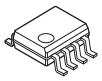
Single Ultra-High speed and Wide Band Operational Amplifier

■ GENERAL DESCRIPTION

The **NJM2722** is a single, ultra-high speed and wide band operational amplifier that features 1000V/μs slew rate and 150ohm load drive, 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

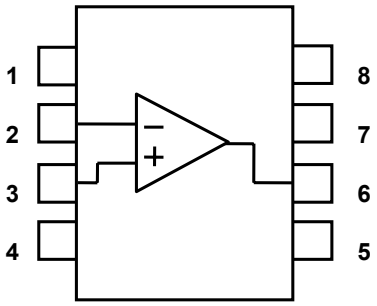
(SOP8)

■ 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	:SOP8 JEDEC 150mil

■ PIN CONFIGRATION

(Top View)



SOP8

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^+/V^-	±5.5	V
Power Dissipation	P_D	SOP8: 730 (Note1)	mW
Differential Input Voltage Range	V_{ID}	±3.0	V
Common Mode Input Voltage Range	V_{ICM}	±5.5 (Note2)	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) "

(Note 2) For supply voltage less than ±5.5V,the absolute maximum input voltage is equal to the supply voltage.

■ 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 3)	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 3) 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

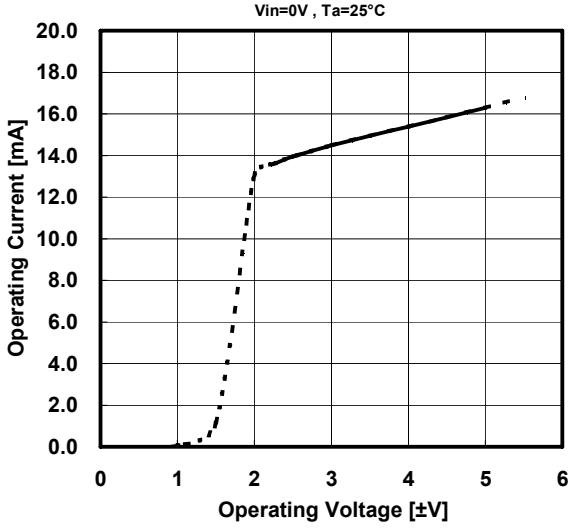
●AC CHARACTERISTICS (V^+/V^-=±4.5V, Ta=25˚C)

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

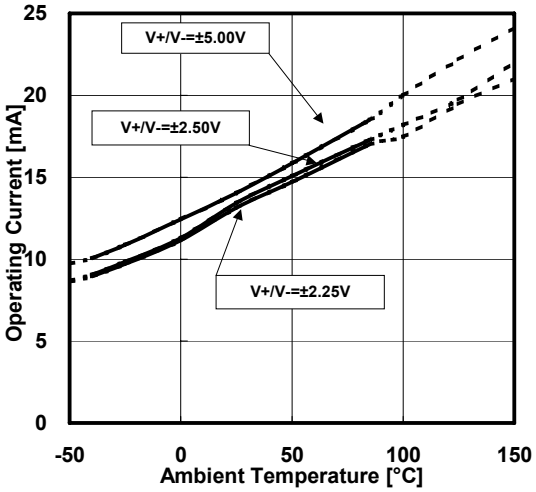
Maximum Output Voltage Swing vs. Operating Voltage

Vin=0V , Ta=25°C



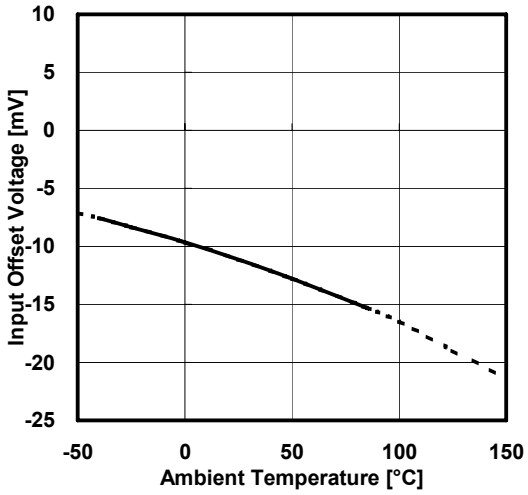
Operating Current vs. Ambient Temperature

Vin=0V



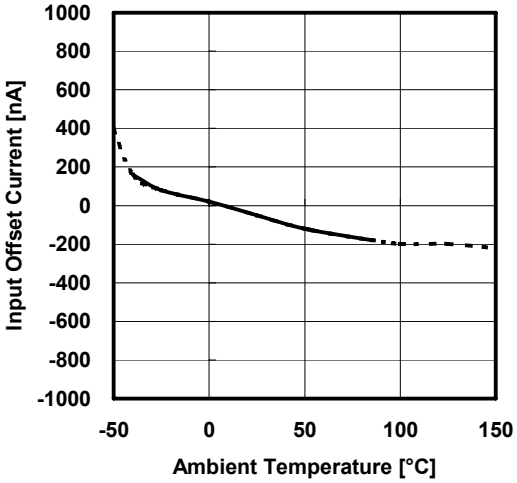
Input Offset Voltage vs. Ambient Temperature

V^+/V^-=±2.5V



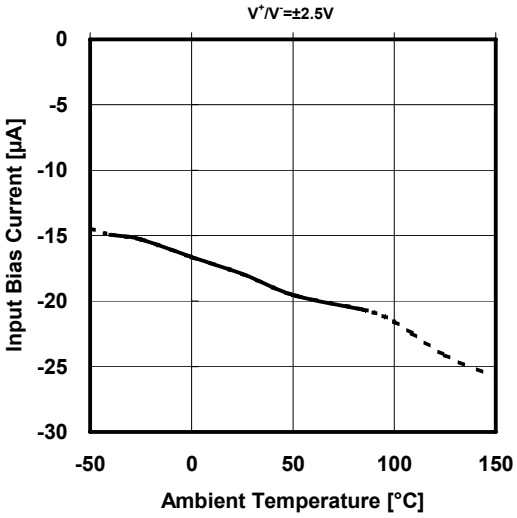
Input Offset Current vs. Ambient Temperature

V^+/V^-=±2.5V



Input Bias Current vs. Ambient Temperature

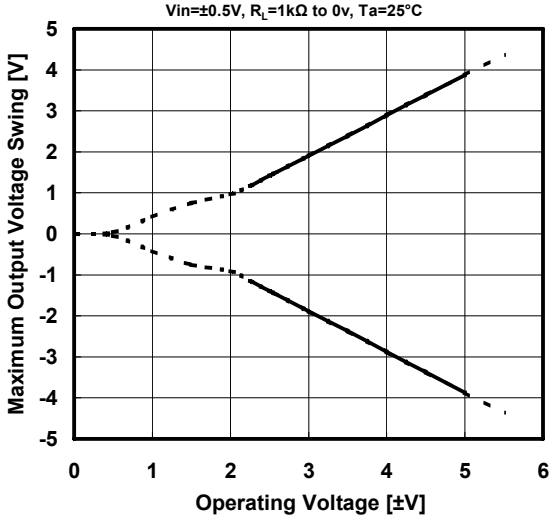
V^+/V^-=±2.5V



■ TYPICAL CHARACTERISTICS

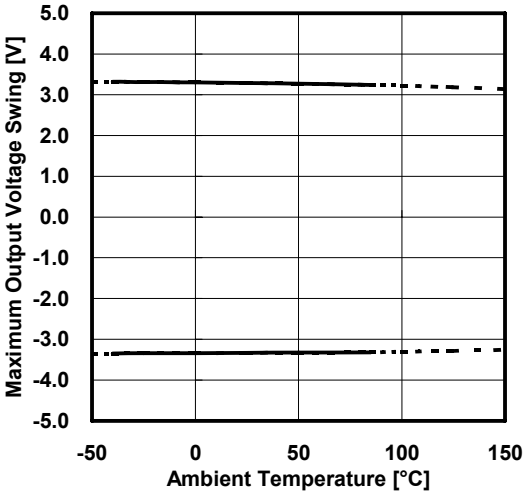
Maximum Output Voltage Swing vs. Operating Voltage

Vin=±0.5V, R_L=1kΩ to 0v, Ta=25°C



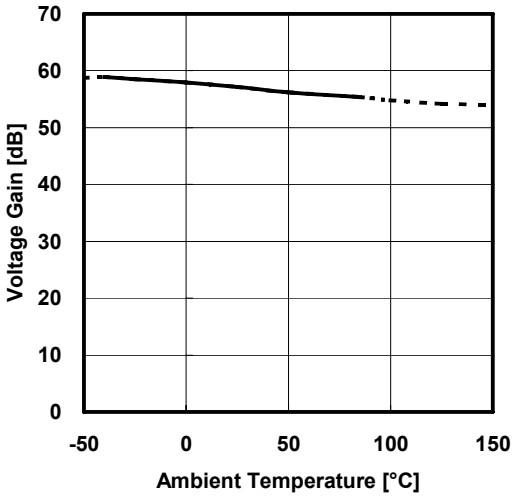
Maximum Output Voltage Swing vs. Ambient Temperature

V^+/V^-=±4.5V, Gv=Open, Vin=±0.5V, R_L=1kΩ to 0v



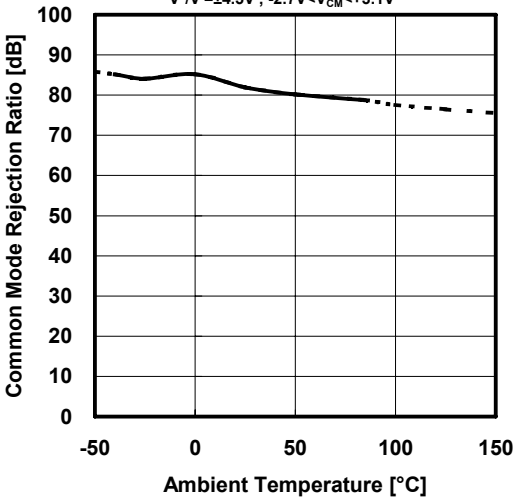
Voltage Gain vs. Ambient Temperature

V^+/V^-=±2.5V, R_L=2kΩ



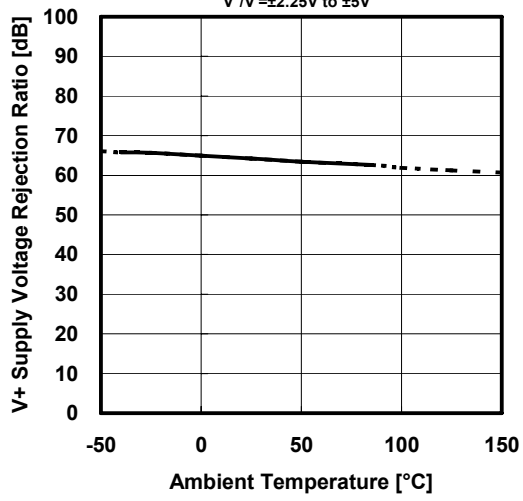
Common Mode Rejection Ratio vs. Ambient Temperature

V^+/V^-=±4.5V , -2.7V<V_{CM}<+3.1V



V+ Supply Voltage Rejection Ratio vs. Ambient Temperature

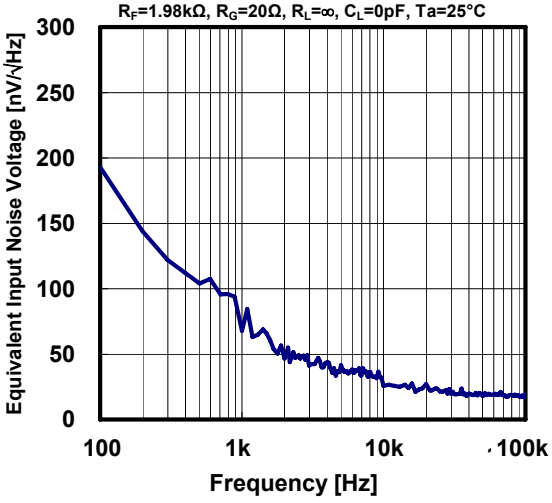
V^+/V^-=±2.25V to ±5V



Equivalent Input Noise Voltage vs. Frequency

V^+/V^-=±2.5V, V_{IN}=50Ω to GND, G_V=100, R_S=50Ω

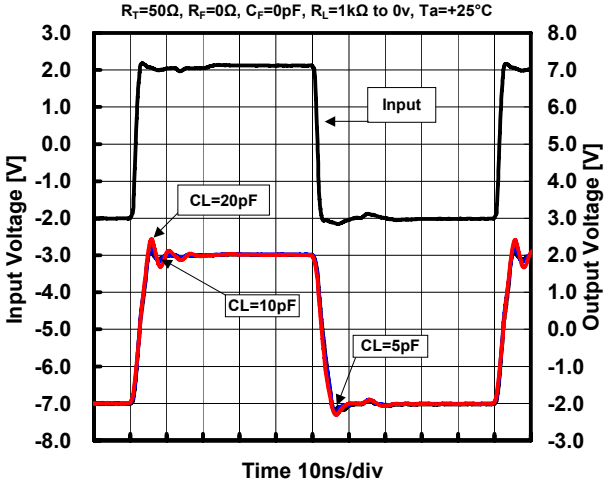
R_F=1.98kΩ, R_G=20Ω, R_L=∞, C_L=0pF, Ta=25°C



■ TYPICAL CHARACTERISTICS

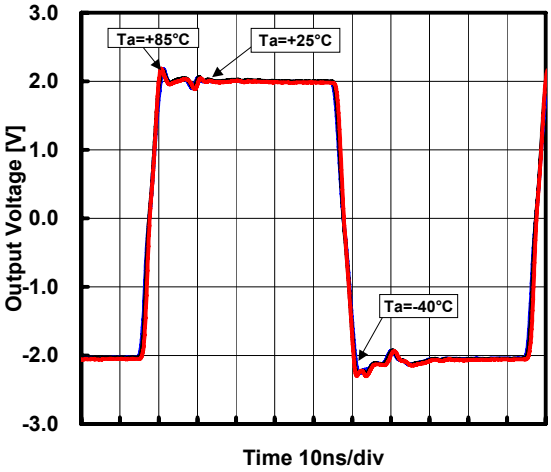
Pulse Response (with Cpacitive load)

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



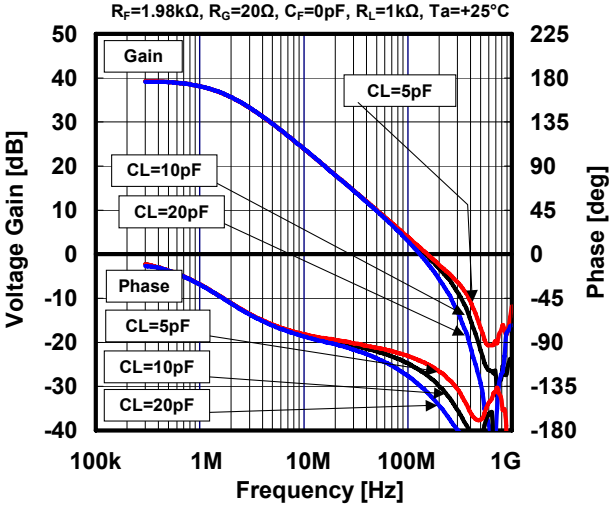
Pulse Response (correlation with Ta)

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



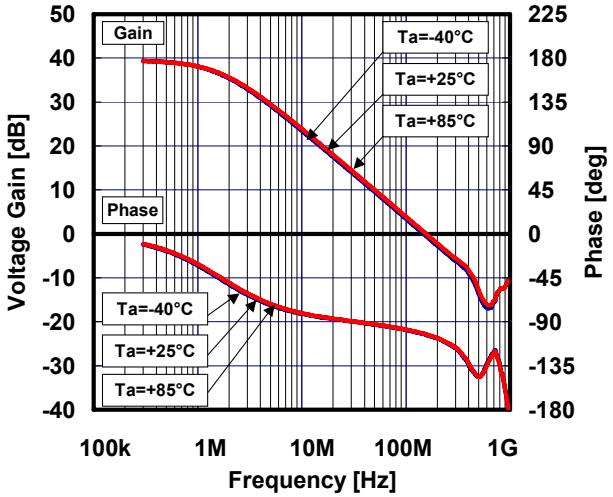
Voltage Gain vs. Frequency (with Cpacitive load)

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



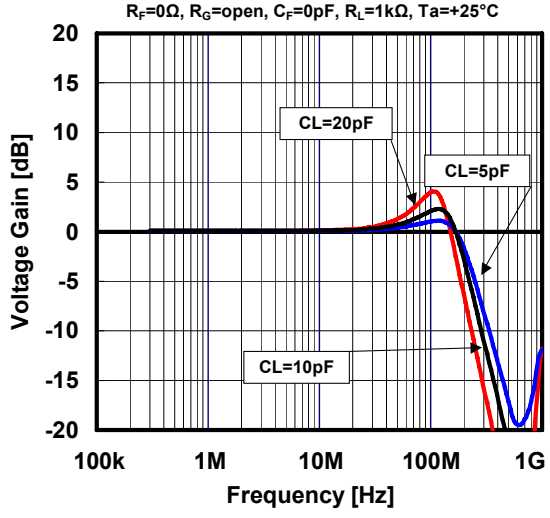
Voltage Gain vs. Frequency (correlation with Ta)

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



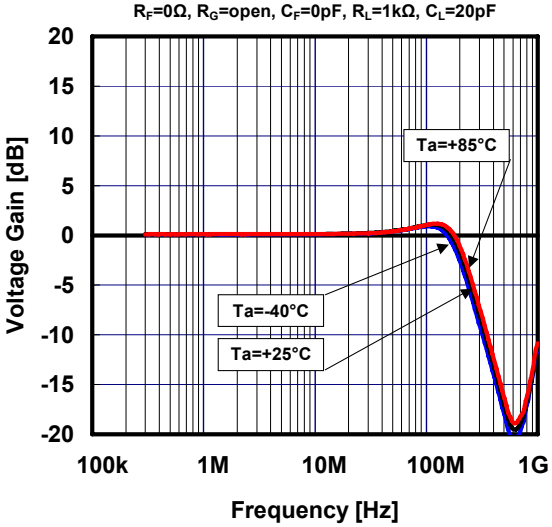
Voltage Gain vs. Frequency (with Cpacitive load)

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



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