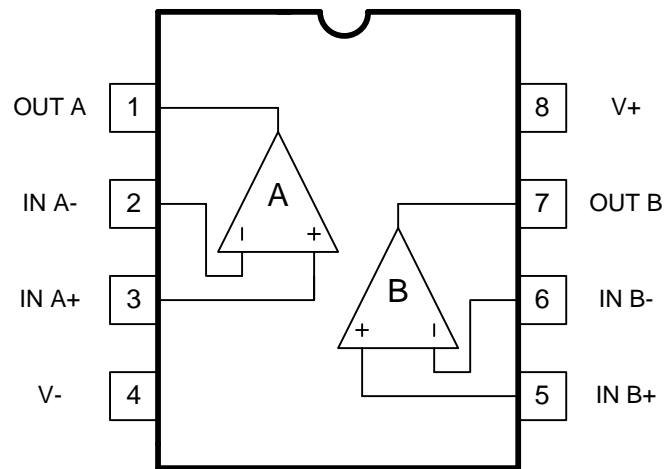


■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{SS}	2.7 ~ 5.5	V
Supply Voltage ($V^+ - V^-$)	V_{SS}	5.5	V
Differential Input Voltage	$V_{I(DIFF)}$	\pm Supply Voltage	
Output Short Circuit to V^+		(Note 1)	
Output Short Circuit to V^-		(Note 1)	
Infrared (15 sec)		215	$^{\circ}$ C
Maximum Junction Temperature (Note 2)	T_J	+150	$^{\circ}$ C
Operation Temperature Range	T_{OPR}	$-40 \leq T_J \leq 85$	$^{\circ}$ C
Storage Temperature Range	T_{STG}	-65 to 150	$^{\circ}$ C

Note: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but specific performances are not guaranteed. For guaranteed specifications and the test conditions, see the Electrical Characteristics.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance (Note 5)	SOP-8	190	$^{\circ}$ C/W
	MSOP-8	235	
	TSSOP-8	155	

■ 2.7V ELECTRICAL CHARACTERISTICS

All limits guaranteed for $T_J = 25^{\circ}$ C, $V^+ = 2.7$ V, $V^- = 0$ V, $V_{CM} = 1.0$ V, $V_{OUT} = V^+/2$ and $R_L > 1$ M Ω , unless otherwise specified.

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
DC CHARACTERISTICS						
Input Offset Voltage	V_{OS}			1.7	7	mV
Input Offset Voltage Average Drift	TCVos			5		μ V/ $^{\circ}$ C
Input Bias Current	$I_{I(BIAS)}$			11	250	nA
Input Offset Current	$I_{I(OFF)}$			5	50	nA
Common Mode Rejection Ratio	CMRR	$0V \leq V_{CM} \leq 1.7V$	50	63		dB
Power Supply Rejection Ratio	PSRR	$2.7V \leq V^+ \leq 5V$ $V_{OUT} = 1V$	50	60		dB
Input Common-Mode Voltage Range	V_{CM}	For CMRR ≥ 50 dB	-0.2	0		V
				1.9	1.7	V
Output Swing	V_{OUT}	$R_L = 10k\Omega$ to 1.35V	$V^+ - 100$	$V^+ - 10$		mV
				60	180	mV
Supply Current	I_{SS}	Both amplifiers		140	340	μ A
AC CHARACTERISTICS						
Gain-Bandwidth Product	GBWP	$C_L = 200$ pF		1		MHz
Phase Margin	$\Phi(T)$			60		Deg
Gain Margin	G(r)			10		dB
Input-Referred Voltage Noise	θ_{r1}	F=1kHz		46		$\frac{nV}{\sqrt{Hz}}$
Input-referred Current Noise	I_{r1}	F=1kHz		0.17		$\frac{pA}{\sqrt{Hz}}$

■ 5V ELECTRICAL CHARACTERISTICS

All limits guaranteed for $T_J = 25^\circ\text{C}$, $V^+ = 5\text{V}$, $V^- = 0\text{V}$, $V_{\text{CM}} = 2.0\text{V}$, $V_{\text{OUT}} = V^+/2$ and $R_L > 1\text{M}\Omega$, unless otherwise specified.

Boldface limits apply at the temperature extremes.

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT		
DC CHARACTERISTICS								
Input Offset Voltage	V_{OS}			1.7	7 9	mV		
Input Offset Voltage Average Drift	TCV_{OS}			5		$\mu\text{V}/^\circ\text{C}$		
Input Bias Current	$I_{\text{I(BIAS)}}$			15	250 500	nA		
Input Offset Current	$I_{\text{I(OFF)}}$			5	50 150	nA		
Common Mode Rejection Ratio	CMRR	$0\text{V} \leq V_{\text{CM}} \leq 4\text{V}$	50	65		dB		
Power Supply Rejection Ratio	PSRR	$2.7\text{V} \leq V^+ \leq 5\text{V}$ $V_{\text{OUT}} = 1\text{V}$ $V_{\text{CM}} = 1\text{V}$	50	60		dB		
Input Common-Mode Voltage Range	V_{CM}	For CMRR $\geq 50\text{dB}$	-0.2	0		V		
				4	4.2	V		
Large Signal Voltage Gain(Note 3)	A_v	$R_L = 2\text{k}\Omega$	15	100		V/mV		
			10					
Output Swing	V_{OUT}	$R_L = 2\text{k}\Omega \sim 2.5\text{V}$	V_{OH}	$V^+ - 300\text{ mV}$ $V^+ - 400\text{ mV}$	$V^+ - 40\text{ mV}$		mV	
			V_{OL}		120 mV	300 mV 400 mV	mV	
		$R_L = 10\text{k}\Omega \sim 2.5\text{V}$	V_{OH}	$V^+ - 100\text{ mV}$ $V^+ - 200\text{ mV}$	$V^+ - 10\text{ mV}$			mV
			V_{OL}		65	180 280	mV	
Output Short Circuit Current	I_{OUT}	Sourcing, $V_{\text{OUT}} = 0\text{V}$	5	60		mA		
		Sinking, $V_{\text{OUT}} = 5\text{V}$	10	160		mA		
Supply Current	I_{SS}	Both amplifiers		210	440 615	μA		
AC CHARACTERISTICS								
Slew Rate	SR	(Note 4)		1		V/ μs		
Gain-Bandwidth Product	GBWP	$C_L = 200\text{pF}$		1		MHz		
Phase Margin	$\Phi(T)$			60		Deg		
Gain Margin	G(r)			10		dB		
Input-Referred Voltage Noise	θ_{r1}	$f = 1\text{kHz}$		39		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$		
Input-referred Current Noise	I_{r1}	$f = 1\text{kHz}$		0.21		$\frac{\text{pA}}{\sqrt{\text{Hz}}}$		

Note1: Shorting output to V^- and shorting output to V^+ will adversely affect reliability.

Note2: The maximum power dissipation is a function of $T_J(\text{max})$, θ_{JA} and T_A . The maximum allowable power dissipation at any ambient temperature is $P_D = (T_J(\text{max}) - T_A) / \theta_{\text{JA}}$. All numbers apply for packages soldered directly into a PC board.

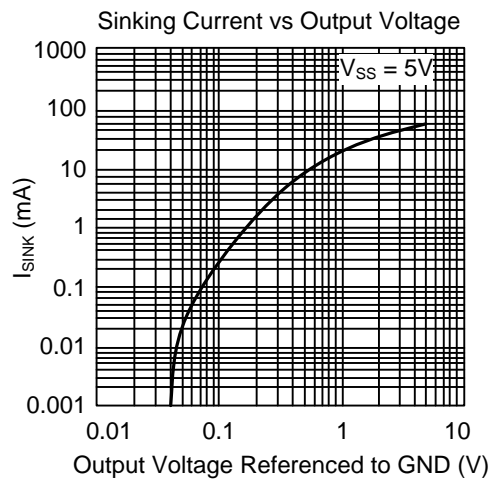
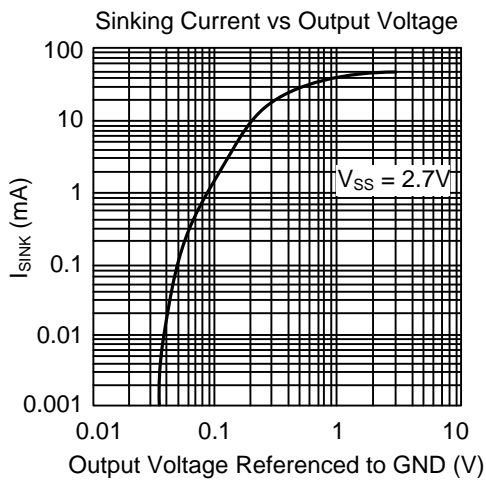
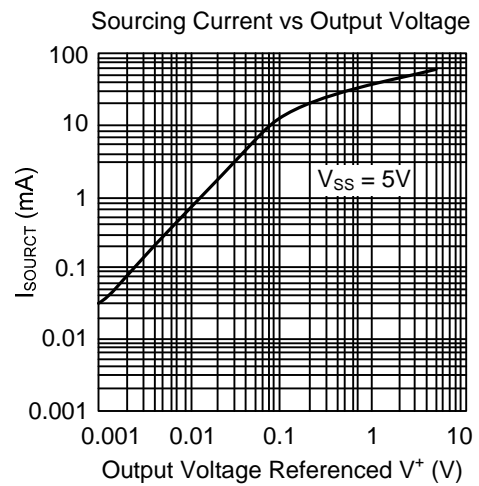
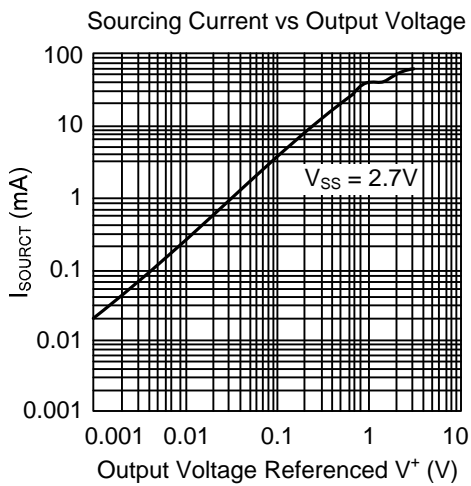
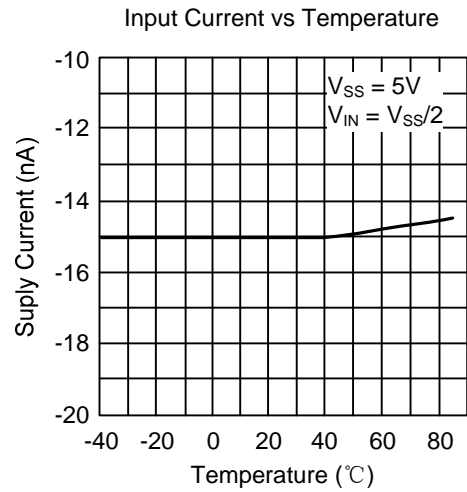
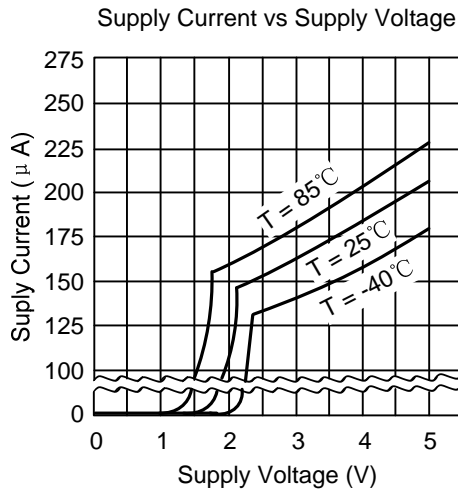
Note3: R_L is connected to V^- . The output voltage is $0.5\text{V} \leq V_{\text{OUT}} \leq 4.5\text{V}$.

Note4: Connected as voltage follower with 3V step input. Number specified is these lower of the positive and negative slew rates.

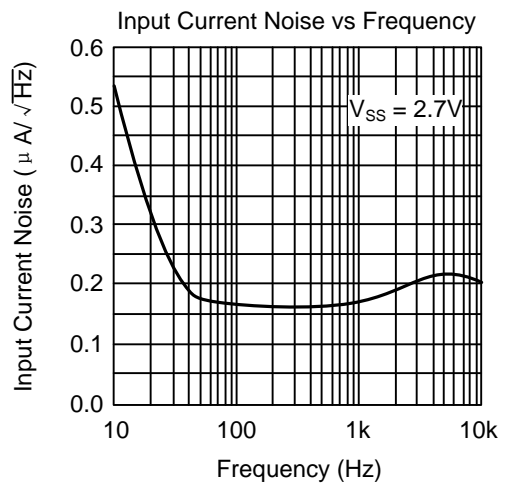
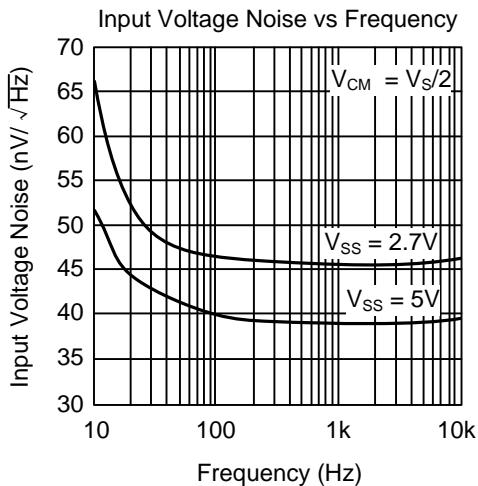
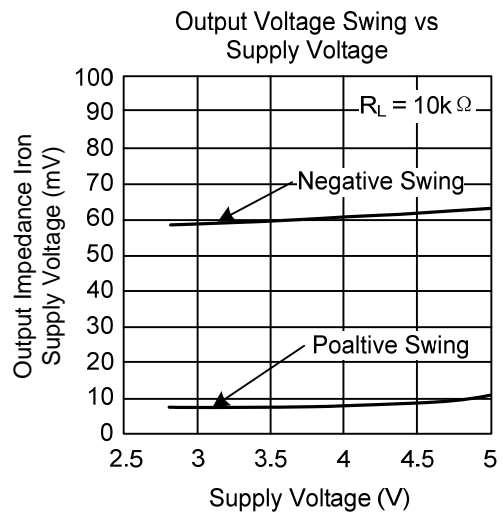
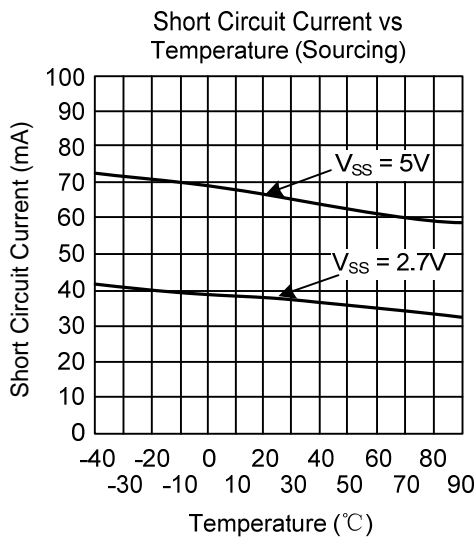
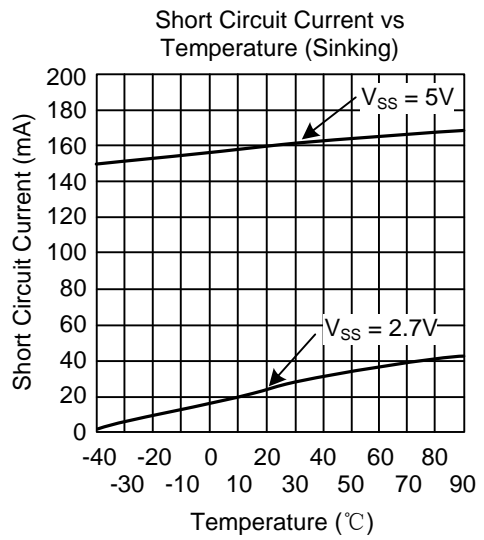
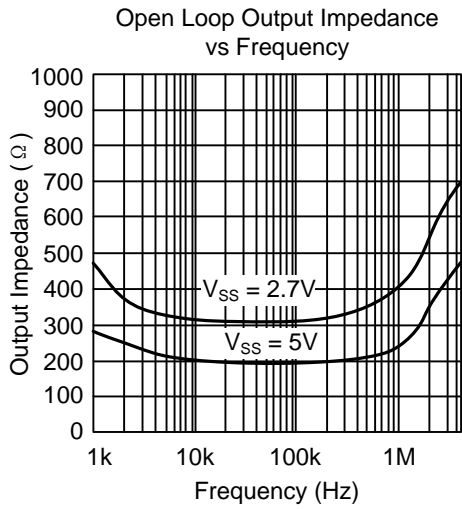
Note5: all numbers are typical, and apply for packages soldered directly note a PC board is still air.

■ TYPICAL CHARACTERISTICS

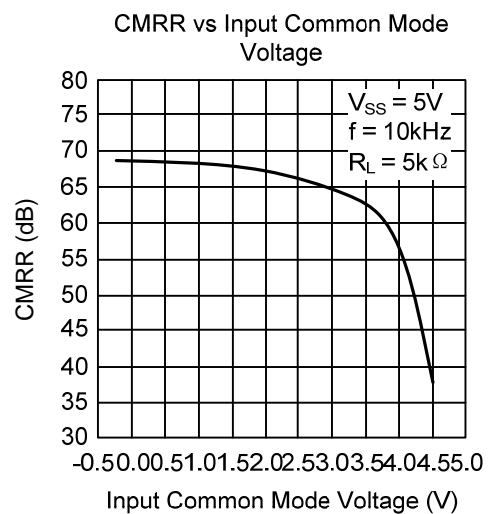
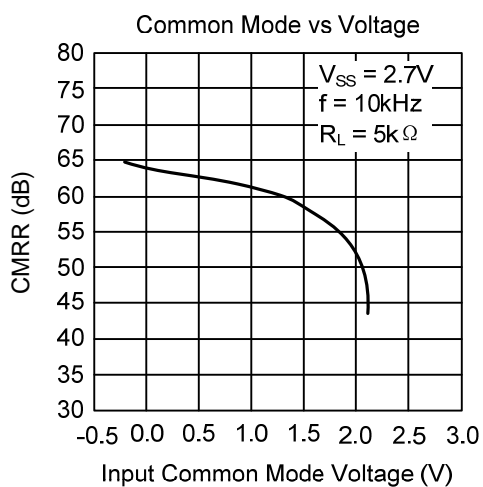
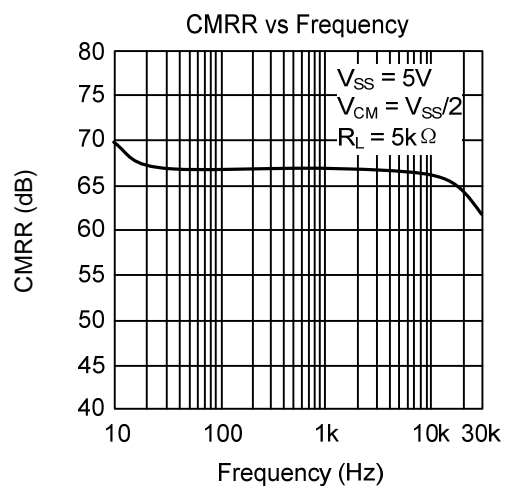
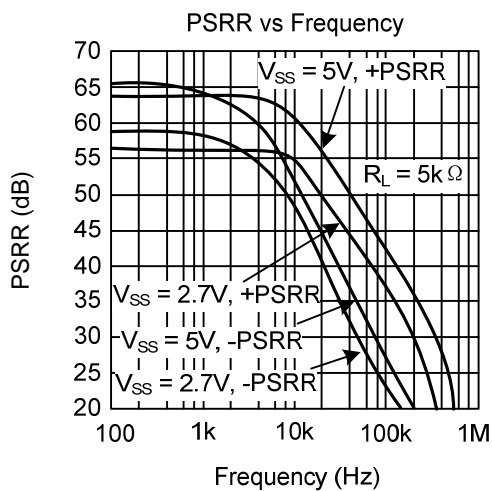
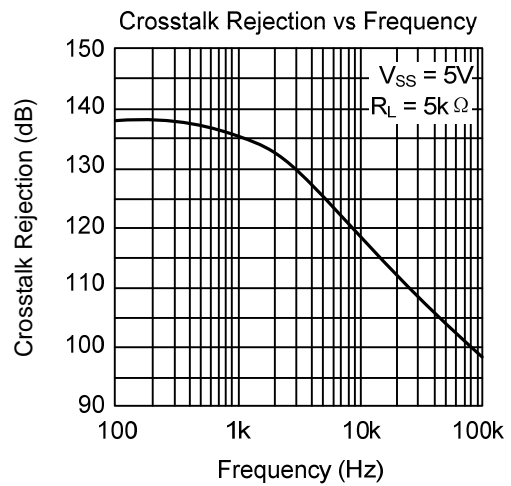
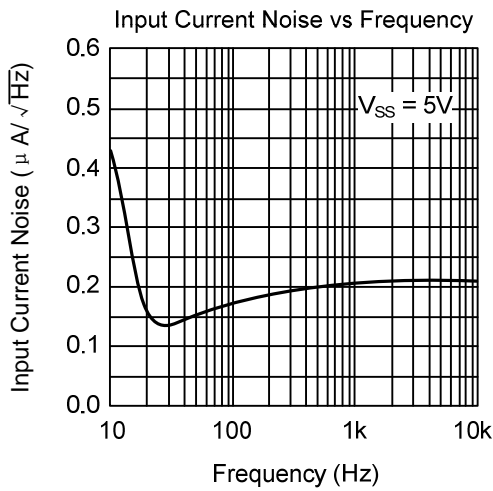
(Unless otherwise specified, $V_E=+5V$, single supply. $T_A=25^\circ C$)



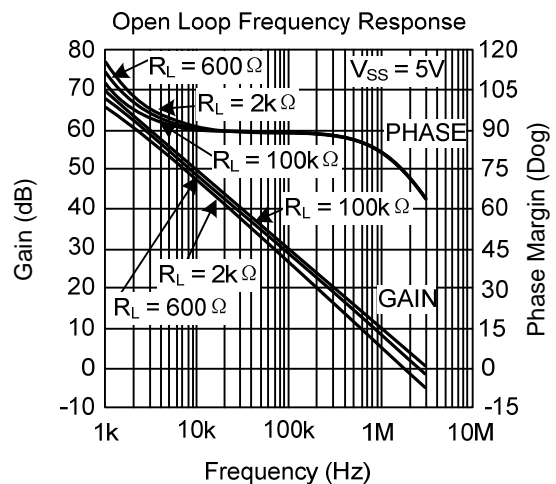
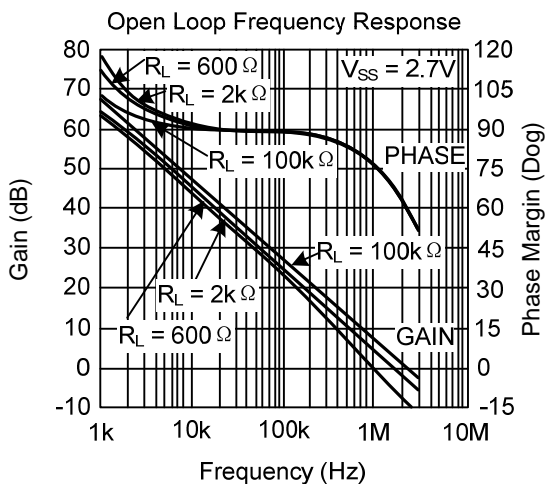
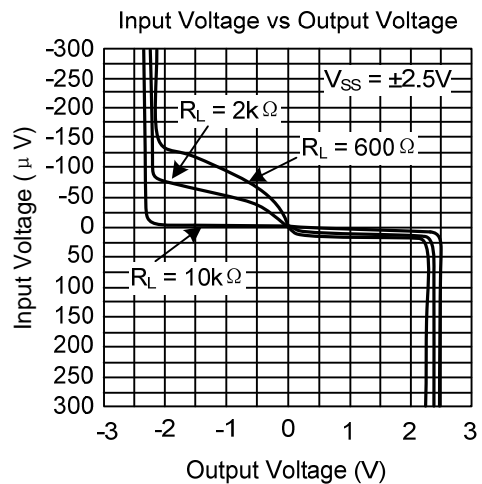
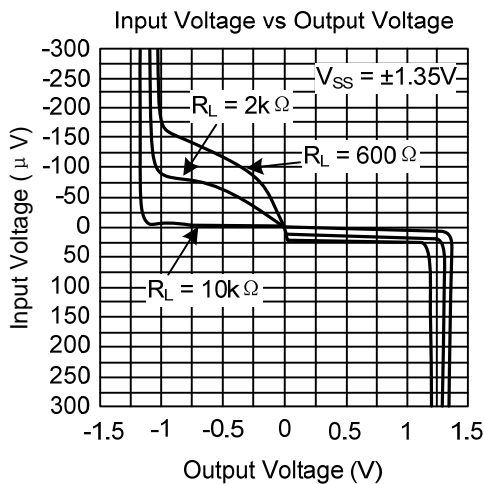
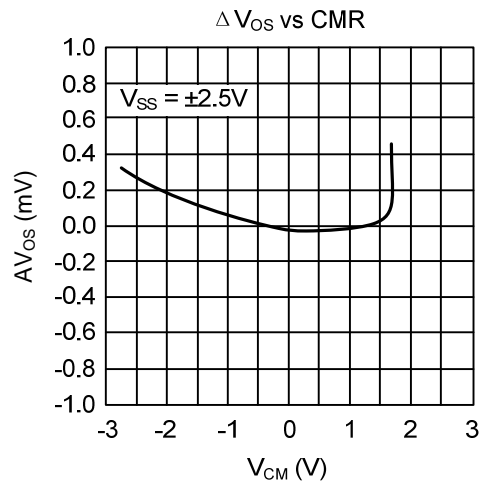
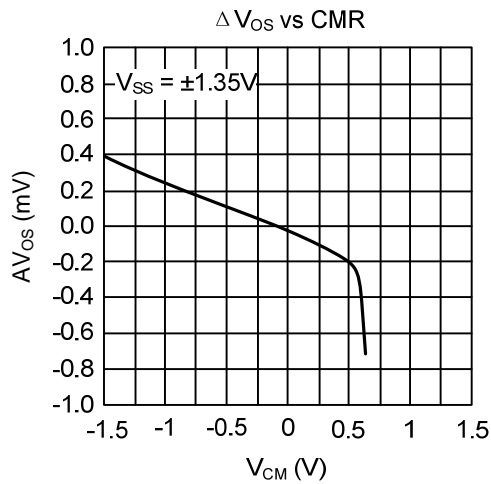
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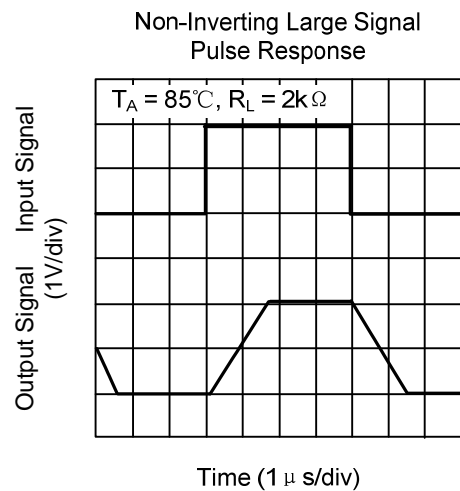
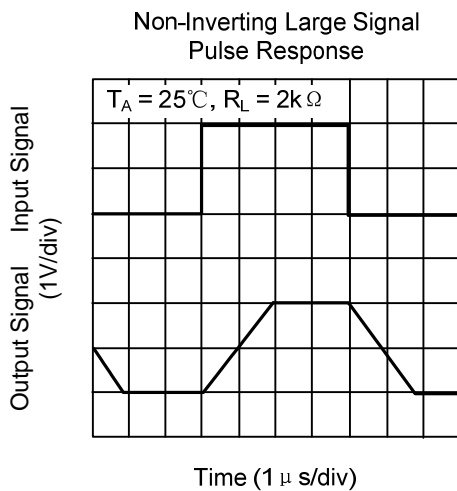
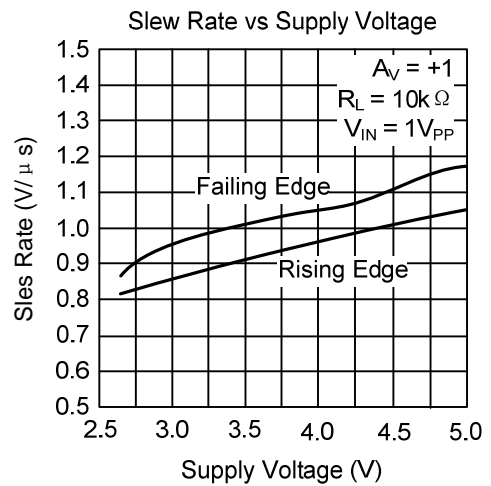
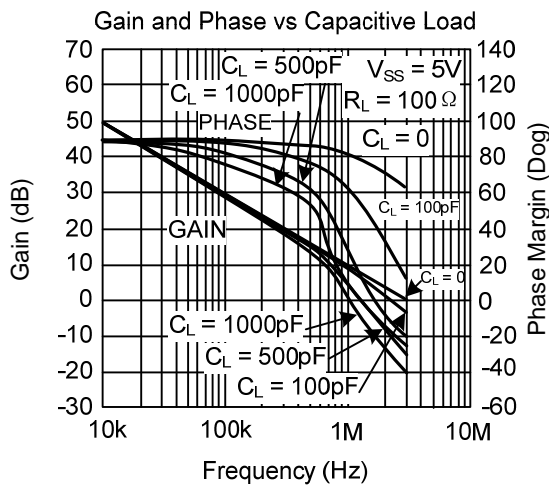
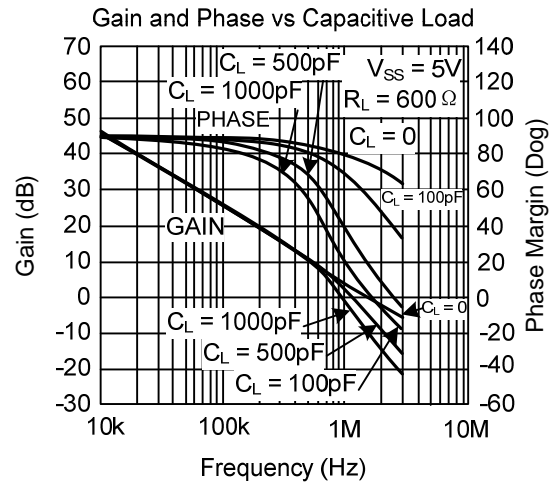
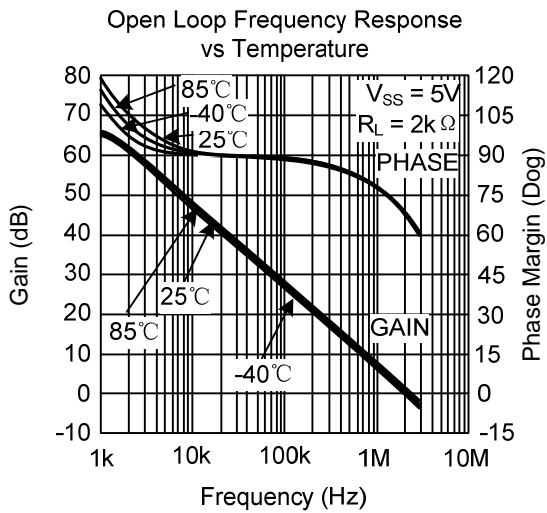
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■ TYPICAL CHARACTERISTICS(Cont.)

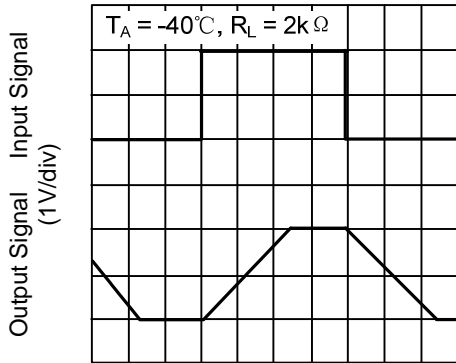


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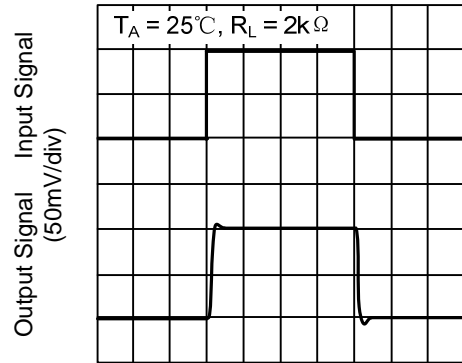
■ TYPICAL CHARACTERISTICS(Cont.)

Non-Inverting Large Signal Pulse Response



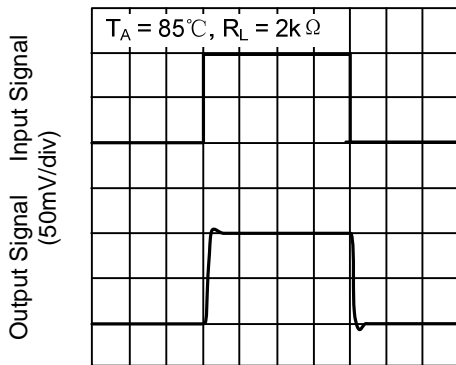
Time (1 μ s/div)

Non-Inverting Small Signal Pulse Response



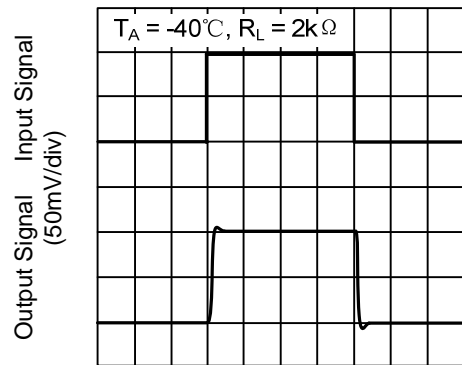
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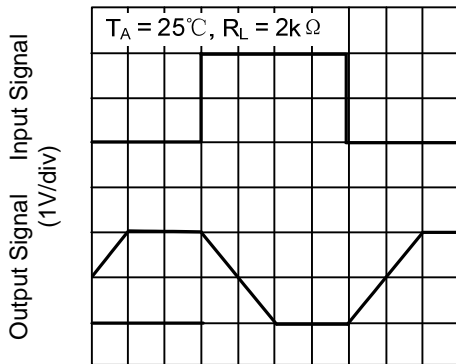
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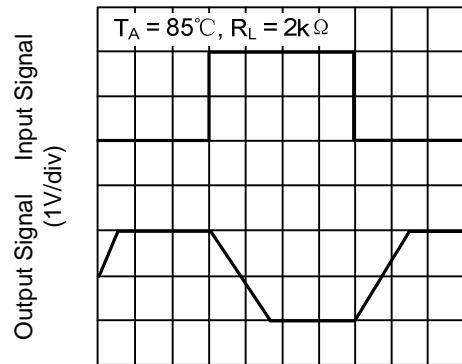
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Non-Inverting Large Signal Pulse Response



Time (1 μ s/div)

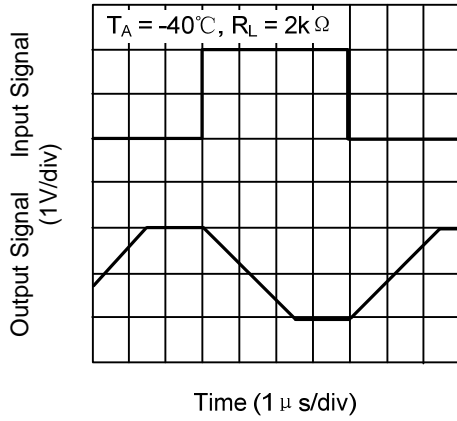
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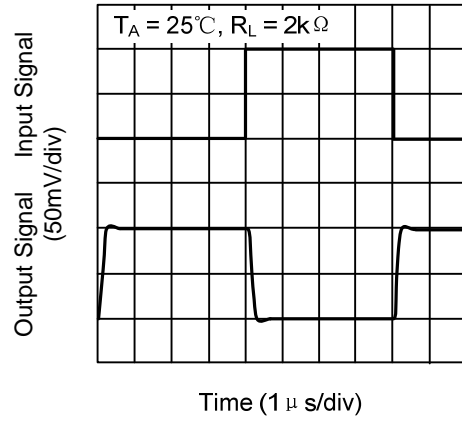
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■ TYPICAL CHARACTERISTICS(Cont.)

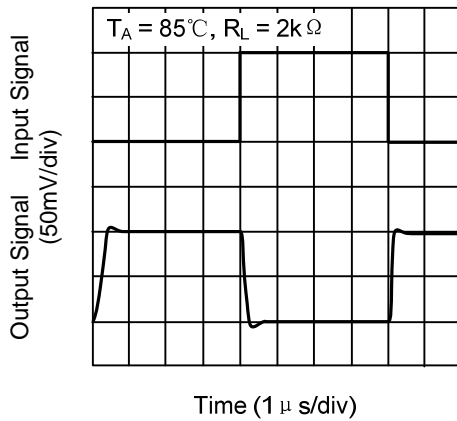
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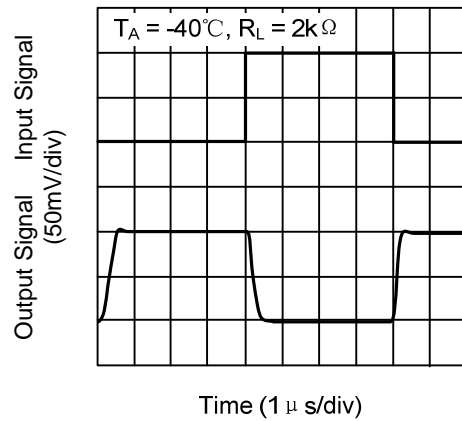
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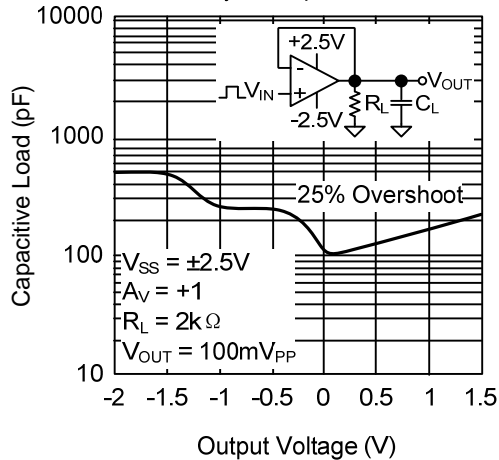
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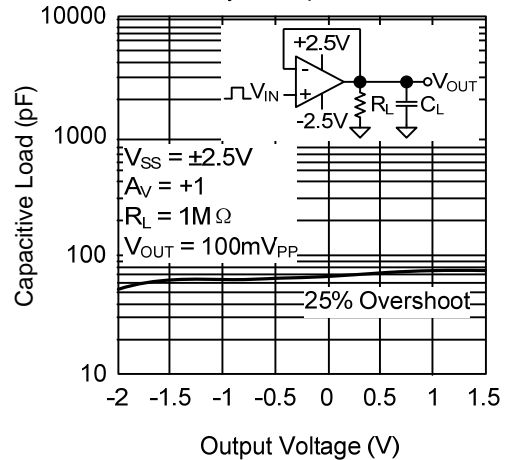
Non-Inverting Small Signal Pulse Response



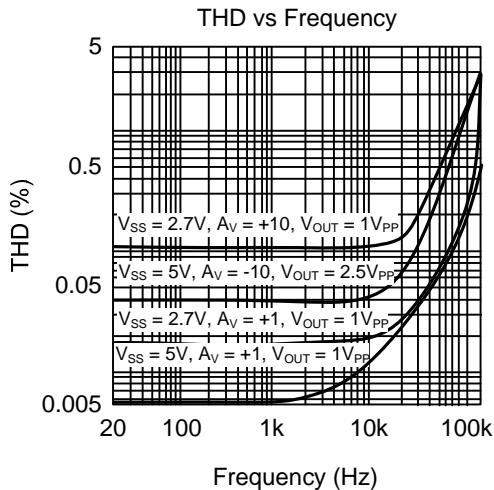
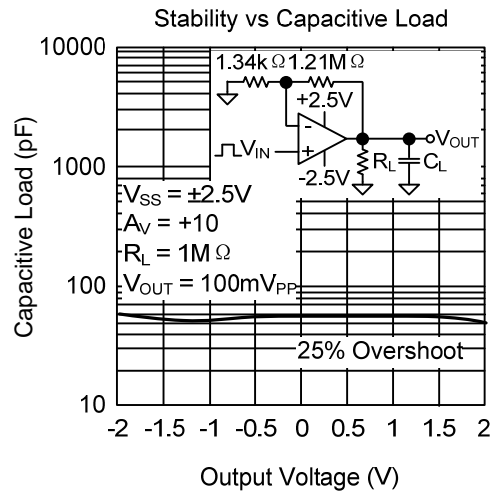
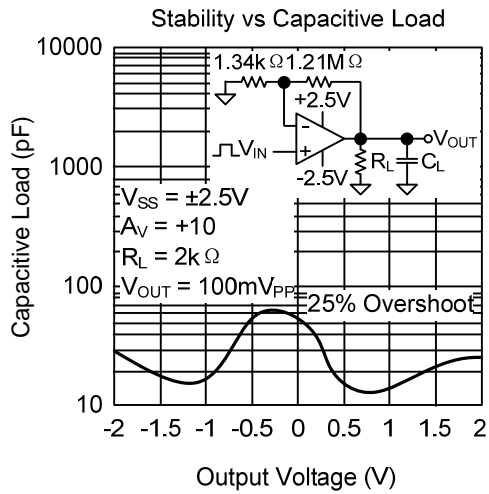
Stability vs Capacitive Load



Stability vs Capacitive Load



■ TYPICAL CHARACTERISTICS(Cont.)



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