

Device Modeling Report

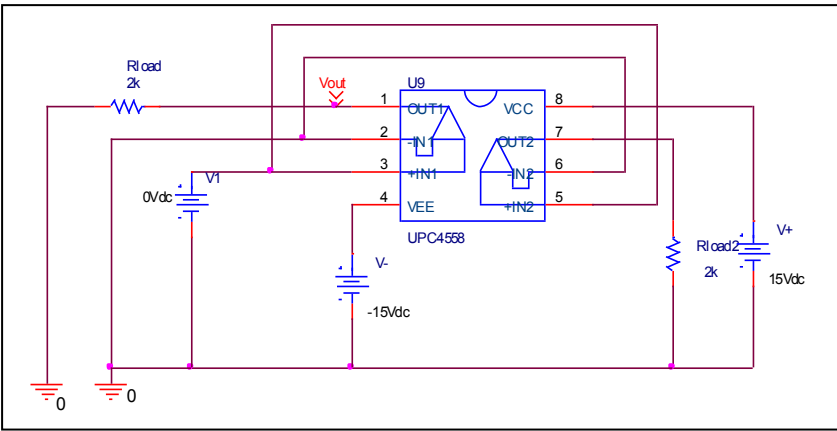
COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER
PART NUMBER:uPC4558C
MANUFACTURER:NEC ELECTRONICS



Bee Technologies Inc.

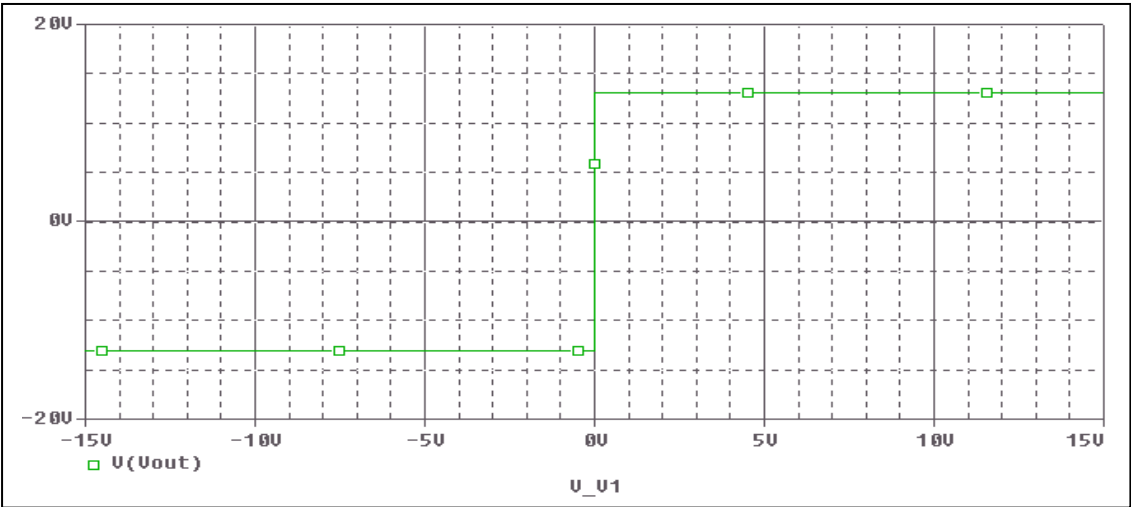
Output Voltage Swing, +Vout and –Vout

Evaluation circuit



The output voltage change of Opamp(open loop) when input DC voltage (Vin -Vi) is changed with the evaluation circuit is simulated

Simulation result

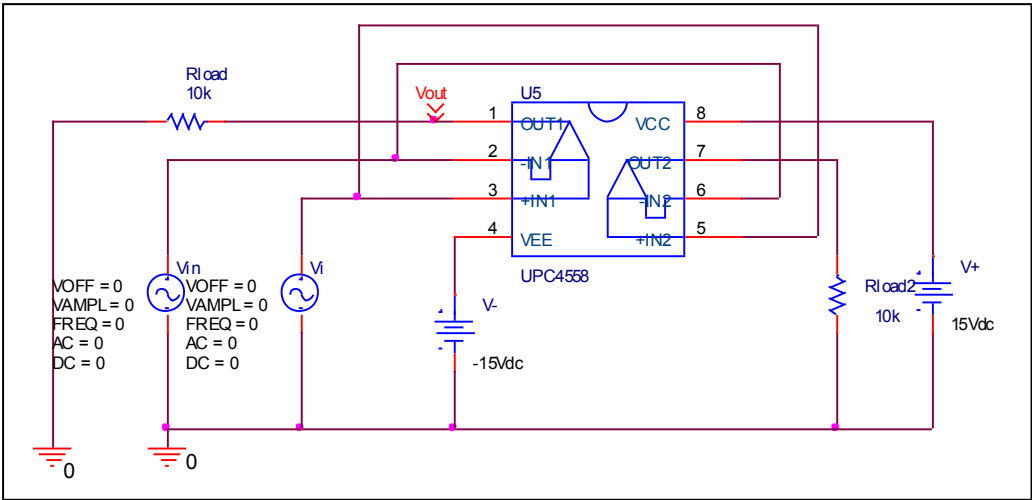


These simulation results are compared with $\pm V_{out}$

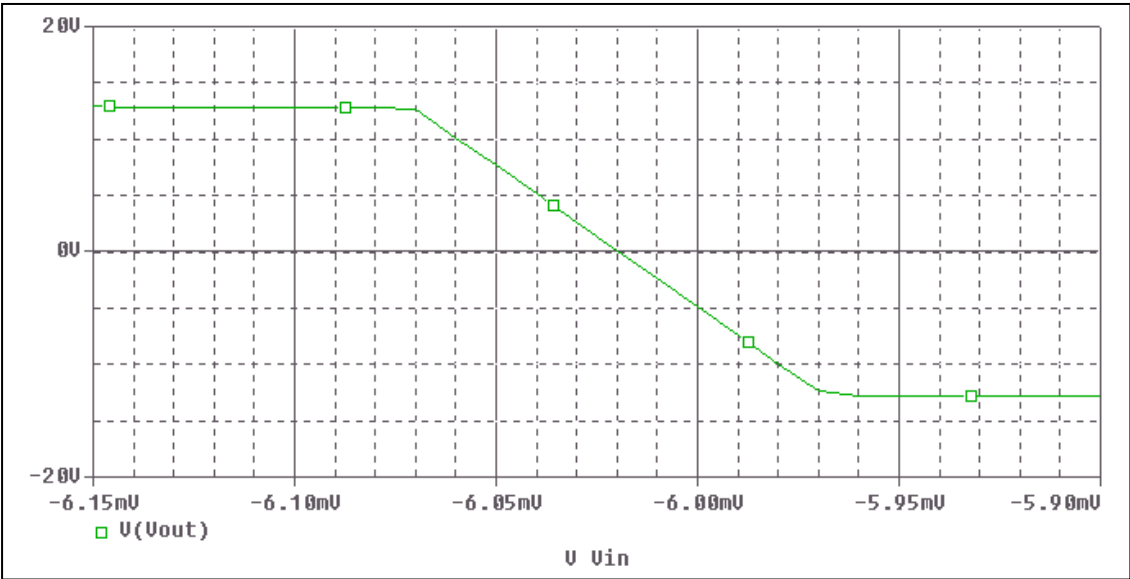
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	+13	+13.021	0.161
-Vout(V)	-13	-13.021	0.161

Input Offset Voltage

Evaluation circuit



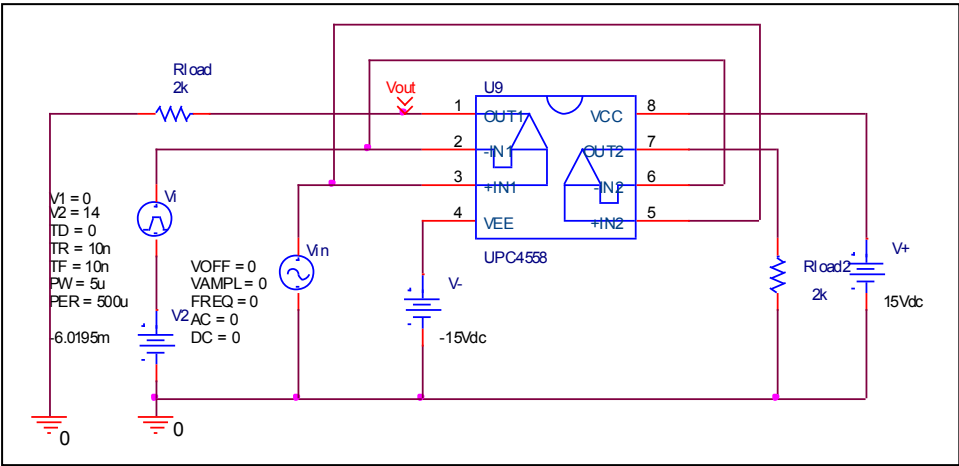
Simulation result



	Measurement		Simulation		Error	
Vos	6	mV	6.0195	mV	0.325	%

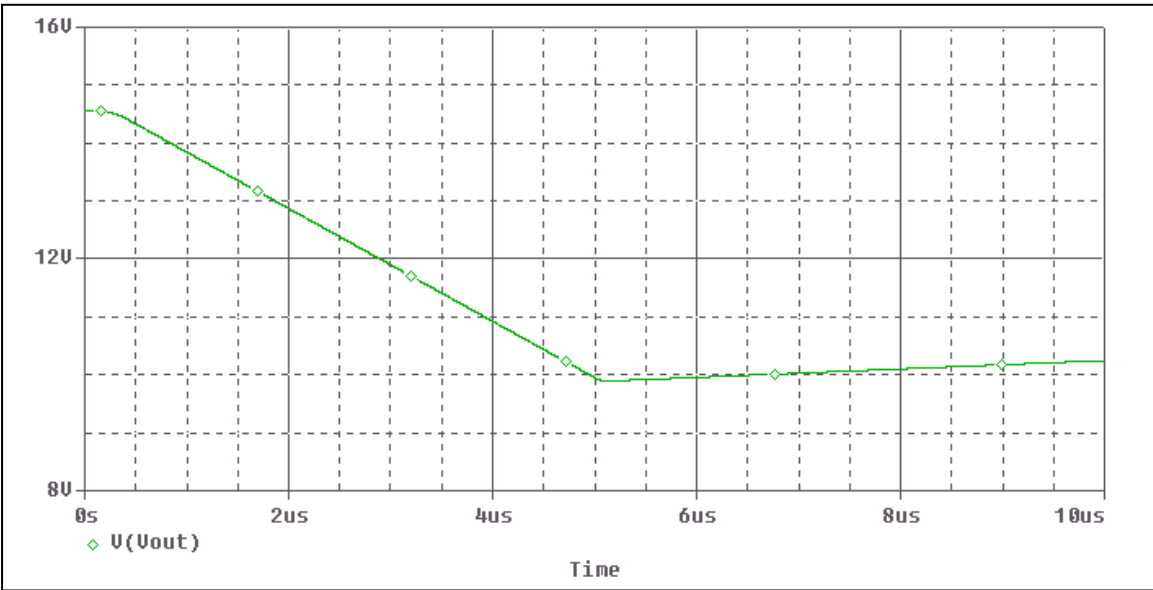
Slew Rate, +SR, -SR

Evaluation circuit



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

Simulation result

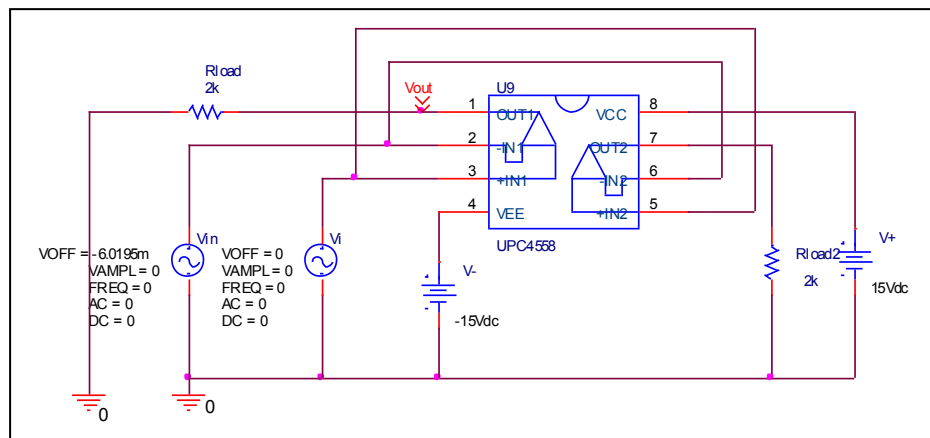


Output voltage change 1V in 1 us (If no good can change **C2** of Spice Model Editor)

Slew Rate(v/us)	Data sheet	Simulation	%Error
	1	0.973	2.7

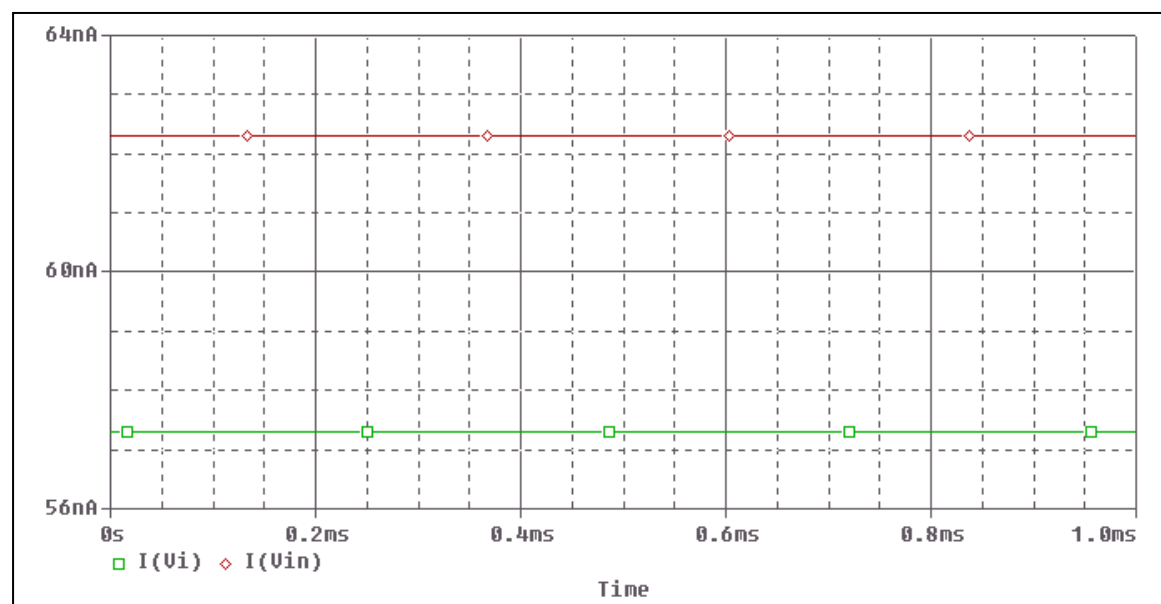
Input current I_b , I_{bos}

Evaluation circuit



The input offset current when supply voltage to op-amp

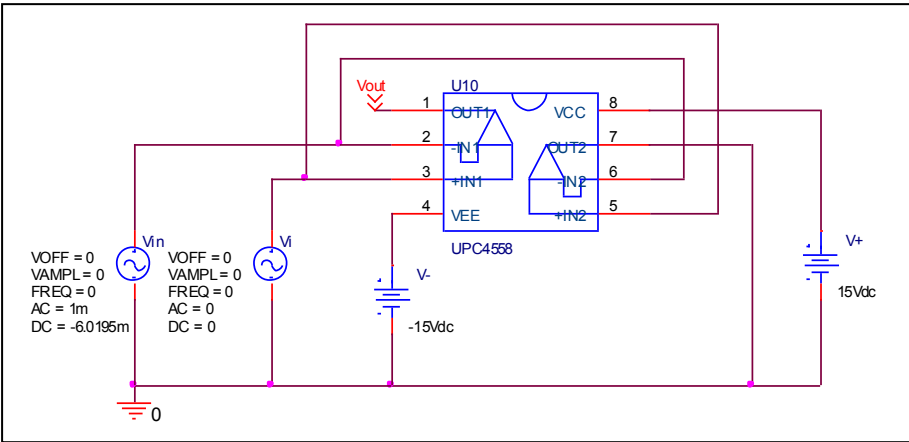
Simulation result



	Data sheet	Simulation	%Error
I_b(nA)	60	59.8	0.333
I_{bos}(nA)	5	5.02	0.4

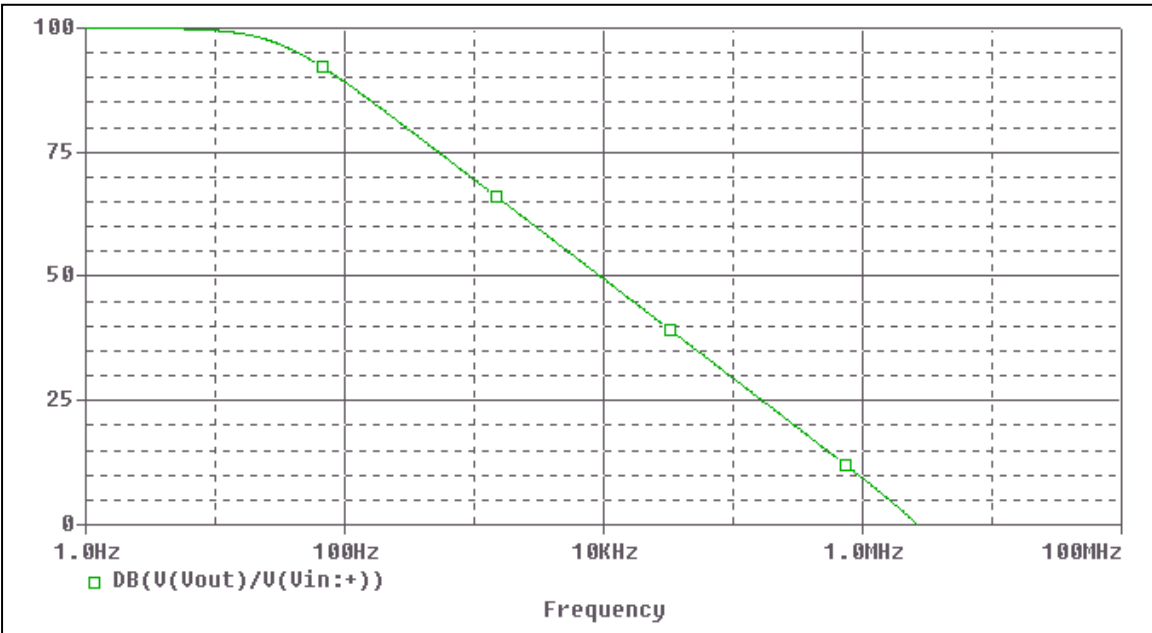
Open Loop Voltage Gain vs. Frequency , Av-dc, f-0dB

Evaluation circuit



The open loop voltage gain of op-amp when supply AC input voltage 3MHz frequency

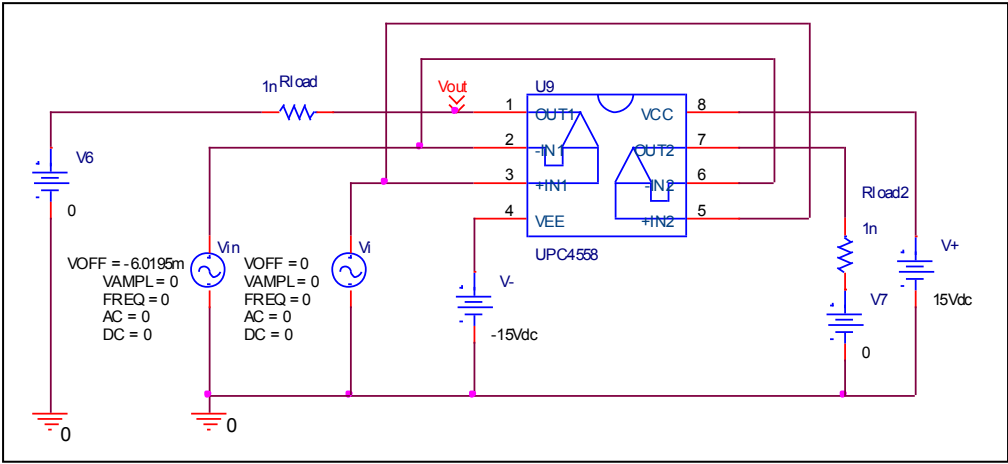
Simulation result



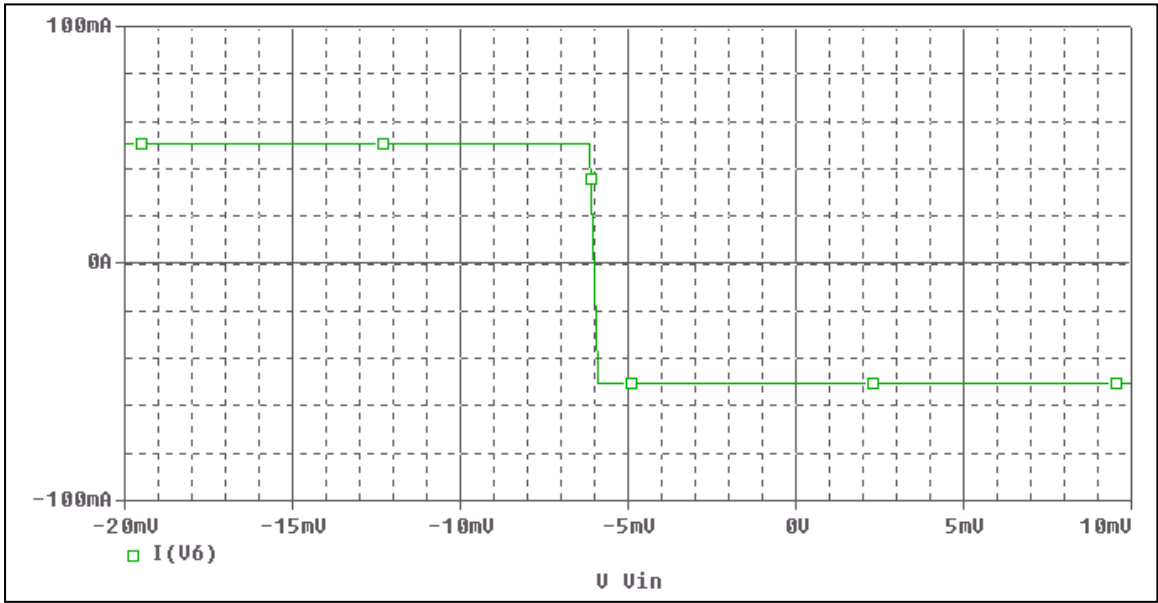
	Data sheet	Simulation	%Error
f-0dB(MHz)	3	2.728	9.06
Av-dc	100000	99655	0.345

Output Short Circuit Current - Ios

Evaluation circuit



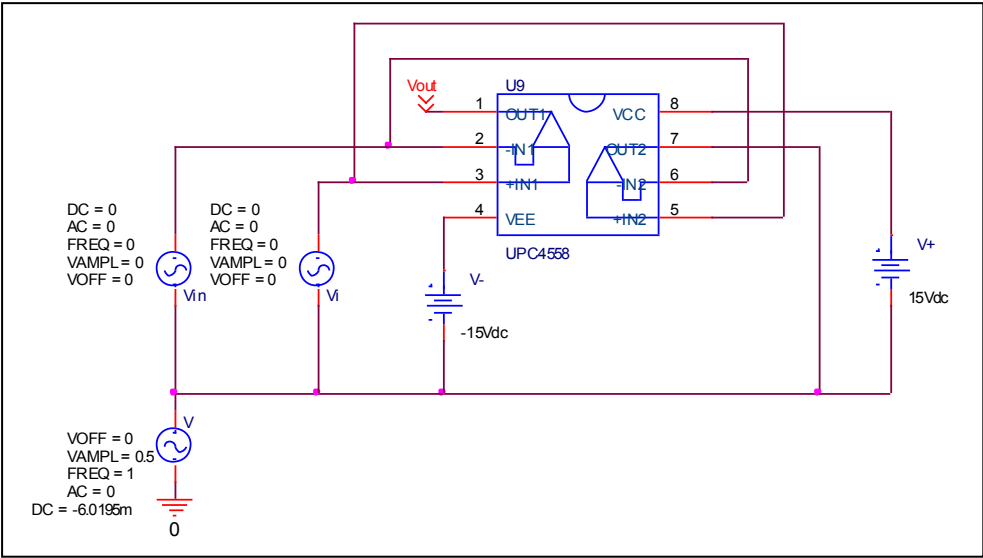
Simulation result



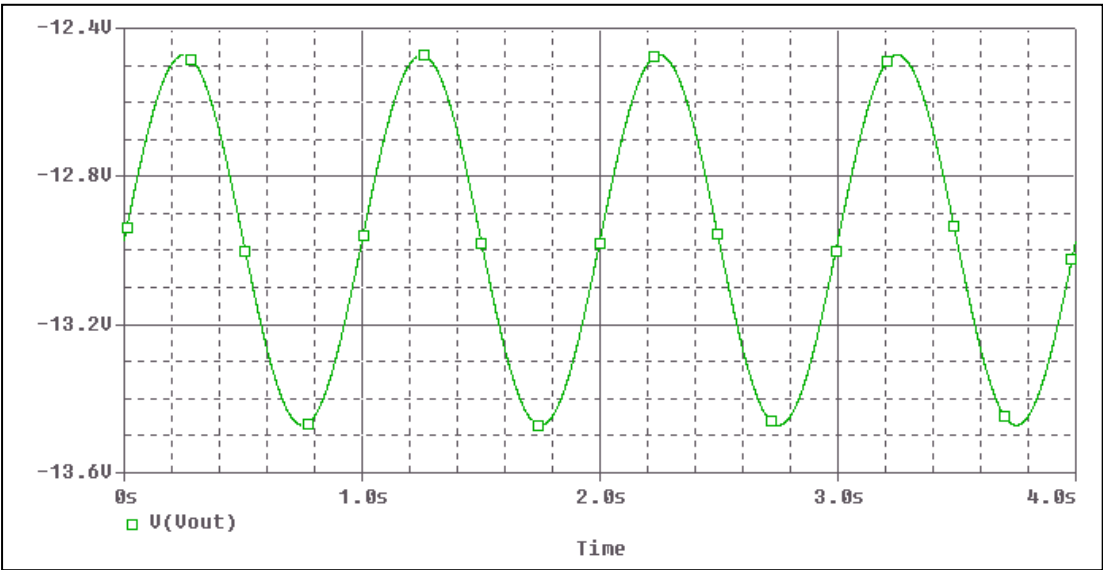
Short Circuit Current	Data sheet	Simulation	%Error
	50mA	50.576mA	1.152

Common-Mode Rejection Voltage gain

Evaluation circuit



Simulation result



Common mode gain=1/0.3162

Common Mode Reject Ratio=99655/3.162=31516

CMRR	Data sheet	Simulation	%Error
	31622	31516	0.335