UNIVERSITY OF CALIFORNIA AT BERKELEY
College of Engineering
Department of Electrical Engineering and Computer Sciences
EE105 Lab Experiments

Experiment 1: Non-Ideal Op-Amps, Lab Report

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Lab group: Monday 11-2 / Monday 2-5 / Monday 5-8 / Wednesday 9-12 / Thursday 8-11

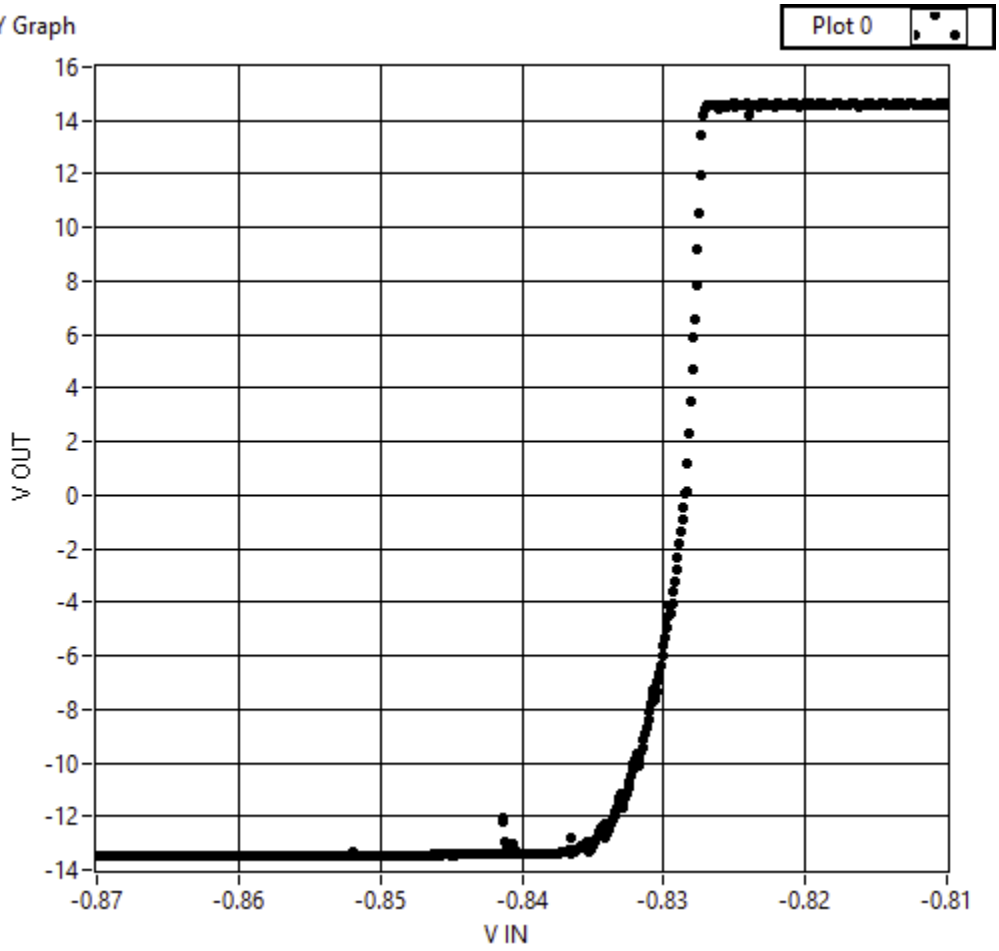
3. Lab

3.1. DC current consumption

Measured DC current consumption: 1.3 mA
Is it in the range defined in the datasheet? No

3.2. DC Open Loop Transfer Characteristic

Measured values of attenuator resistors: 100.2 kΩ, 98.2 Ω
Open loop gain A0: 11 672
Voltage offset Voffset ≡ −Vshift: 0.83 V
Plot of the DC Open Loop Transfer Characteristic:



3.3. Nulling the Offset Voltage

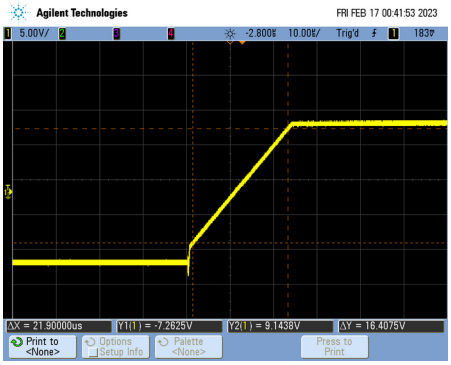
The resistance from -15V to pin1 of the opamp: 4.1 kΩ
The resistance from -15V to pin5 of the opamp: 6.5 kΩ

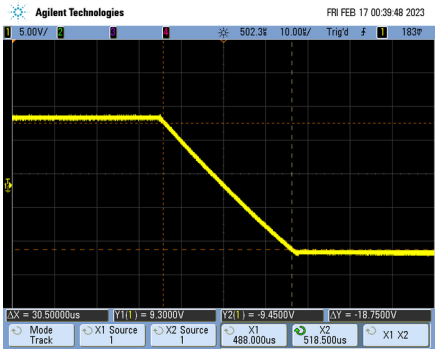
3.4. Slew Rate in Unity Gain Configuration

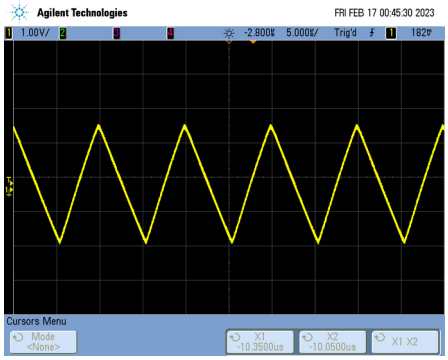
Rising Slew Rate: 0.75 V/µs
Falling Slew Rate: 0.65 V/µs
Is it reasonable based on the datasheet? Yes
Oscilloscope trace(s) of the slew rate measurements:

3.5. Gain and Bandwidth in Unity Gain Configuration

Based on your slew rate measurements, for 100KHz input at what amplitude the amplifier will start slewing? 1.2 V rising, 1 V falling
Oscilloscope trace of the slewing output sine signal when doubling this amplitude:







Gain A0: 1.06
Bandwidth f3dB: 800 kHz

3.6. Gain and Bandwidth in Non-Inverting Amplifier Configuration

R=10kΩ	Gain A0: 11
	Bandwidth f3dB: 75 kHz
R=100kΩ	Gain A0: 109
	Bandwidth f3dB: 10 kHz

Plot of magnitude response of the voltage gain in dB for the two non-inverting amplifier circuits and the circuit from Problem 3.5 on the same plot: