

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.

■ FEATURES

- Operating Voltage : 2.5V to 14V
- Output Full Swing : $V_{OH} \geq 4.9V$ Typ. (at $V^+ = 5V$, $R_L = 5k\Omega$)
: $V_{OL} \leq 0.1V$ Typ. (at $V^+ = 5V$, $R_L = 5k\Omega$)
- Offset Voltage : 1mV Typ
- Slew Rate : $3.5V/\mu s$ Typ.
- Low Distortion : 0.001% typ. (at $V^+ = 5V$, $f = 1kHz$)
- Low Input Voltage Noise : $10nV/\sqrt{Hz}$ typ.
- Bipolar Technology
- Package Outline : DMP8, SSOP8, TVSP8

■ PACKAGE OUTLINE



NJM2746M

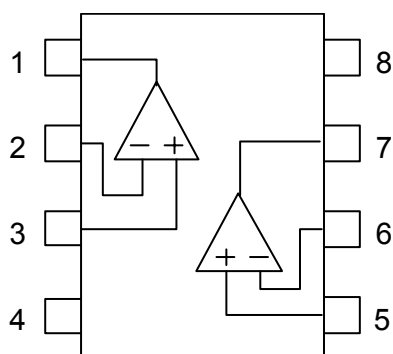


NJM2746V



NJM2746RB1

■ 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)

■ 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 ($T_a=25^\circ\text{C}$)

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

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS ($V^+=5\text{V}, T_a=25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	$R_L=\infty, V_{IN}=2.5\text{V}$, No Signal Apply	-	4	5.5	mA
Input Offset Voltage	V_{IO}	$R_S \leq 10\text{k}\Omega$	-	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	$R_L \geq 10\text{k}\Omega$ to 2.5V, $V_o=0.5\text{V}$ to 4.5V	65	85	-	dB
Common Mode Rejection Ratio	CMR	$0\text{V} \leq V_{CM} \leq 4\text{V}$	60	75	-	dB
Supply Voltage Rejection Ratio	SVR	$V^+=2.5\text{V}$ to 14V	60	80	-	dB
Output Voltage	V_{OH}	$R_L=5\text{k}\Omega$ to 2.5V	4.75	4.9	-	V
	V_{OL}	$R_L=5\text{k}\Omega$ to 2.5V	-	0.1	0.25	V
Input Common Mode Voltage Range	V_{ICM}	CMR $\geq 60\text{dB}$	0	-	4	V

●AC CHARACTERISTICS ($V^+=5\text{V}, T_a=25^\circ\text{C}$)

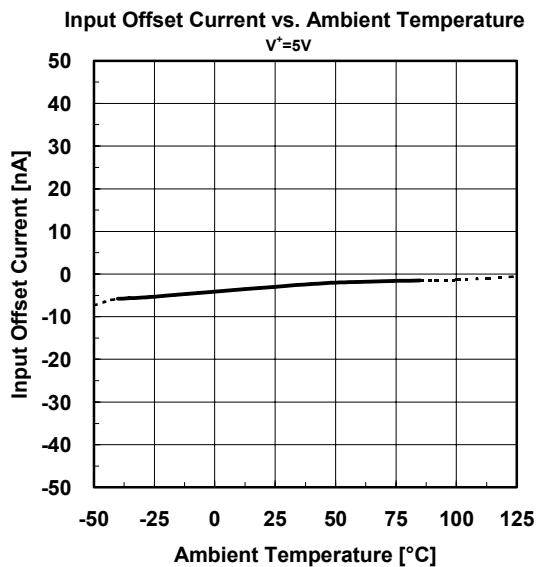
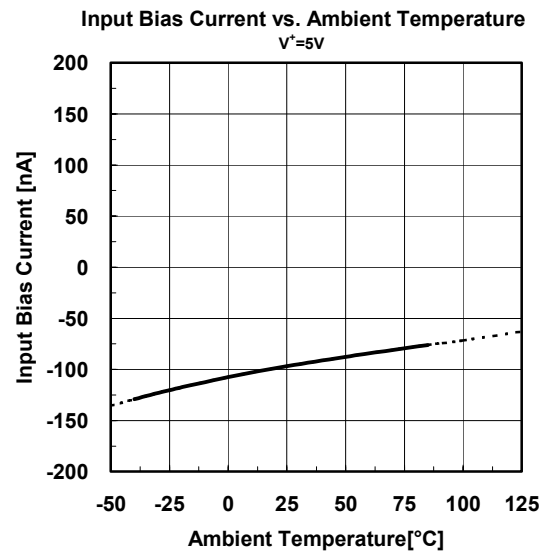
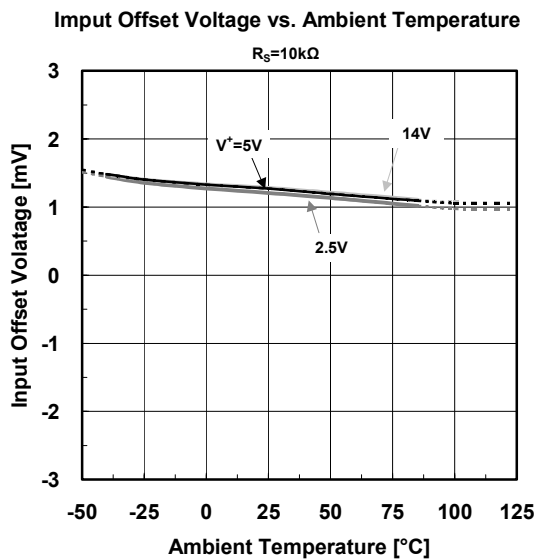
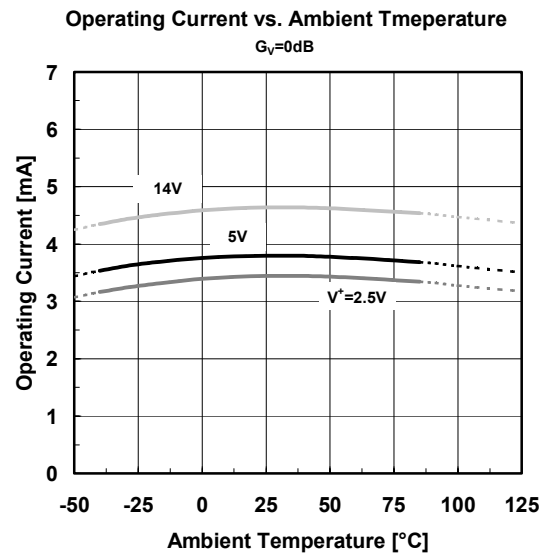
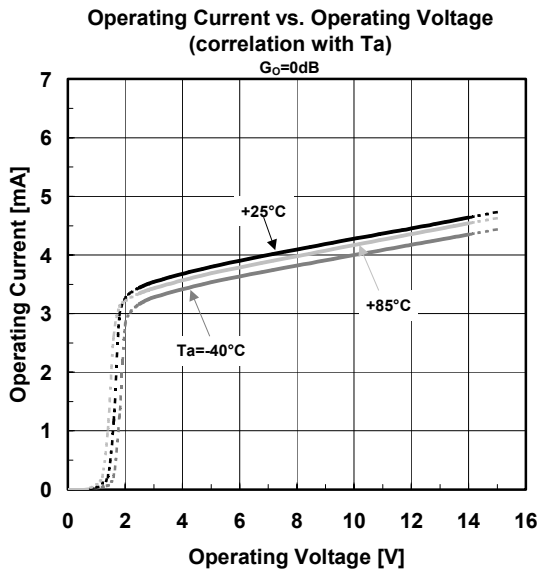
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Bandwidth	GB	$f=1\text{MHz}$	-	10	-	MHz
Phase Margin	Φ_M	$R_L=10\text{k}\Omega, C_L=10\text{pF}$	-	75	-	Deg
Equivalent Input Noise Voltage	V_{NI}	$f=1\text{kHz}, V_{CM}=2.5\text{V}$	-	10	-	nV/ $\sqrt{\text{Hz}}$
Total Harmonic Distortion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

●AC CHARACTERISTICS ($V^+=5\text{V}, T_a=25^\circ\text{C}$)

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

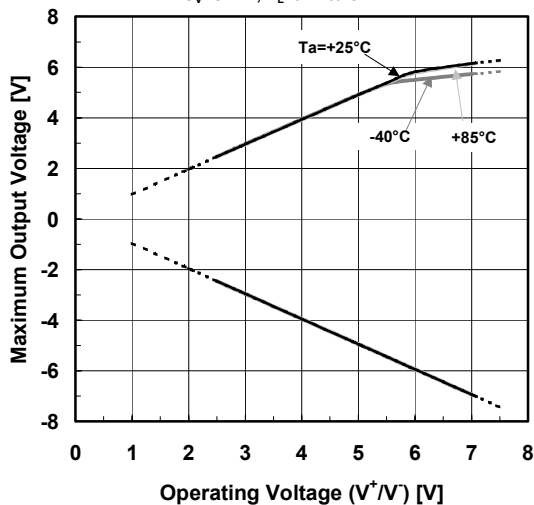
(Note 2) Number specified is the slower of the positive and negative slew rates.

■ TYPICAL CHARACTERISTICS

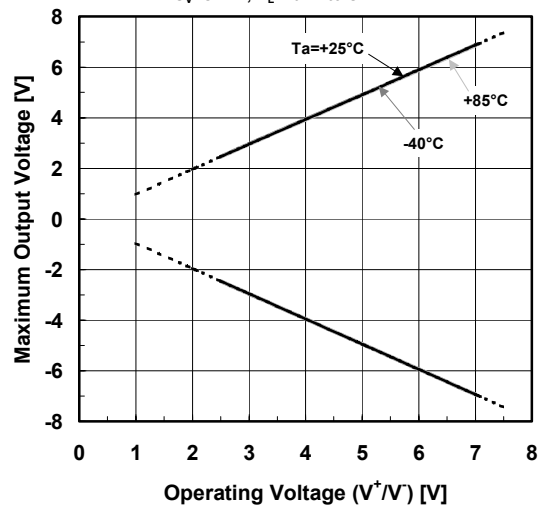


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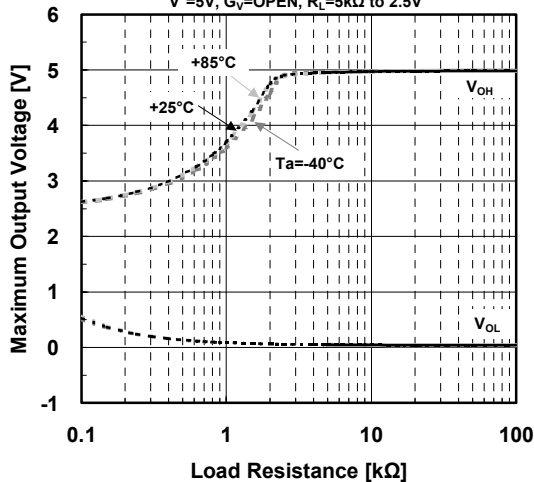
Maximum Output Voltage vs. Operating Voltage
 $G_V = \text{OPEN}$, $R_L = 5\text{k}\Omega$ to GND



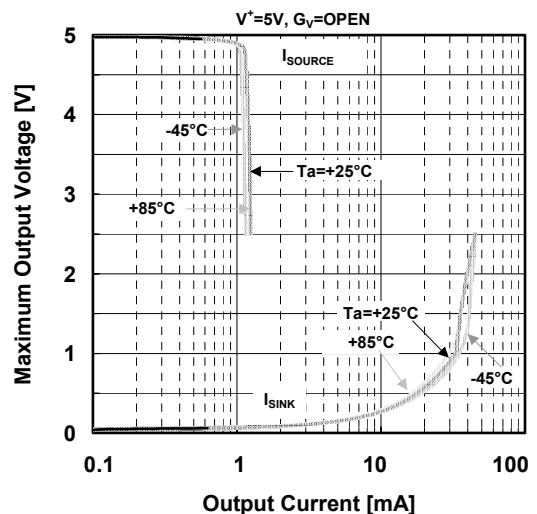
Maximum Output Voltage vs. Operating Voltage
 $G_V = \text{OPEN}$, $R_L = 10\text{k}\Omega$ to GND



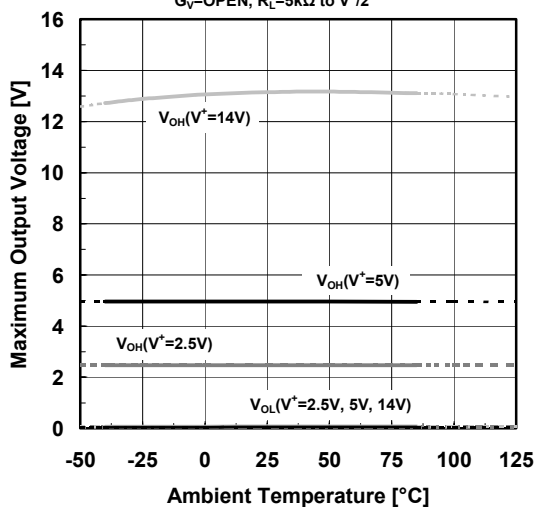
Maximum Output Voltage
 vs. Load Resistance (Correlation with Ta)
 $V^+ = 5\text{V}$, $G_V = \text{OPEN}$, $R_L = 5\text{k}\Omega$ to 2.5V



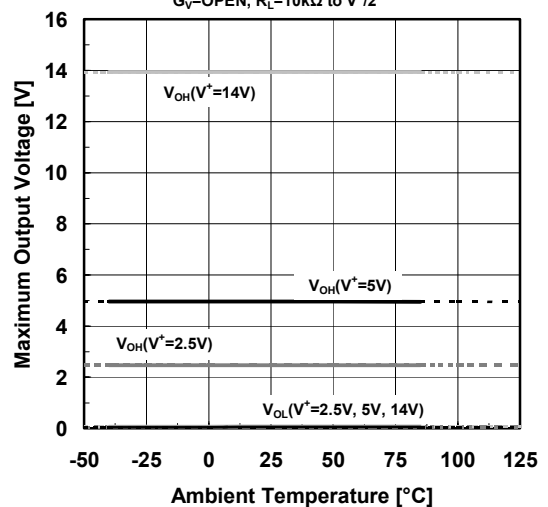
Maximum Output Voltage vs. Output Current
 (correlation with Ta)



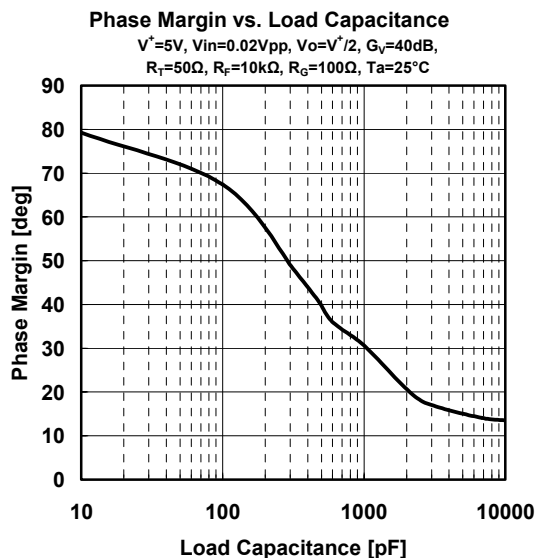
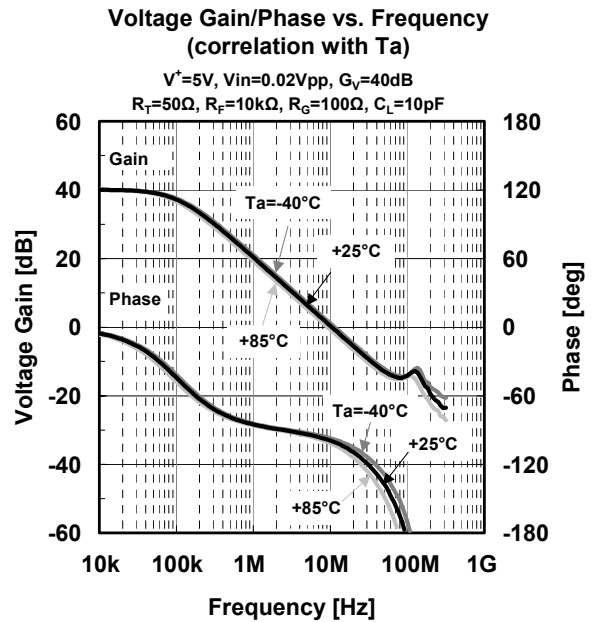
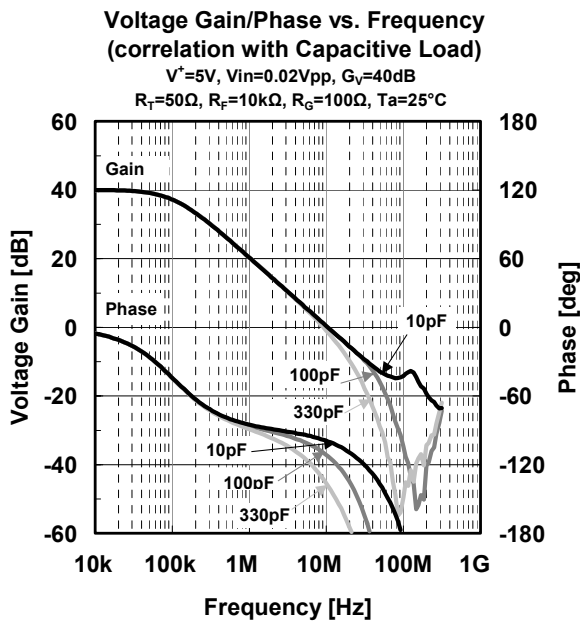
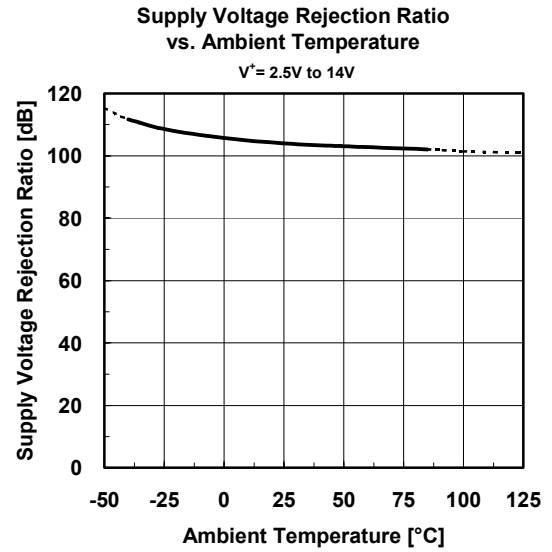
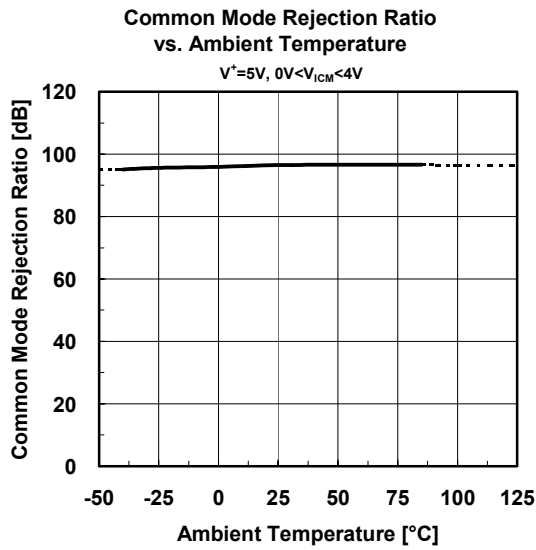
Maximum Output Voltage vs. Ambient Temperature
 $G_V = \text{OPEN}$, $R_L = 5\text{k}\Omega$ to V⁺/2



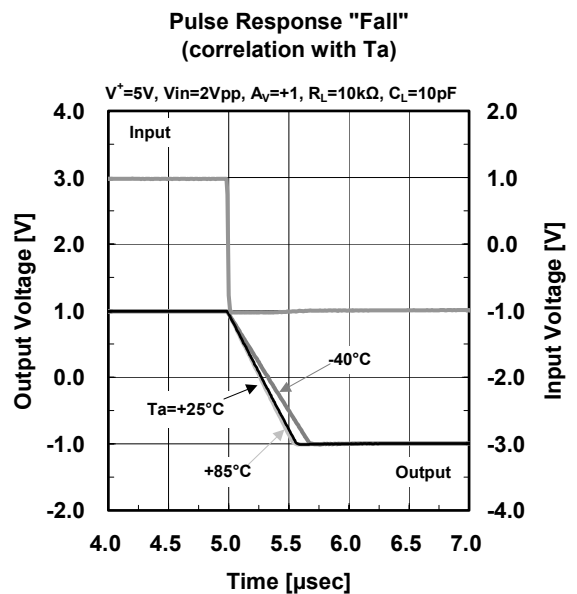
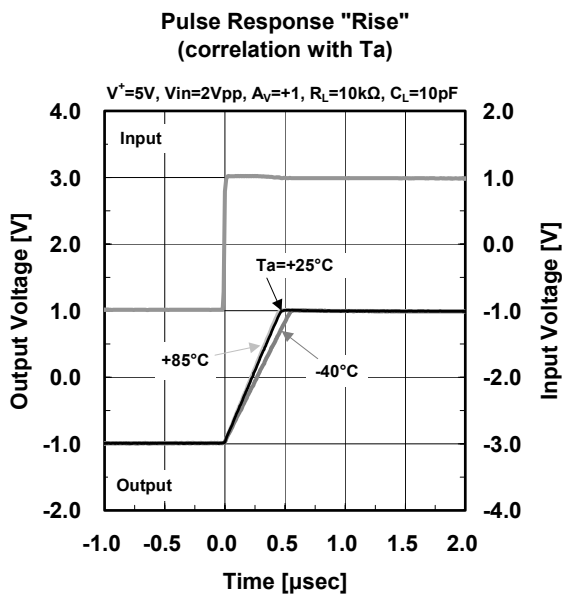
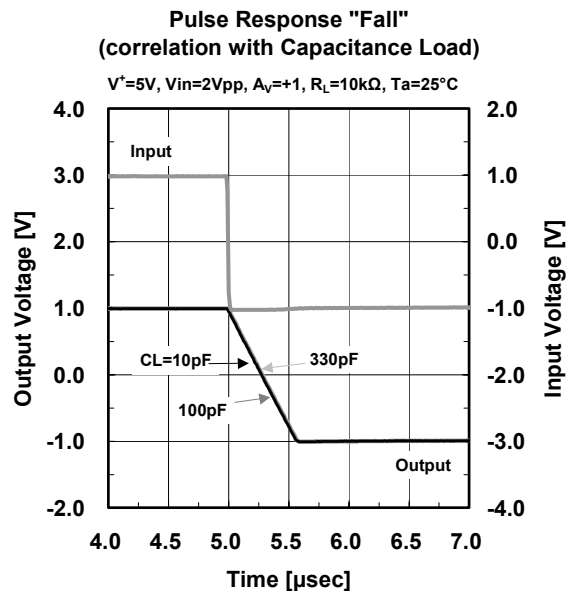
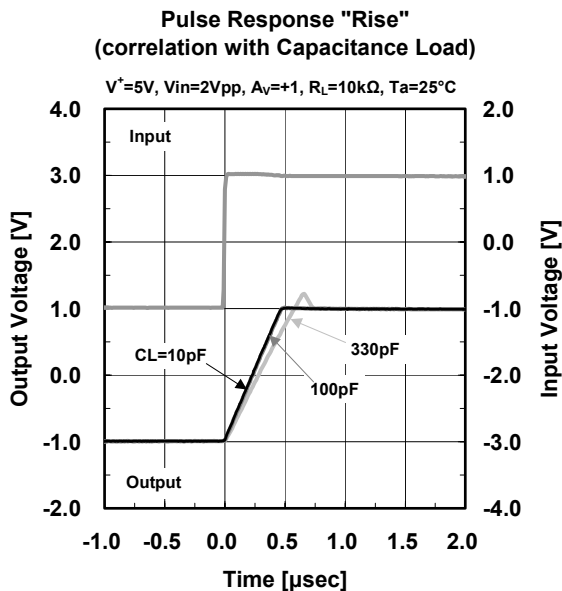
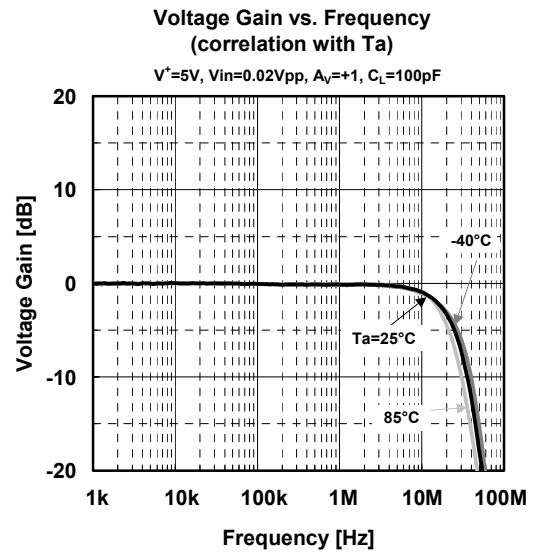
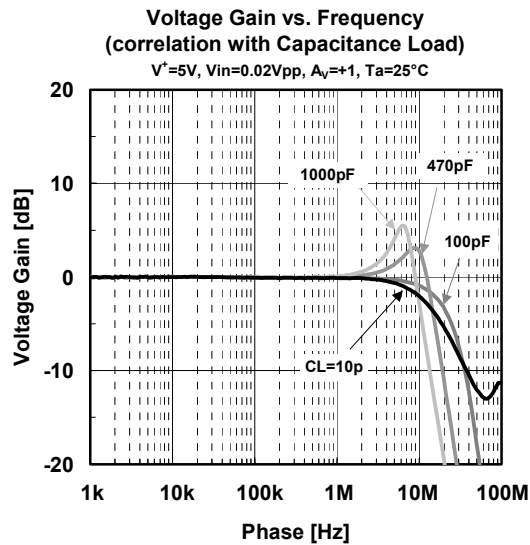
Maximum Output Voltage vs. Ambient Temperature
 $G_V = \text{OPEN}$, $R_L = 10\text{k}\Omega$ to V⁺/2



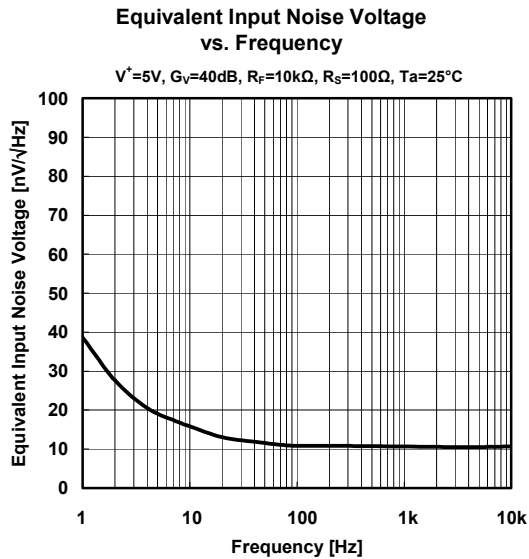
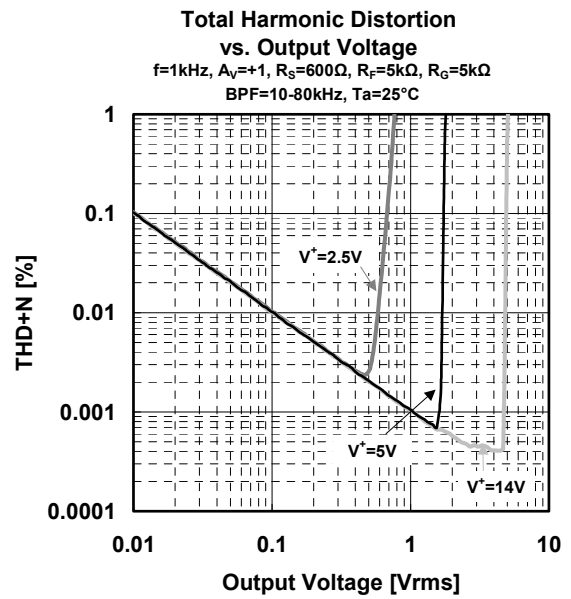
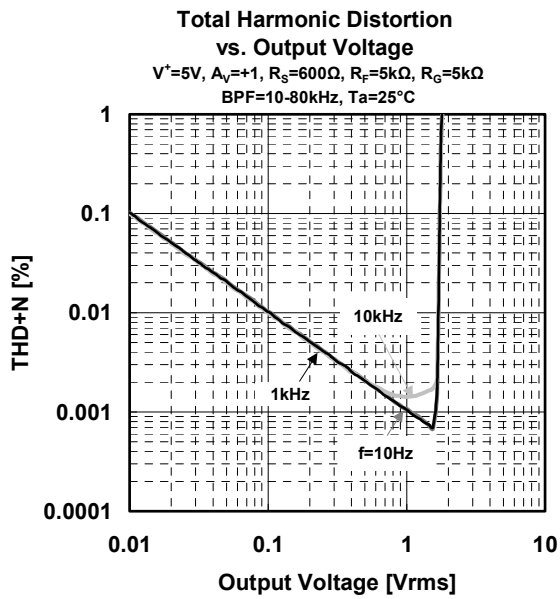
■ TYPICAL CHARACTERISTICS



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