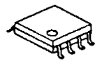
Single Supply Dual Operational Amplifier with Full Swing Output

■GENERAL DESCRIPTION

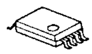
The NJM2746 is a dual low supply voltage operational amplifier with Full swing output.

It is suitable for audio section of portable sets, PCs and any General-purpose use.

■PACKAGE OUTLINE



NJM2746M



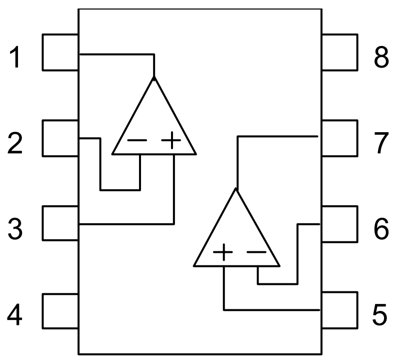
NJM2746V

NJM2746RB1

■ FEATURES

●Operating Voltage	:2.5V to 14V
●Output Full Swing	: V_{OH} ≥4.9V Typ. (at V^+=5V, R_L=5kΩ)
	: V_{OL} ≤0.1V Typ. (at V^+=5V, R_L=5kΩ)
●Offset Voltage	:1mV Typ
●Slew Rate	: 3.5V/µs Typ.
●Low Distortion	: 0.001% typ. (at V^+=5V, f=1kHz)
●Low Input Voltage Noise	:10nV/√Hz typ.
●Bipolar Technology	
●Package Outline	: DMP8, SSOP8, TVSP8

■ PIN CONFIGURATION



PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. GND
5. B +INPUT
6. B –INPUT
7. B OUTPUT
8. V^+

NJM2746M
NJM2746V
NJM2746RB1
(Top View)

NJM2746

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	15	V
Differential Input Voltage Range	V_{ID}	±15 (Note1)	V
Common Mode Input Voltage Range	V_{ICM}	0 to 15 (Note1)	V
Power Dissipation	P_D	DMP8 (300), SSOP (250) TVSP8 (320)	mW
Operating Temperature Range	T_{opr}	-40 to +85	°C
Storage Temperature Range	T_{stg}	-50 to +125	°C

(Note1) For supply voltage less than 15V, the absolute maximum input voltage is equal to the supply voltage.

■ OPERATING VOLTAGE (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	2.5 to 14	V

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS (V^+=5V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	R_L=∞, V_{IN}=2.5V, No Signal Apply	-	4	5.5	mA
Input Offset Voltage	V_{IO}	R_S ≤ 10kΩ	-	1	6	mV
Input Bias Current	I_B		-	100	350	nA
Input Offset Current	I_{IO}		-	5	100	nA
Large Signal Voltage Gain	A_V	R_L≥10kΩ to 2.5V, Vo=0.5V to 4.5V	65	85	-	dB
Common Mode Rejection Ratio	CMR	0V ≤ V_{CM} ≤ 4V	60	75	-	dB
Supply Voltage Rejection Ratio	SVR	V^+=2.5V to 14V	60	80	-	dB
Output Voltage	V_{OH}	R_L=5kΩ to 2.5V	4.75	4.9	-	V
	V_{OL}	R_L=5kΩ to 2.5V	-	0.1	0.25	V
Input Common Mode Voltage Range	V_{ICM}	CMR ≥ 60dB	0	-	4	V

●AC CHARACTERISTICS (V^+=5V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Bandwidth	GB	f=1MHz	-	10	-	MHz
Phase Margin	Φ_M	R_L=10kΩ, C_L=10pF	-	75	-	Deg
Equivalent Input Noise Voltage	V_{NI}	f=1kHz, V_{CM}=2.5V	-	10	-	nV/√Hz
Total Harmonic Distortion	THD	f=1kHz, A_V=+2 R_L=10kΩ to 2.5V, Vo=1.5Vrms	-	0.001	-	%
Amp to Amp Separation	CS	f=1kHz R_L=10kΩ to 2.5V, Vo=1.5Vrms	-	120	-	dB

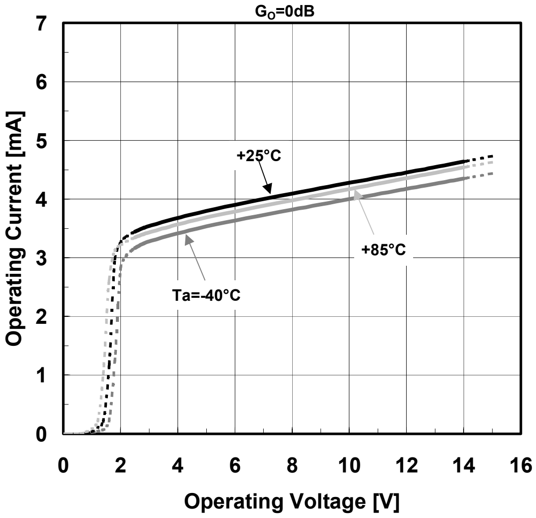
●AC CHARACTERISTICS (V^+=5V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Slew Rate	SR	(Note 2), A_V=1, V_{IN}=2Vpp R_L=10kΩ to 2.5V C_L=10pF to 2.5V	-	3.5	-	V/μs

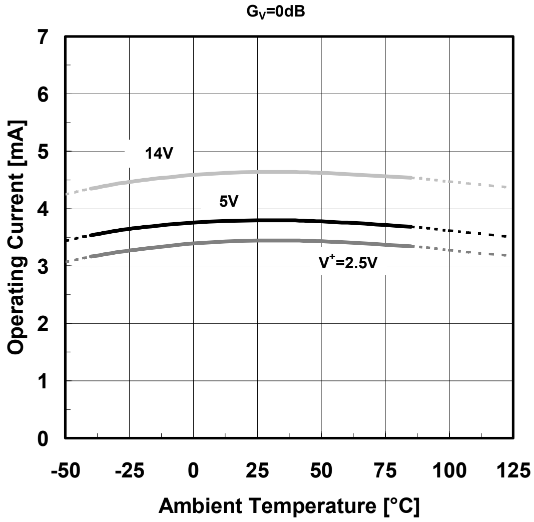
(Note 2) Number specified is the slower of the positive and negative slew rates.

■ TYPICAL CHARACTERISTICS

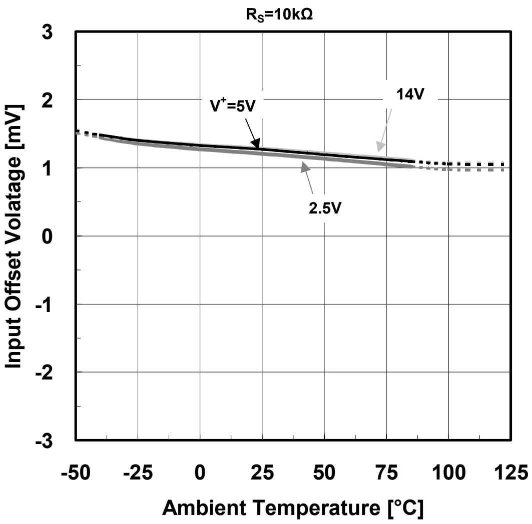
Operating Current vs. Operating Voltage (correlation with Ta)



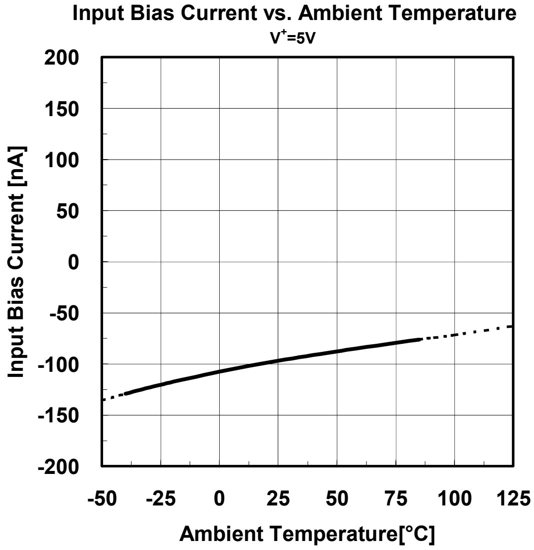
Operating Current vs. Ambient Tmeperature



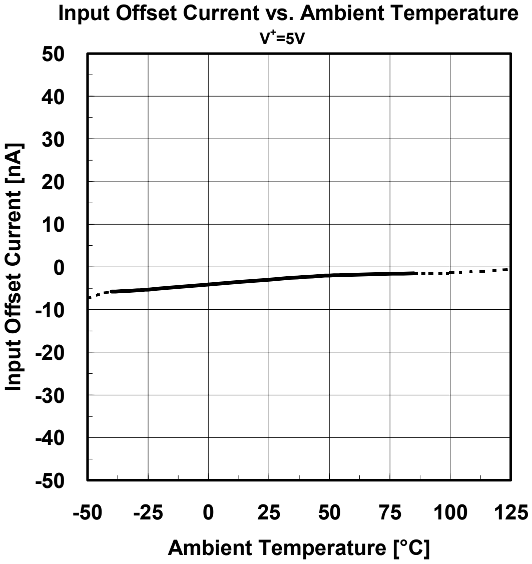
Imput Offset Voltage vs. Ambient Temperature



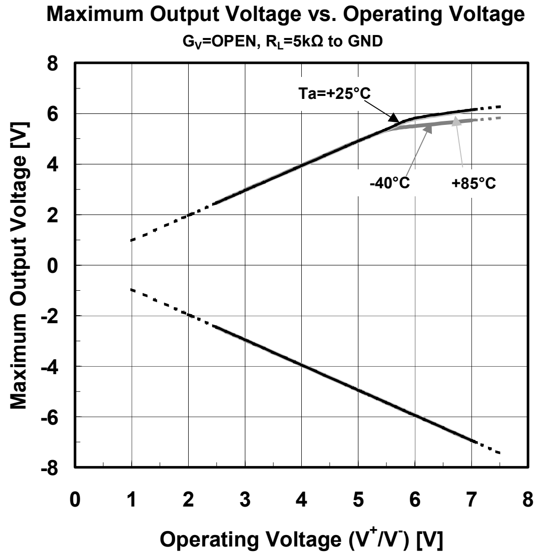
Input Bias Current vs. Ambient Temperature

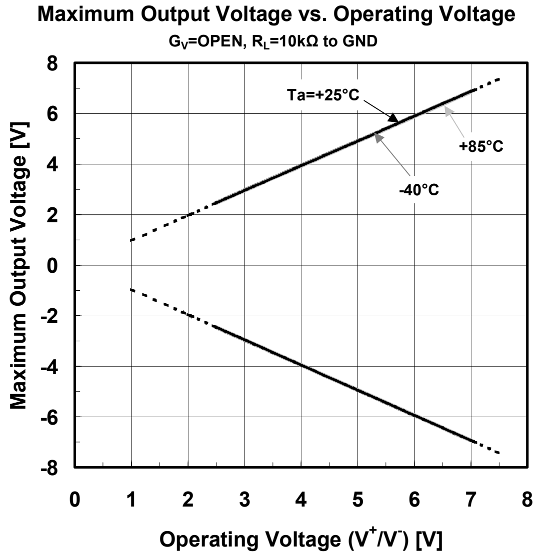


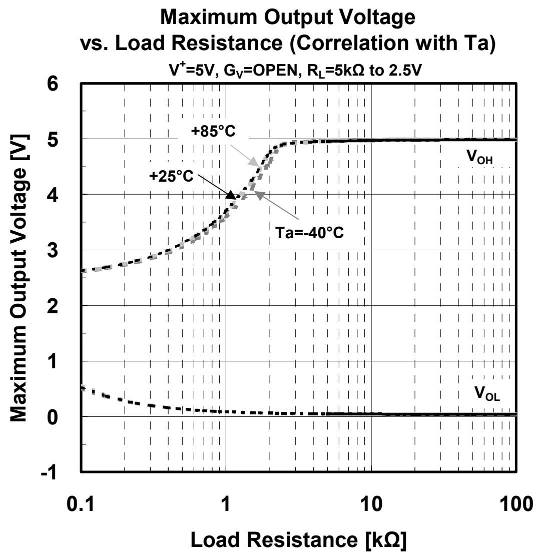
Input Offset Current vs. Ambient Temperature

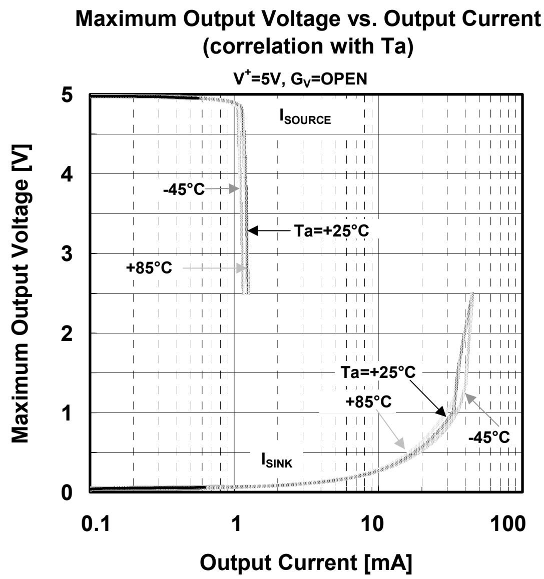


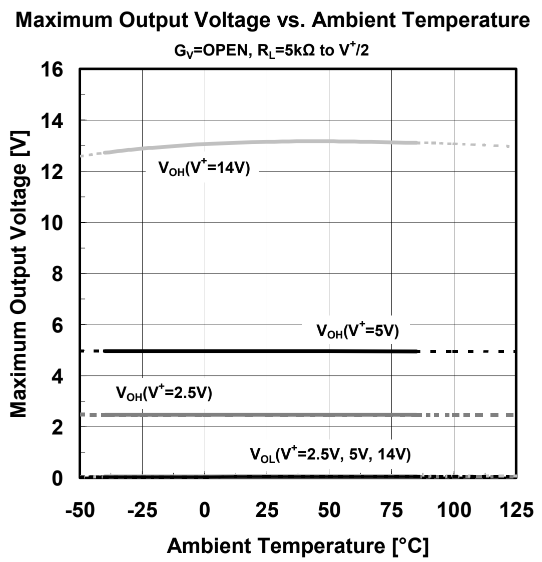
■ TYPICAL CHARACTERISTICS

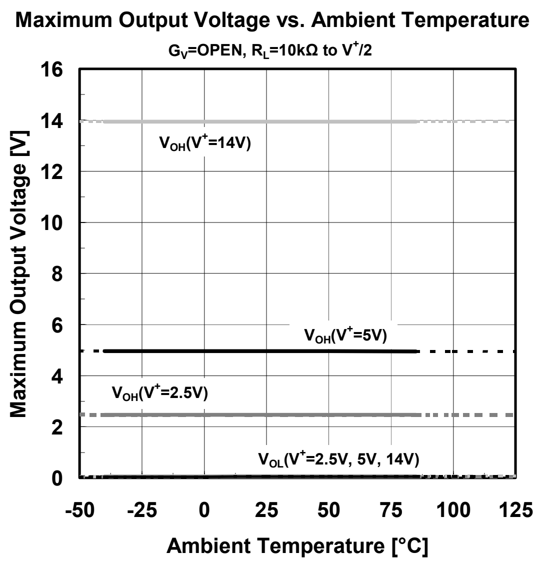












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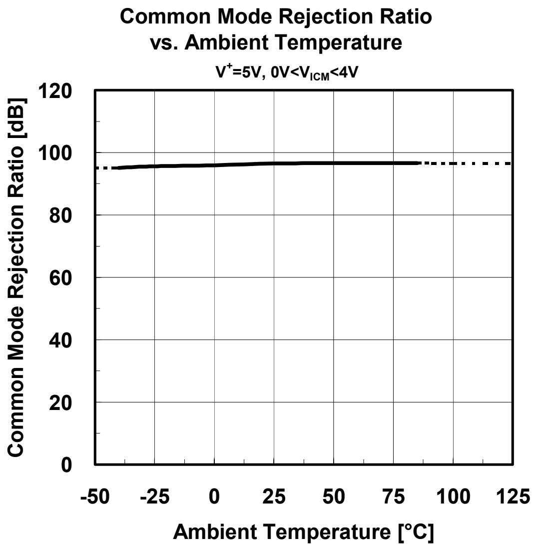
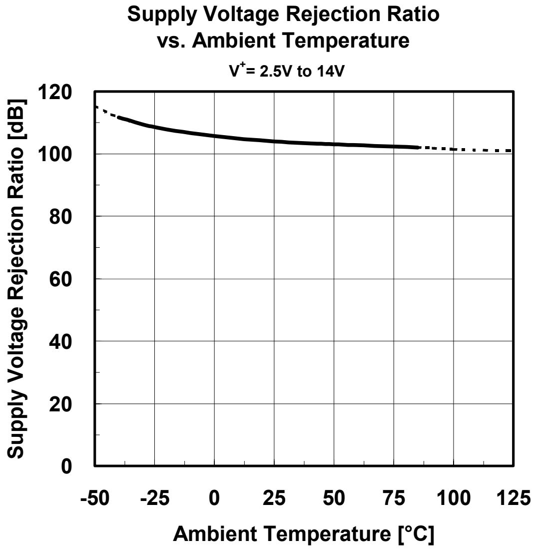
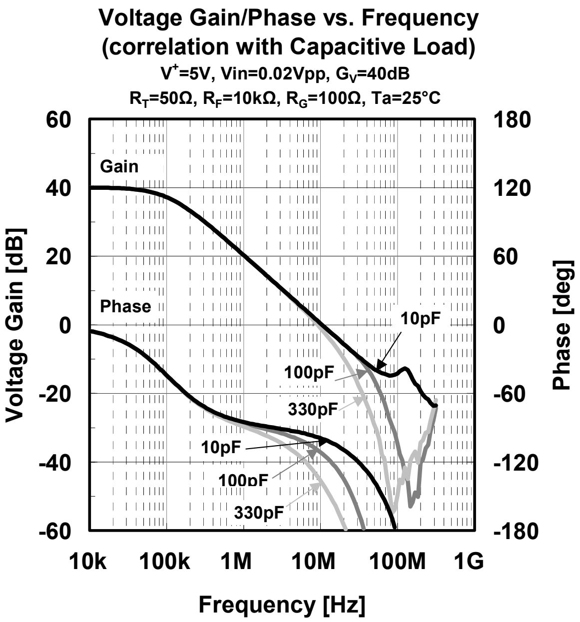
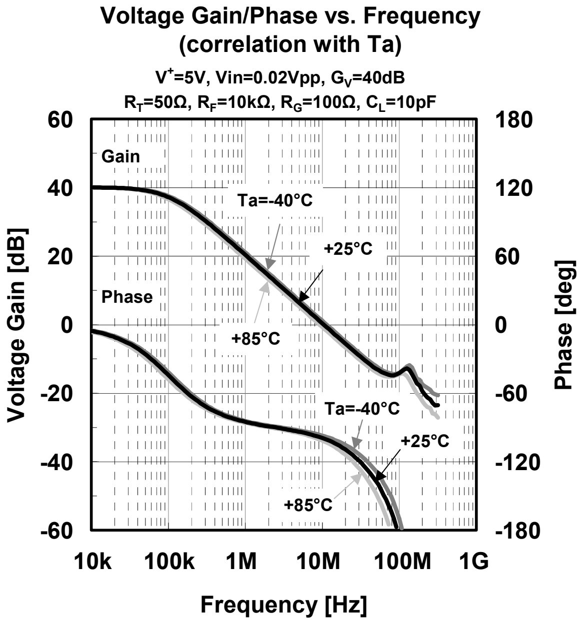
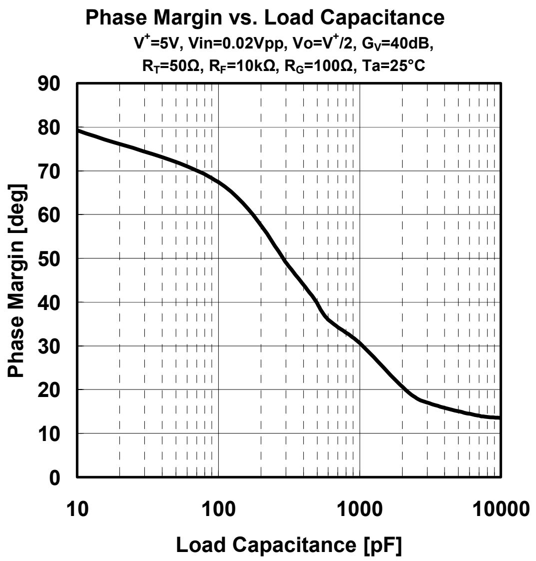




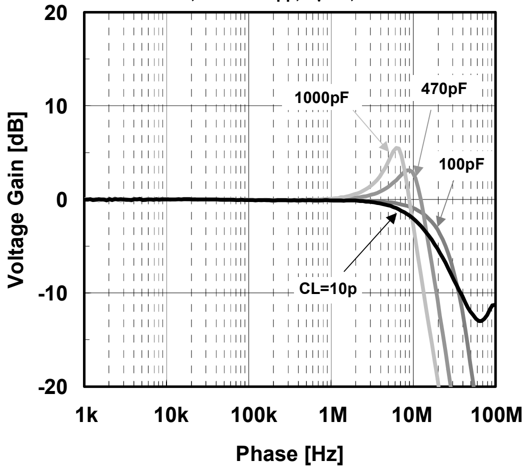




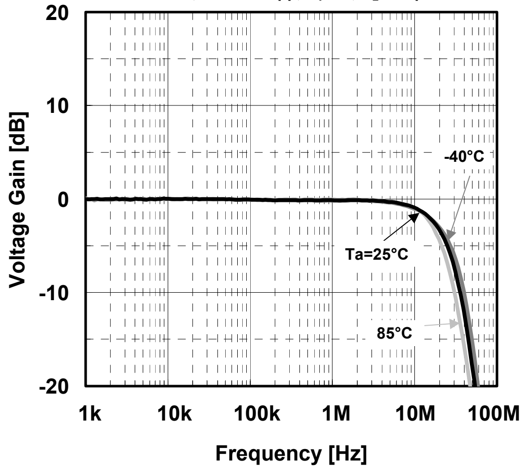


■ TYPICAL CHARACTERISTICS

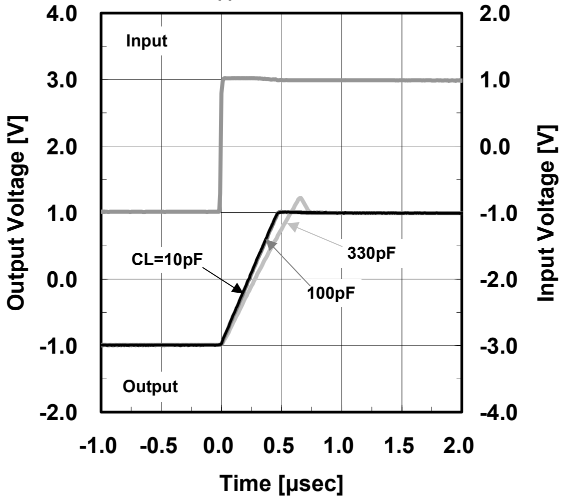
Voltage Gain vs. Frequency
(correlation with Capacitance Load)
V^+=5V, Vin=0.02Vpp, A_V=+1, Ta=25°C



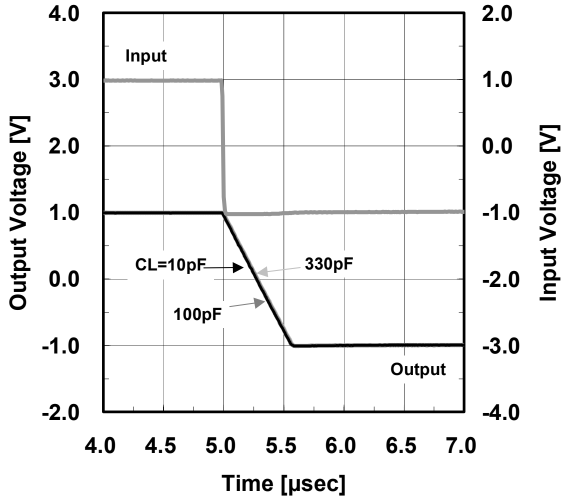
Voltage Gain vs. Frequency
(correlation with Ta)
V^+=5V, Vin=0.02Vpp, A_V=+1, C_L=100pF



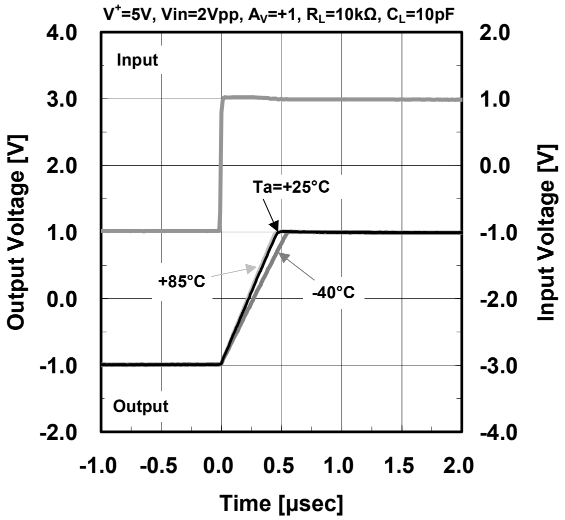
Pulse Response "Rise"
(correlation with Capacitance Load)
V^+=5V, Vin=2Vpp, A_V=+1, R_L=10kΩ, Ta=25°C



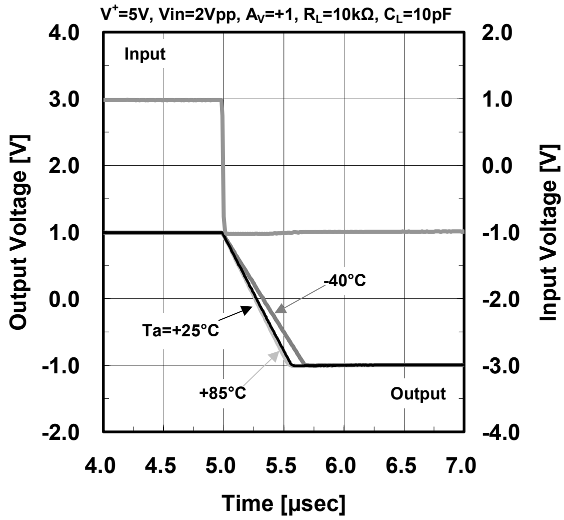
Pulse Response "Fall"
(correlation with Capacitance Load)
V^+=5V, Vin=2Vpp, A_V=+1, R_L=10kΩ, Ta=25°C



Pulse Response "Rise"
(correlation with Ta)
V^+=5V, Vin=2Vpp, A_V=+1, R_L=10kΩ, C_L=10pF



Pulse Response "Fall"
(correlation with Ta)
V^+=5V, Vin=2Vpp, A_V=+1, R_L=10kΩ, C_L=10pF



■ TYPICAL CHARACTERISTICS