

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/ μ s slew rate and 150ohm load drive, at supply voltage of ± 4.5 V.

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

■ PACKAGE OUTLINE

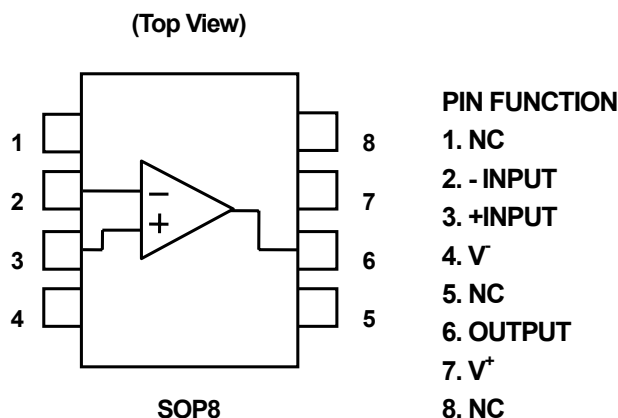


NJM2722E
(SOP8)

■ FEATURES

- Operating Voltage : ± 2.5 V to ± 5.0 V
- Slew Rate : 1000V/ μ s Typ. (at $V^+/V^- = \pm 4.5$ V, $R_L = 1$ k Ω)
- Unity-Gain : 170MHz Typ.
- Output Voltage : $V_{OH} = +3.2$ V Typ. (at $V^+/V^- = \pm 4.5$ V, $R_L = 1$ k Ω)
: $V_{OL} = -3.2$ V Typ. (at $V^+/V^- = \pm 4.5$ V, $R_L = 1$ k Ω)
- Offset Voltage : 5mV Typ.
- Operating Current : 16.5 mA Typ.
- Adequate phase margin : $\Phi_M = 70$ deg. Typ. (at $R_L = 2$ k Ω , voltage follower)
- Bipolar Technology
- Package Outline : SOP8 JEDEC 150mil

■ PIN CONFIGURATION



NJM2722

■ 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 $\pm 5.5V$, 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

($V^+/V^- = \pm 2.5V$, 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	$R_L = 2k\Omega$ (Note 3)	50	60	-	dB
Input Common Mode Voltage Range	V_{ICM}	$V^+/V^- = \pm 4.5V$	+3.1	+3.5	-	V
			-2.7	-3.0	-	V
Common Mode Rejection Ratio	CMR	$V^+/V^- = \pm 4.5V$ $-2.7V \leq V_{ICM} \leq +3.1V$	60	80	-	dB
Supply Voltage Rejection Ratio	SVR	$\pm 2.5V \leq V^+/V^- \leq \pm 5.0V$	50	60	-	dB
Maximum Output Voltage Swing	V_{OM}	$V^+/V^- = \pm 4.5V$, $R_L = 1k\Omega$	± 2.9	± 3.2	-	V

(Note 3) When using NJM2722, the closed gain should be 40dB or lower.

● AC CHARACTERISTICS

($V^+/V^- = \pm 4.5V$, Ta=25°C)

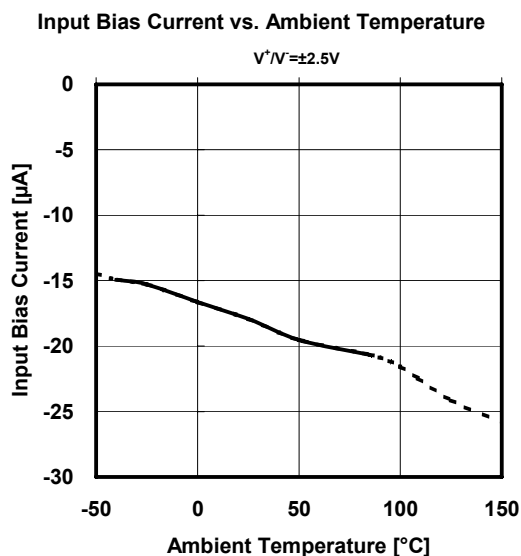
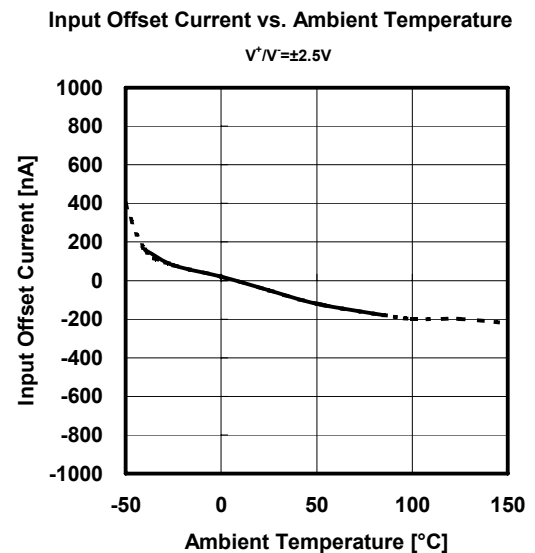
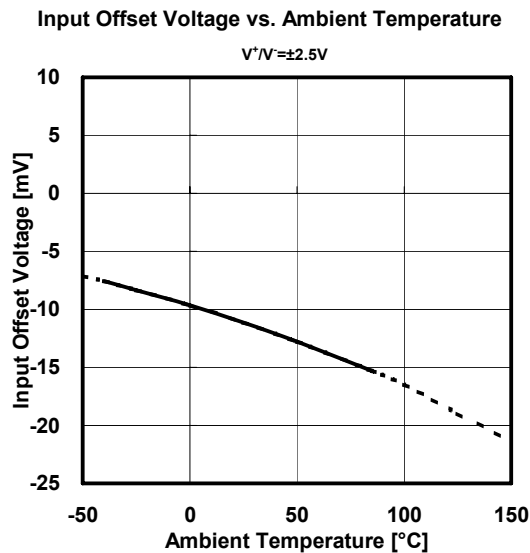
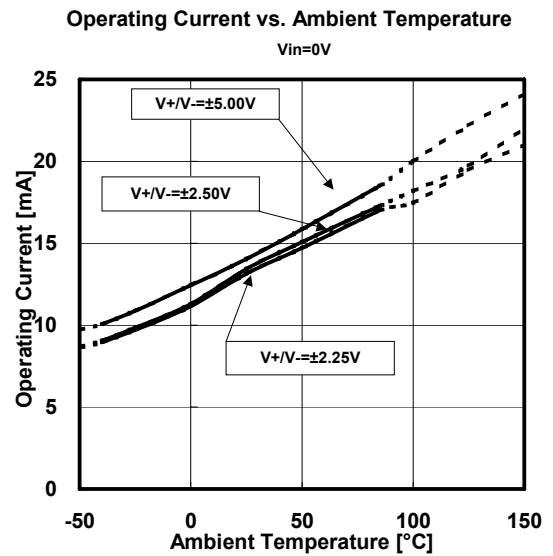
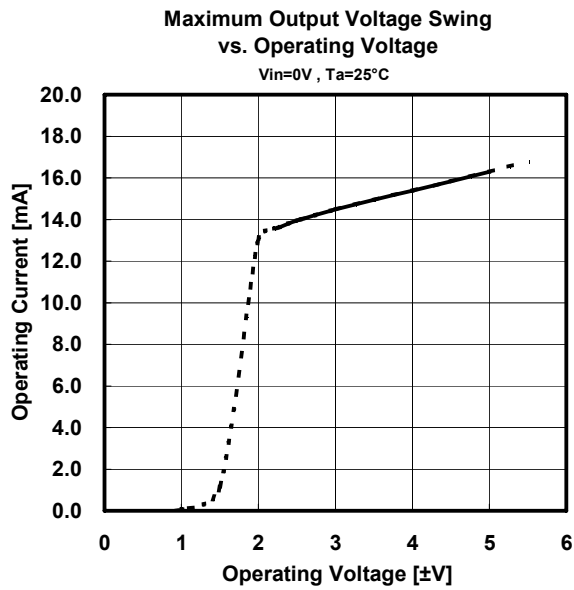
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Frequency	f_T	$A_V = 40dB$, $R_F = 1.98k\Omega$ $R_G = 20\Omega$, $R_L = \infty$, $C_L = 5pF$	-	170	-	MHz
Phase Margin	Φ_M	$A_V = 40dB$, $R_F = 1.98k\Omega$ $R_G = 20\Omega$, $R_L = \infty$, $C_L = 5pF$	-	70.0	-	Deg

● AC CHARACTERISTICS

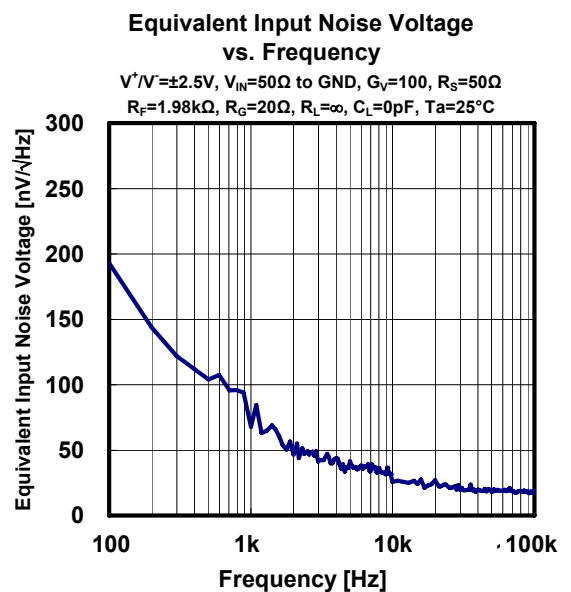
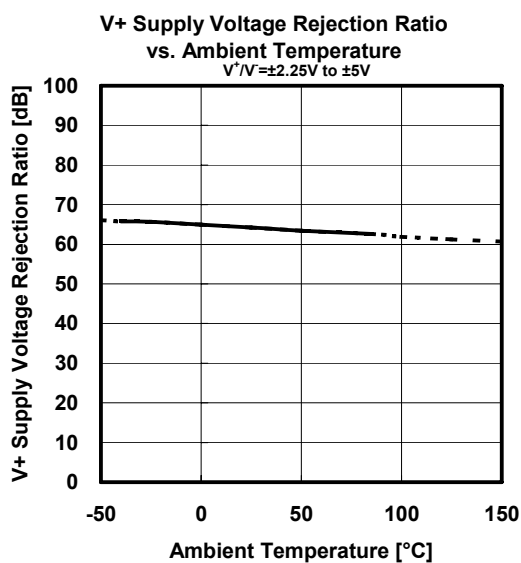
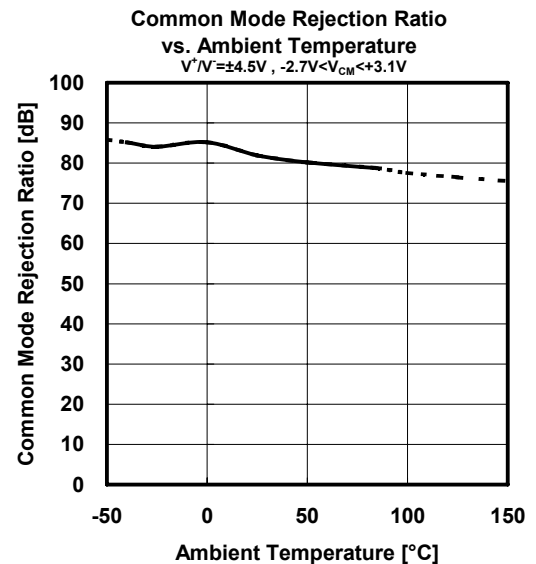
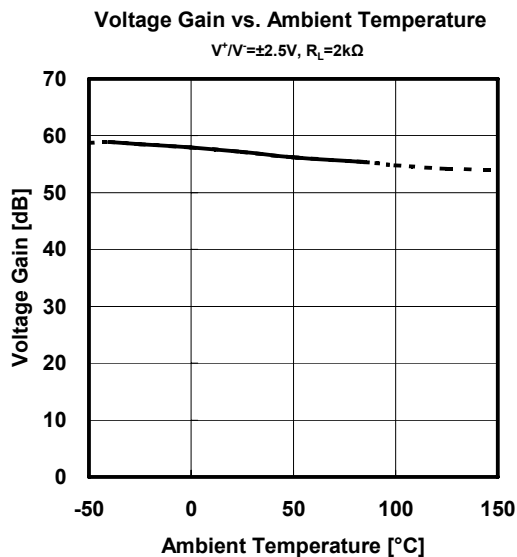
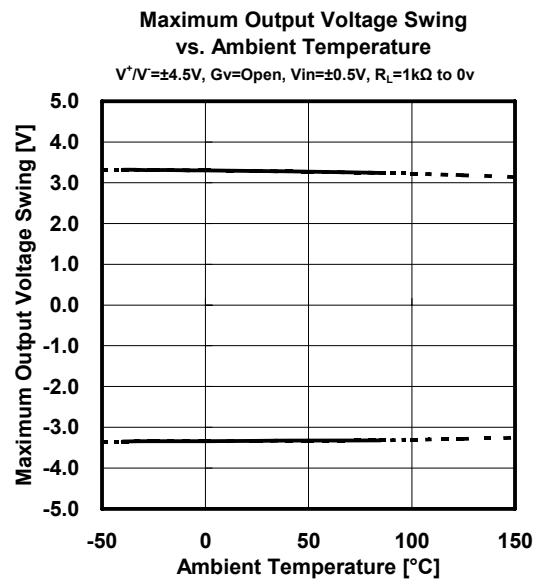
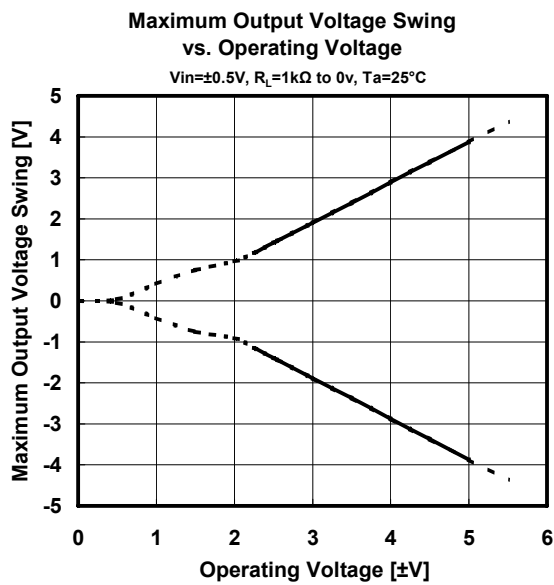
($V^+/V^- = \pm 4.5V$, Ta=25°C)

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

■ TYPICAL CHARACTERISTICS



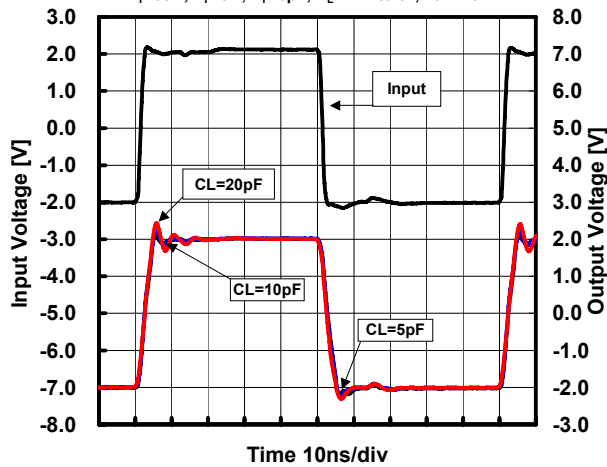
■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS

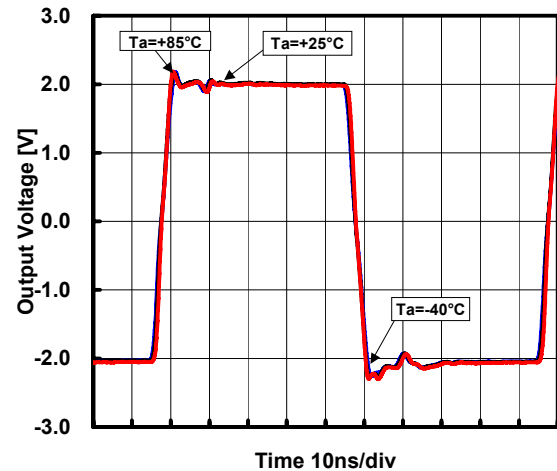
Pulse Response (with Capacitive load)

$V^+/V^- = \pm 4.5V$, $f = 10MHz$, $V_O = 4V_{PP}$, $G_V = 0dB$
 $R_I = 50\Omega$, $R_F = 0\Omega$, $C_F = 0pF$, $R_L = 1k\Omega$ to $0v$, $T_a = +25^\circ C$



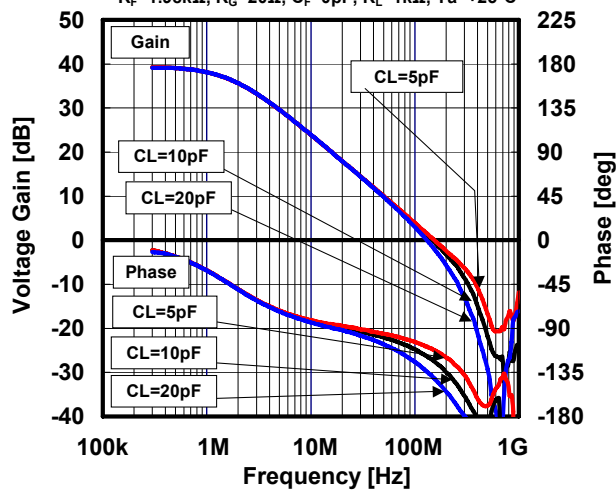
Pulse Response (correlation with T_a)

$V^+/V^- = \pm 4.5V$, $f = 10MHz$, $V_O = 4V_{PP}$, $G_V = 0dB$
 $R_I = 50\Omega$, $R_F = 0\Omega$, $C_F = 0pF$, $C_L = 5pF$, $R_L = 1k\Omega$ to $0v$



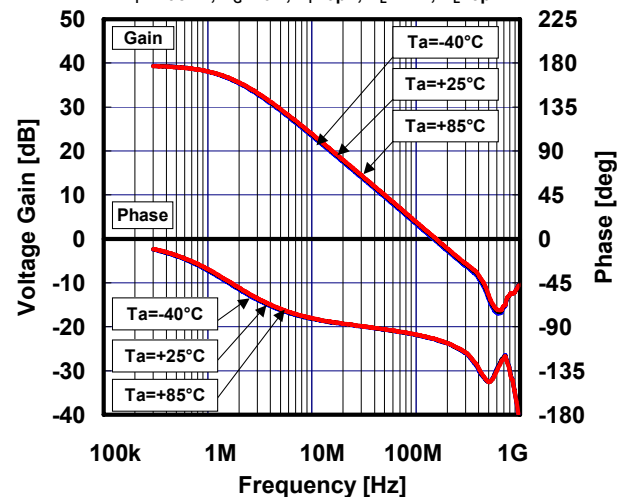
Voltage Gain vs. Frequency (with Capacitive load)

$V^+/V^- = \pm 4.5V$, $V_{IN} = 0.02V_{PP}$, $G_V = 40dB$, $R_I = 50\Omega$
 $R_F = 1.98k\Omega$, $R_G = 20\Omega$, $C_F = 0pF$, $R_L = 1k\Omega$, $T_a = +25^\circ C$



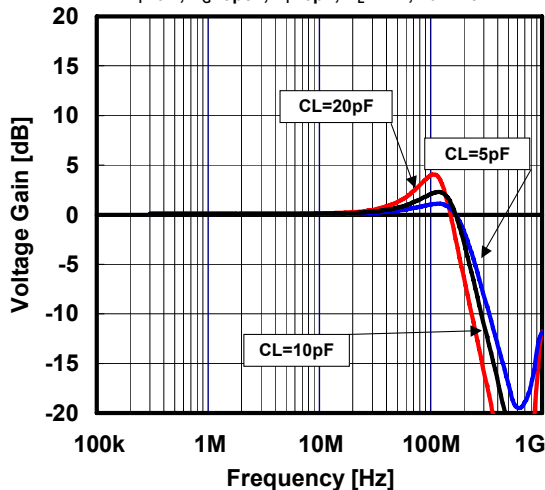
Voltage Gain vs. Frequency (correlation with T_a)

$V^+/V^- = \pm 2.5V$, $V_{IN} = 0.02V_{PP}$, $G_V = 40dB$, $R_I = 50\Omega$
 $R_F = 1.98k\Omega$, $R_G = 20\Omega$, $C_F = 0pF$, $R_L = 2k\Omega$, $C_L = 5pF$



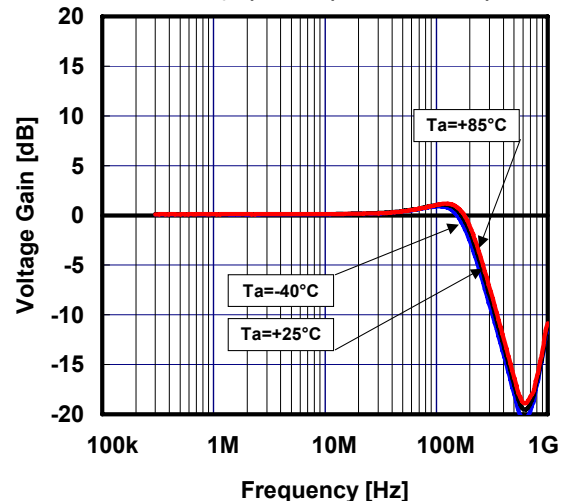
Voltage Gain vs. Frequency (with Capacitive load)

$V^+/V^- = \pm 4.5V$, $V_{IN} = 0.02V_{PP}$, $G_V = 0dB$, $R_I = 50\Omega$
 $R_F = 0\Omega$, $R_G = \text{open}$, $C_F = 0pF$, $R_L = 1k\Omega$, $T_a = +25^\circ C$



Voltage Gain vs. Frequency (correlation with T_a)

$V^+/V^- = \pm 4.5V$, $V_{IN} = 0.02V_{PP}$, $G_V = 0dB$, $R_I = 50\Omega$
 $R_F = 0\Omega$, $R_G = \text{open}$, $C_F = 0pF$, $R_L = 1k\Omega$, $C_L = 20pF$



[CAUTION]
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