

Device Modeling Report

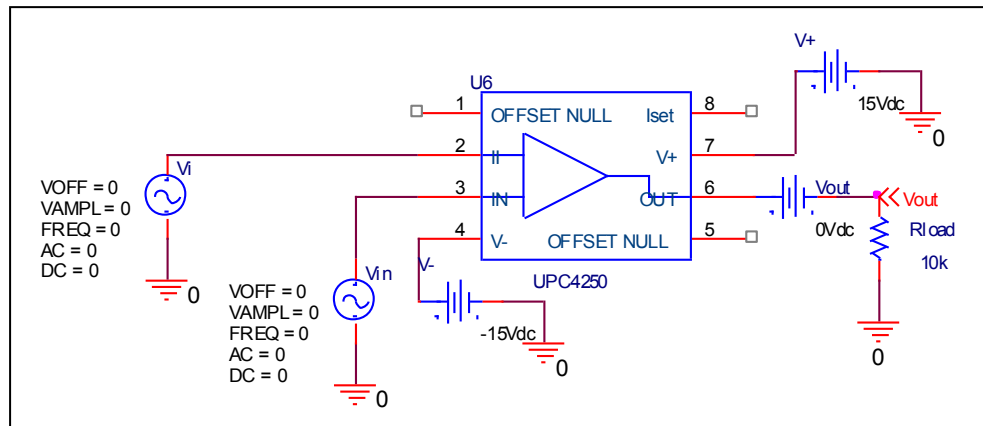
COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER
PART NUMBER:uPC4250G2
MANUFACTURER: NEC ELECTRONICS



Bee Technologies Inc.

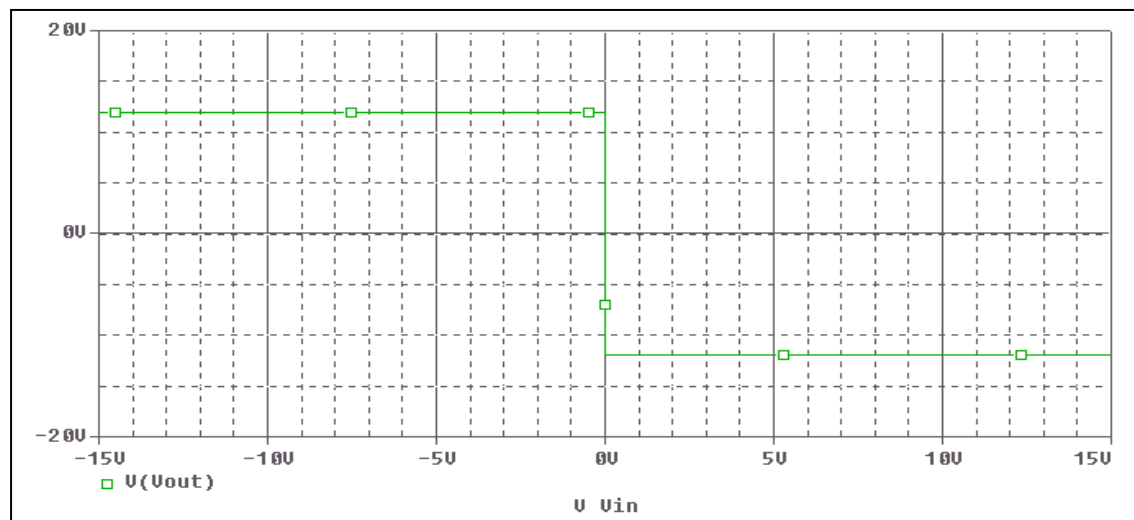
Output Voltage Swing, +Vout and -Vout

Evaluation circuit



The output voltage change of Opamp(open loop) when input DC voltage (V_{in} - V_i) is changed with the evaluation circuit is simulated

Simulation result

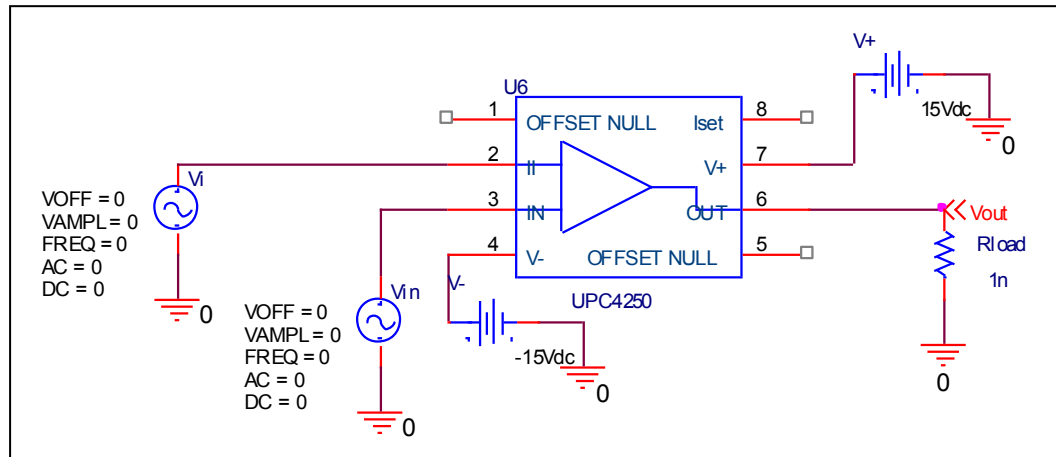


These simulation results are compared with $\pm V_{out}$

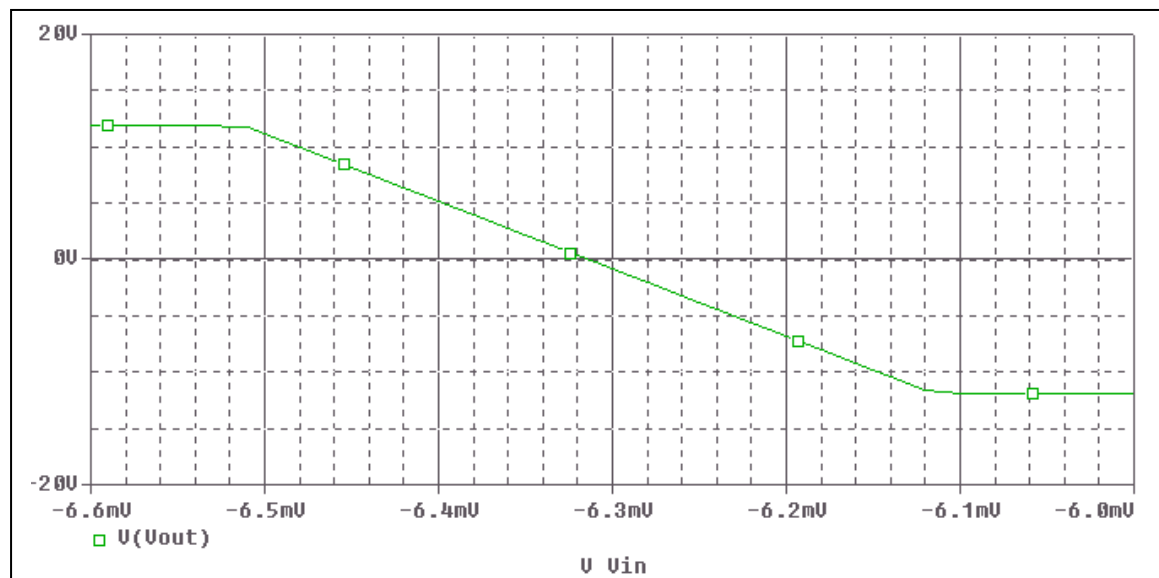
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	12	11.983	0.141666
-Vout(V)	12	-11.983	0.141666

Input Offset Voltage

Evaluation circuit



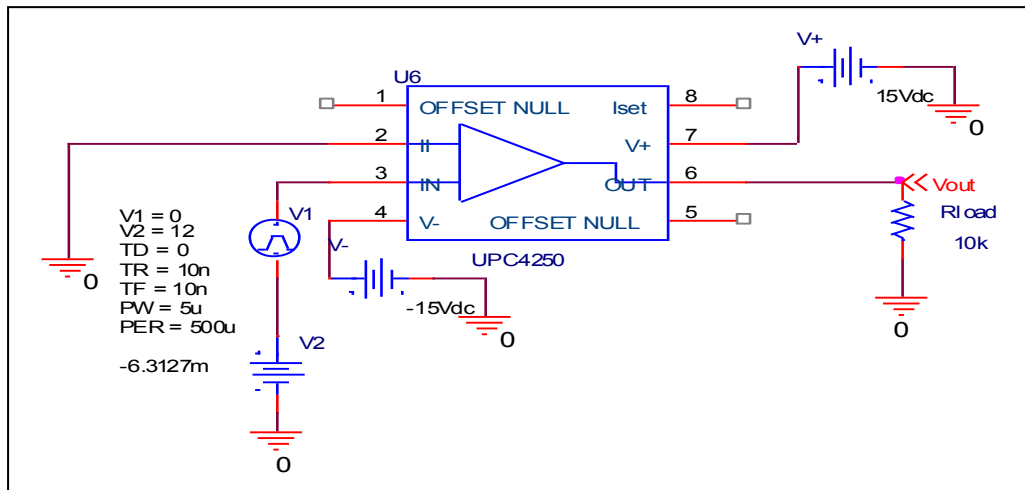
Simulation result



Vos	Measurement		Simulation		Error	
	6	mV	6.3127	mV	5.2346	%

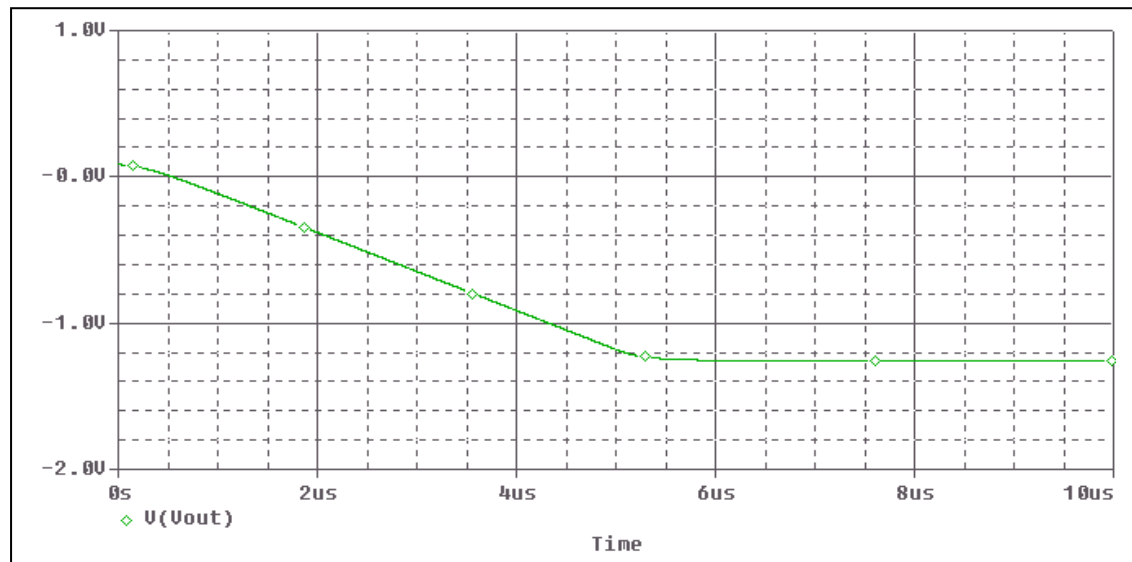
Slew Rate, +SR, -SR

Evaluation circuit



The output voltage change versus time (slope) of op-amp when input electric step voltage.

Simulation result

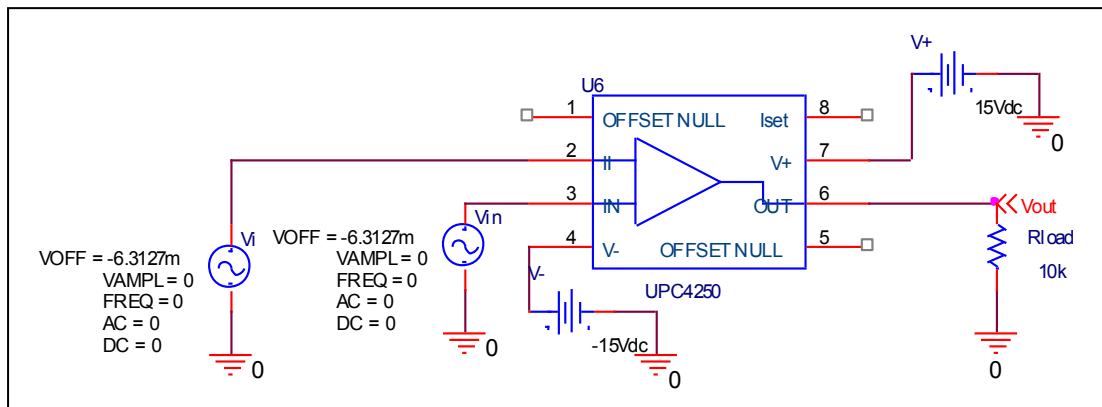


Output voltage change 0.2V in 1 us (If no good can change **C2** of Spice Model Editor)

Slew Rate(v/us)	Data sheet	Simulation	%Error
		0.2	0.19999

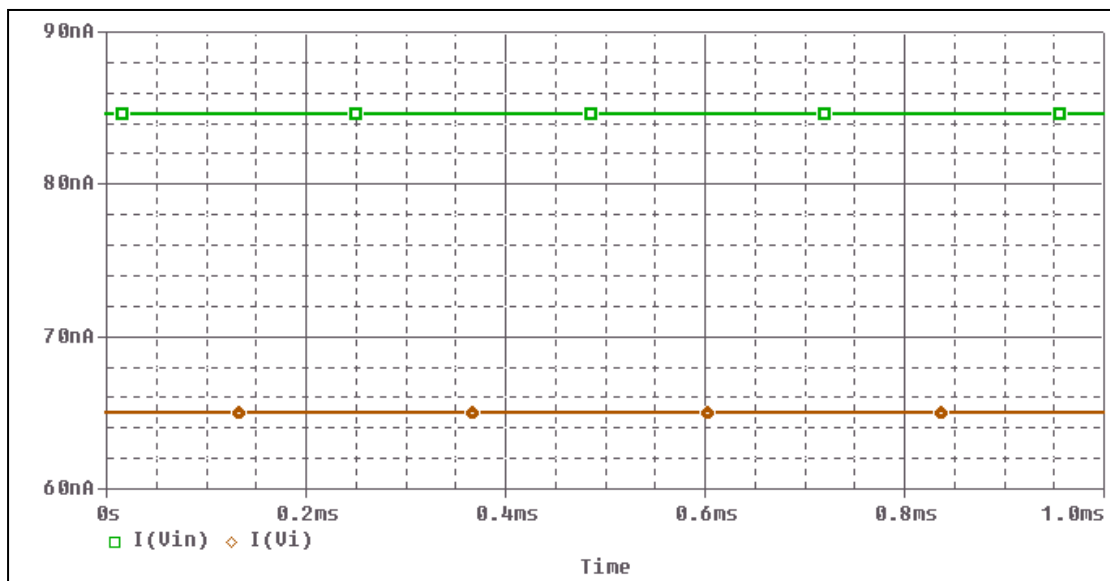
Input current Ib, Ibos

Evaluation circuit



The input offset current when supply voltage to op-amp

Simulation result

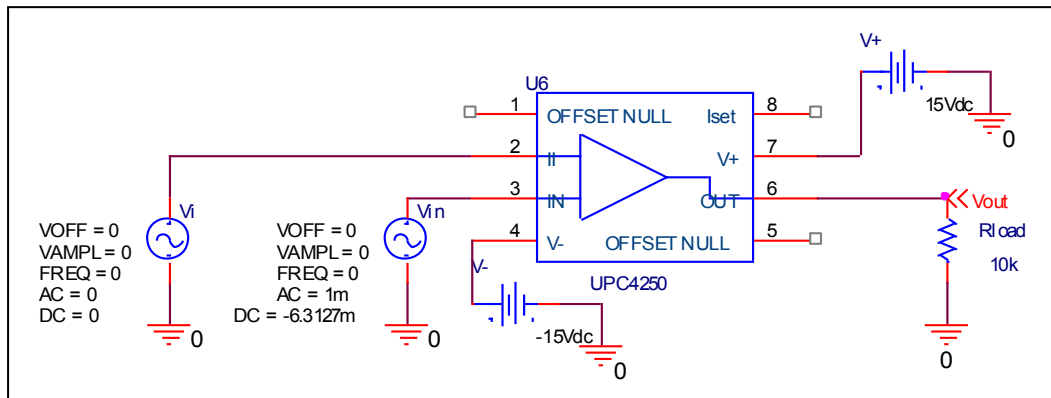


$$I(Vin) = 84.573\text{mA}, I(Vi) = 64.970\text{mA} : I_b = (I(Vin) + I(Vi))/2, I_{bos} = 19.603\text{mA}$$

	Data sheet	Simulation	%Error
Ib(mA)	75	74.7715	0.304666667
Ibos(mA)	20	19.603	1.985

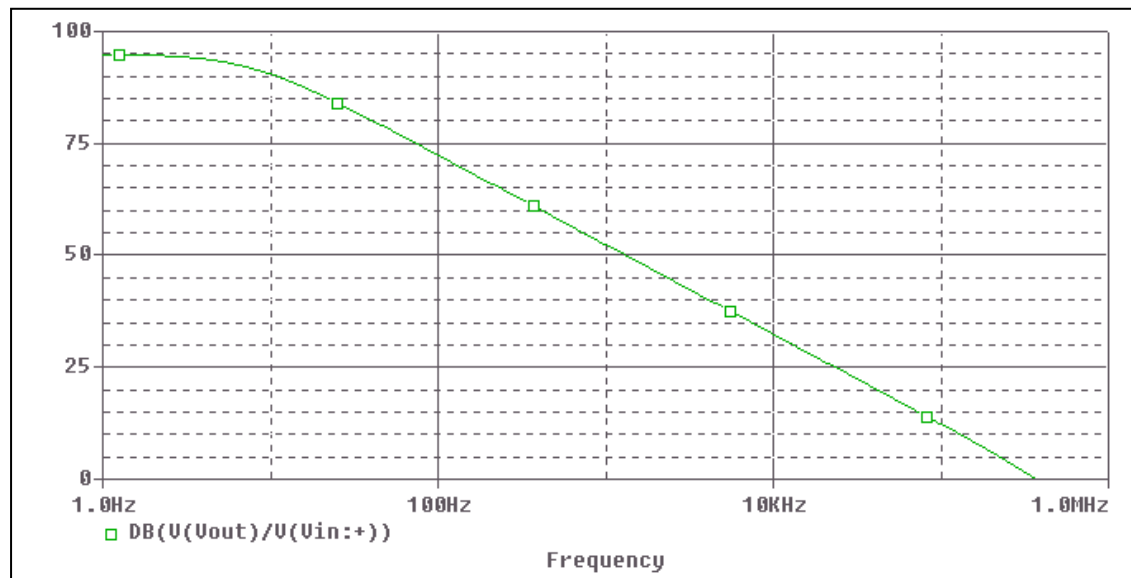
Open Loop Voltage Gain vs. Frequency , Av-dc, f-0dB

Evaluation circuit



The open loop voltage gain of op-amp when supply AC input voltage 0.35MHz frequency

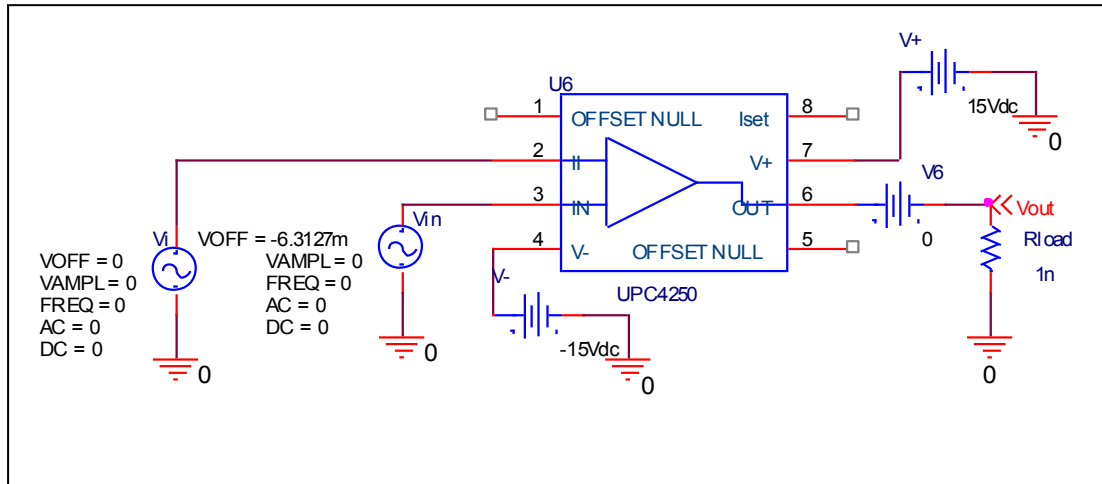
Simulation result



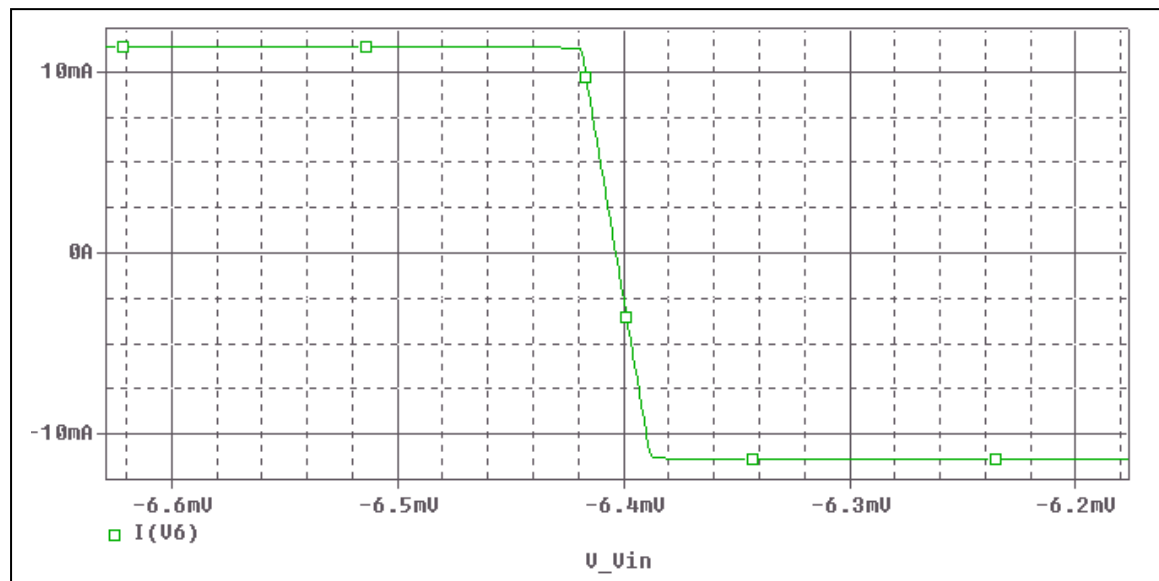
	Data sheet	Simulation	%Error
f-0dB(MHz)	0.35	0.37	5.7
Av-dc	60000(min)	55526	7.4566

Output Short Circuit Current - Ios

Evaluation circuit



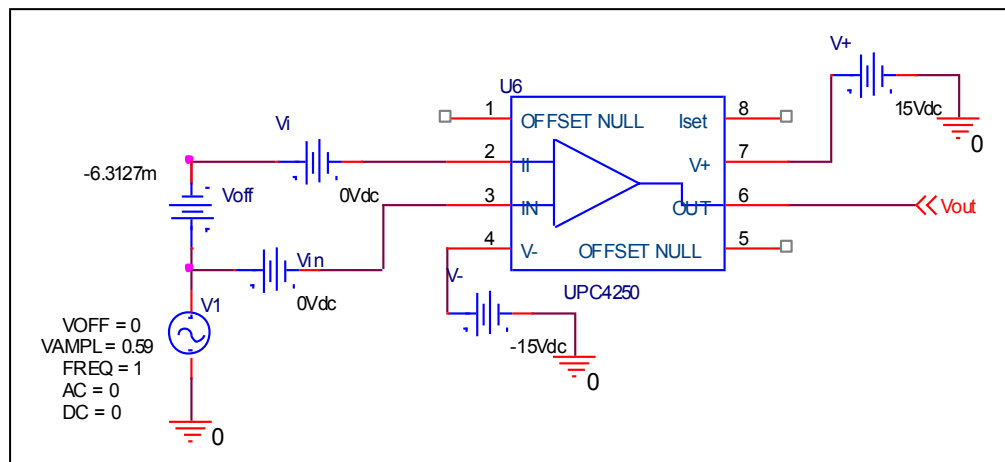
Simulation result



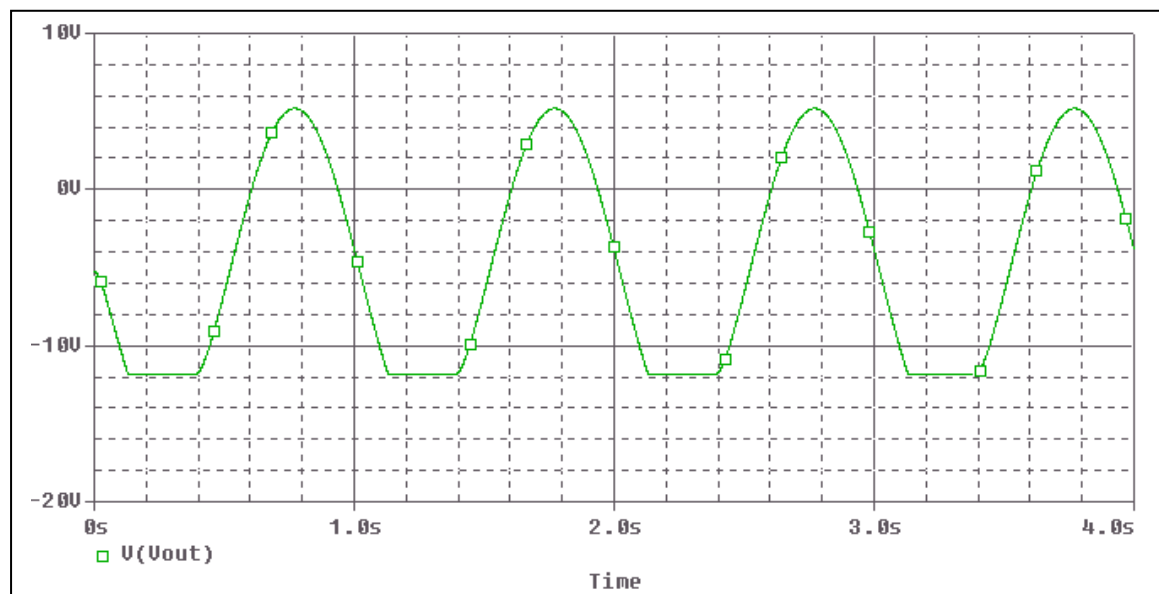
Short Circuit Current	Data sheet	Simulation	%Error
		11mA	11.43mA

Common-Mode Rejection Voltage gain

Evaluation circuit



Simulation result



Common mode gain=17.066/1

Common Mode Reject Ratio=55526/17.066=3253.6

CMRR	Data sheet	Simulation	%Error
		3162.3	3253.6