Single Ultra-High speed and Wide Band Operational Amplifier

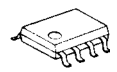
■ GENERAL DESCRIPTION

The **NJM2722** is single and ultra-high speed and wide band operational amplifier.

The NJM2722 is 1000V/μs slew rate and 1kΩ load drive is possible, at supply voltage of ±4.5V.

The NJM2722 is suitable for video signal processing, video buffer, pulse amplifiers, ADC input buffer, measuring instrument, and digital communication.

■ PACKAGE OUTLINE



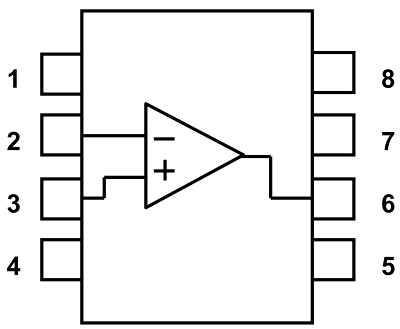
NJM2722E

■ FEATURES

- Operating Voltage : ±2.5V to ±5.0V
- Slew Rate : 1000V/μs Typ. (at V^+/V^-=±4.5V, R_L=1kΩ)
- Unity-Gain : 170MHz Typ.
- Output Voltage : V_{OH} = +3.2V Typ. (at V^+/V^-=±4.5V, R_L=1kΩ)
  : V_{OL} = -3.2V Typ. (at V^+/V^-=±4.5V, R_L=1kΩ)
- Offset Voltage : 5mV Typ.
- Operating Current : 16.5 mA Typ.
- Adequate phase margin : Φ_M=70deg. Typ. (at R_L=2kΩ, voltage follower)
- Bipolar Technology
- Package Outline :EMP8

■ FEATURES

(Top View)



EMP8

PIN FUNCTION.
1. NC
2. -INPUT
3. +INPUT
4. V^-
5. NC
6. OUTPUT
7. V^+
8. NC

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	11.0	V
Power Dissipation	P_D	EMP8: 910 (Note1)	mW
Differential Input Voltage Range	V_{ID}	±3.0	V
Common Mode Input Voltage Range	V_{ICM}	11.0	V
Operating Temperature Range	T_{opr}	-40 to +85	°C
Storage Temperature Range	T_{stg}	-40 to +150	°C

(Note 1) On the PCB " EIA/JEDEC (76.2x11.43x1.6mm, four layers, FR-4) "

■ RECOMMENDED OPERATING CONDITION

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+/V^-	±2.5 to ±5.0	V

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS

(V^+/V^-=±2.5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	No Signal	-	16.5	25.5	mA
Input Offset Voltage	V_{IO}		-	5.0	28.0	mV
Input Bias Current	I_B		-	25.5	70.0	μA
Input Offset Current	I_{IO}		-	0.3	1.7	μA
Large Signal Voltage Gain	A_V	R_L=2kΩ (Note 2)	50	60	-	dB
Input Common Mode Voltage Range	V_{ICM}	V^+/V^- = ±4.5V	+3.1 -2.7	+3.5 -3.0	- -	V V
Common Mode Rejection Ratio	CMR	V^+/V^- = ±4.5V -2.7V≤ V_{ICM} ≤+3.1V	60	80	-	dB
Supply Voltage Rejection Ratio	SVR	±2.5V≤V^+/V^-≤±5.0V	50	60	-	dB
Maximum Output Voltage Swing	V_{OM}	V^+/V^- = ±4.5V , R_L=1kΩ	±2.9	±3.2	-	V

(Note 2) When using NJM2722, the closed gain should be 40dB or lower.

●AC CHARACTERISTICS

(V^+/V^-=±4.5V, Ta=25°C)

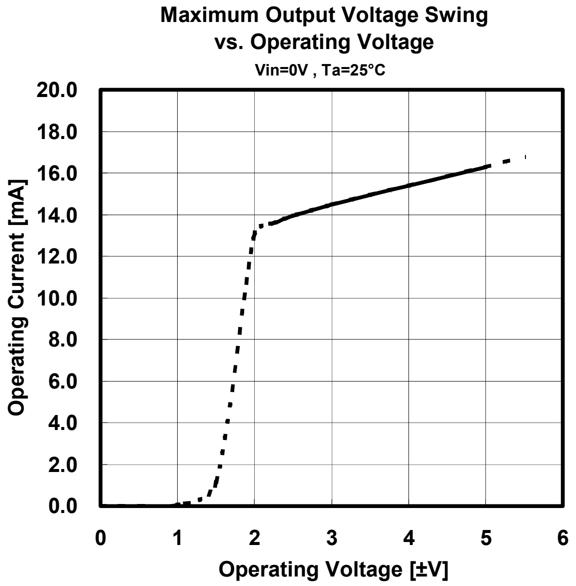
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Frequency	f_T	A_V=40dB, R_F=1.98kΩ R_G=20Ω, R_L=∞, C_L=5pF	-	170	-	MHz
Phase Margin	Φ_M	A_V=40dB, R_F=1.98kΩ R_G=20Ω, R_L=∞, C_L=5pF	-	70.0	-	Deg

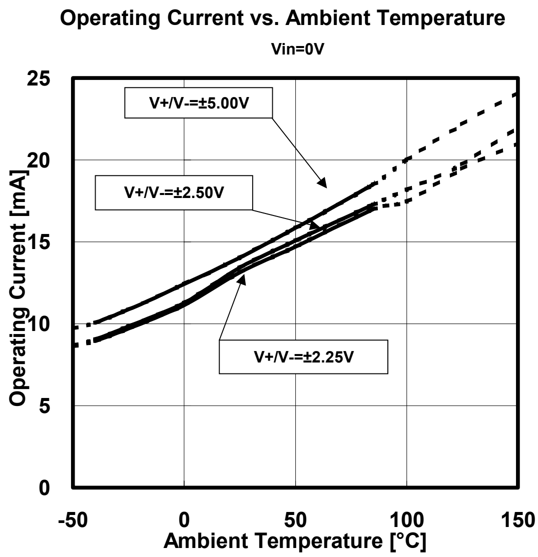
●AC CHARACTERISTICS

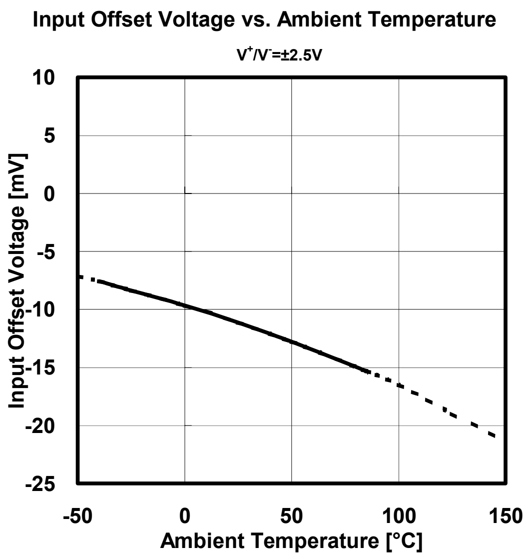
(V^+/V^-=±4.5V, Ta=25°C)

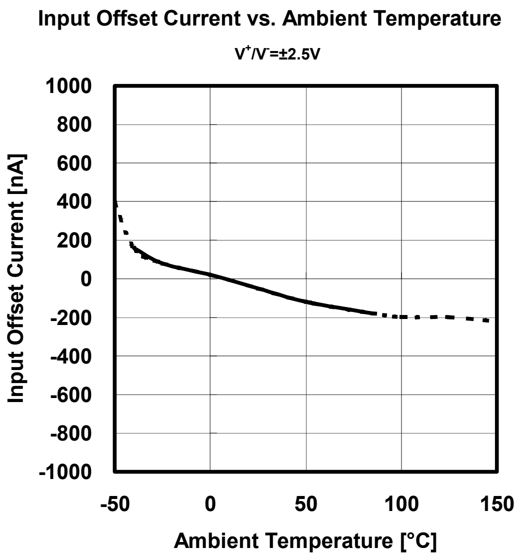
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Slew Rate	SR	A_V=0dB, R_F=0Ω, R_G=∞ R_L=1kΩ,C_L=1.5pF V_{IN}=4V_{PP}	-	1000	-	V/μs

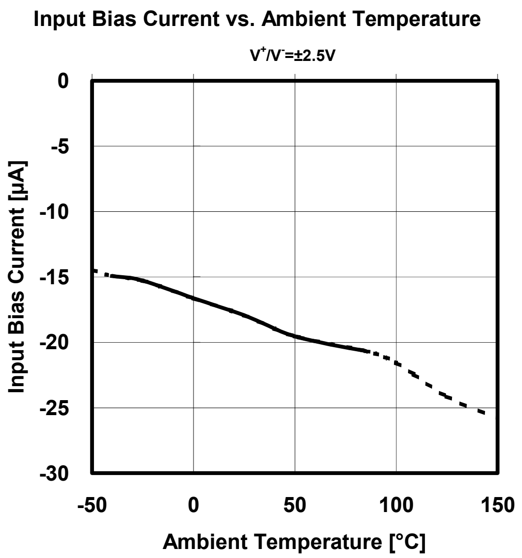
■ TYPICAL CHARACTERISTICS



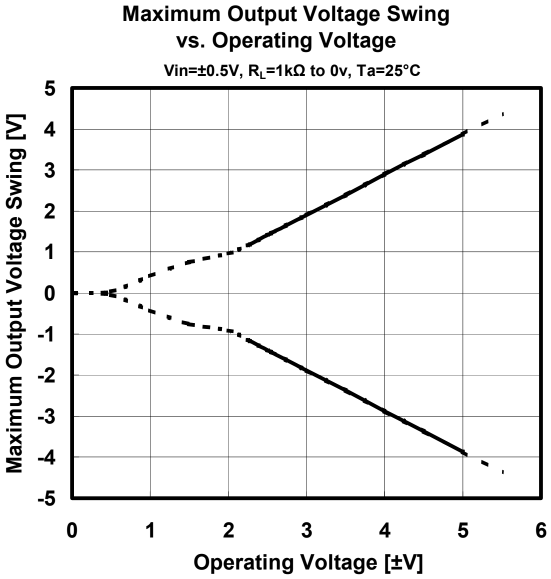


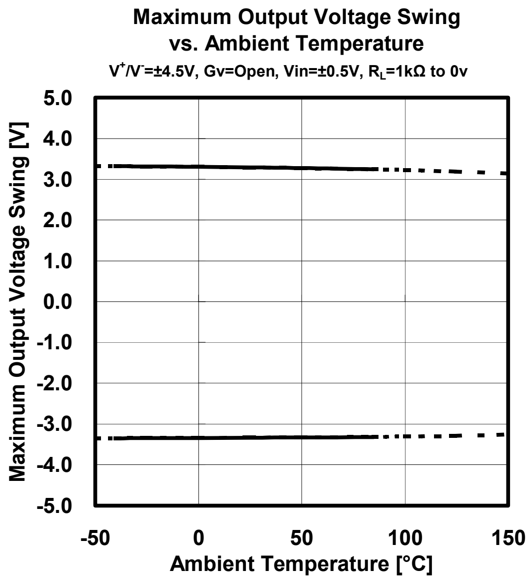


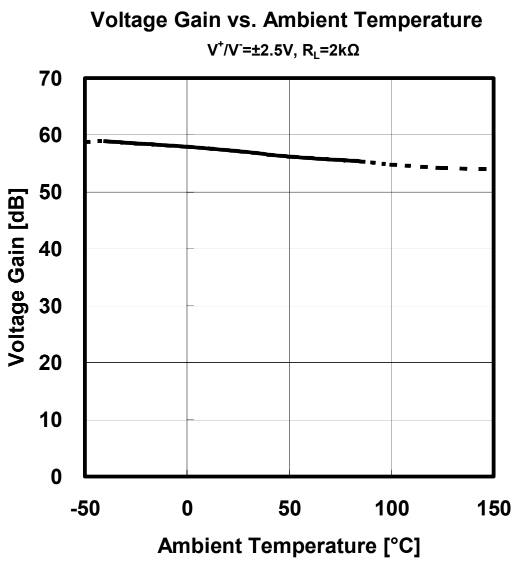


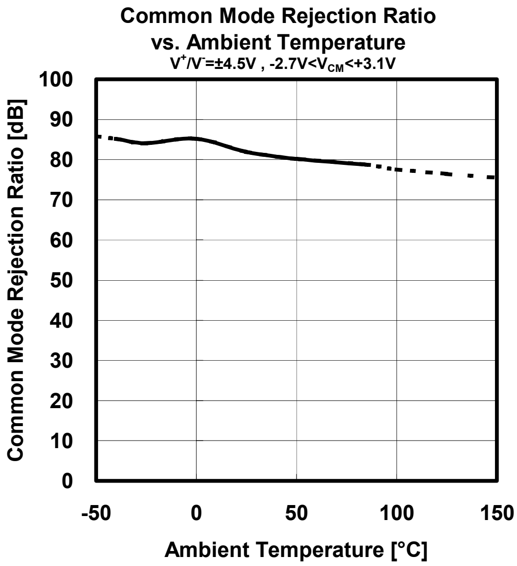


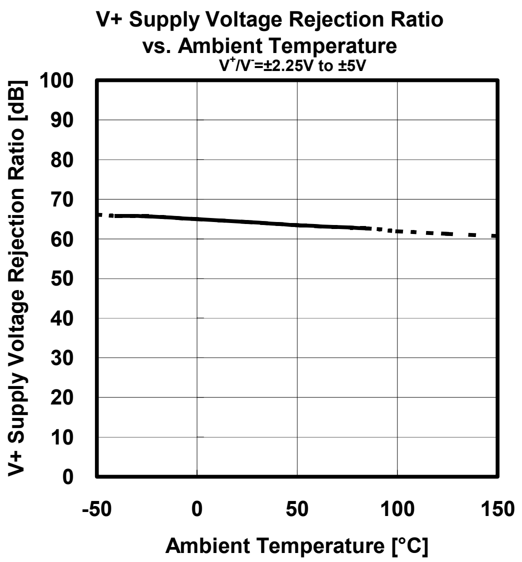
■ TYPICAL CHARACTERISTICS

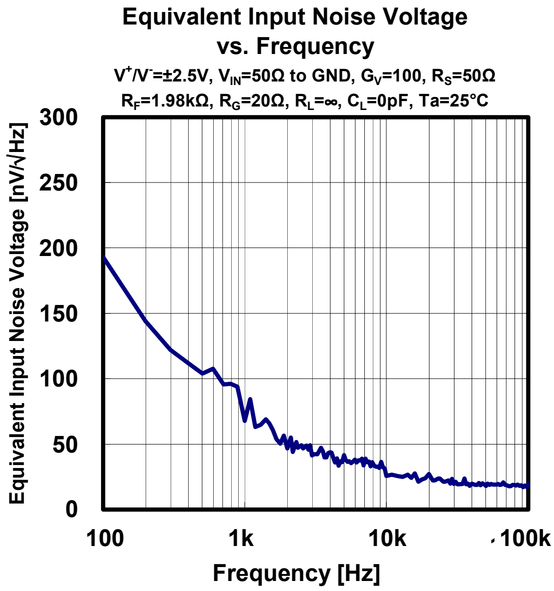








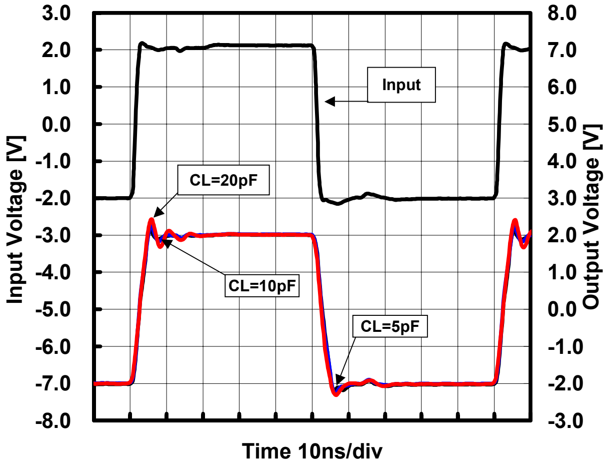




■ TYPICAL CHARACTERISTICS

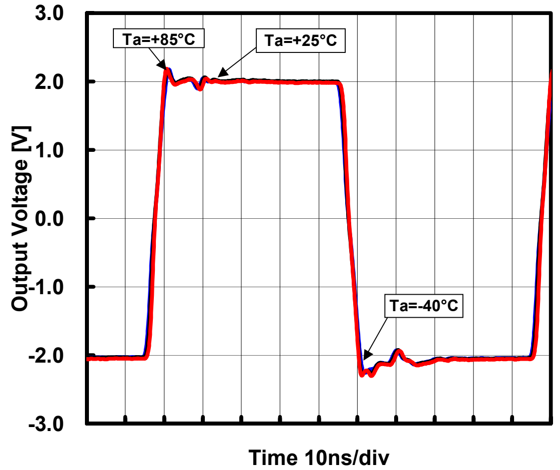
Pulse Response (with Cpacitive load)

V^+/V^-=±4.5V, f=10MHz, V_O=4V_{PP}, G_V=0dB
R_T=50Ω, R_F=0Ω, C_F=0pF, R_L=1kΩ to 0v, Ta=+25°C



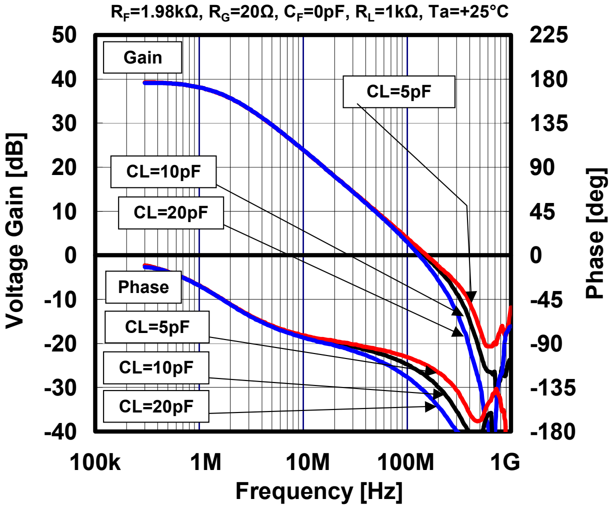
Pulse Response (correlation with Ta)

V^+/V^-=±4.5V, f=10MHz, V_O=4V_{PP}, G_V=0dB
R_T=50Ω, R_F=0Ω, C_F=0pF, C_L=5pF, R_L=1kΩ to 0v



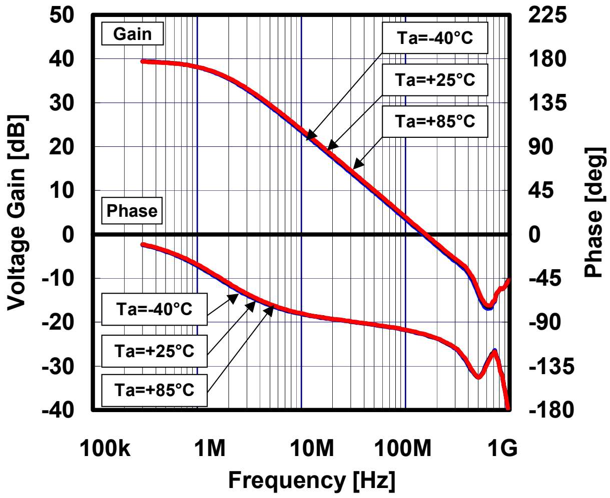
Voltage Gain vs. Frequency (with Cpacitive load)

V^+/V^-=±4.5V, V_{IN}=0.02V_{PP}, G_V=40dB, R_T=50Ω
R_F=1.98kΩ, R_G=20Ω, C_F=0pF, R_L=1kΩ, Ta=+25°C



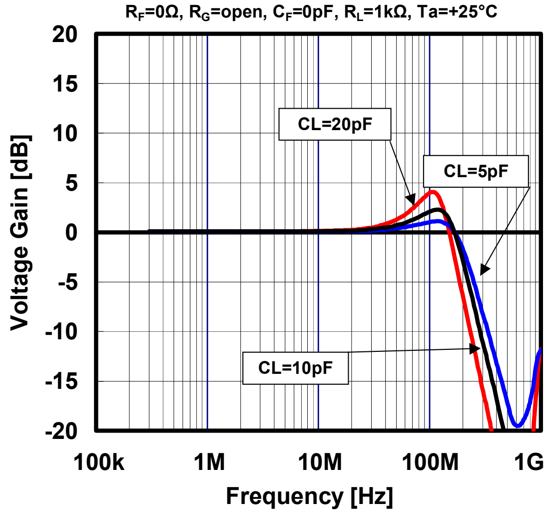
Voltage Gain vs. Frequency (correlation with Ta)

V^+/V^-=±2.5V, V_{IN}=0.02V_{PP}, G_V=40dB, R_T=50Ω
R_F=1.98kΩ, R_G=20Ω, C_F=0pF, R_L=2kΩ, C_L=5pF



Voltage Gain vs. Frequency (with Cpacitive load)

V^+/V^-=±4.5V, V_{IN}=0.02V_{PP}, G_V=0dB, R_T=50Ω
R_F=0Ω, R_G=open, C_F=0pF, R_L=1kΩ, Ta=+25°C



Voltage Gain vs. Frequency (correlation with Ta)

V^+/V^-=±4.5V, V_{IN}=0.02V_{PP}, G_V=0dB, R_T=50Ω
R_F=0Ω, R_G=open, C_F=0pF, R_L=1kΩ, C_L=20pF