

Auto-Zero, High Precision Single Operational Amplifier

■GENERAL DESCRIPTION

The NJU7098 is Auto Zero high precision operational amplifiers available in the SOT23-5 packages. The NJU7098 operates from a single 3V to 10V supply. The NJU7098 of CMOS operational amplifier use Auto Zero techniques to simultaneously provide very low offset voltage, and near-zero drift over temperature (0.05 μ V/ $^{\circ}$ C Max.).

The NJU7098 includes a shutdown mode. Under logic control, the amplifiers can be switched from normal operation to a standby. When the $\overline{\text{SHDN}}$ pin is connected high, the amplifier is active. Connecting $\overline{\text{SHDN}}$ low disables the amplifier.

■PACKAGE OUTLINE



NJU7098F1

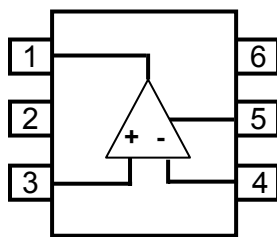
■FEATURES

- Low Offset Voltage Drift 0.05 μ V/ $^{\circ}$ C max.
- Low Offset Voltage 15 μ V max.
- Operating Voltage +3V to +10V
- High Voltage Gain 140dB typ.
- CMR, SVR 130dB typ.
- Operating Current 0.6mA typ. (at $V_{DD}=+5V$)
- Output Full-Swing ($R_L=10k\Omega$)
- Shutdown
- Ground Sensing
- Package Outline SOT-23-6 (MTP6)

■APPLICATIONS

- Thermocouple / Thermopile Amplifiers
- Strain Gauge / Pressure sensor Amplifiers
- Load Cell and Bridge Transducer Amplifiers
- High Resolution Data Acquisition
- Precision Current Sensing

■PIN CONFIGURATION

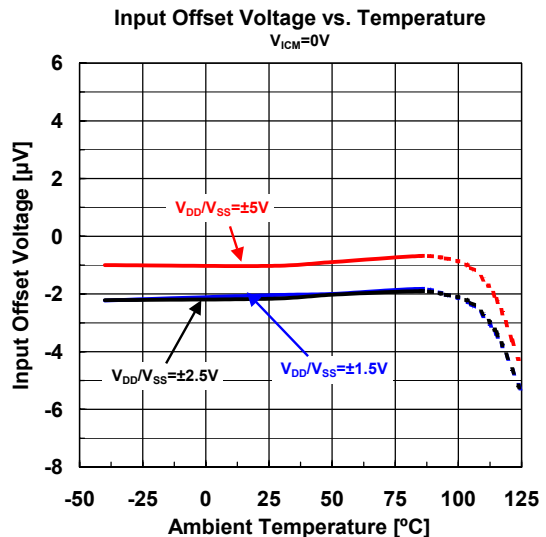


NJU7098F1
(Top View)

PIN FUNCTION

1. OUTPUT
2. V_{SS}
3. +INPUT
4. -INPUT
5. $\overline{\text{SHDN}}$
6. V_{DD}

■TYPICAL CHARACTERISTICS



NJU7098

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

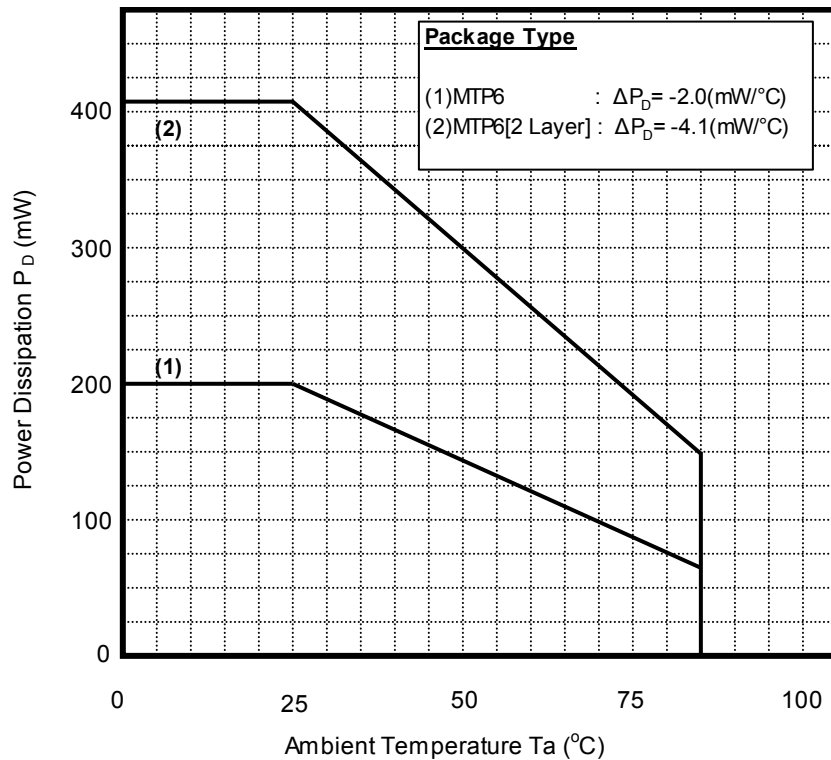
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{DD}	11	V
Common Mode Input Voltage Range	V _{ICM}	-0.3 to V _{DD} +0.3	V
Differential Input Voltage Range	V _{ID}	±11(Note 1)	V
Power Dissipation	P _D	200 [MTP6]	mW
		410 [MTP6] (Note 2)	
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C

(Note 1) For supply voltage less than 11V, the absolute maximum input voltage is equal to the supply voltage.

(Note 2) On the PCB " EIA/JEDEC (76.2x11.43x1.6mm, two layers, FR-4) "

(Note 3) Do not exceed "Power dissipation: P_D" in which power dissipation in IC is shown by the absolute maximum rating.
Refer to following Figure 1 for a permissible loss when ambient temperature (Ta) is Ta≥25°C .

Figure 1: Power Dissipation – Ambient Temperature



■ OPERATING VOLTAGE (Ta=-40 to +85°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{DD}	3 to 10	V

■ ELECTORIC CHARACTERISTICS

● DC CHARACTERISTICS ($V_{DD}=+3V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^{\circ}C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I_{DD}	$R_L=\infty$, No Signal	-	0.55	1.1	mA
Input Offset Voltage1	V_{IO1}	$T_a=25^{\circ}C$	-	3	15	μV
Input Offset Voltage2	V_{IO2}		-	3	15	μV
Input Offset Voltage Drift	$V_{IO}/\Delta t$		-	-	0.05	$\mu V/^{\circ}C$
Input Bias Current1	I_{B1}	$T_a=25^{\circ}C$	-	15	50	pA
Input Bias Current2	I_{B2}		-	-	100	pA
Input Offset Current1	I_{IO1}	$T_a=25^{\circ}C$	-	-	100	pA
Input Offset Current2	I_{IO2}		-	-	200	pA
Voltage Gain1	A_{V1}	$R_L \geq 10k\Omega$, $V_o=0.35\sim 2.65V$, $T_a=25^{\circ}C$	120	140	-	dB
Voltage Gain2	A_{V2}	$R_L \geq 10k\Omega$, $V_o=0.35\sim 2.65V$	115	140	-	dB
Input Common Mode Voltage Range	V_{ICM}	$CMR \geq 110dB$	0	-	1.7	V
Common Mode Rejection Ratio1	CMR1	$V_{ICM}=0\sim 1.7V$, $T_a=25^{\circ}C$	110	130	-	dB
Common Mode Rejection Ratio2	CMR2	$V_{ICM}=0\sim 1.7V$	110	130	-	dB
Supply Voltage Rejection Ratio1	SVR1	$V_{DD}=3\sim 10V$, $T_a=25^{\circ}C$	110	130	-	dB
Supply Voltage Rejection Ratio2	SVR2	$V_{DD}=3\sim 10V$	110	130	-	dB
Maximum Output Voltage1	V_{OH1}	$R_L=2k\Omega$ to GND	2.85	2.94	-	V
	V_{OL1}	$R_L=2k\Omega$ to GND	-	1	10	mV
Maximum Output Voltage2	V_{OH2}	$R_L=10k\Omega$ to GND	2.95	2.98	-	V
	V_{OL2}	$R_L=10k\Omega$ to GND	-	1	10	mV
Output Source Current	I_{SOURCE}	$V_o=2.5V$	5	20	-	mA
Output Sink Current	I_{SINK}	$V_o=0.5V$	3	25	-	mA

● AC CHARACTERISTICS ($V_{DD}=+3V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^{\circ}C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain Bandwidth Product	GB	$R_L=10k\Omega$	-	2	-	MHz
Phase Margin	Φ_M	$R_L=10k\Omega$, $C_L=50pF$	-	30	-	deg
Equivalent Input Noise Voltage	V_{NI}	$f=10Hz$	-	120	-	nV/\sqrt{Hz}
Internal Sampling Frequency	F_S		-	7.5	-	kHz

● TRANSIENT CHARACTERISTICS ($V_{DD}=+3V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^{\circ}C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Positive Slew Rate	+SR	$A_V=1$, $V_{IN}=1V_{P-P}$, $R_L=10k\Omega$	-	3	-	$V/\mu s$
Negative Slew Rate	-SR	$A_V=1$, $V_{IN}=1V_{P-P}$, $R_L=10k\Omega$	-	8	-	$V/\mu s$

● SHUTDOWN CHARACTERISTICS

($V_{DD}=+3V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^{\circ}C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Shutdown Supply Current	I_{DDSHDN}	$R_L=\infty$, $V_{SHDN}=GND$, No Signal	-	-	10	μA
Turn On Voltage to Enable Part	V_{SHDNON}	$I_{DD} \geq 300\mu A$	2.5	-	3	V
Turn off Voltage to Disable Part	$V_{SHDNOFF}$	$I_{DD} \leq 10\mu A$	GND	-	0.5	V
Shutdown Bias Current	I_{SHDN}	$V_{SHDN}=GND$	-	0.5	3.0	μA

■ ELECTRIC CHARACTERISTICS

● DC CHARACTERISTICS ($V_{DD}=+5V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I_{DD}	$R_L=\infty$, No signal	-	0.6	1.2	mA
Input Offset Voltage1	V_{IO1}	$T_a=25^\circ C$	-	3	15	μV
Input Offset Voltage2	V_{IO2}		-	3	15	μV
Input Offset Voltage Drift	$V_{IO}/\Delta t$		-	-	0.05	$\mu V/^\circ C$
Input Bias Current1	I_{B1}	$T_a=25^\circ C$	-	20	50	pA
Input Bias Current2	I_{B2}		-	-	100	pA
Input Offset Current1	I_{IO1}	$T_a=25^\circ C$	-	-	100	pA
Input Offset Current2	I_{IO2}		-	-	200	pA
Voltage Gain1	A_{V1}	$R_L \geq 10k\Omega$, $V_o=1\sim 4V$, $T_a=25^\circ C$	125	140	-	dB
Voltage Gain2	A_{V2}	$R_L \geq 10k\Omega$, $V_o=1\sim 4V$	120	140	-	dB
Input Common Mode Voltage Range	V_{ICM}	$CMR \geq 115dB$	0	-	3.5	V
Common Mode Rejection Ratio1	CMR1	$V_{ICM}=0\sim 3.5V$, $T_a=25^\circ C$	120	130	-	dB
Common Mode Rejection Ratio2	CMR2	$V_{ICM}=0\sim 3.5V$	115	130	-	dB
Supply Voltage Rejection Ratio1	SVR1	$V_{DD}=4\sim 10V$, $T_a=25^\circ C$	115	130	-	dB
Supply Voltage Rejection Ratio2	SVR2	$V_{DD}=4\sim 10V$	115	130	-	dB
Maximum Output Voltage1	V_{OH1}	$R_L=2k\Omega$ to GND	4.85	4.94	-	V
	V_{OL1}	$R_L=2k\Omega$ to GND	-	1	10	mV
Maximum Output Voltage2	V_{OH2}	$R_L=10k\Omega$ to GND	4.95	4.98	-	V
	V_{OL2}	$R_L=10k\Omega$ to GND	-	1	10	mV
Output Source Current	I_{SOURCE}	$V_o=4.5V$	10	30	-	mA
Output Sink Current	I_{SINK}	$V_o=0.5V$	4	40	-	mA

AC CHARACTERISTICS ($V_{DD}=+5V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain Bandwidth Product	GB	$R_L=10k\Omega$	-	3	-	MHz
Phase Margin	Φ_M	$R_L=10k\Omega$, $C_L=50pF$	-	30	-	deg
Equivalent Input Noise Voltage	V_{NI}	$f=10Hz$	-	120	-	nV/\sqrt{Hz}
Internal Sampling Frequency	F_S		-	7.5	-	kHz

● TRANSIENT CHARACTERISTICS ($V_{DD}=+5V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Positive Slew Rate	+SR	$A_V=1$, $V_{IN}=2V_{P-P}$, $R_L=10k\Omega$	-	3	-	$V/\mu s$
Negative Slew Rate	-SR	$A_V=1$, $V_{IN}=2V_{P-P}$, $R_L=10k\Omega$	-	12	-	$V/\mu s$

● SHUTDOWN CHARACTERISTICS

($V_{DD}=+5V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Shutdown Supply Current	I_{DDSHDN}	$R_L=\infty$, $V_{SHDN}=GND$, No Signal	-	-	15	μA
Turn On Voltage to Enable Part	V_{SHDNON}	$I_{DD} \geq 300\mu A$	4.5	-	5	V
Turn off Voltage to Disable Part	$V_{SHDNOFF}$	$I_{DD} \leq 15\mu A$	GND	-	0.5	V
Shutdown Bias Current	I_{SHDN}	$V_{SHDN}=GND$	-	2.0	7.0	μA

■ ELECTORIC CHARACTERISTICS

● DC CHARACTERISTICS ($V_{DD}=+10V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I_{DD}	$R_L=\infty$, No Signal	-	0.7	1.5	mA
Input Offset Voltage1	V_{IO1}	$T_a=25^\circ C$	-	3	15	μV
Input Offset Voltage2	V_{IO2}		-	3	15	μV
Input Offset Voltage Drift	$V_{IO}/\Delta t$		-	-	0.05	$\mu V/^\circ C$
Input Bias Current1	I_{B1}	$T_a=25^\circ C$	-	40	200	pA
Input Bias Current2	I_{B2}		-	-	200	pA
Input Offset Current1	I_{IO1}	$T_a=25^\circ C$	-	-	400	pA
Input Offset Current2	I_{IO2}		-	-	400	pA
Voltage Gain1	A_{V1}	$R_L \geq 10k\Omega$, $V_o=1\sim 9V$, $T_a=25^\circ C$	125	140	-	dB
Voltage Gain2	A_{V2}	$R_L \geq 10k\Omega$, $V_o=1\sim 9V$	120	140	-	dB
Input Common Mode Voltage Range	V_{ICM}	$CMR \geq 115dB$	0	-	8.5	V
Common Mode Rejection Ratio1	$CMR1$	$V_{ICM}=0\sim 8.5V$, $T_a=25^\circ C$	120	130	-	dB
Common Mode Rejection Ratio2	$CMR2$	$V_{ICM}=0\sim 8.5V$	115	130	-	dB
Supply Voltage Rejection Ratio1	$SVR1$	$V_{DD}=4\sim 10V$, $T_a=25^\circ C$	115	130	-	dB
Supply Voltage Rejection Ratio2	$SVR2$	$V_{DD}=4\sim 10V$	115	130	-	dB
Maximum Output Voltage1	V_{OH1}	$R_L=2k\Omega$ to GND	9.5	9.94	-	V
	V_{OL1}	$R_L=2k\Omega$ to GND	-	1	10	mV
Maximum Output Voltage2	V_{OH2}	$R_L=10k\Omega$ to GND	9.6	9.98	-	V
	V_{OL2}	$R_L=10k\Omega$ to GND	-	1	10	mV
Output Source Current	I_{SOURCE}	$V_o=9.5V$	14	40	-	mA
Output Sink Current	I_{SINK}	$V_o=0.5V$	5	60	-	mA

● AC CHARACTERISTICS ($V_{DD}=+10V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain Bandwidth Product	GB	$R_L=10k\Omega$	-	2	-	MHz
Phase Margin	Φ_M	$R_L=10k\Omega$, $C_L=50pF$	-	30	-	deg
Equivalent Input Noise Voltage	V_{NI}	$f=10Hz$	-	120	-	nV/\sqrt{Hz}
Internal Sampling Frequency	F_S		-	7.5	-	kHz

● TRANSIENT CHARACTERISTICS ($V_{DD}=+10V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=+25^\circ C$ unless otherwise specified)

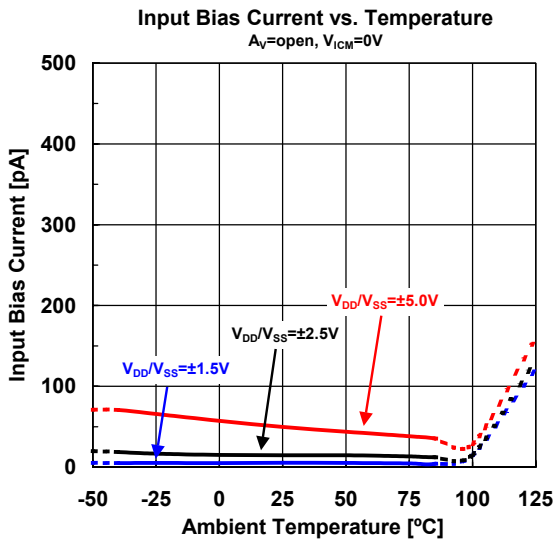
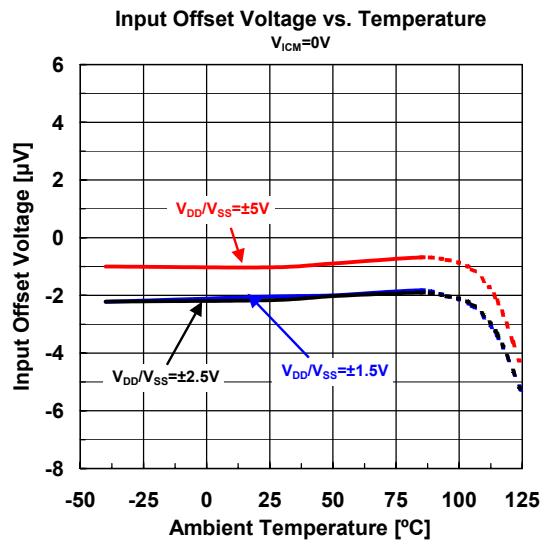
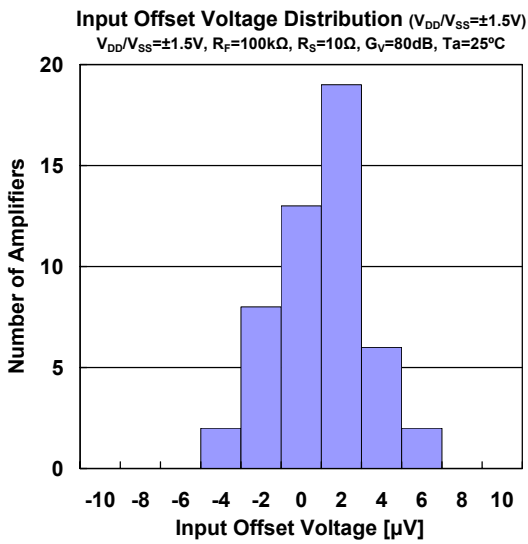
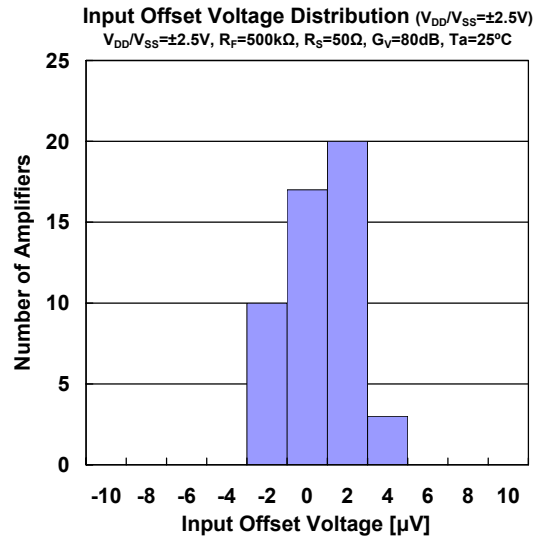
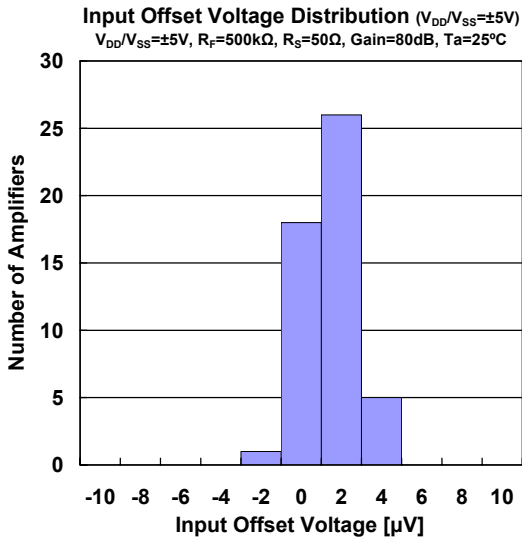
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Positive Slew Rate	+SR	$A_V=1$, $V_{IN}=2V_{P-P}$, $R_L=10k\Omega$	-	4	-	$V/\mu s$
Negative Slew Rate	-SR	$A_V=1$, $V_{IN}=2V_{P-P}$, $R_L=10k\Omega$	-	14	-	$V/\mu s$

● SHUTDOWN CHARACTERISTICS

($V_{DD}=+10V$, $V_{SS}=GND$, $V_{COM}=V_{DD}/2$, $V_{SHDN}=V_{DD}$, $T_a=-40\sim 85^\circ C$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Shutdown Supply Current	I_{DDSHDN}	$R_L=\infty$, $V_{SHDN}=GND$, No Signal	-	-	25	μA
Turn On Voltage to Enable Part	V_{SHDNON}	$I_{DD} \geq 400\mu A$	9.5	-	10	V
Turn off Voltage to Disable Part	$V_{SHDNOFF}$	$I_{DD} \leq 25\mu A$	GND	-	0.5	V
Shutdown Bias Current	I_{SHDN}	$V_{SHDN}=GND$	-	7.5	20	μA

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS

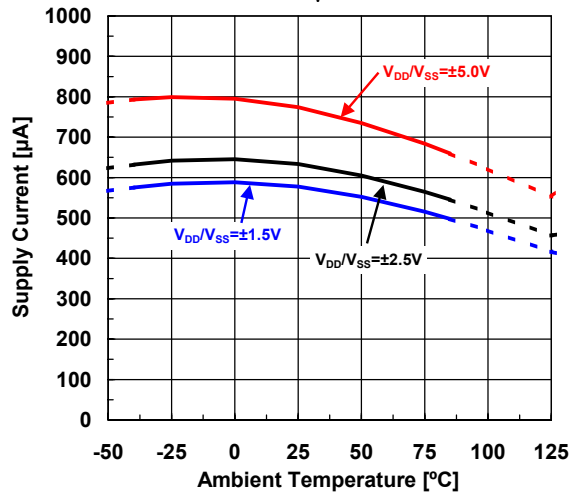
Supply Current vs. Supply Voltage

$A_v=0dB$



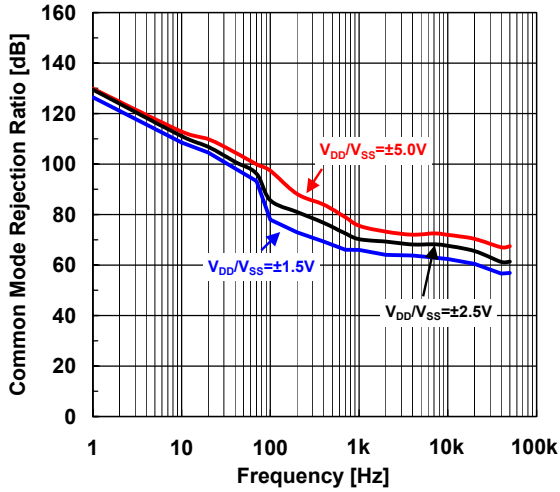
Supply Current vs. Temperature

$A_v=0dB$



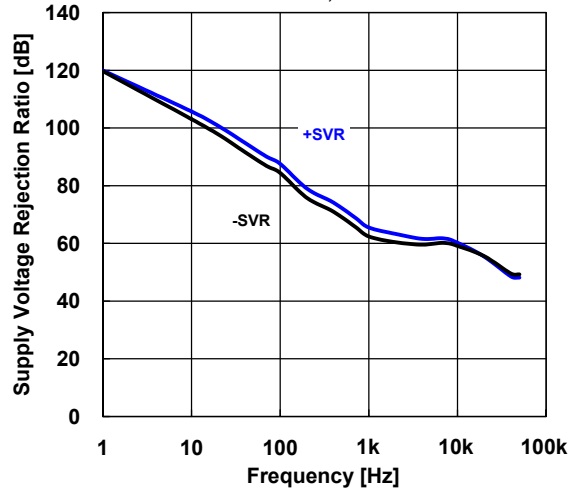
CMR vs. Frequency (Supply Voltage)

$R_f=100k, R_s=10, G_v=80dB, Ta=25°C$



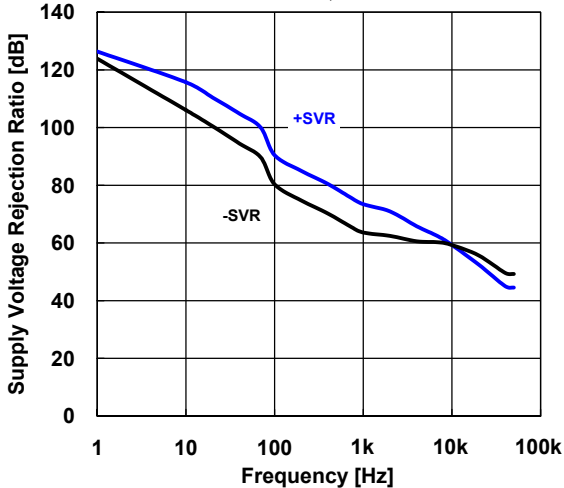
SVR vs. Frequency

$V'/V=\pm 5V, Ta=25°C$



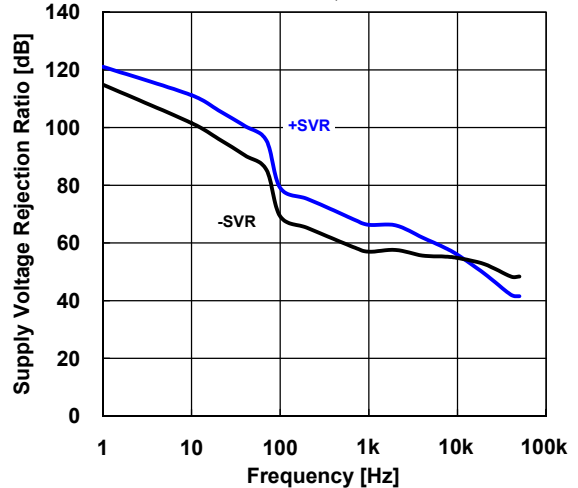
SVR vs. Frequency

$V'/V=\pm 2.5V, Ta=25°C$

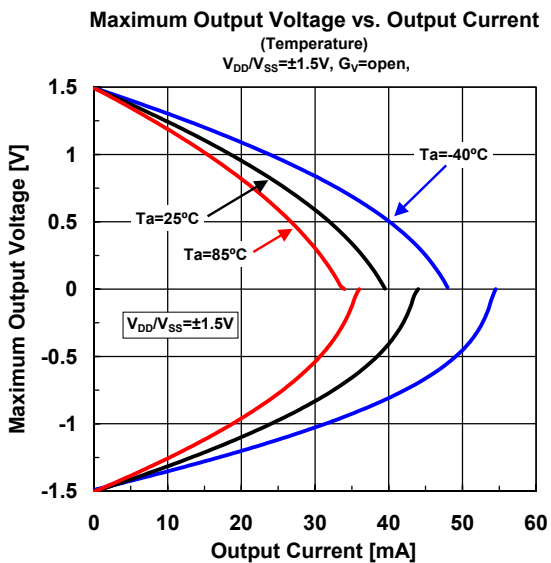
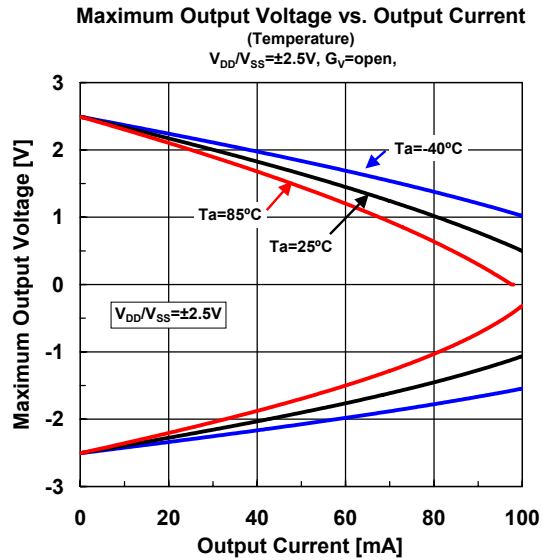
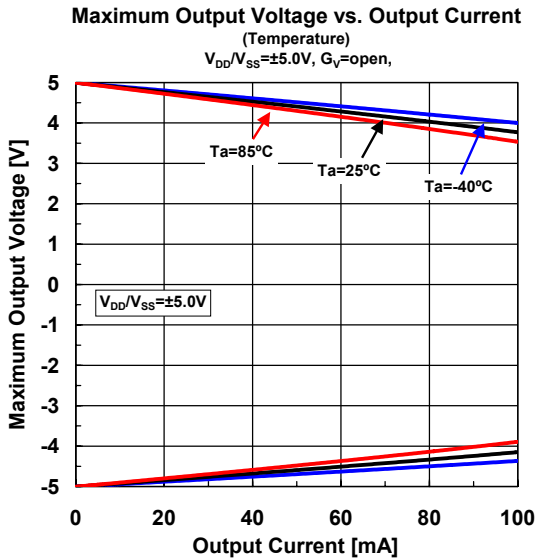
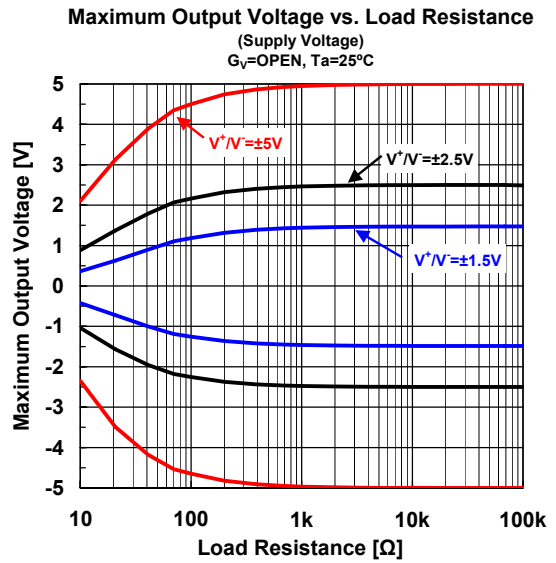
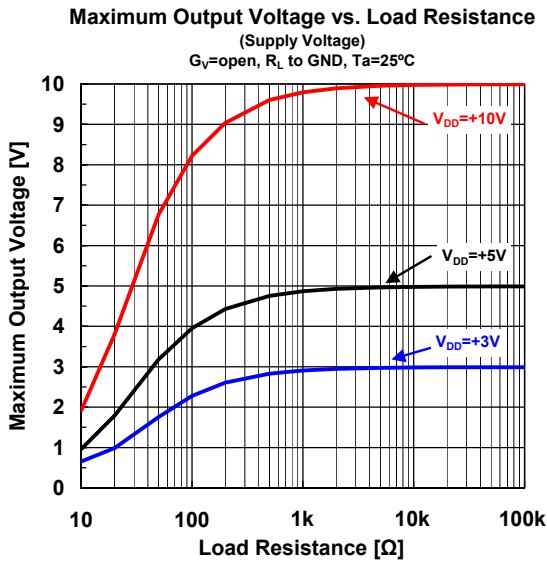


SVR vs. Frequency

$V'/V=\pm 1.5V, Ta=25°C$

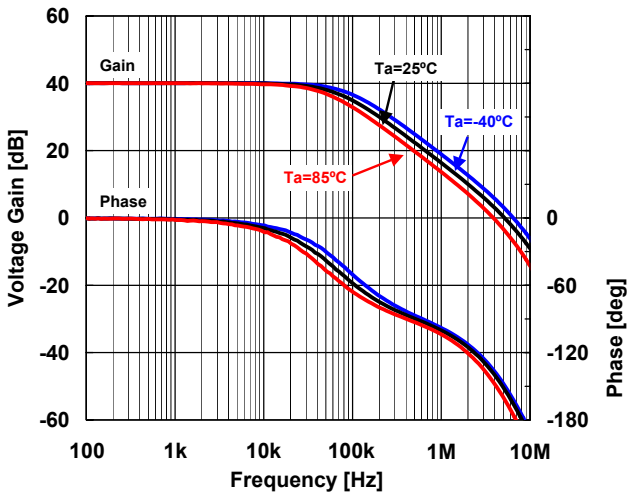


■ TYPICAL CHARACTERISTICS

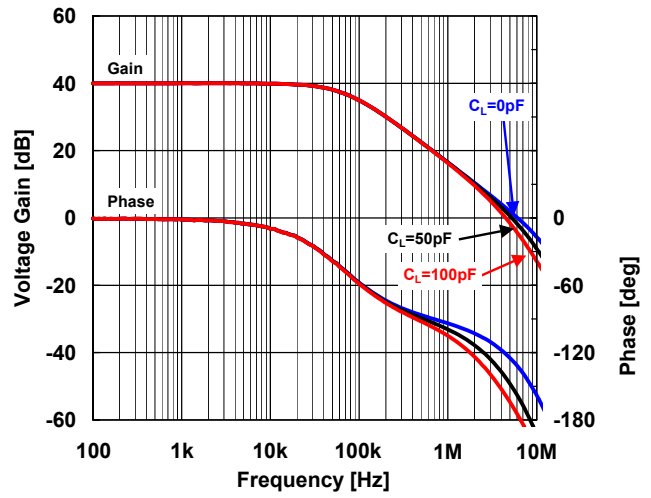


■ TYPICAL CHARACTERISTICS

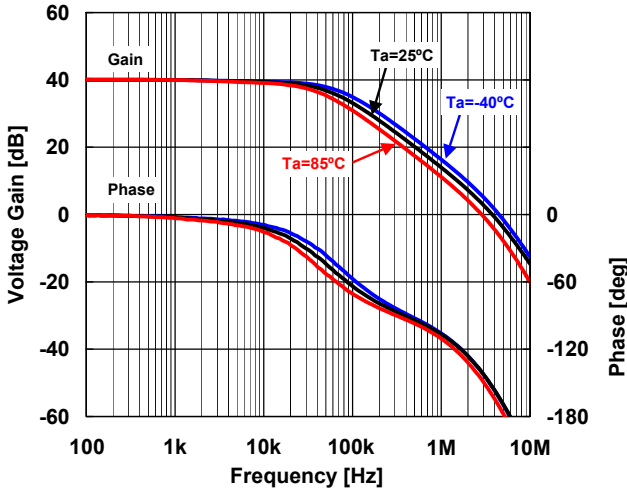
40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 5V$, $G_V=40dB$, $R_L=10k\Omega$, $C_L=50pF$



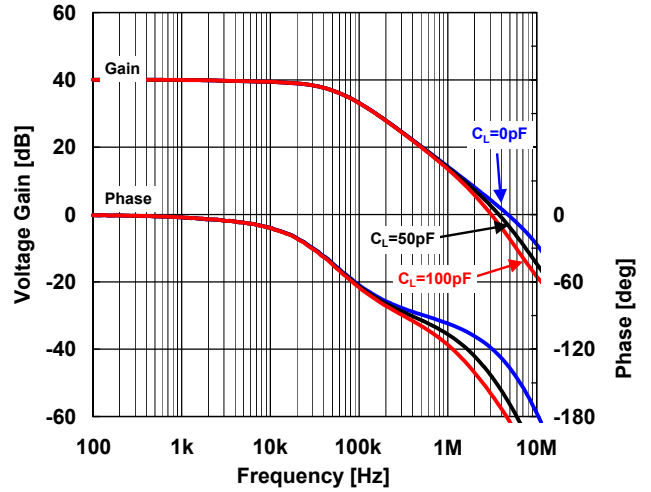
40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 5V$, $G_V=40dB$, $R_L=10k\Omega$, $T_a=25^\circ C$



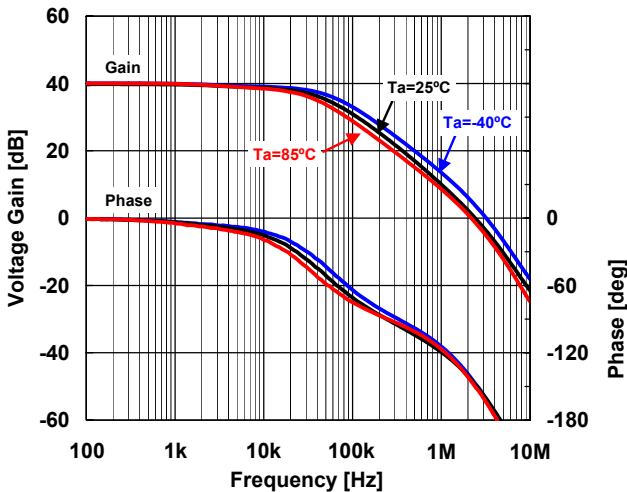
40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 2.5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 2.5V$, $G_V=40dB$, $R_L=10k\Omega$, $C_L=50pF$



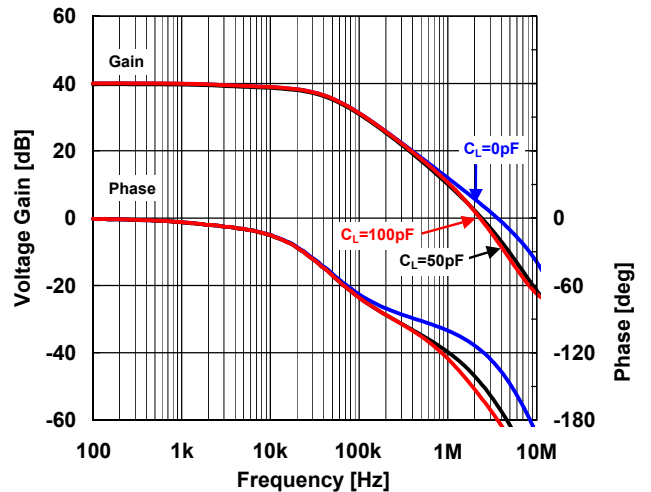
40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 2.5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 2.5V$, $G_V=40dB$, $R_L=10k\Omega$, $T_a=25^\circ C$



40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 1.5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 1.5V$, $G_V=40dB$, $R_L=10k\Omega$, $C_L=50pF$

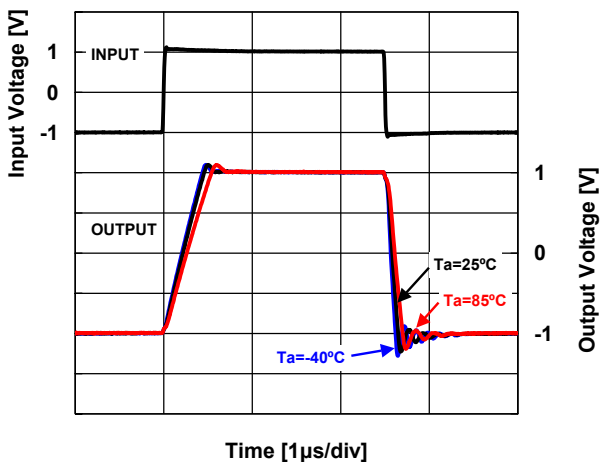


40dB Gain/Phase vs. Frequency
 ($V_{DD}/V_{SS}=\pm 1.5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 1.5V$, $G_V=40dB$, $R_L=10k\Omega$, $T_a=25^\circ C$

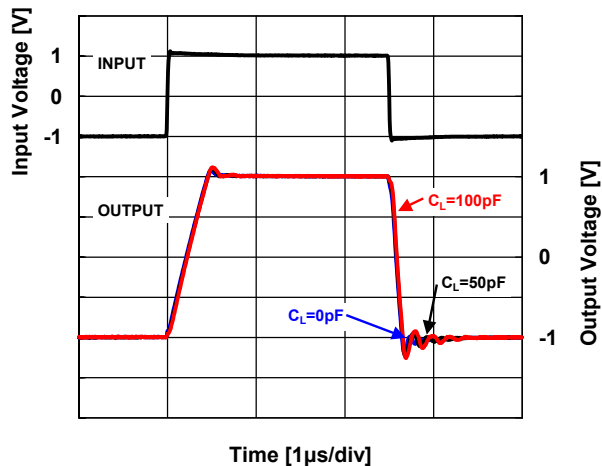


■ TYPICAL CHARACTERISTICS

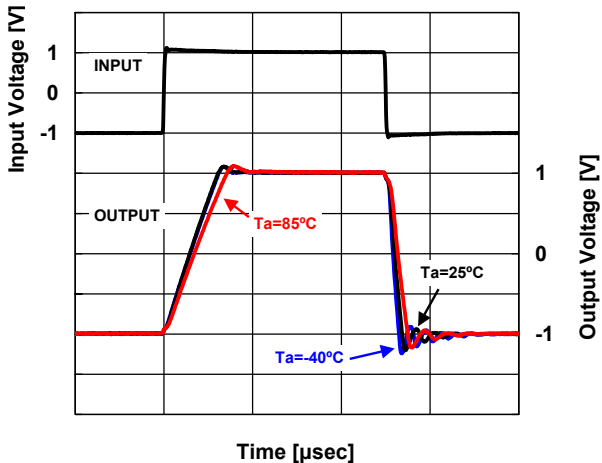
Pulse Response ($V_{DD}/V_{SS}=\pm 5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 5.0V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 1V$, $R_L=10k\Omega$, $C_L=50pF$



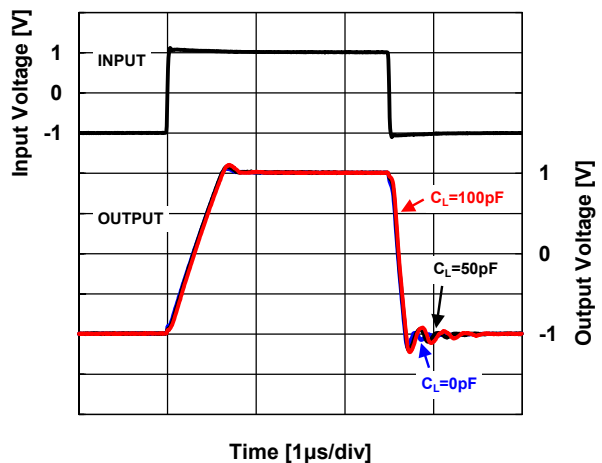
Pulse Response ($V_{DD}/V_{SS}=\pm 5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 5.0V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 1V$, $R_L=10k\Omega$, $T_a=25^\circ C$



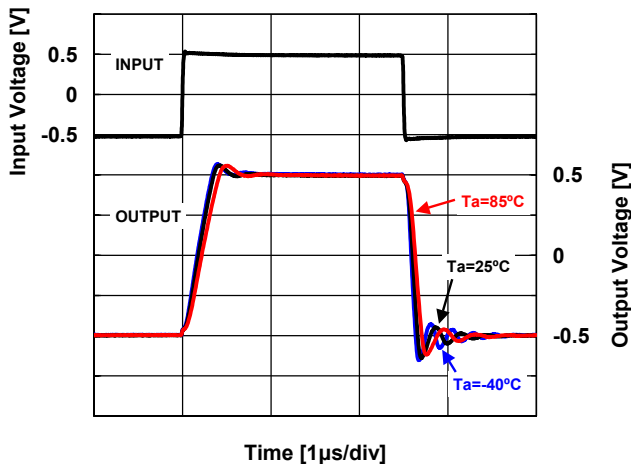
Pulse Response ($V_{DD}/V_{SS}=\pm 2.5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 2.5V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 1V$, $R_L=10k\Omega$, $C_L=50pF$



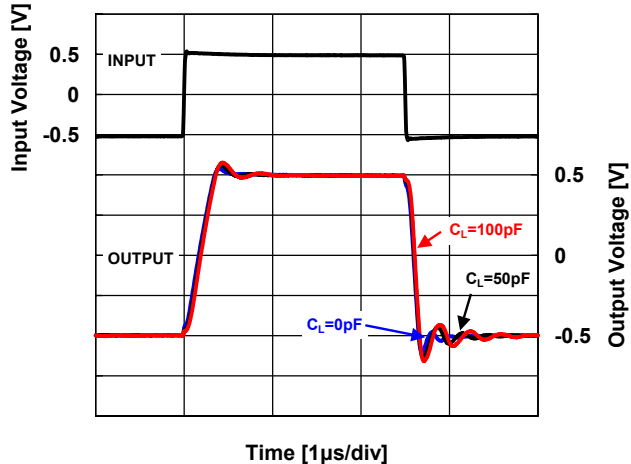
Pulse Response ($V_{DD}/V_{SS}=\pm 2.5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 2.5V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 1V$, $R_L=10k\Omega$, $T_a=25^\circ C$



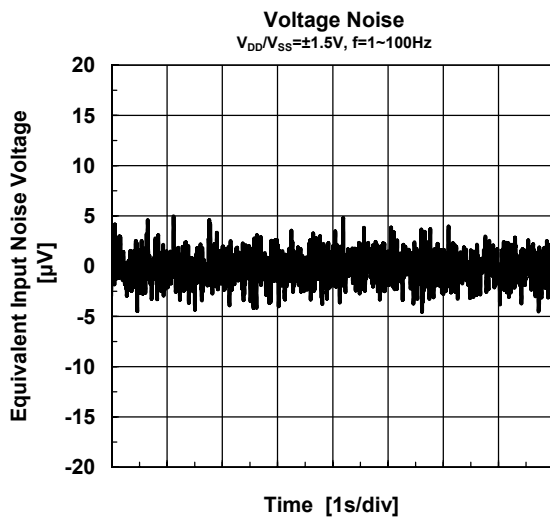
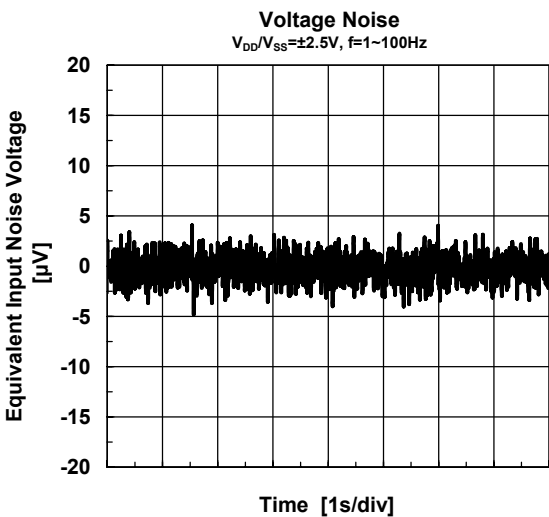
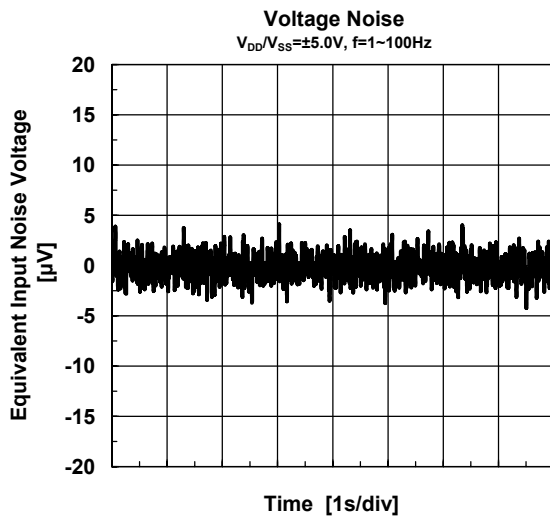
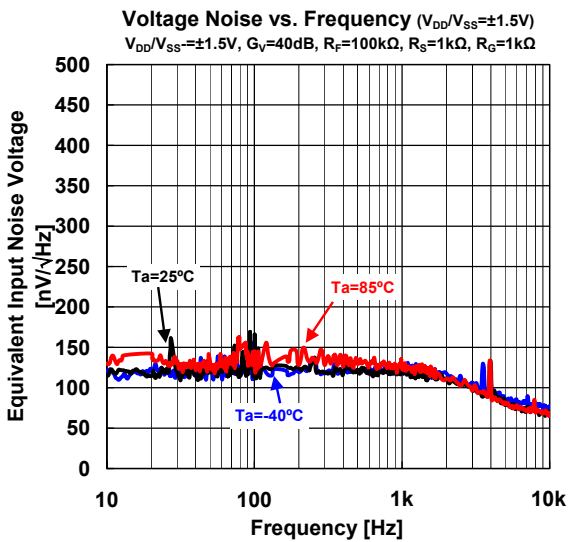
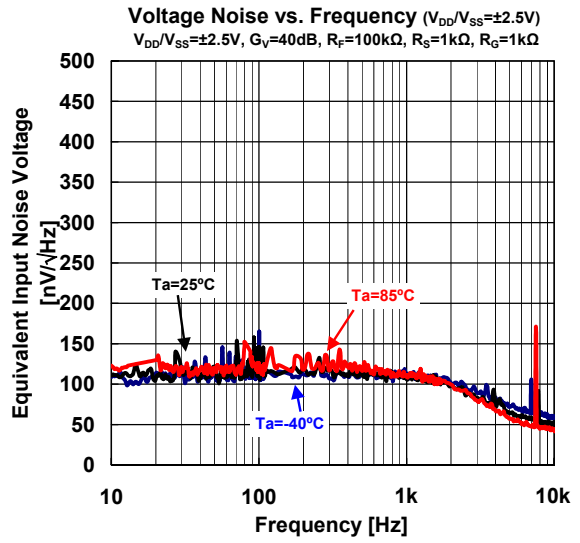
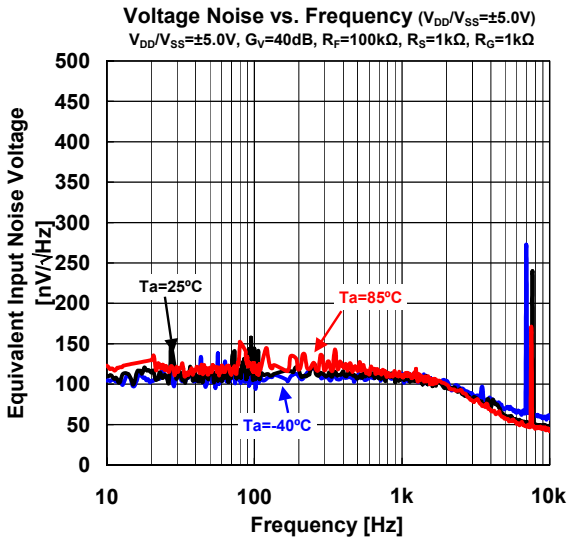
Pulse Response ($V_{DD}/V_{SS}=\pm 1.5V$, Temperature)
 $V_{DD}/V_{SS}=\pm 1.5V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 0.5V$, $R_L=10k\Omega$, $C_L=50pF$



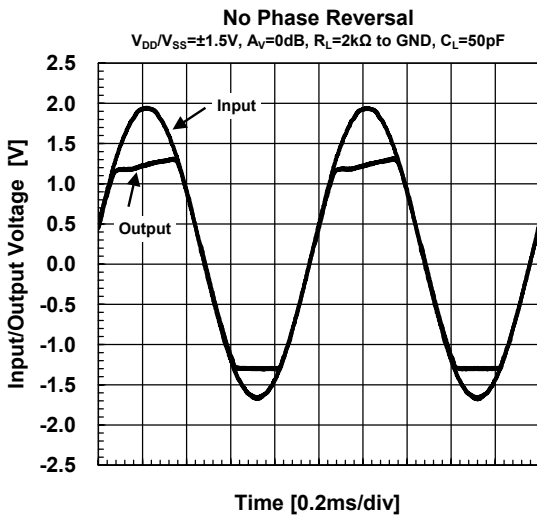
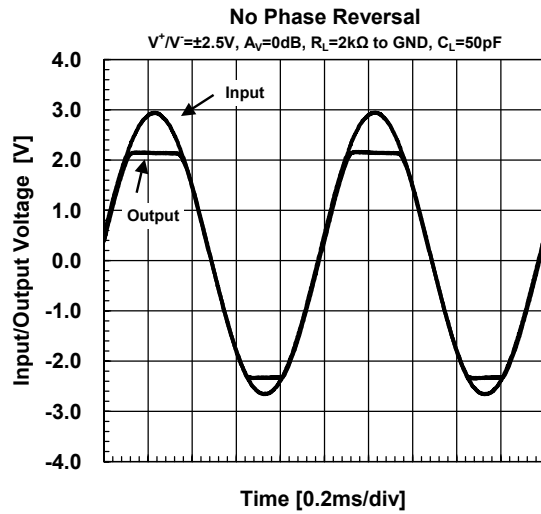
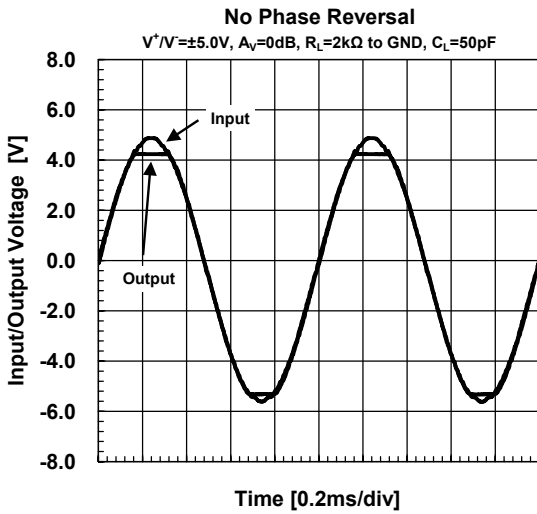
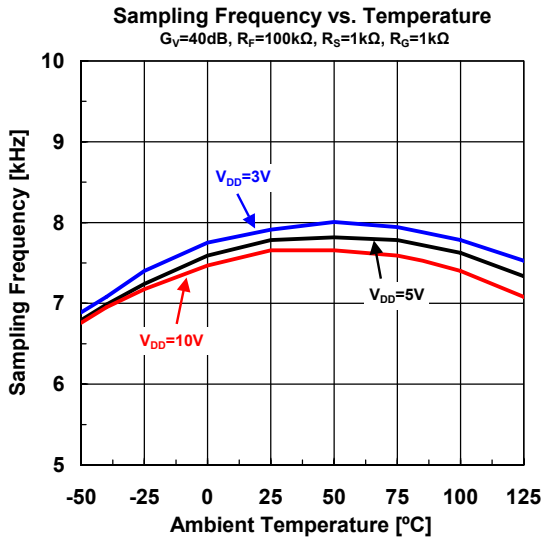
Pulse Response ($V_{DD}/V_{SS}=\pm 1.5V$, Load Capacitance)
 $V_{DD}/V_{SS}=\pm 1.5V$, $G_V=0dB$, $f=100kHz$,
 $V_{IN}=\pm 0.5V$, $R_L=10k\Omega$, $T_a=25^\circ C$



■ TYPICAL CHARACTERISTICS



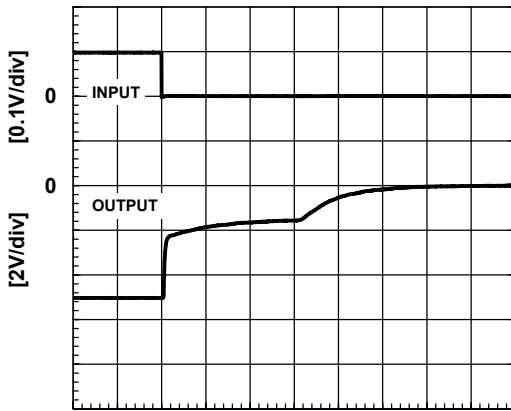
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS

Positive Overload Recovery Response

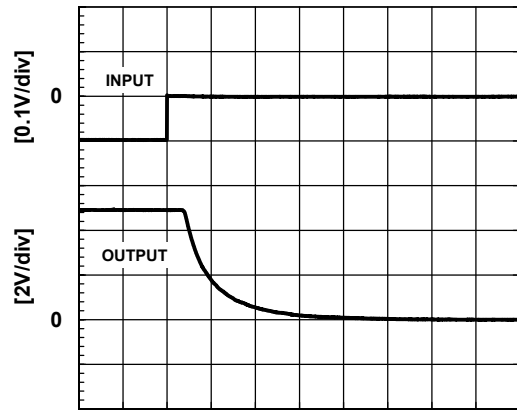
$V^+/V^-\approx\pm 5.0V$,
 $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

Negative Overload Recovery Response

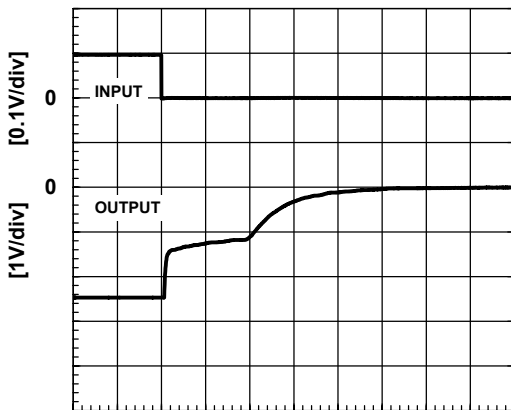
$V^+/V^-\approx\pm 5.0V$, $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

Positive Overload Recovery Response

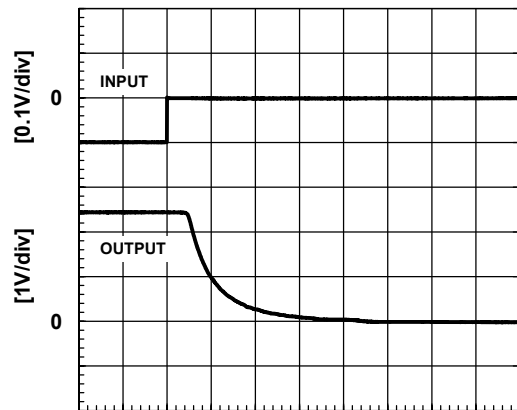
$V^+/V^-\approx\pm 2.5V$, $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

Negative Overload Recovery Response

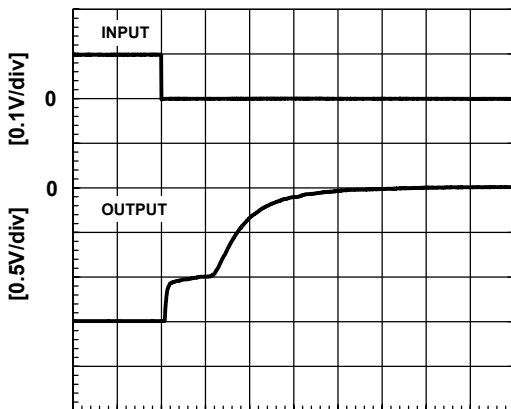
$V^+/V^-\approx\pm 2.5V$, $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

Positive Overload Recovery Response

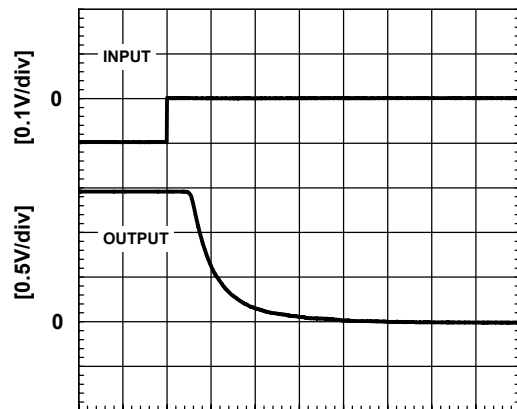
$V^+/V^-\approx\pm 1.5V$, $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

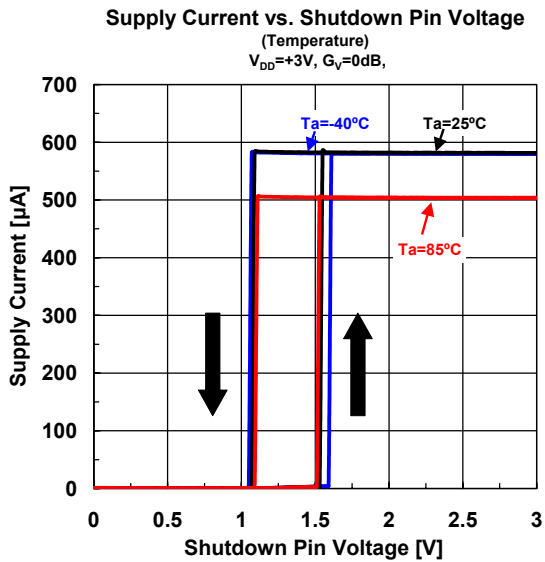
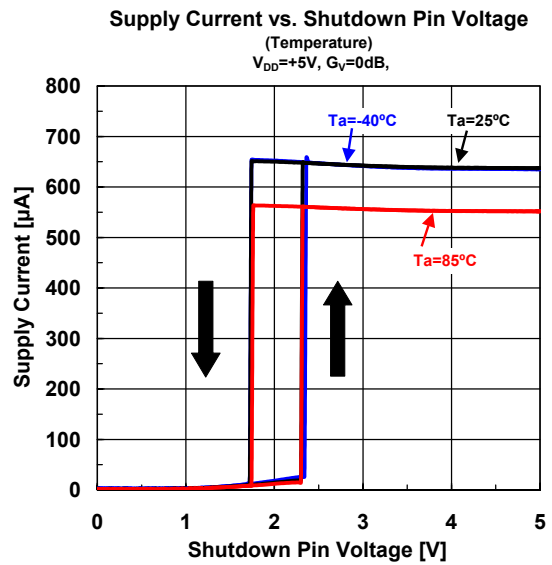
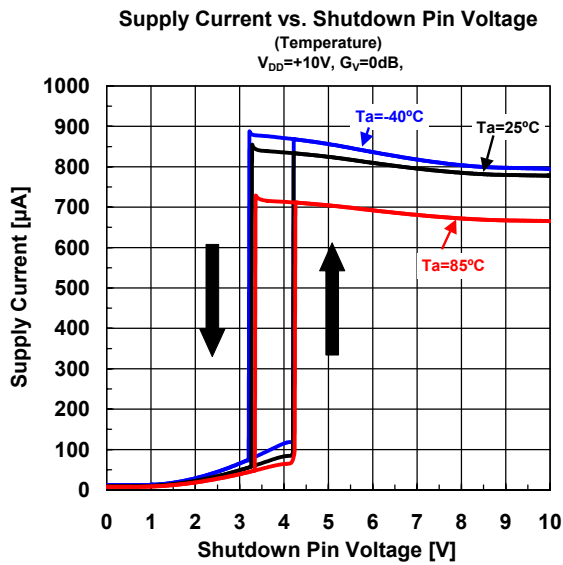
Negative Overload Recovery Response

$V^+/V^-\approx\pm 1.5V$, $A_v=100$, $R_1=1k\Omega$, $R_2=100k\Omega$



Time [0.1ms/div]

■ TYPICAL CHARACTERISTICS



[CAUTION]

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