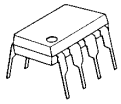
SINGLE SUPPLY HI-SLEW RATE DUAL OPERATIONAL AMPLIFER

■GENERAL DESCRIPTION

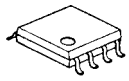
The NJM2717 is single supply dual high slew rate operational amplifier.

It is applicable to A/D converters, FAX, scanner which require the single supply operation and high slew rate.

■ PACKAGE OUTLINE



NJM2717D



NJM2717M

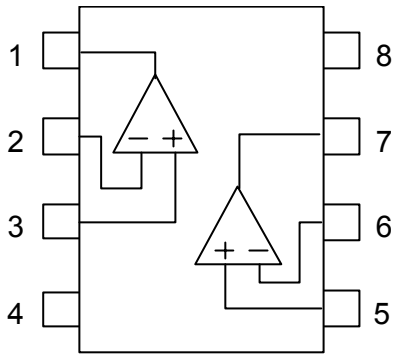
NJM2717V

NJM2717RB1

■ 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, TVSP8

■ PIN CONFIGRATION



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

■ 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 (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	TEST CONDITION	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	$V_{OH}1$	R_L=4kΩ to GND	4.3	4.5	-	V
	$V_{OL}1$		-	0.05	0.1	V
Output Voltage 2	$V_{OH}2$	R_L=4kΩ to 2.5V	4.5	4.7	-	V
	$V_{OL}2$		-	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	-	5	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	$V_{OH}1$	R_L=10kΩ to GND	11.3	11.5	-	V
	$V_{OL}1$		-	0.1	0.3	V
Output Voltage 2	$V_{OH}2$	R_L=10kΩ to 6V	11.5	11.7	-	V
	$V_{OL}2$		-	0.1	0.5	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

■ ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS (V^+=2.7V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I_{CC}	R_L=∞, no signal	-	6	8.5	mA
Input Offset Voltage	V_{IO}	R_S=0Ω	-	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 ≥ 10kΩ, V_O=0.85V to 1.85V	60	73	-	dB
Common Mode Rejection Ratio	CMR	0V ≤ V_{CM} ≤ 1.5V	45	80	-	dB
Supply Voltage Rejection Ratio	SVR	V^+=2.7V to 4V	50	75	-	dB
Output Voltage 1	$V_{OH}1$	R_L=4kΩ to GND	2.5	2.6	-	V
	$V_{OL}1$		-	0.05	0.1	V
Output Voltage 2	$V_{OH}2$	R_L=4kΩ to 1.35V	2.6	2.65	-	V
	$V_{OL}2$		-	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,Ta=25°C)

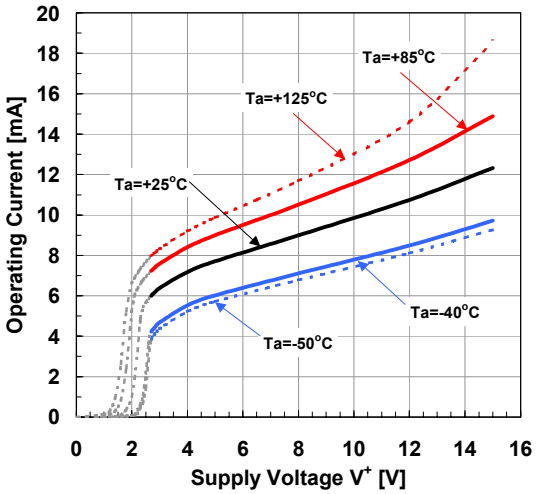
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	f_T		-	19	-	MHz

●TRANSIENT CHARACTERISTICS (V^+=2.7V,Ta=25°C)

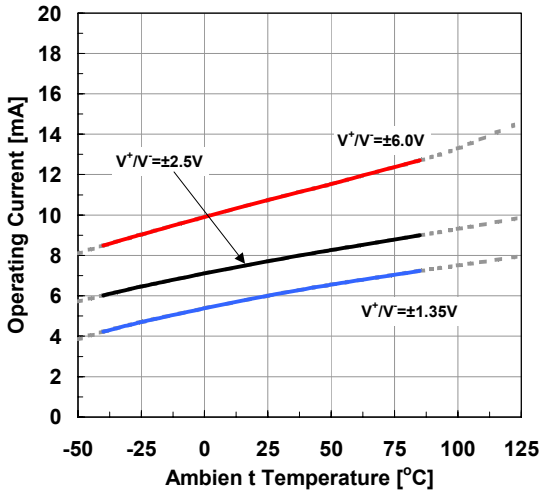
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	30	-	V/μs

■ Typical Characteristics

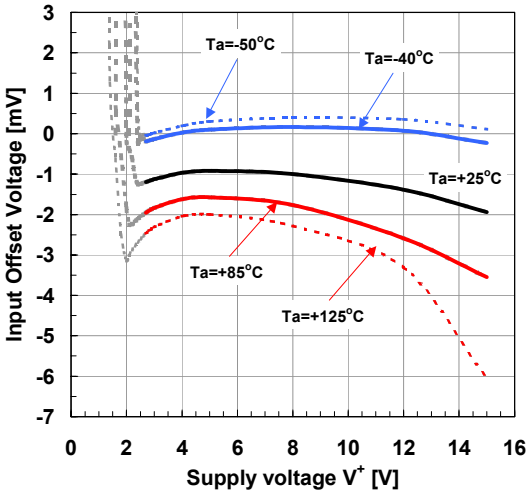
Operating Current vs. Supply Voltage
(Ambient Temperature)



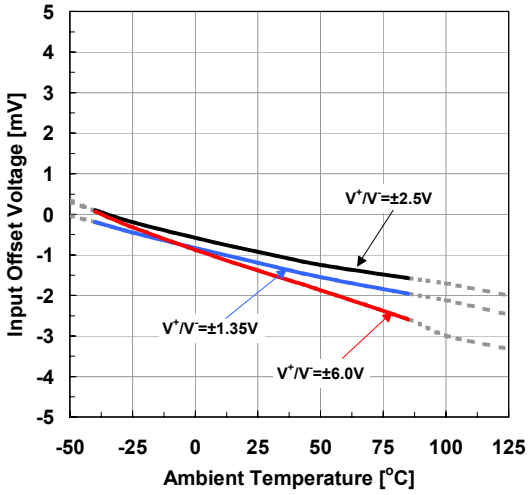
Operating Current vs. Ambient temperature



Input Offset Voltage vs. Supply Voltage
(Ambient Temperature)

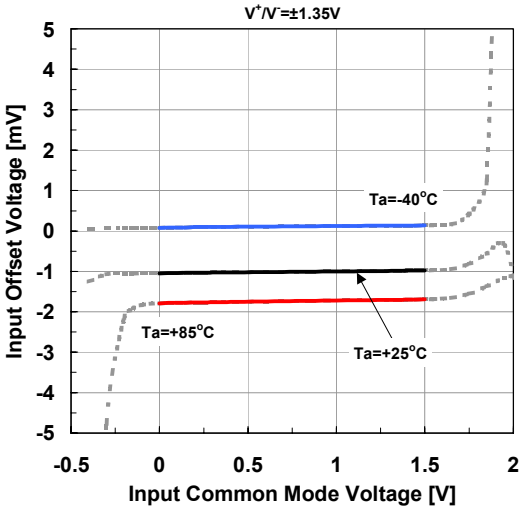


Input Offset Voltage vs. Ambient Tmperature

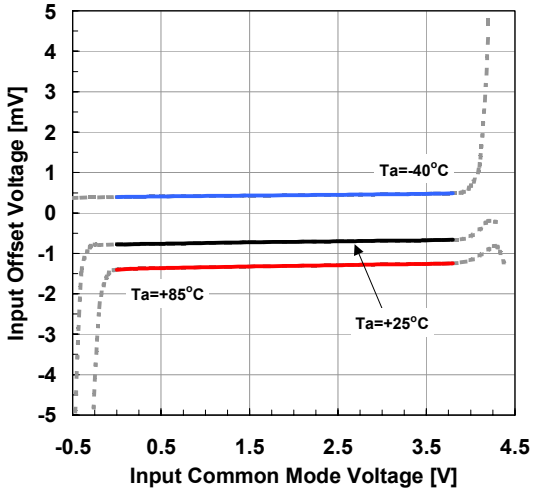


■ Typical Characteristics

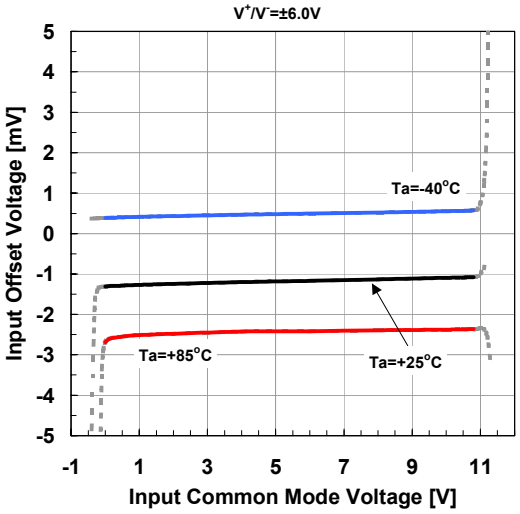
Input Offset Voltage
vs. Input Common Mode VItage
(Ambient Temperature)
V^+/V^-=±1.35V



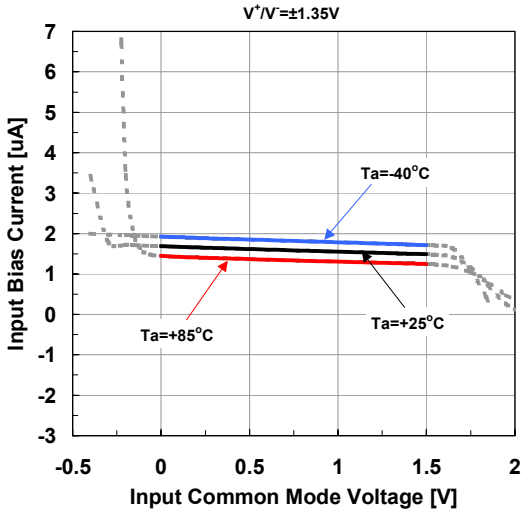
Input Offset Voltage
vs. Input Common Mode Voltage
(Ambient Temperature)
V^+/V^-=±2.5V



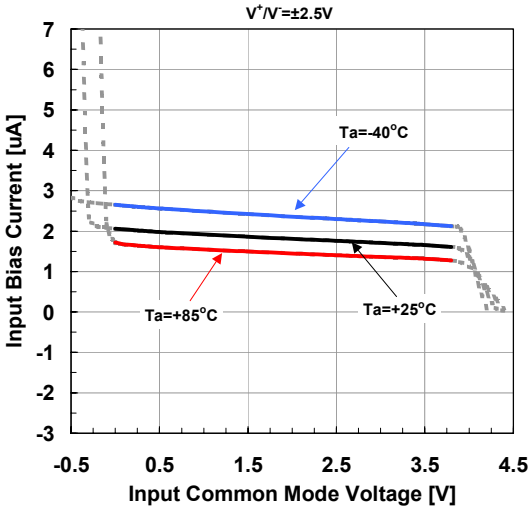
Input Offset Voltage
vs. Input Common Mode Voltage Range
(Ambient Temperature)
V^+/V^-=±6.0V



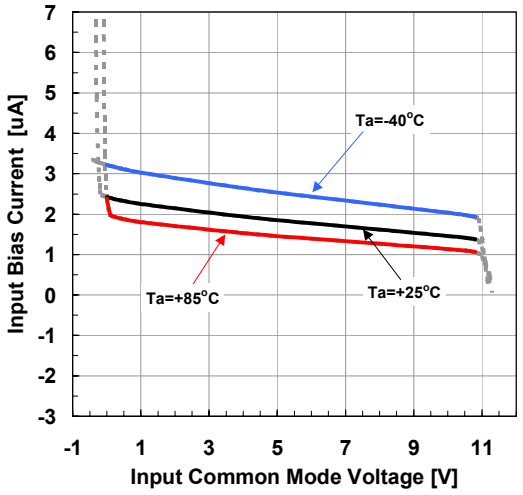
Input Bias Current
vs. Input Common Mode Voltage
(Ambient Temperature)
V^+/V^-=±1.35V



Input Bias Current
vs. Input Common Mode Voltage
(Ambient Temperature)
V^+/V^-=±2.5V

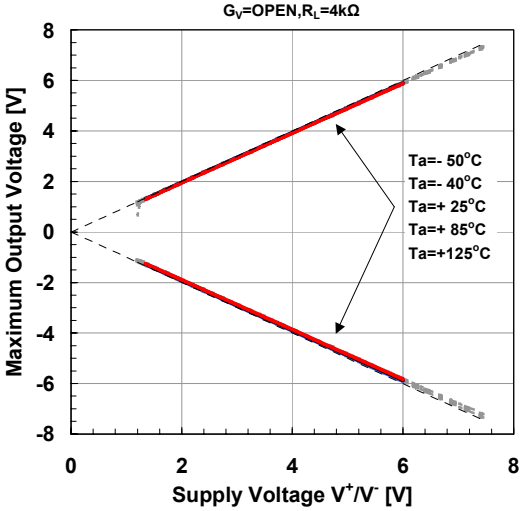


Input Bias Current
vs. Input Common Mode Voltage
(Ambient Temperature)
V^+/V^-=±6.0V

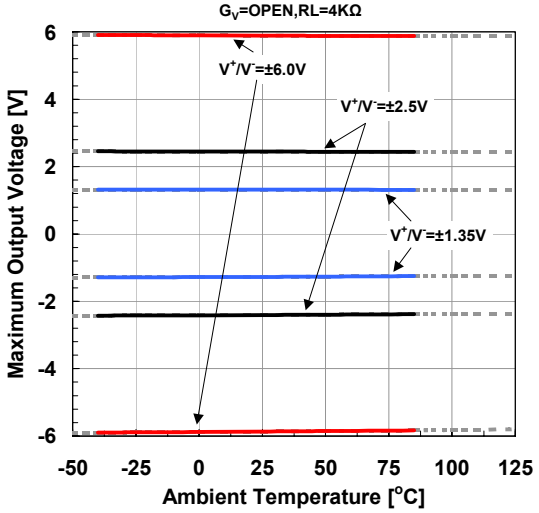


■ Typical Characteristics

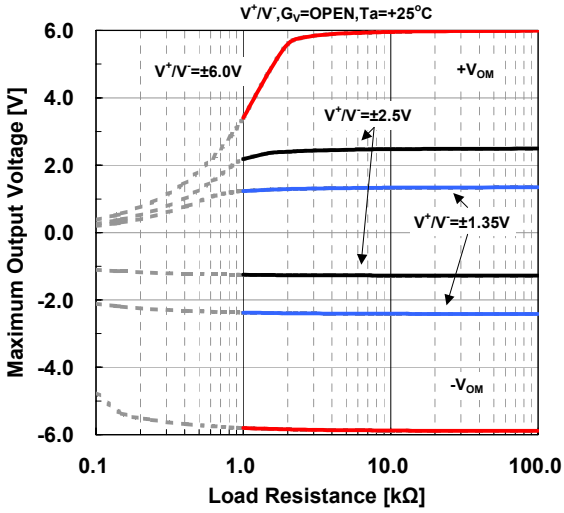
Maximum Output Voltage
vs. Supply Voltage
(Ambient Temperature)
G_V=OPEN,R_L=4kΩ



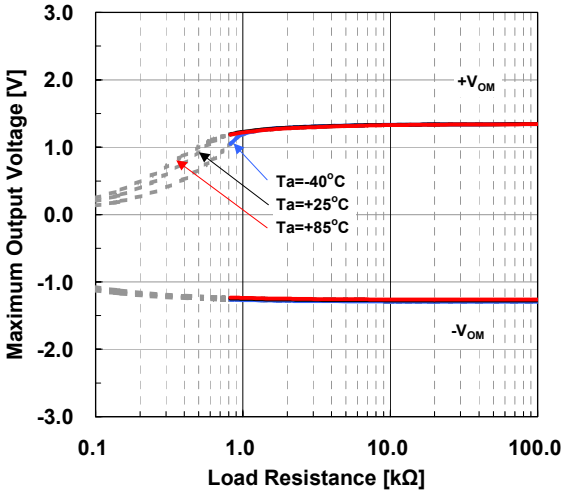
Maximum Output Voltage
vs. Ambient Temperature
G_V=OPEN,RL=4KΩ



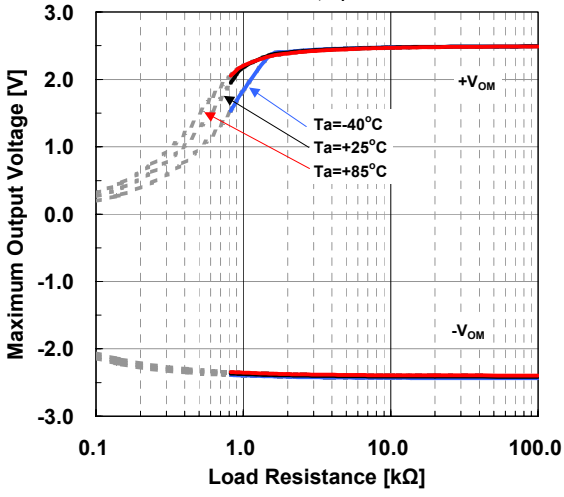
Maximum Output Voltage
vs. Load Resistance
(Supply Voltage)
V+/V-,G_V=OPEN,Ta=+25°C



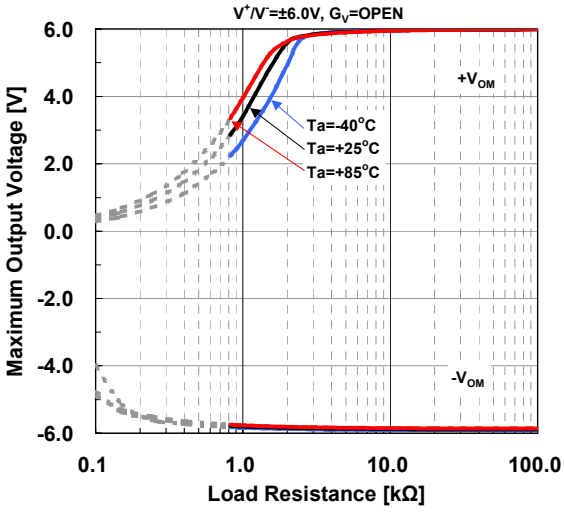
Maximum Output Voltage
vs. Load Resistance
(Ambient Temperature)
V+/V-=±1.35V, G_V=OPEN



Maximum Output Voltage
vs. Load Resistance
(Ambient Temperautre)
V+/V-=±2.5V, G_V=OPEN

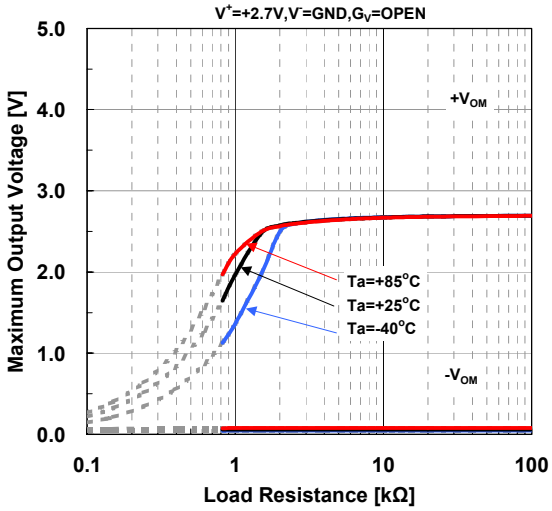


Maximum Output vltage
vs. Load Resistance
(Ambient Temperature)
V+/V-=±6.0V, G_V=OPEN

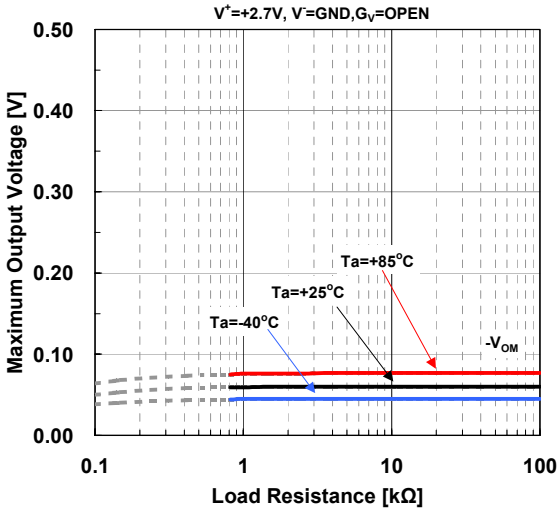


■ Typical Characteristics

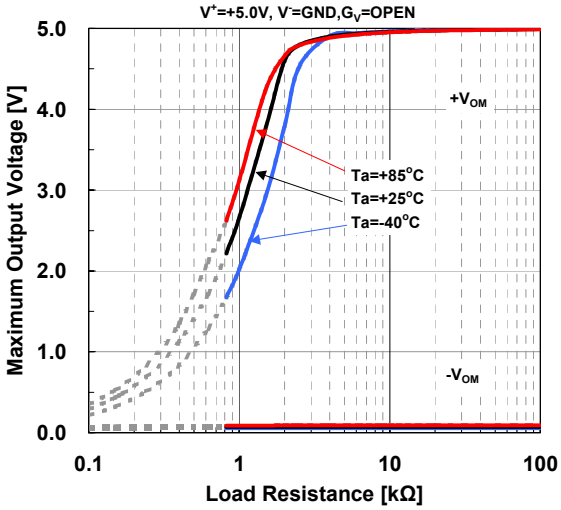
Maximum Output Voltage vs. Load Resistance
(Ambient Temperature)
V^+=+2.7V,V^-=GND,G_V=OPEN



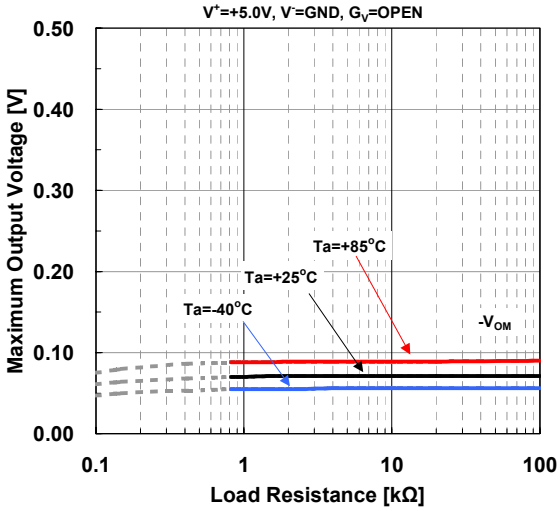
Maximum Output Voltage vs. Load Resistance
(Ambient Temperature)
V^+=+2.7V, V^-=GND,G_V=OPEN



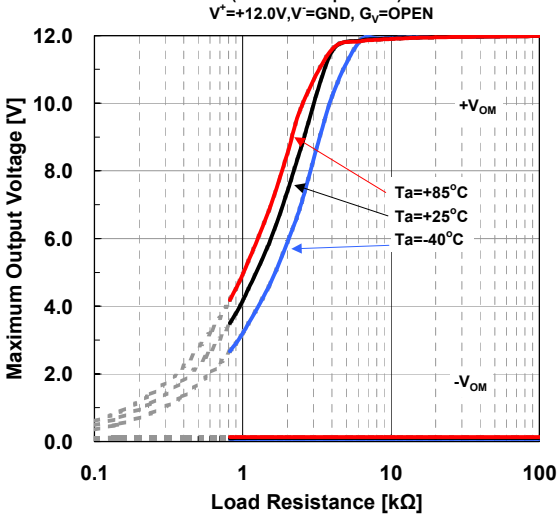
Maximum Output Voltage vs. Load Resistance
(Ambient Temperarture)
V^+=+5.0V, V^-=GND,G_V=OPEN



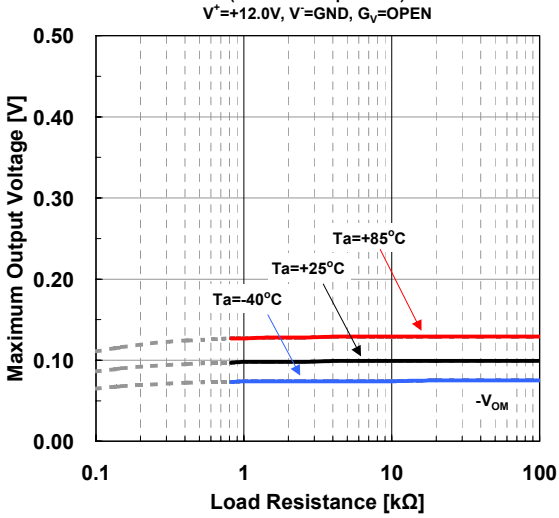
Maximum Output Voltage vs. Load Resistance
(Ambient Temperature)
V^+=+5.0V, V^-=GND, G_V=OPEN



Maximum Output Voltage vs. Load Resistance
(Ambient temperature)
V^+=+12.0V,V^-=GND, G_V=OPEN



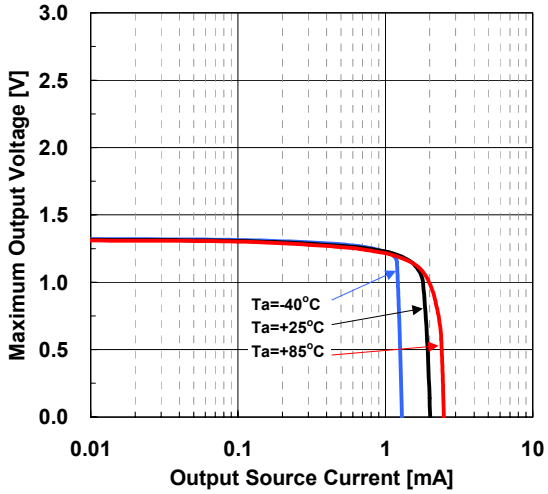
Maximum Output Voltage vs. Load Resistance
(Ambient Temperature)
V^+=+12.0V, V^-=GND, G_V=OPEN



■ Typical Characteristics

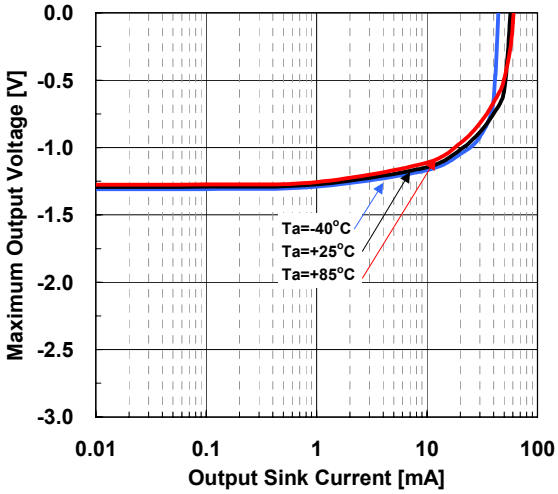
Maximum Output Voltage vs. Output Source Current

V^+/V^-=±1.35V,G_V=OPEN



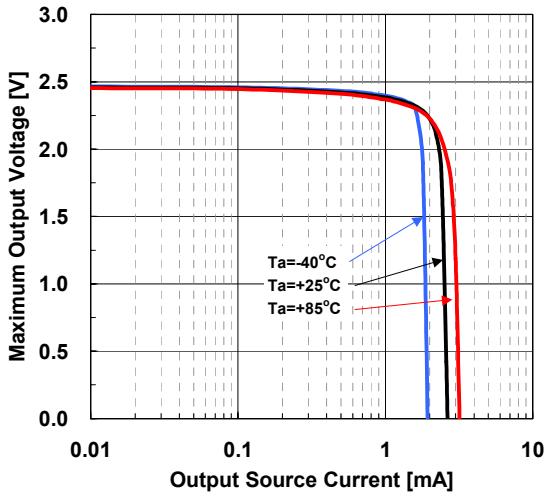
Maximum Output Voltage vs. Output Sink Current

V^+/V^-=±1.35V,G_V=OPEN



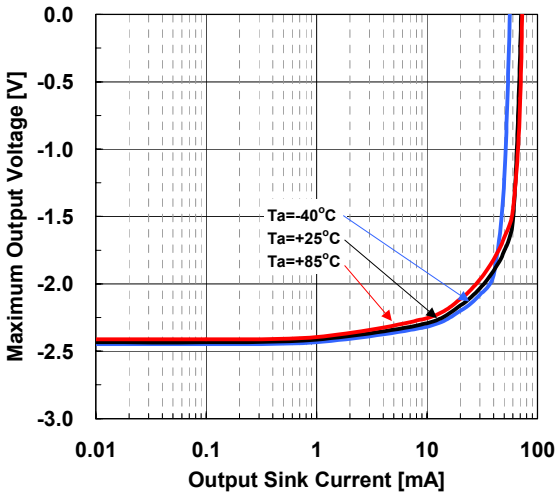
Maximum Output Voltage vs. Output Source Current

V^+/V^-=±2.5V,G_V=OPEN



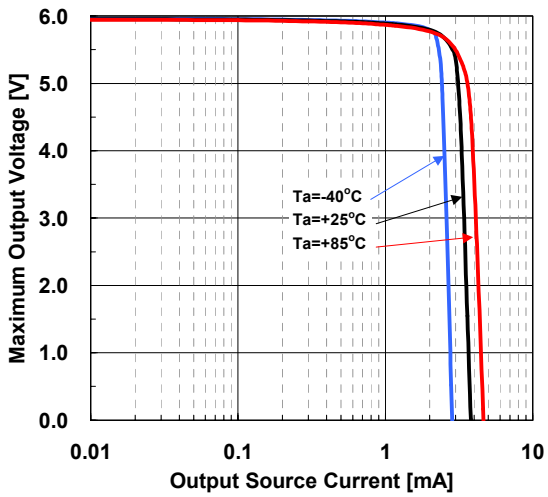
Maximum Output Voltage vs. Output Sink Current

V^+/V^-=±2.5V,G_V=OPEN



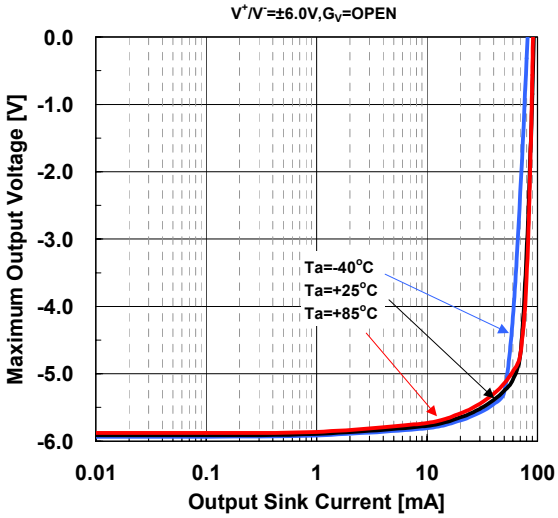
Maximum Output Voltage vs. Output Source Current

V^+/V^-=±6.0V,G_V=OPEN



Maximum Output Voltage vs. Output Sink Current

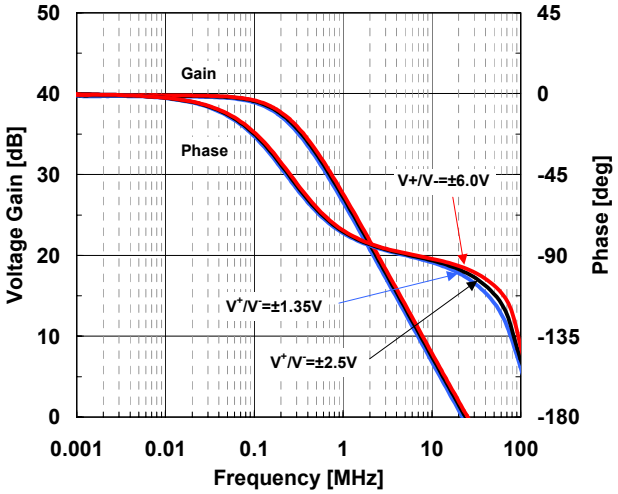
V^+/V^-=±6.0V,G_V=OPEN



■ Typical Characteristics

Voltage Gain/Phase vs. Frequency

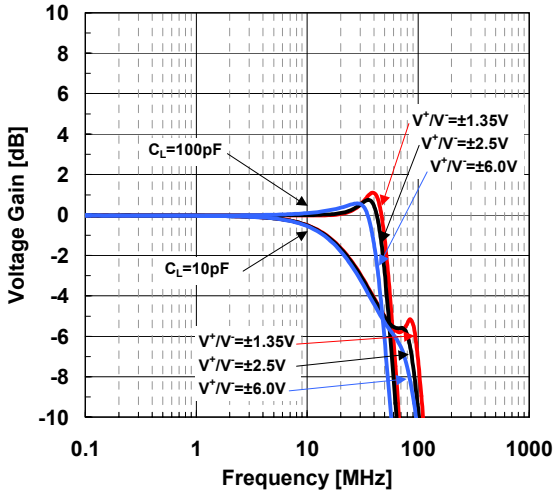
G_V=40dB, R_L=2kΩ to GND, C_L=10pF, Ta=25°C



Voltage Gain vs. Frequency

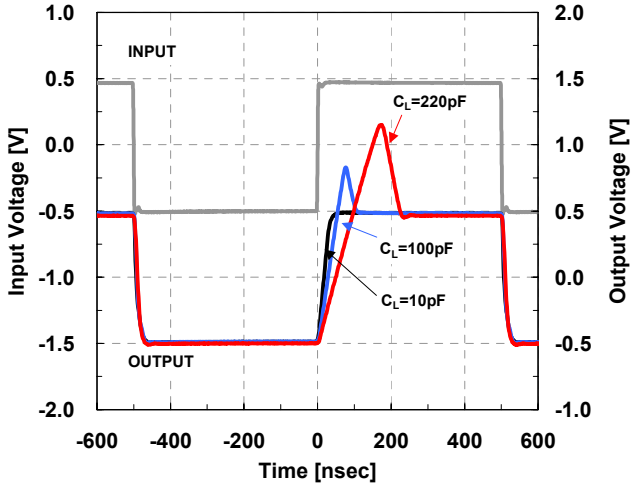
(Voltage Follower)

V^+/V^-=±6.0V, G_V=0dB, R_L=2kΩ to GND, Ta=25°C



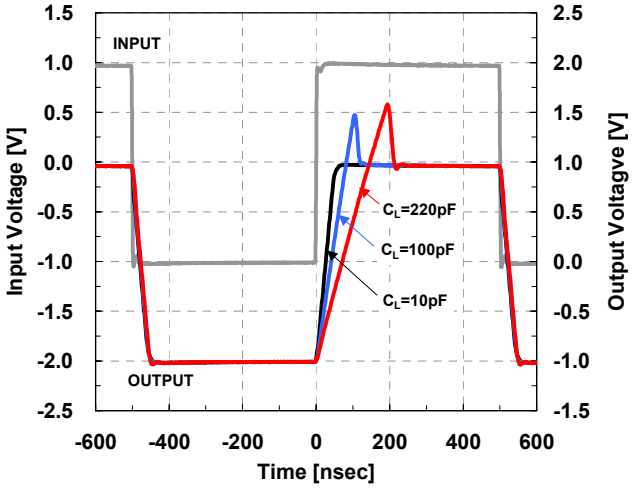
Pulse Response

V^+/V^-=±1.35V, A_V=0dB, f=1MHz, V_{IN}=±0.5V,
R_L=10KΩ, Ta=25°C



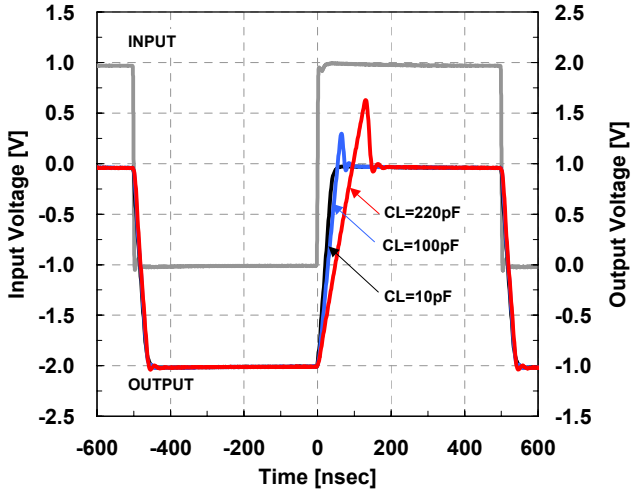
Pulse Response

V^+/V^-=±2.5V, A_V=0dB, f=1MHz, V_{IN}=±1V,
R_L=10KΩ, Ta=25°C



Pulse Response

V^+/V^-=±6.0V, A_V=0dB, f=1MHz,
V_{IN}=±1V, R_L=10KΩ, Ta=25°C



[CAUTION]
The specifications on this data book are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this data book are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.