5V/\mu S$) and large gain bandwidth product (10MHz). Supply voltage can be applied to dual (2ch.), quad (4ch.) and hex (6ch.) operational amplifiers. NJM 2097 can be applied for the circuit which requires a lot of operational amplifiers like that of active filter.

■ PACKAGE OUTLINE

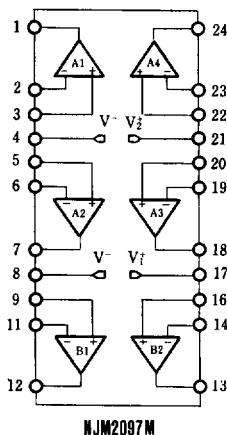


NJM2097M

■ FEATURES

- Operating Voltage $(\pm 2V \sim \pm 7.5V)$
- Hex Circuit
- High Slew Rate $(5V/\mu s \text{ typ.})$
- Unity Gain Bandwidth $(10MHz \text{ typ.})$
- Package Outline DMP24
- Bipolar Technology

■ PIN CONFIGURATION



Pin Function

1. A1 OUTPUT
2. A1 -INPUT
3. A1 +INPUT
4. V^-
5. A2 +INPUT
6. A2 -INPUT
7. A2 OUTPUT
8. V^-
9. B1 +INPUT
10. NC
11. B1 -INPUT
12. B1 OUTPUT
13. B2 OUTPUT
14. B2 -INPUT
15. NC
16. B2 +INPUT
17. V_1^+
18. A3 OUTPUT
19. A3 -INPUT
20. A3 +INPUT
21. V_2^+
22. A4 +INPUT
23. A4 -INPUT
24. A4 OUTPUT

(Note) Applied power supply

Supply voltage can be applied to dual (2ch.), quad (4ch.) and hex (6ch.) on this operational amplifier.

- (1) 2ch. (B1, B2) V_1^+ to 17pin, V^- to 4, 8pins
- (2) 4ch. (A1, A2, A3, A4) V_2^+ to 21pin. V^- to 4, 8pins
- (3) 6ch.(A1, A2, A3, A4, B1, B2) V_1^+ to 17pin and V_2^+ to 21pin, V^- to 4,8pins



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V ⁻	±7.5	V
Differential Input Voltage	V _{ID}	±15	V
Input Voltage	V _I	±7.5	V
Power Dissipation	P _D	700	mW
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

■ ELECTRICAL CHARACTERISTICS

(V⁺/V⁻=±5V, Ta=25°C)

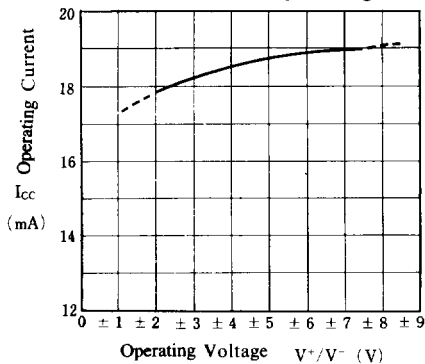
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I _{CC}	R _L =∞ (On all amplifiers)	—	15	30	mA
Input Offset Voltage	V _{IO}	R _S ≤10kΩ	—	0.5	6	mV
Input Offset Current	I _{IO}		—	20	200	nA
Input Bias Current	I _B		—	120	600	nA
Input Resistance	R _{IN}		100	500	—	kΩ
Voltage Gain	A _V	R _L ≥2kΩ, V _O =±3V	80	110	—	dB
Maximum Output Voltage Swing	V _{OM}	R _L ≥2kΩ	±2	±3.5	—	V
Input Common Mode Voltage Range	V _{ICM}		±2	±3.5	—	V
Common Mode Rejection Ratio	CMR	R _S ≤10kΩ	70	100	—	dB
Supply Voltage Rejection Ratio	SVR	R _S ≤10kΩ	75	100	—	dB
Slew Rate	SR	R _L ≥2kΩ, A _V =1	—	5.0	—	V/μS
Gain Bandwidth product	GB		—	10	—	MHz
Equivalent Input Noise Voltage	V _{NI}	R _S =100kΩ, 30KHz LPF	—	3	—	μV _{p-p}

4



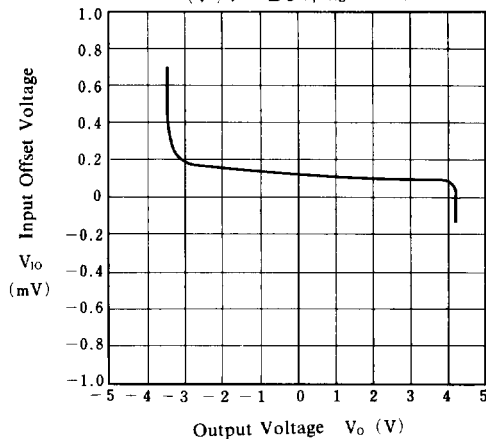
■ TYPICAL CHARACTERISTICS

Operating Current vs. Operating Voltage



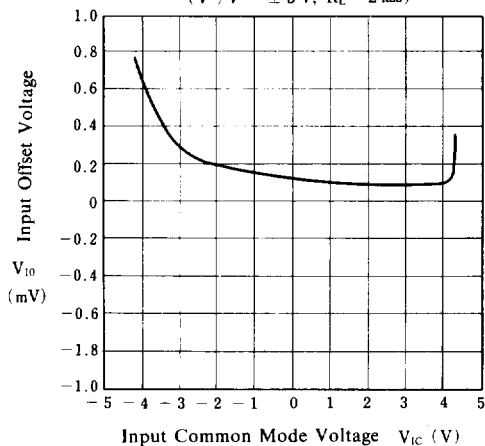
Input Offset Voltage vs. Output Voltage

($V^+/V^- = \pm 5$ V, $R_L = 2$ k Ω)



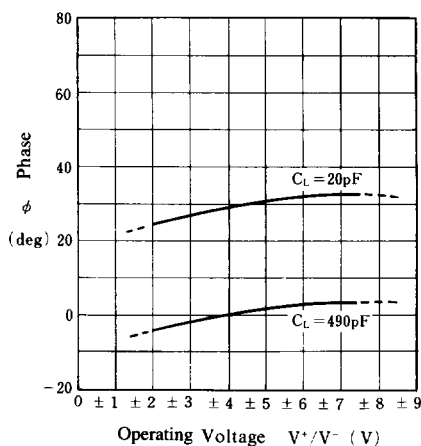
Input Offset Voltage vs. Input Common Mode Voltage

($V^+/V^- = \pm 5$ V, $R_L = 2$ k Ω)



Phase vs. Operating Voltage

(Zero Cross Phase)

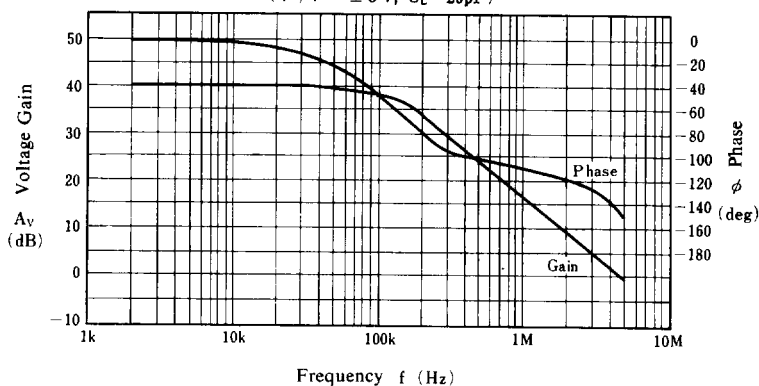




■ TYPICAL CHARACTERISTICS

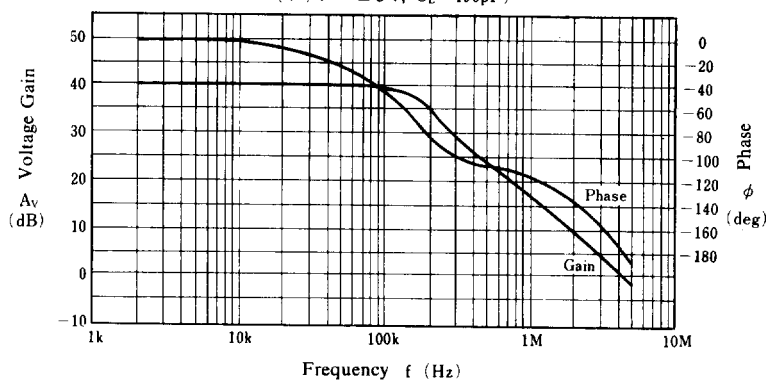
Voltage Gain, Phase vs. Frequency

($V^+/V^- = \pm 5\text{ V}$, $C_L = 20\text{ pF}$)



Voltage Gain, Phase vs. Frequency

($V^+/V^- = \pm 5\text{ V}$, $C_L = 490\text{ pF}$)



Total Harmonic Distortion vs. Frequency

($V^+/V^- = \pm 5\text{ V}$)

