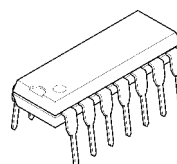


QUAD OPERATIONAL AMPLIFIER

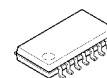
■ GENERAL DESCRIPTION

NJM2745 is the quad operational amplifier for the audio use.
Designed low noise, high gain-bandwidth, and low distortion,
the NJM2745 is suitable for audio applications and active filters.

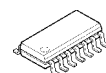
■ PACKAGE OUTLINE



NJM2745D



NJM2745M



NJM2745E
(U.D.)

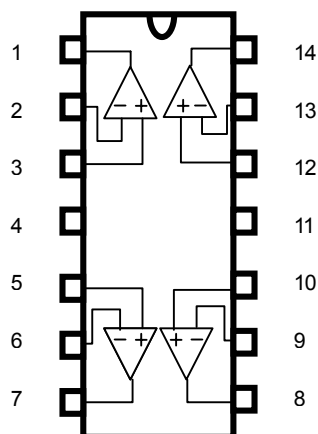


NJM2745V

■ FEATURES

- Operating Voltage ($\pm 2V$ to $\pm 7V$)
- Low Input Noise Voltage ($5nV/\sqrt{Hz}$ @ $1kHz$ typ.)
- Wide Gain Bandwidth Product ($15MHz$ typ.)
- Low Distortion (0.005% typ. @ $A_v=20dB, V_o=1V_{rms}, R_L=2k\Omega, f=1kHz$)
- Slew Rate ($5V/\mu s$ typ.)
- Package Outline DIP14, EMP14, SSOP14, DMP14
- Bipolar Technology

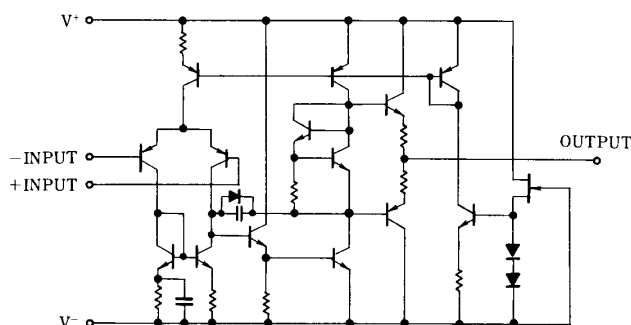
■ PIN CONFIGURATION



PIN ASSIGNMENT

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V^+
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. C OUTPUT
9. C -INPUT
10. C +INPUT
11. V^-
12. D +INPUT
13. D -INPUT
14. D OUTPUT

■ EQUIVALENT CIRCUIT (1/4 Shown)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+ / V^-	± 7.5	V
Common mode Input Voltage	V_{IC}	± 7.5 (note 1)	V
Differential Input Voltage	V_{ID}	± 15 (note 1)	V
Power Dissipation	P_D	870(DIP14) 930(EMP14) (note 2) 700(DMP14) (note 2) 570(SSOP14) (note 2)	mW
Output Current	I_O	± 50	mA
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-40~+125	°C

(note 1) For supply voltages less than ± 7.5 V, the absolute maximum input voltage is equal to the supply voltage.

(note 2) Mounted on the EIA/JEDEC standard board (76.2 × 114.3 × 1.6mm, two layer FR-4).

■ RECOMMENDED OPERATING CONDITION

(Ta=25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V^+ / V^-	± 2	-	± 7	V

■ DC CHARACTERISTICS

(Ta=25°C, $V^+ / V^- = \pm 4.5$ V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}		-	12	18	mA
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.3	3	mV
Input Bias Current	I_B		-	100	500	nA
Input Offset Current	I_{IO}		-	5	200	nA
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega, V_O = \pm 1.5V$	90	110	-	dB
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega, -2.5V \leq V_{IC} \leq +2.5V$	70	110	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega, V^+ / V^- = \pm 2V$ to $\pm 7V$	80	110	-	dB
Output Voltage Swing	V_{OM}	$R_L \geq 2k\Omega$	± 2.5	± 3	-	V
Input Common Mode Voltage Range	V_{ICM}	CMR ≥ 70 dB	-2.5	-	+2.5	V

■ AC CHARACTERISTICS

(Ta=25°C, $V^+ / V^- = \pm 4.5$ V)

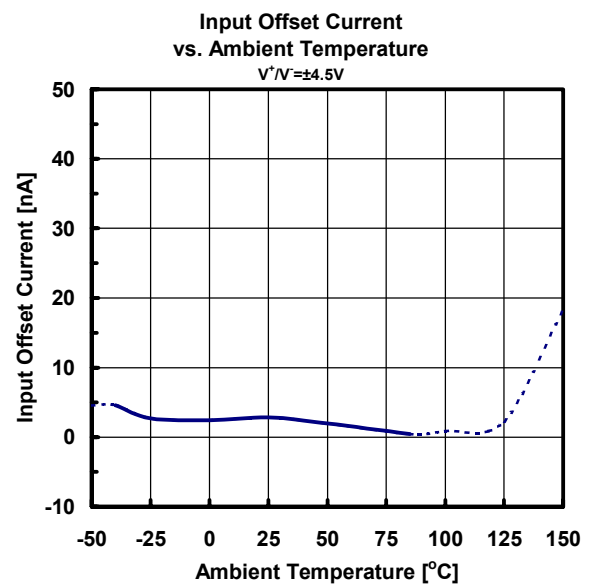
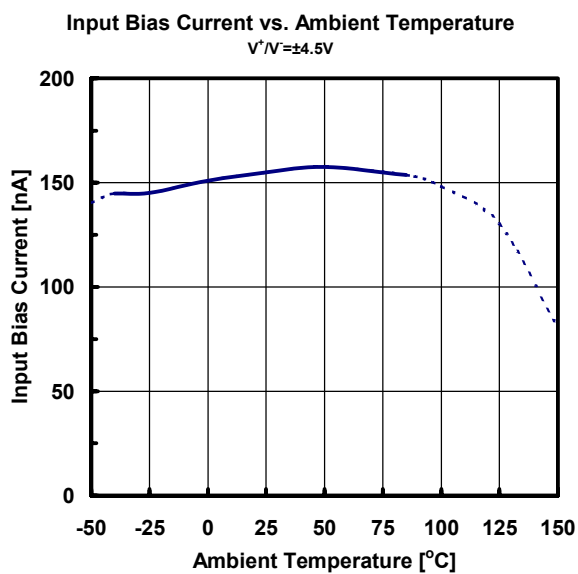
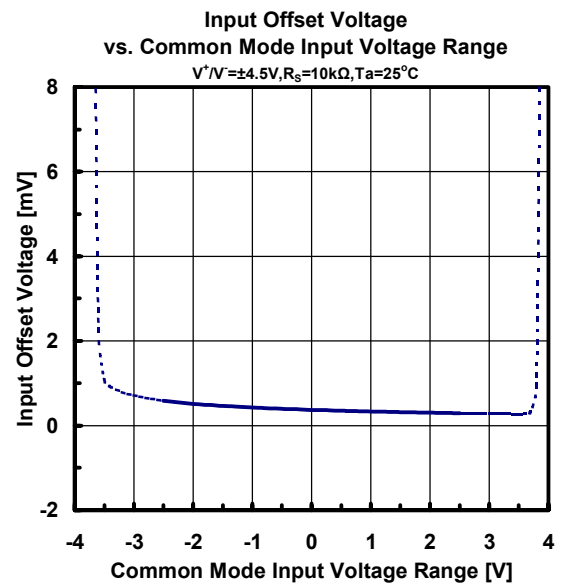
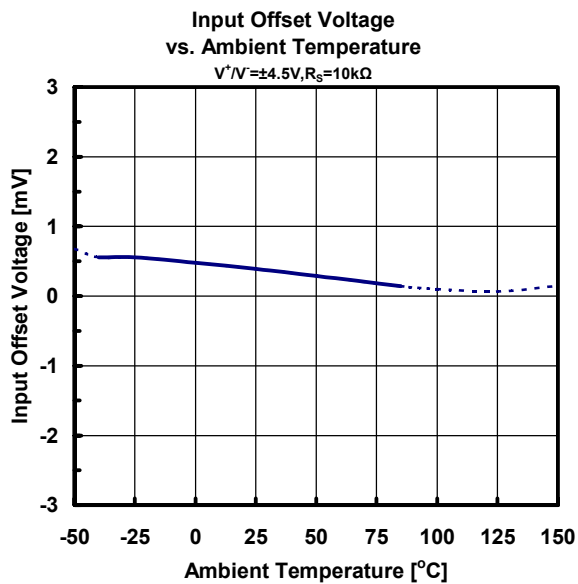
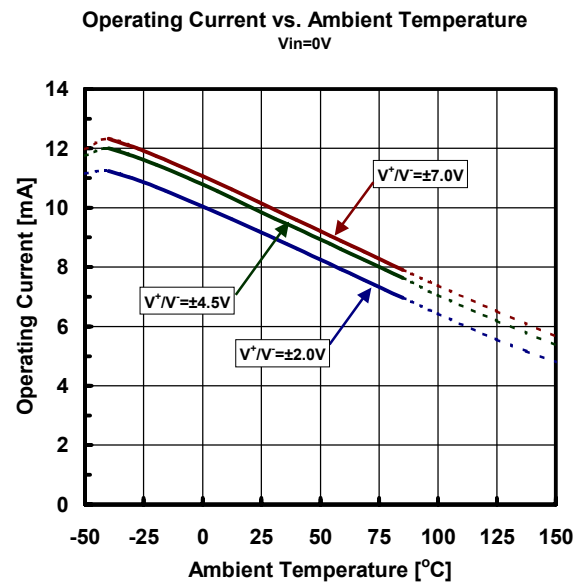
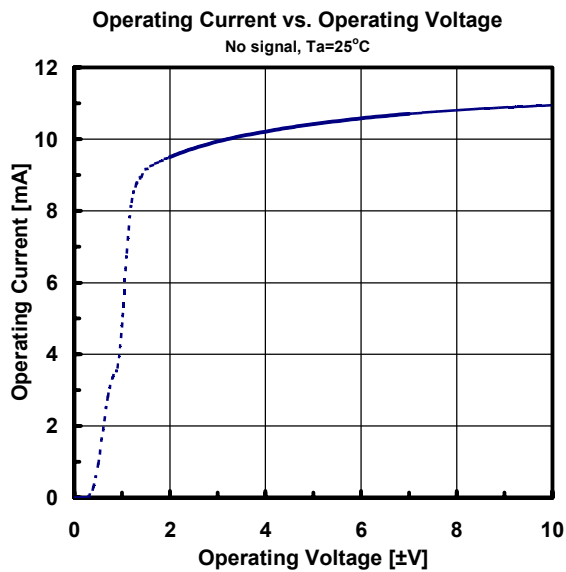
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gain Bandwidth Product	GB	$f = 10kHz$	-	15	-	MHz
Total Harmonic Distortion	THD	$A_V = 20dB, V_O = 1V_{rms}, R_L = 2k\Omega, f = 1kHz$	-	0.005	-	%
Input Noise Voltage	V_{NI}	$R_S = 0\Omega$	-	5	-	nV/ $\sqrt{Hz}$

■ TRANSIENT CHARACTERISTICS

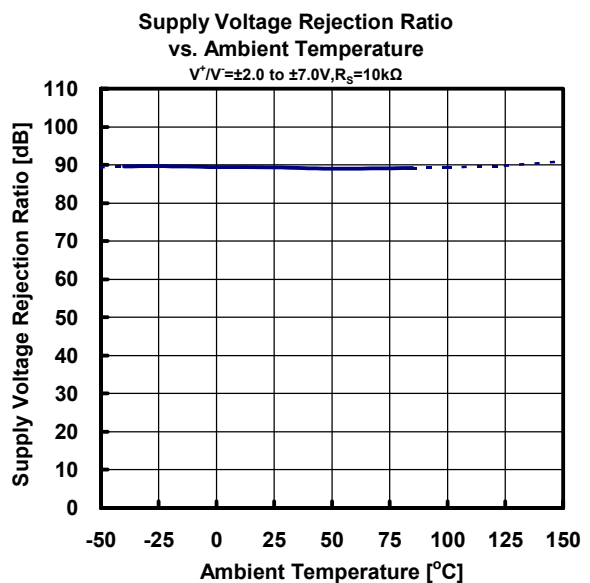
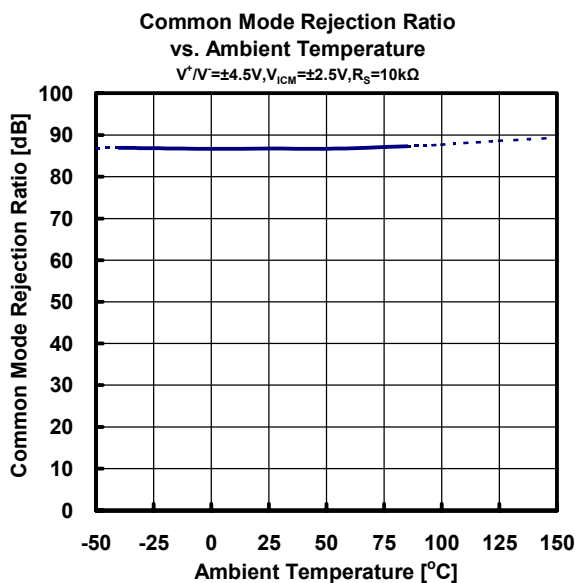
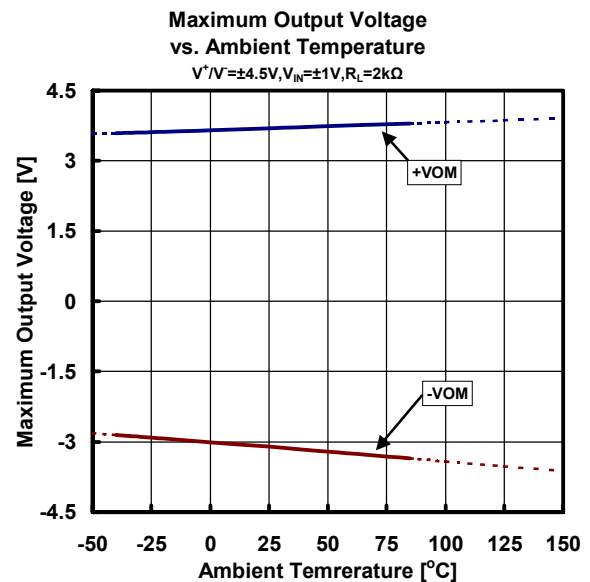
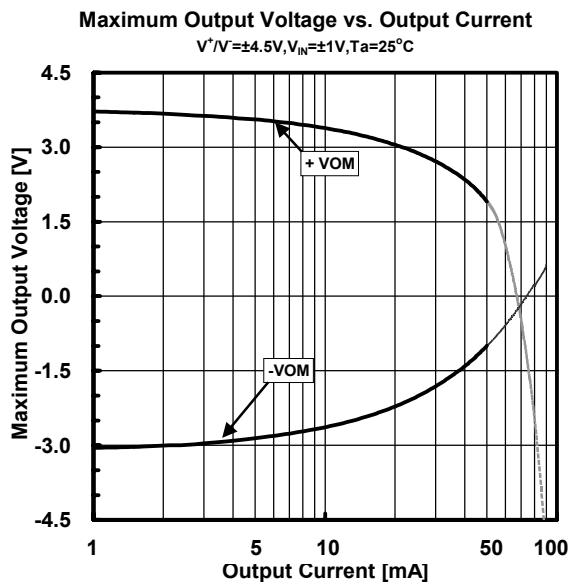
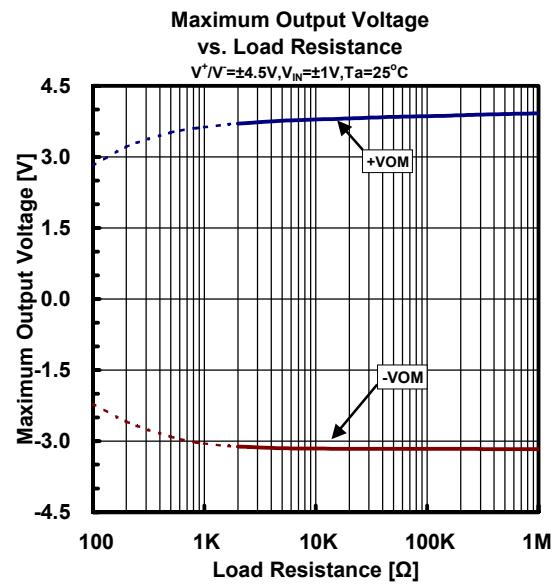
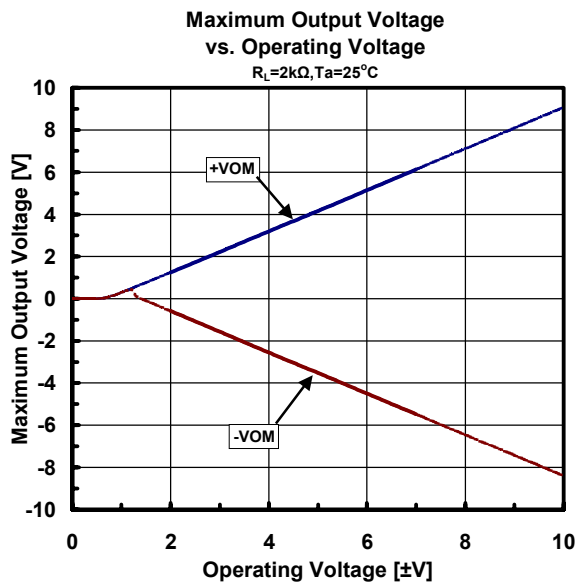
(Ta=25°C, $V^+ / V^- = \pm 4.5$ V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Slew Rate	SR	$R_L \geq 2k\Omega$	-	5	-	V/ μs

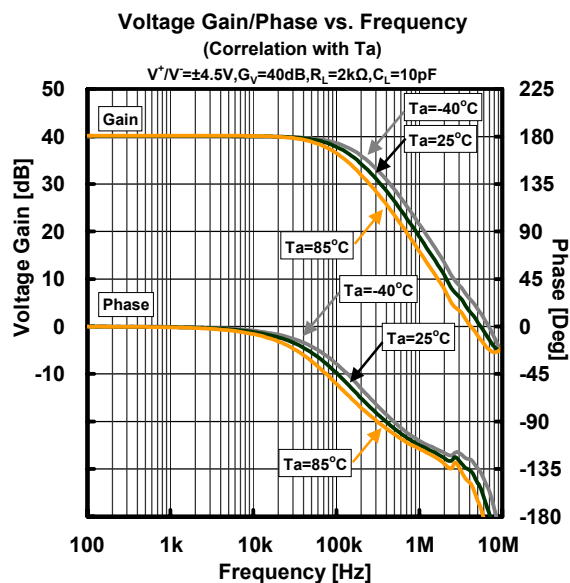
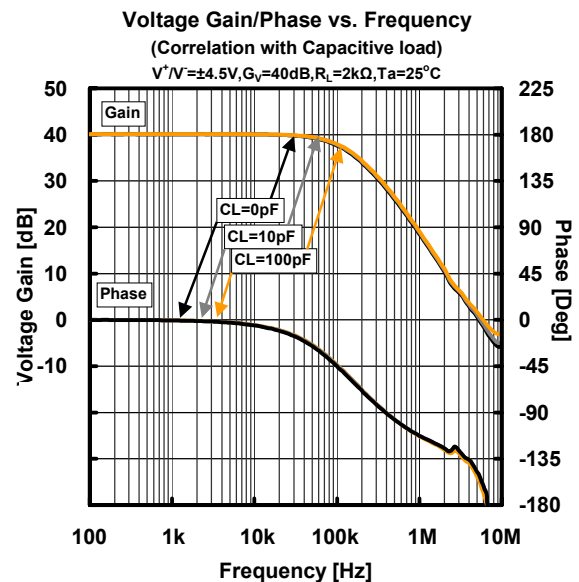
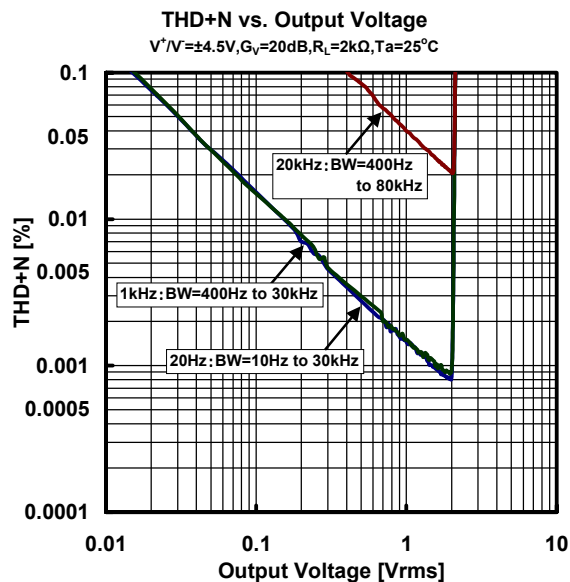
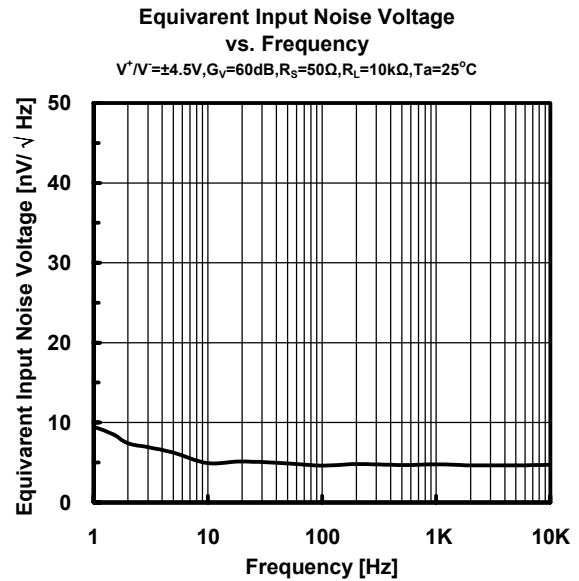
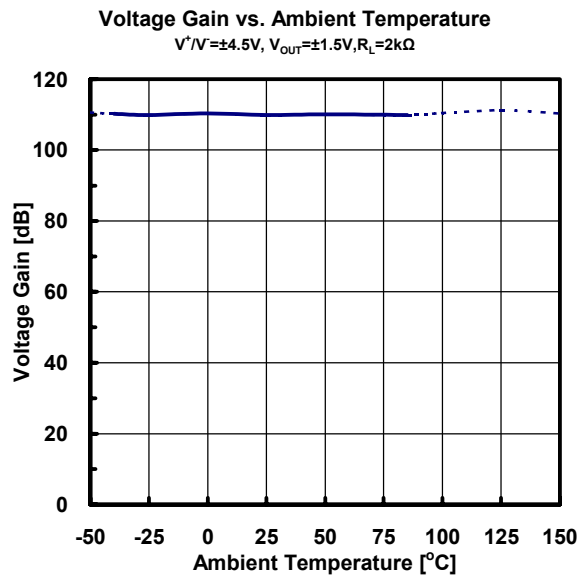
■ TYPICAL CHARACTERISTICS



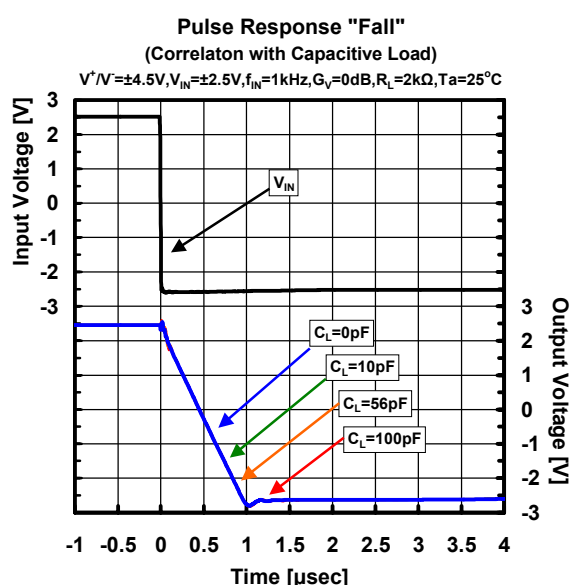
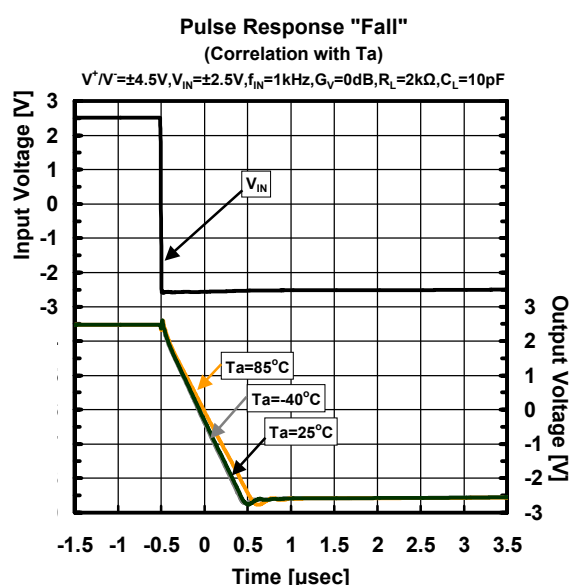
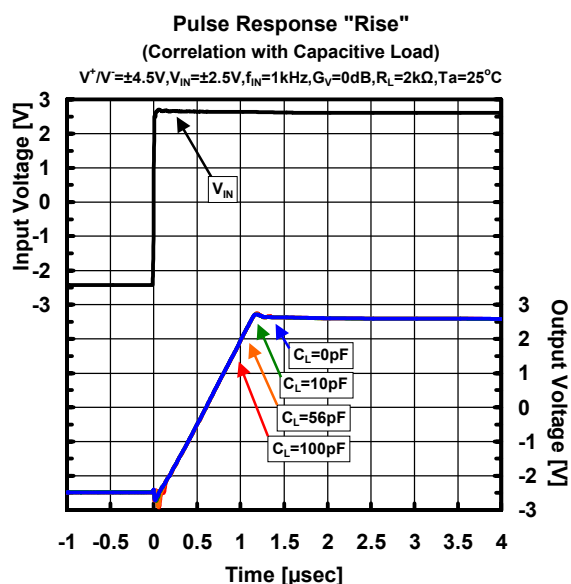
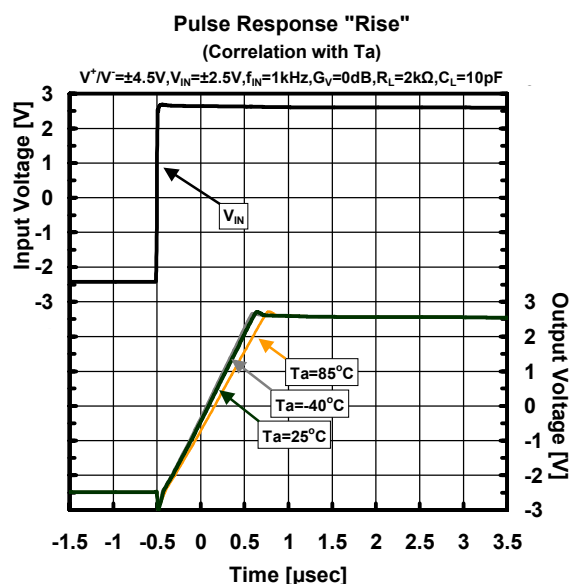
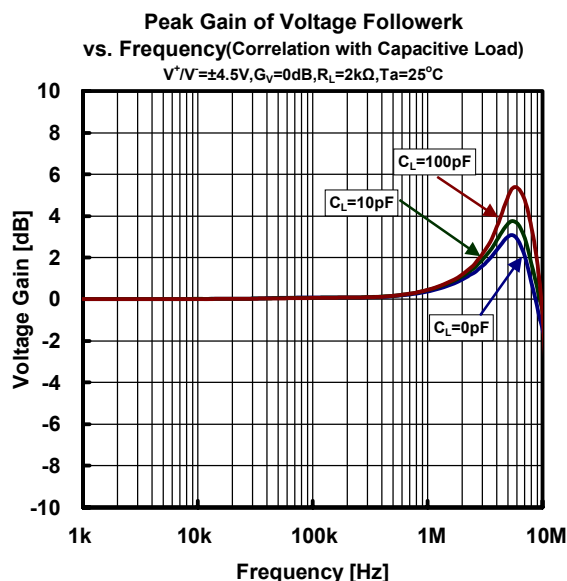
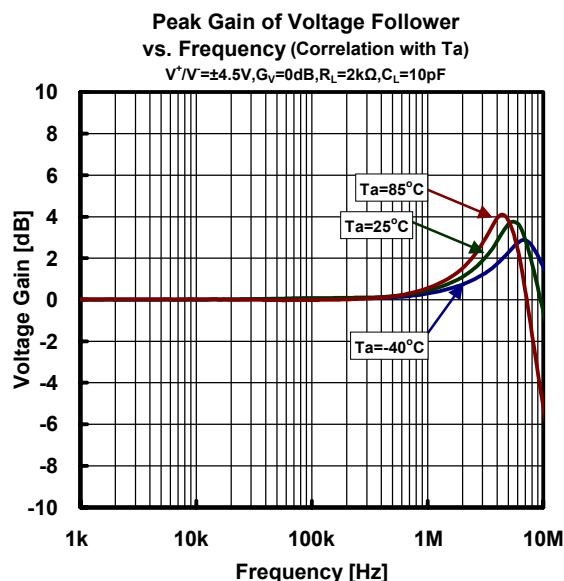
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



■ NOTE

[CAUTION]

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