

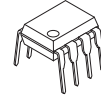
SINGLE SUPPLY HI-SLEW RATE DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

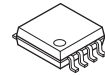
The NJM2717 is a high slew rate single supply dual operational amplifier. It offers excellent features of a 40V/us (typ.) high slew rate in a single supply and low operating voltage from 2.7V, which provide a benefit to buffer, filter and ground level signal detection circuit design. Therefore The NJM2717 is suitable for CCD buffer and AD/DA converter buffer using in facsimile/scanner, current detector in inverter controller, PWM motor controller and Tuner/Communication devices.

The NJM2717 is available in a wide variety packages 8-lead DIP, and 8-lead surface-mount packages of SOP (DMP), SSOP and MSOP (TVSP).

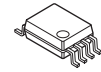
■ PACKAGE OUTLINE



**NJM2717D
(DIP8)**



**NJM2717M
(DMP8)**



**NJM2717V
(SSOP8)**

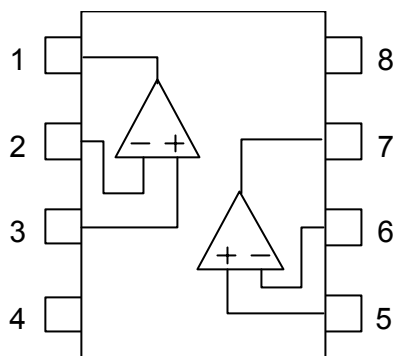


**NJM2717RB1
(MSOP8 (TVSP8))**

■ FEATURES

- Single Supply
- Operating Voltage 2.7V to 12V
- High Slew Rate 40V/μs Typ. (at V⁺=5V)
- Operating Current 8mA typ. (at V⁺=5V)
- Output Voltage Range V_{OH} ≥ 4.5V Typ. (at V⁺=5V, R_L=4kΩ)
V_{OL} ≤ 0.05V Typ. (at V⁺=5V, R_L=4kΩ)
- Bipolar Technology
- Package Outline DIP8,
DMP8,
SSOP8,
MSOP8 (TVSP8) MEET JEDEC MO-187-DA/THIN TYPE

■ 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⁺

**NJM2717D
NJM2717M
NJM2717V
NJM2717RB1
(Top View)**

NJM2717

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	15.0	V
Differential Input Voltage	V _{ID}	± 3	V
Input Common Mode Voltage Range	V _{ICM}	-0.3 to +15.0(Note 1)	V
Power Dissipation	P _D	(DIP8) 500 (DMP8) 300 (SSOP8) 250 (MSOP8 (TVSP8)) 320	mW
Output Sink Current	I _{SINK}	10	mA
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C

(Note 1) For supply voltage less than 15V, the absolute maximum input voltage is equal to the supply voltage.

■ RECOMMENDED OPERATING CONDITION

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V ⁺	2.7 to 12.0	V

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS

(V⁺=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I _{CC}	R _L =∞, no signal	-	8.0	11.0	mA
Input Offset Voltage	V _{IO}	R _S =0Ω	-	1	11	mV
Input Bias Current	I _B		-	2	4.4	μA
Input Offset Current	I _{IO}		-	0.2	0.5	μA
Voltage Gain	A _V	R _L ≥ 10kΩ, V _O =1.5V to 3.5V	60	75	-	dB
Common Mode Rejection Ratio	CMR	0V ≤ V _{CM} ≤ 3.8V	45	80	-	dB
Supply Voltage Rejection Ratio	SVR	V ⁺ =4V to 8V	50	85	-	dB
Output Voltage 1	V _{OH1}	R _L =4kΩ to GND	4.3	4.5	-	V
	V _{OL1}		-	0.05	0.1	V
Output Voltage 2	V _{OH2}	R _L =4kΩ to 2.5V	4.5	4.7	-	V
	V _{OL2}		-	0.1	0.5	V
Output Source Current	I _{SOURCE}		1	2.5	-	mA
Output Sink Current	I _{SINK}		2.5	6	-	mA
Input Common Mode Voltage Range	V _{ICM}		0 to 3.8	-	-	V

●AC CHARACTERISTICS

(V⁺=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	f _T		-	20	-	MHz

●TRANSIENT CHARACTERISTICS

(V⁺=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	40	-	V/μs

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS

(V⁺=12V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I _{CC}	R _L =∞, no signal	-	10.0	14.5	mA
Input Offset Voltage	V _{IO}	R _S =0Ω	-	1	12	mV
Input Bias Current	I _B		-	2.1	4.4	μA
Input Offset Current	I _{IO}		-	0.2	1	μA
Voltage Gain	A _V	R _L ≥ 10kΩ, V _O =2V to 10V	60	80	-	dB
Common Mode Rejection Ratio	CMR	0V ≤ V _{CM} ≤ 10.8V	45	80	-	dB
Supply Voltage Rejection Ratio	SVR	V ⁺ =8V to 12V	50	85	-	dB
Output Voltage 1	V _{OH1} V _{OL1}	R _L =10kΩ to GND	11.3 -	11.5 0.1	- 0.3	V V
Output Voltage 2	V _{OH2} V _{OL2}	R _L =10kΩ to 6V	11.5 -	11.7 0.1	- 0.5	V V
Output Source Current	I _{SOURCE}		1	3	-	mA
Output Sink Current	I _{SINK}		2.5	8	-	mA
Input Common Mode Voltage Range	V _{ICM}		0 to 10.8	-	-	V

●AC CHARACTERISTICS

(V⁺=12V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	f _T		-	21	-	MHz

●TRANSIENT CHARACTERISTICS

(V⁺=12V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	45	-	V/μs

NJM2717

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS

($V^+=2.7V, T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I_{CC}	$R_L=\infty$, no signal	-	6	8.5	mA
Input Offset Voltage	V_{IO}	$R_S=0\Omega$	-	1	10	mV
Input Bias Current	I_B		-	1.7	4.4	μA
Input Offset Current	I_{IO}		-	0.2	0.5	μA
Voltage Gain	A_V	$R_L \geq 10k\Omega, V_O=0.85V$ to 1.85V	60	73	-	dB
Common Mode Rejection Ratio	CMR	$0V \leq V_{CM} \leq 1.5V$	45	80	-	dB
Supply Voltage Rejection Ratio	SVR	$V^+=2.7V$ to 4V	50	75	-	dB
Output Voltage 1	V_{OH1}	$R_L=4k\Omega$ to GND	2.5	2.6	-	V
	V_{OL1}		-	0.05	0.1	V
Output Voltage 2	V_{OH2}	$R_L=4k\Omega$ to 1.35V	2.6	2.65	-	V
	V_{OL2}		-	0.1	0.2	V
Output Source Current	I_{SOURCE}		1	2.5	-	mA
Output Sink Current	I_{SINK}		2.5	5	-	mA
Input Common Mode Voltage Range	V_{ICM}		0 to 1.5	-	-	V

●AC CHARACTERISTICS

($V^+=2.7V, T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	f_T		-	19	-	MHz

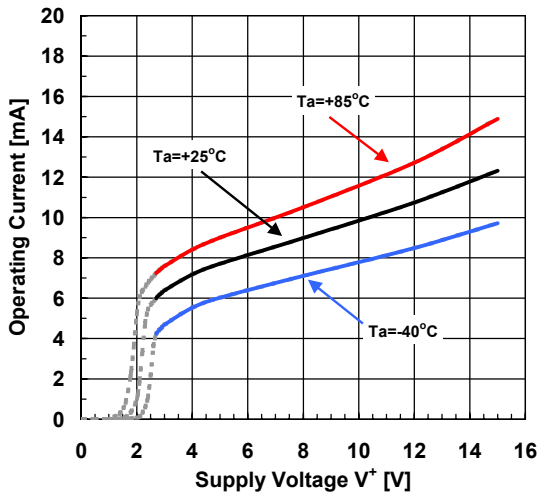
●TRANSIENT CHARACTERISTICS

($V^+=2.7V, T_a=25^\circ C$)

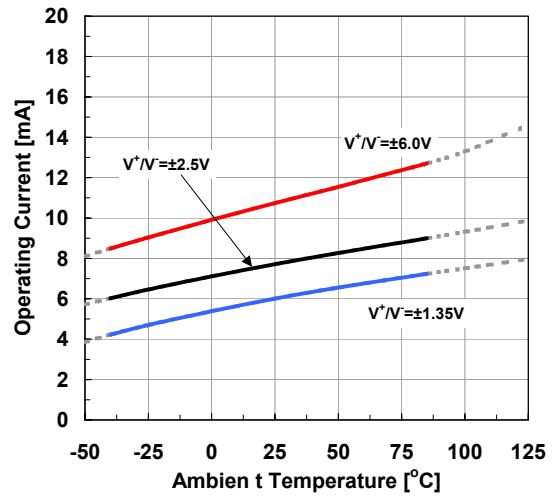
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	30	-	V/ μs

■ Typical Characteristics

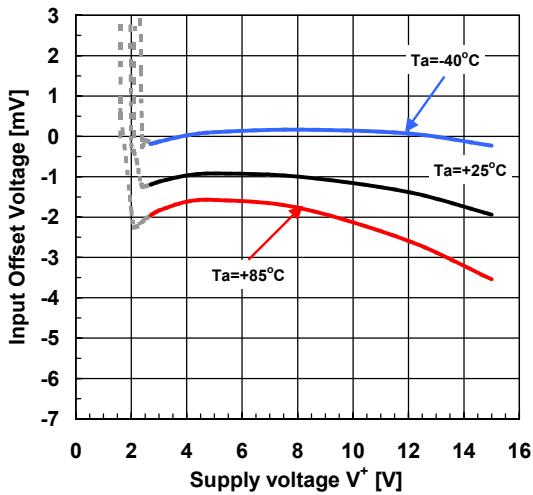
Operating Current vs. Supply Voltage



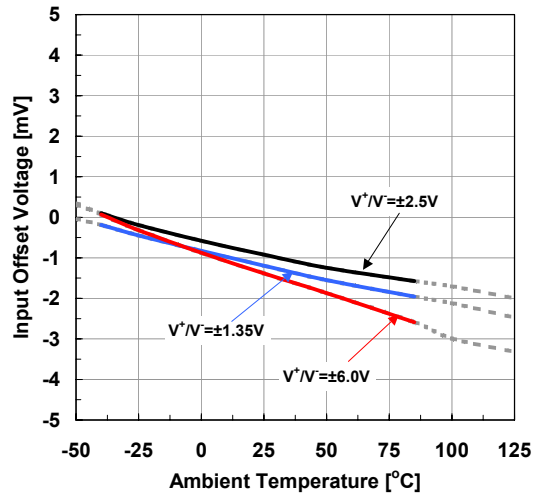
Operating Current vs. Ambient temperature



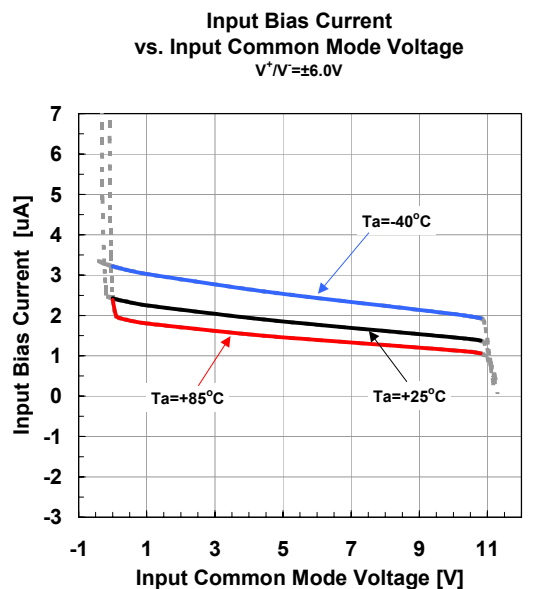
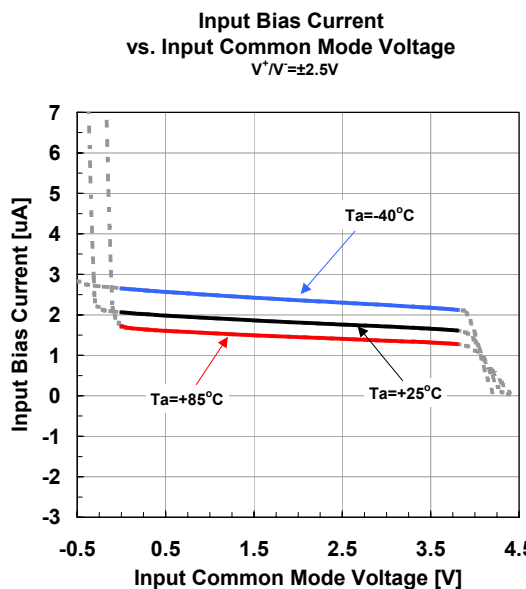
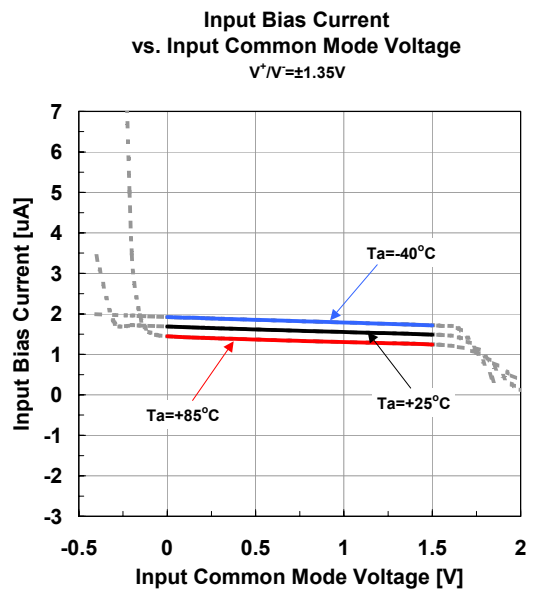
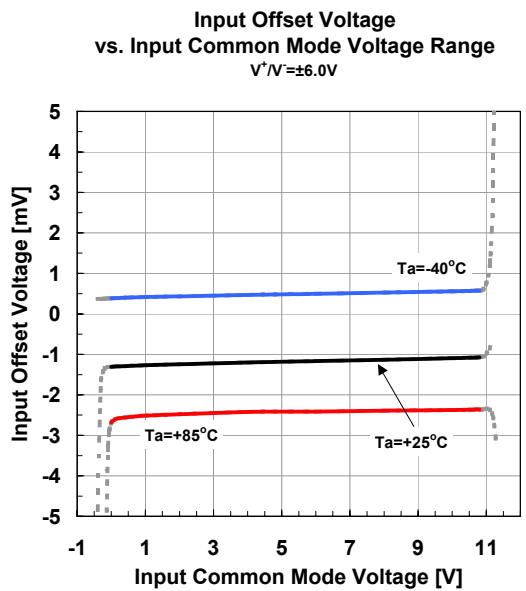
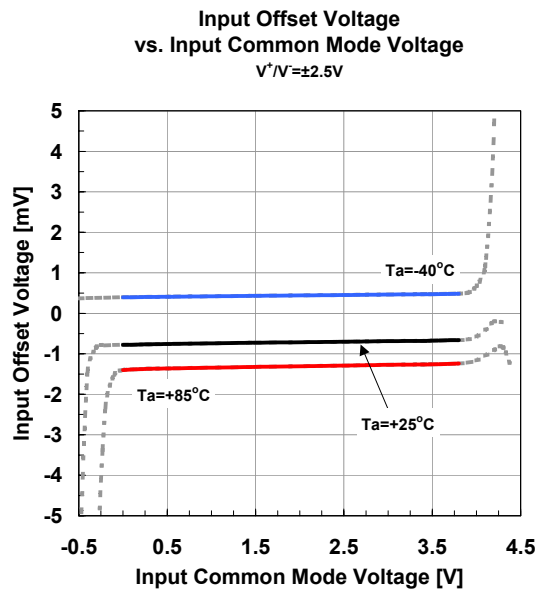
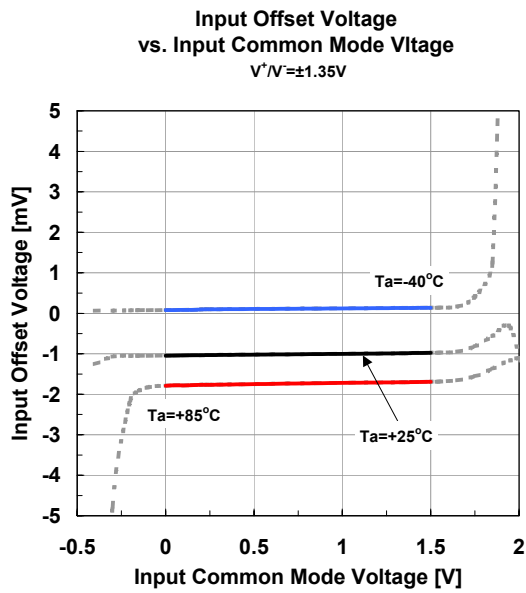
Input Offset Voltage vs. Supply Voltage



Input Offset Voltage vs. Ambient Temperature

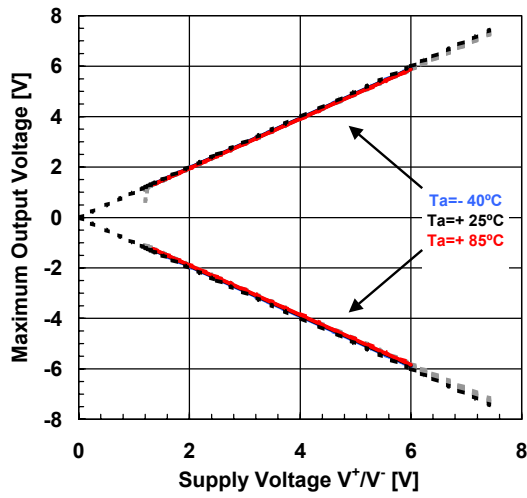


■ Typical Characteristics

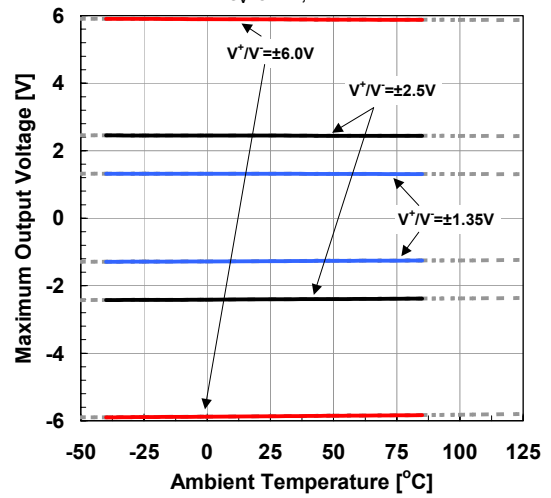


■ Typical Characteristics

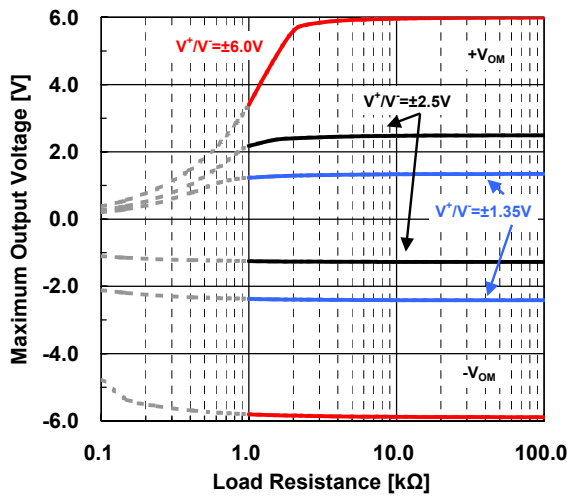
Maximum Output Voltage vs. Supply Voltage
 $G_V=OPEN, R_L=4k\Omega$



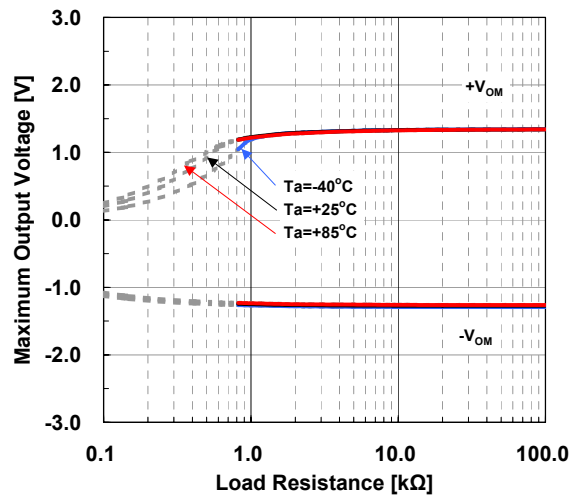
Maximum Output Voltage vs. Ambient Temperature
 $G_V=OPEN, R_L=4k\Omega$



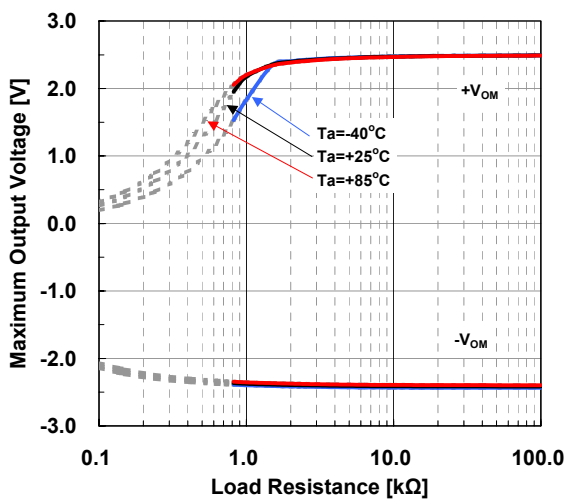
Maximum Output Voltage vs. Load Resistance
 $G_V=OPEN, T_a=+25^\circ C$



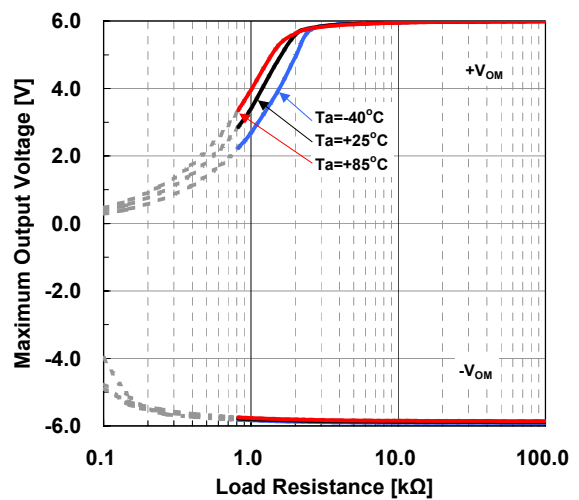
Maximum Output Voltage vs. Load Resistance
 $V^+/V^-=\pm 1.35V, G_V=OPEN$



Maximum Output Voltage vs. Load Resistance
 $V^+/V^-=\pm 2.5V, G_V=OPEN$

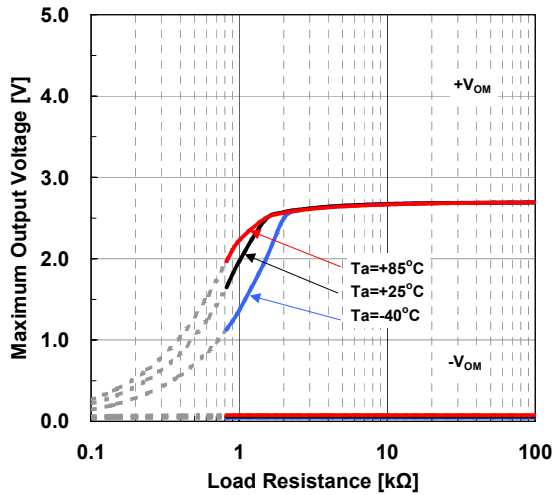


Maximum Output Voltage vs. Load Resistance
 $V^+/V^-=\pm 6.0V, G_V=OPEN$

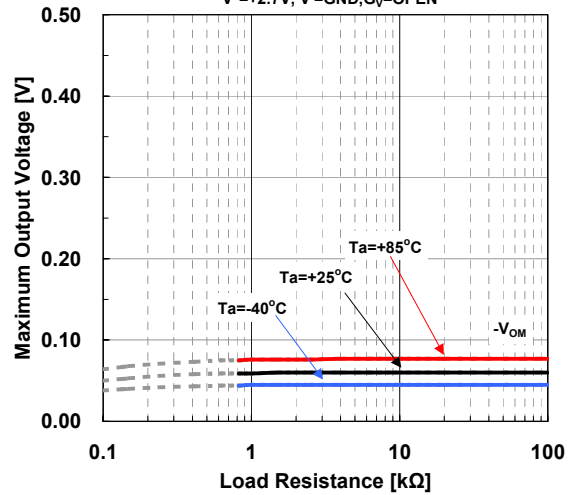


■ Typical Characteristics

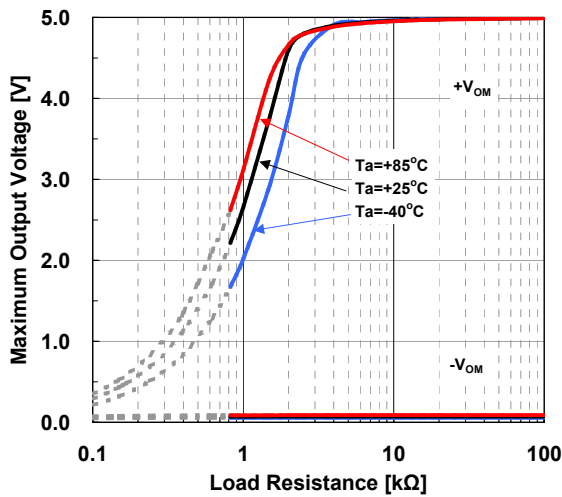
Maximum Output Voltage
vs. Load Resistance
 $V^+=+2.7V, V=GND, G_V=OPEN$



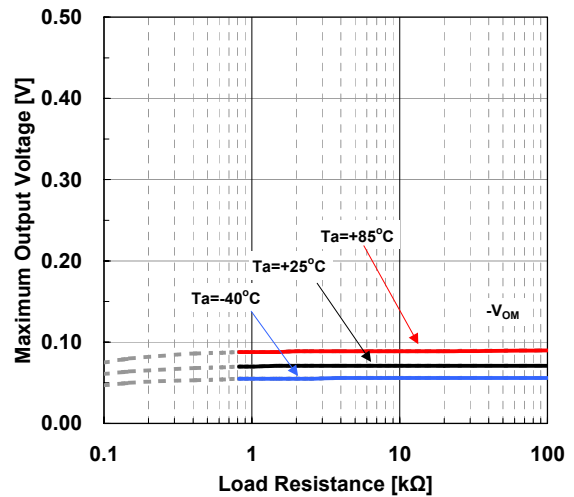
Maximum Output Voltage
vs. Load Resistance
 $V^+=+2.7V, V=GND, G_V=OPEN$



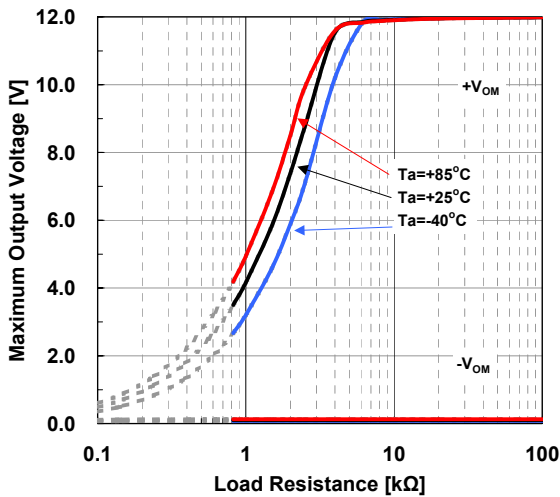
Maximum Output Voltage
vs. Load Resistance
 $V^+=+5.0V, V=GND, G_V=OPEN$



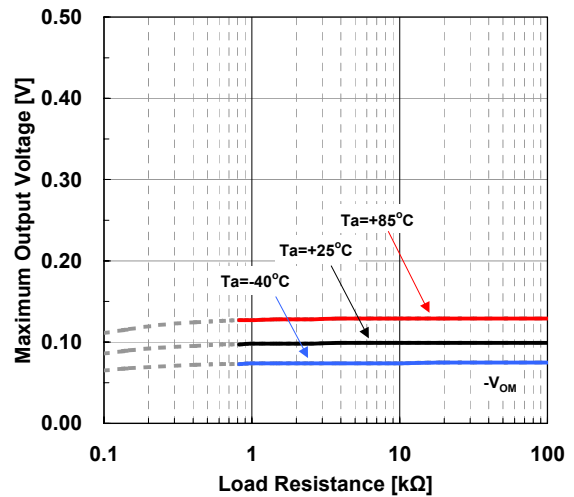
Maximum Output Voltage
vs. Load Resistance
 $V^+=+5.0V, V=GND, G_V=OPEN$



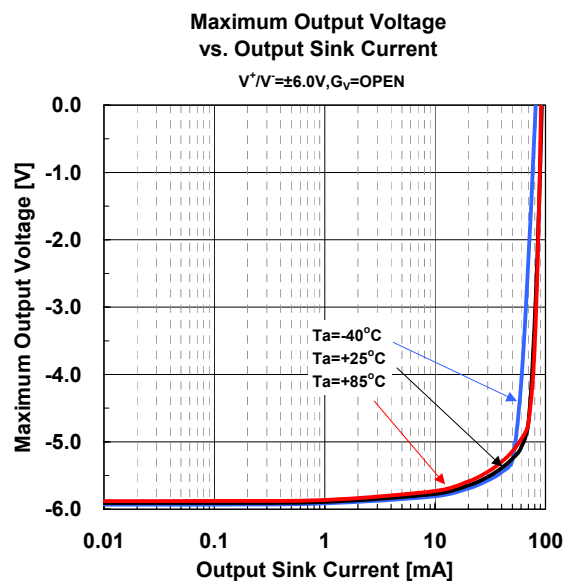
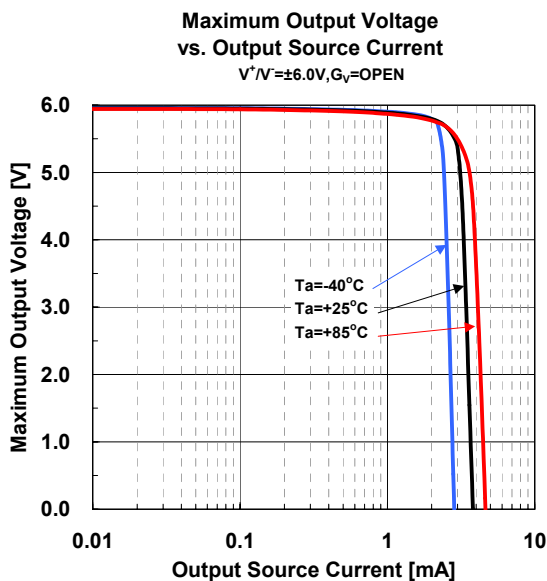
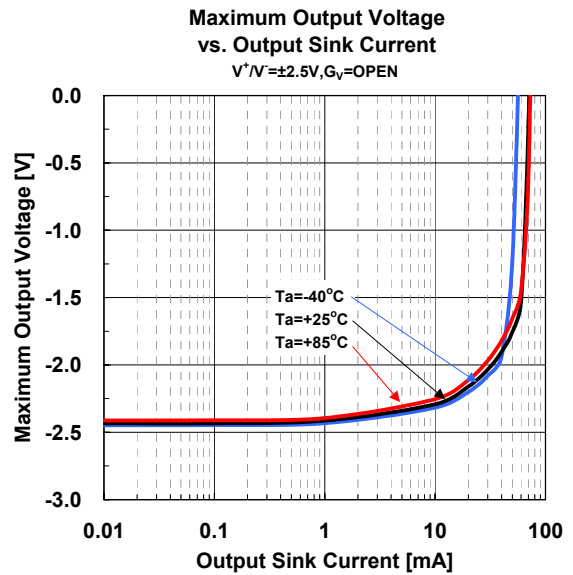
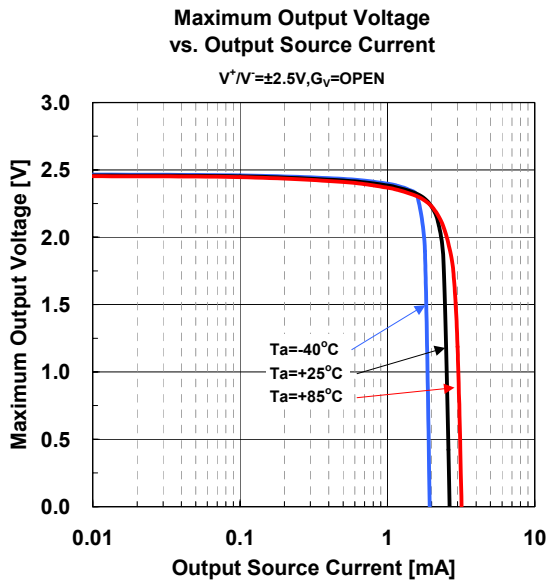
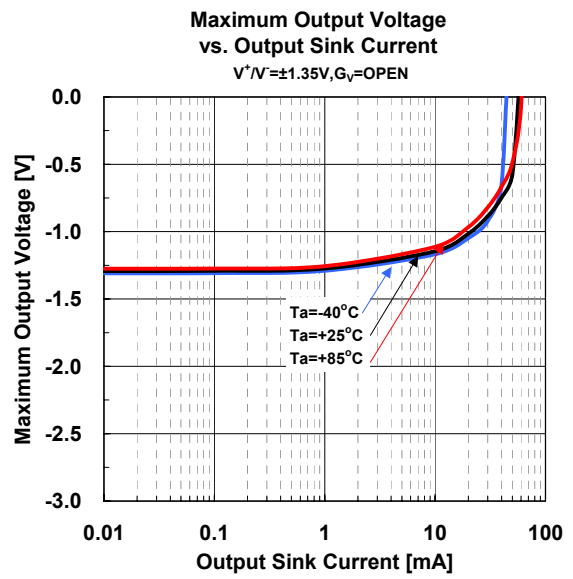
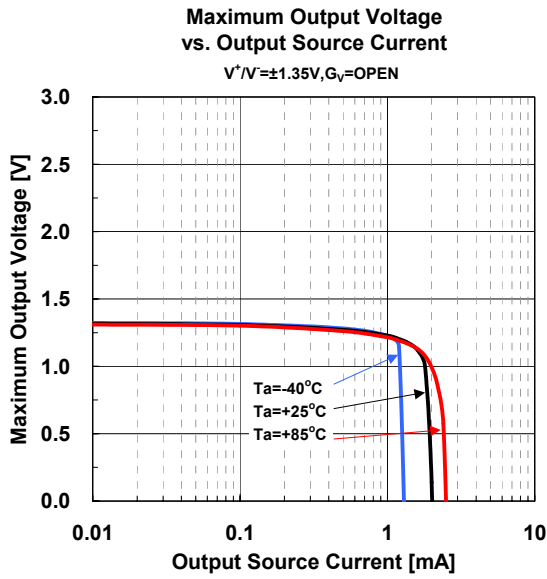
Maximum Output Voltage
vs. Load Resistance
 $V^+=+12.0V, V=GND, G_V=OPEN$



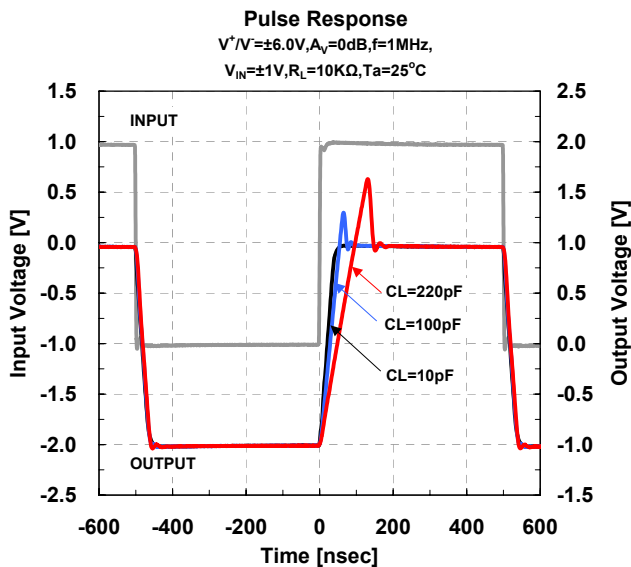
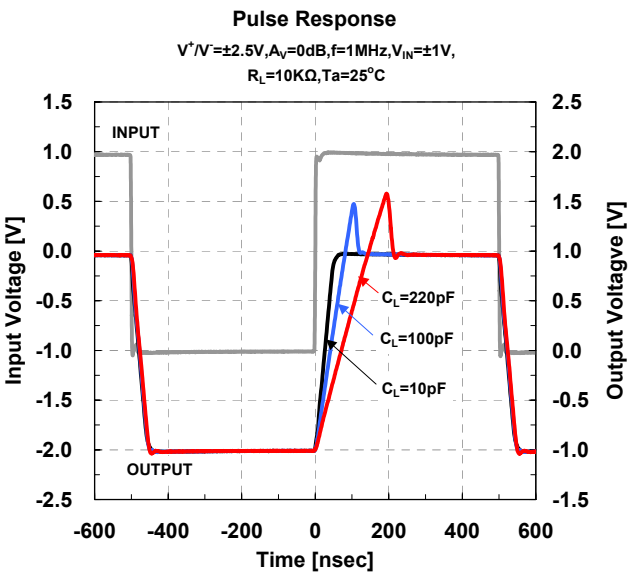
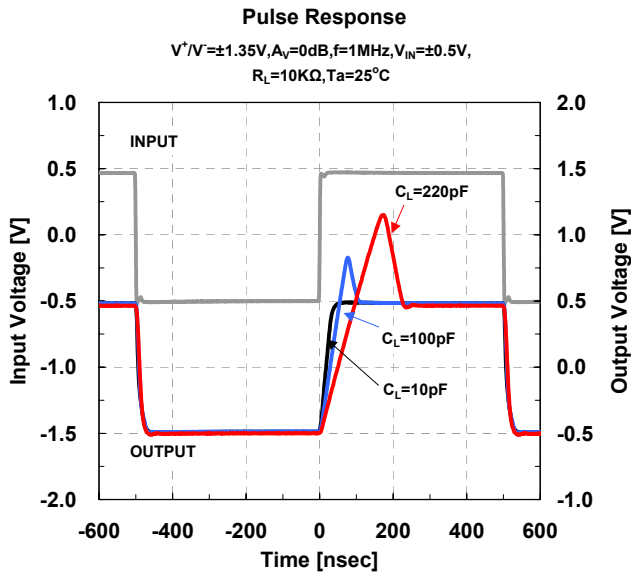
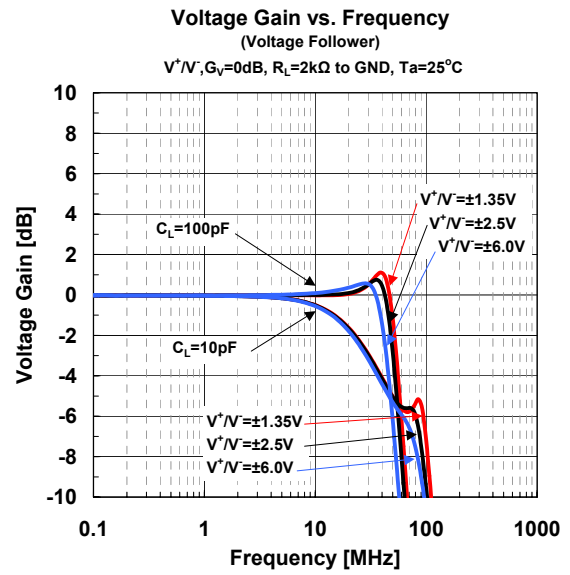
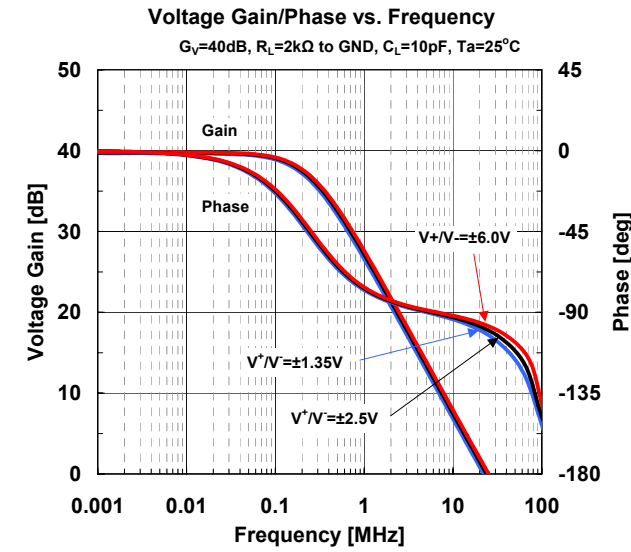
Maximum Output Voltage
vs. Load Resistance
 $V^+=+12.0V, V=GND, G_V=OPEN$



■ Typical Characteristics



■ Typical Characteristics



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