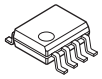
Single Ultra-High speed and Wide Band Operational Amplifier

■ GENERAL DESCRIPTION

The **NJM2721** is a single, ultra-high speed and wide band operational amplifier that features 500V/μs slew rate and 150ohm load drive, at supply voltage of ±2.5V.

The NJM2721 is suitable for video signal processing, video line driver, video buffer, pulse amplifiers, ADC input buffer, measuring instrument, and digital communication.

■ PACKAGE OUTLINE



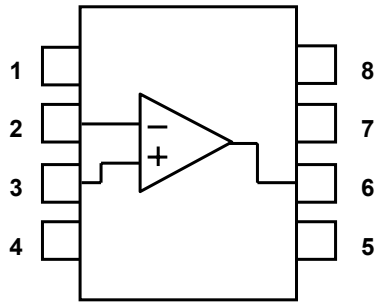
NJM2721E
(SOP8)

■ FEATURES

●Operating Voltage	: ±2.5V to ±5.0V
●Slew Rate	: 500V/μs Typ. (at V^+/V^-=±2.5V, R_L=150Ω)
●Unity-Gain	: 120MHz Typ.
●Output Voltage	: V_{OH} = +1.35V Typ. (at V^+/V^-=±2.5V, R_L=150Ω)
	: V_{OL} = -1.35V Typ. (at V^+/V^-=±2.5V, R_L=150Ω)
●Offset Voltage	: 3mV Typ.
●Operating Current	: 11.3 mA Typ.
●Adequate phase margin	: Φ_M=60deg. 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 +125	°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	-	11.3	18.3	mA
Input Offset Voltage	V_{IO}		-	3.0	22.0	mV
Input Bias Current	I_B		-	15.0	50.0	μA
Input Offset Current	I_{IO}		-	150	900	nA
Large Signal Voltage Gain	A_V	R_L=2kΩ	50	60	-	dB
Input Common Mode Voltage Range	V_{ICM}		+1.5 -1.0	+1.7 -1.2	- -	V V
Common Mode Rejection Ratio	CMR	-1.0V≤V_{ICM}≤+1.5V	60	80	-	dB
Supply Voltage Rejection Ratio	SVR	±2.5V≤V^+/V^-≤±5.0V	50	60	-	dB
Maximum Output Voltage Swing	V_{OM}	R_L=150Ω	±1.1	±1.35	-	V

●AC CHARACTERISTICS (V^+/V^-=±2.5V, Ta=25˚C)

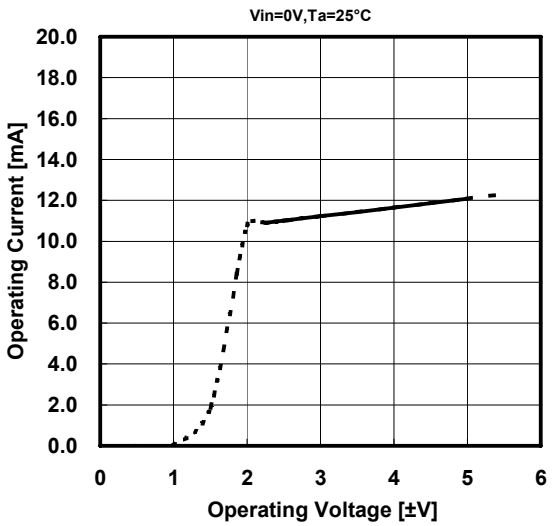
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Frequency	f_T	A_V=40dB, R_F=1.98kΩ R_G=20Ω, R_L=∞, C_L=5pF	-	120	-	MHz
Phase Margin	Φ_M	A_V=40dB, R_F=1.98kΩ R_G=20Ω, R_L=∞, C_L=5pF	-	60.0	-	Deg

●AC CHARACTERISTICS (V^+/V^-=±2.5V, Ta=25˚C)

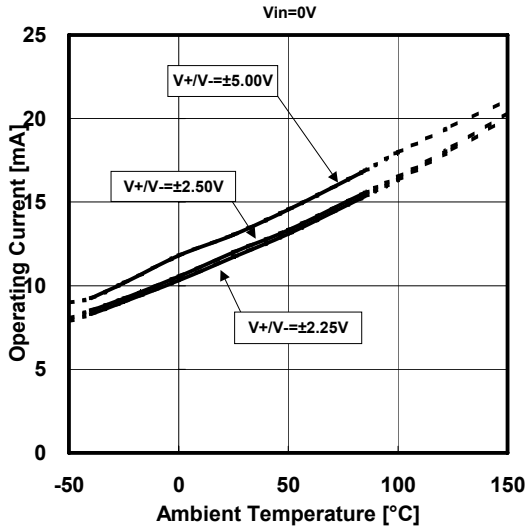
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Slew Rate	SR	A_V=0dB, R_F=0Ω, R_G=∞ R_L=150Ω,C_L=5pF V_{IN}=2V_{PP}	-	500	-	V/μs

■ TYPICAL CHARACTERISTICS

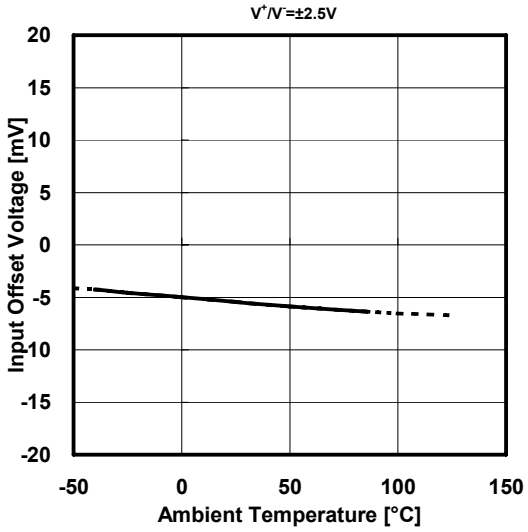
Opearting Current vs. Operating Voltage



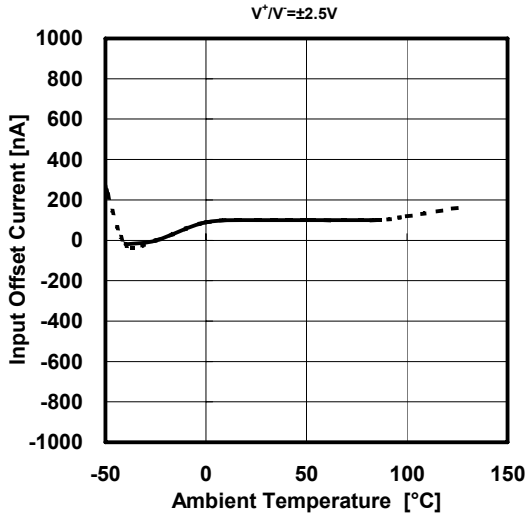
Operating Current vs. Ambient Temperature



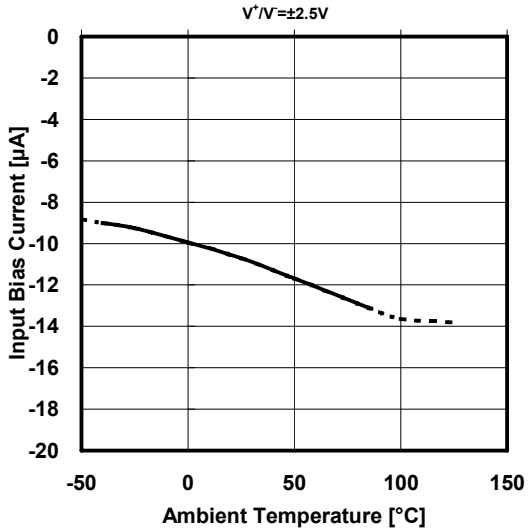
Input Offset Voltage vs. Ambient Temperature



Input Offset Current vs. Ambient Temperature



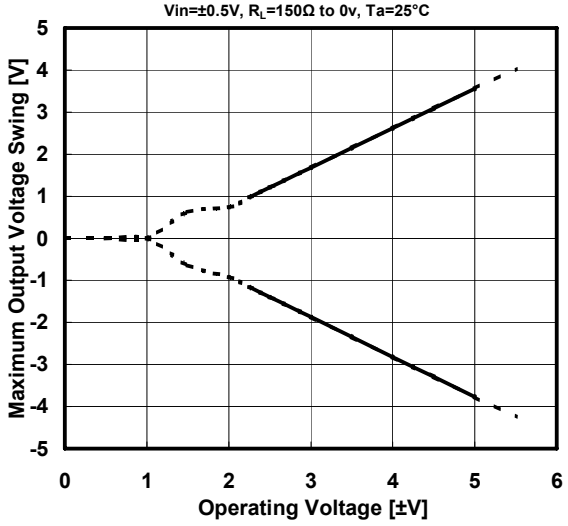
Input Bias Current vs. Ambient Temperature



■ TYPICAL CHARACTERISTICS

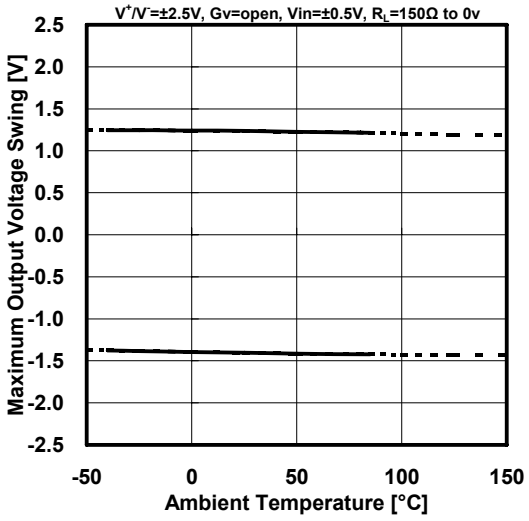
Maximum Output Voltage Swing vs. Operating Voltage

Vin=±0.5V, R_L=150Ω to 0v, Ta=25°C



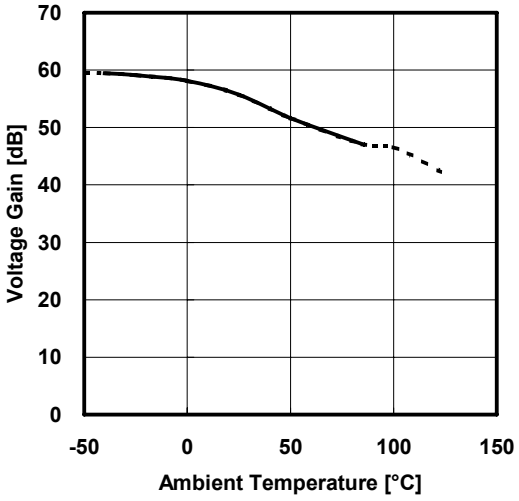
Maximum Output Voltage Swing vs. Ambient Temperature

V^+/V^-=±2.5V, Gv=open, Vin=±0.5V, R_L=150Ω to 0v



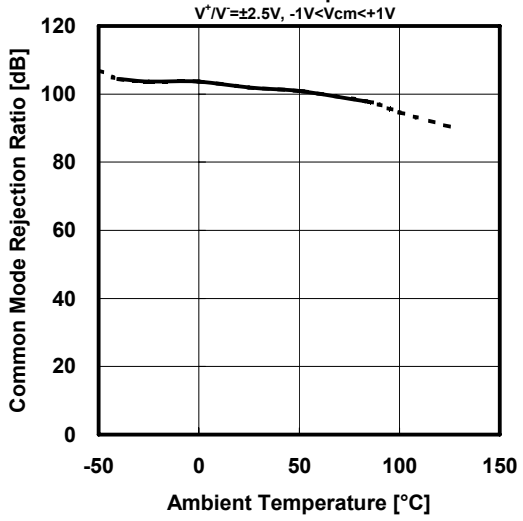
Voltage Gain vs. Ambient Temperature

V^+/V^-=±2.5V, R_L=2kΩ



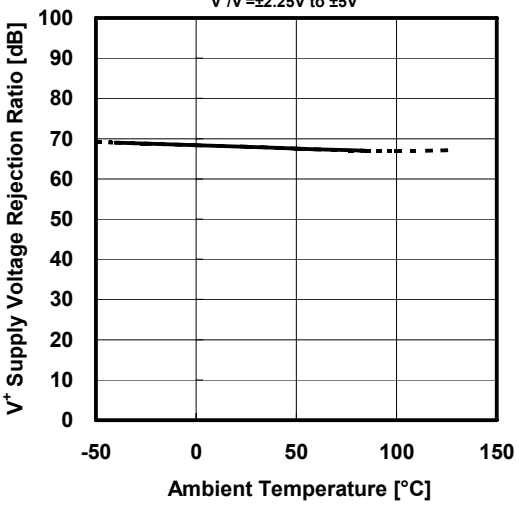
Common Mode Rejection Ratio vs. Ambient Temperature

V^+/V^-=±2.5V, -1V<Vcm<+1V



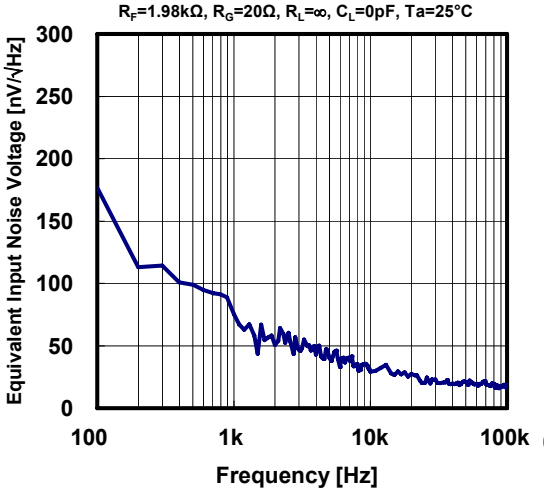
V^+ Supply Voltage Rejection Ratio vs. Ambient Temperature

V^+/V^-=±2.25V to ±5V



Equivalent Input Noise Voltage vs. Frequency

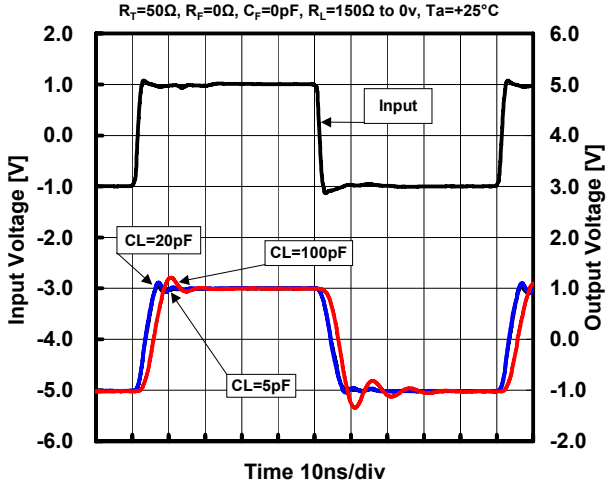
V^+/V^-=±2.5V, V_{IN}=50Ω to GND, G_V=100, R_S=50Ω
R_F=1.98kΩ, R_G=20Ω, R_L=∞, C_L=0pF, Ta=25°C



■ TYPICAL CHARACTERISTICS

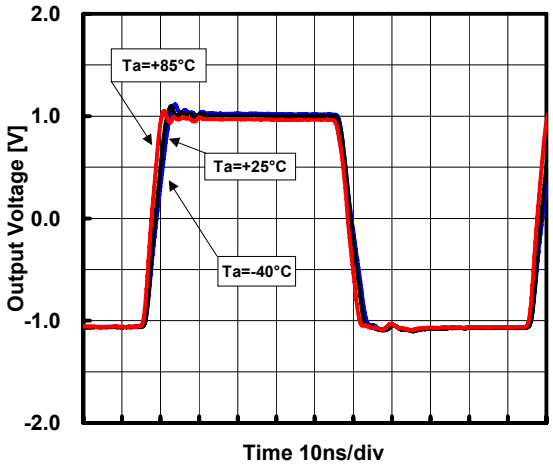
Pulse Response (with Cpacitive load)

V^+/V^-=±2.5V, f=10MHz, V_O=2V_{PP}, G_V=0dB
R_T=50Ω, R_F=0Ω, C_F=0pF, R_L=150Ω to 0v, Ta=+25°C



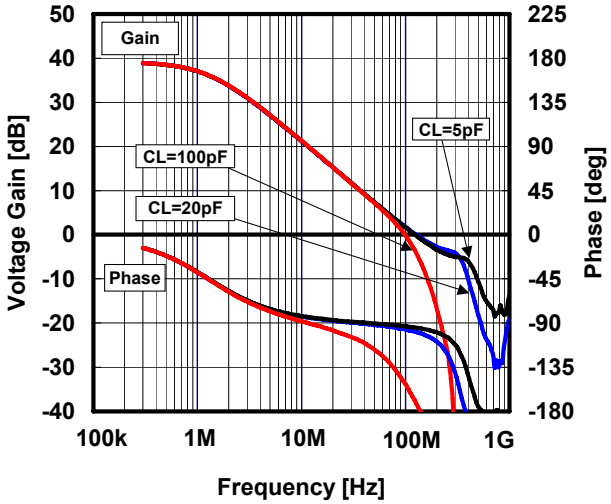
Pulse Response (correlation with Ta)

V^+/V^-=±2.5V, f=10MHz, V_O=2V_{PP}, G_V=0dB
R_T=50Ω, R_F=0Ω, C_F=0pF, C_L=5pF, R_L=150Ω to 0v



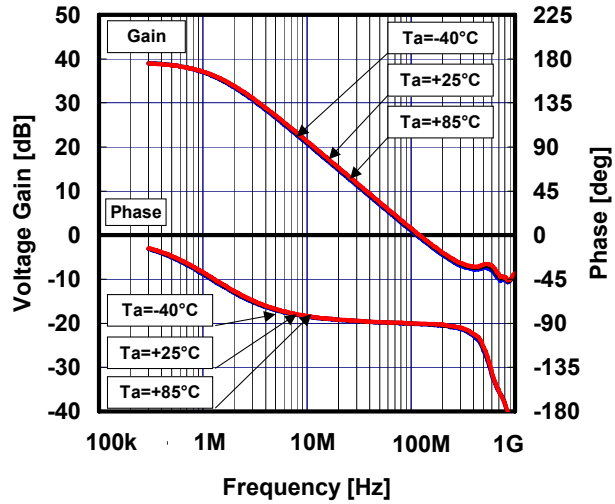
Voltage Gain vs. Frequency (with Cpacitive load)

V^+/V^-=±2.5V, V_{IN}=0.02Vpp, G_V=40dB, R_T=50Ω
R_F=1.98kΩ, R_G=20Ω, C_F=0pF, R_L=2kΩ, Ta=+25°C



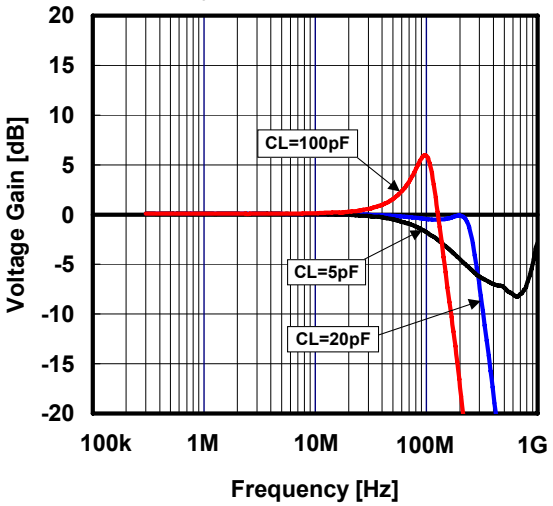
Voltage Gain vs. Frequency (correlation with Ta)

V^+/V^-=±2.5V, V_{IN}=0.02Vpp, G_V=40dB, R_T=50Ω
R_F=1.98kΩ, R_G=20Ω, C_F=0pF, R_L=150Ω, C_L=5pF



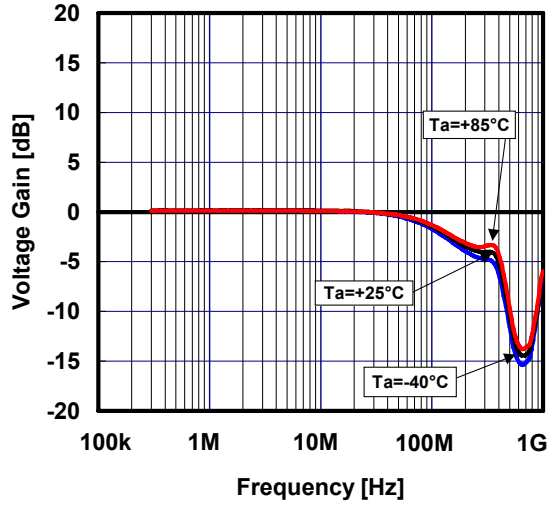
Voltage Gain vs. Frequency (with Cpacitive load)

V^+/V^-=±2.5V, V_{IN}=0.02Vpp, G_V=0dB, R_T=50Ω
R_F=0Ω, R_G=open, C_F=0pF, R_L=150Ω, Ta=+25°C



Voltage Gain vs. Frequency (correlation with Ta)

V^+/V^-=±2.5V, V_{IN}=0.02Vpp, G_V=0dB, R_T=50Ω
R_F=0Ω, R_G=open, C_F=0pF, R_L=150Ω, C_L=5pF



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