

Device Modeling Report

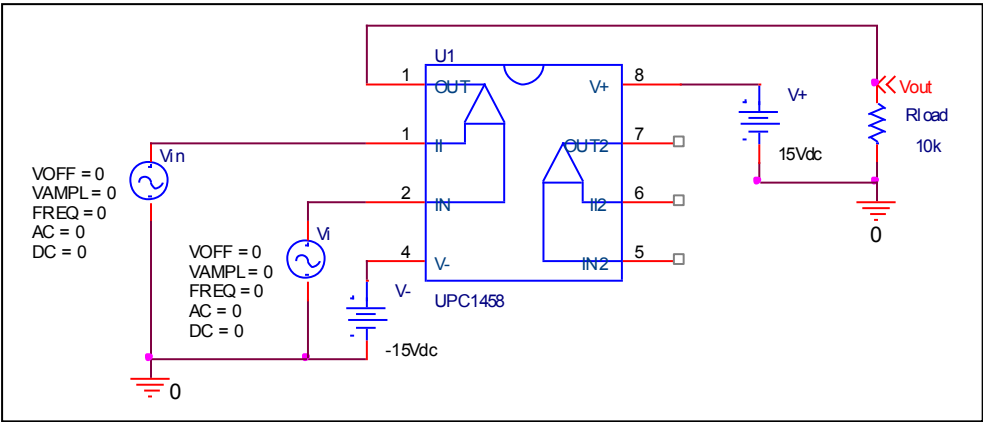
COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER
PART NUMBER:uPC1458C
MANUFACTURER:NEC ELECTRONICS



Bee Technologies Inc.

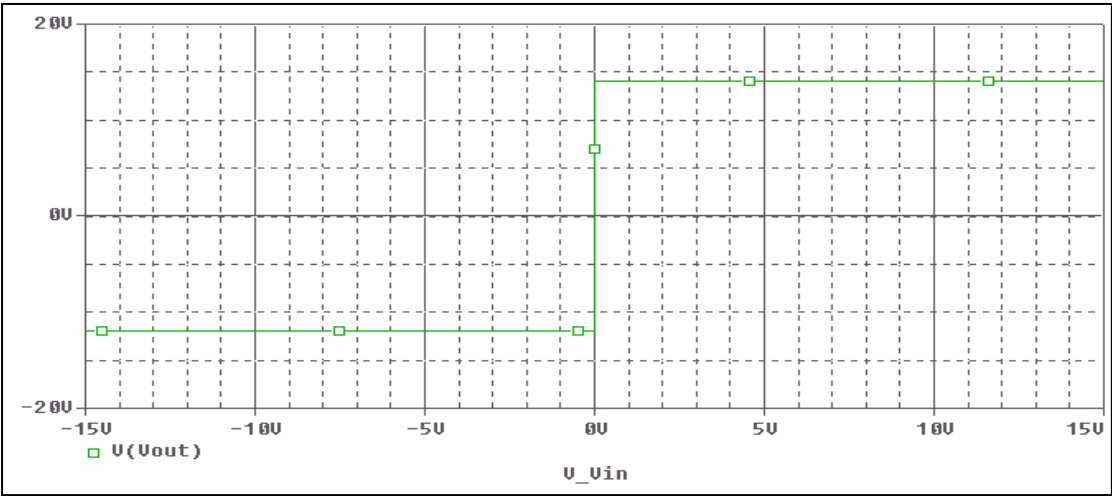
Output Voltage Swing, +Vout and -Vout

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

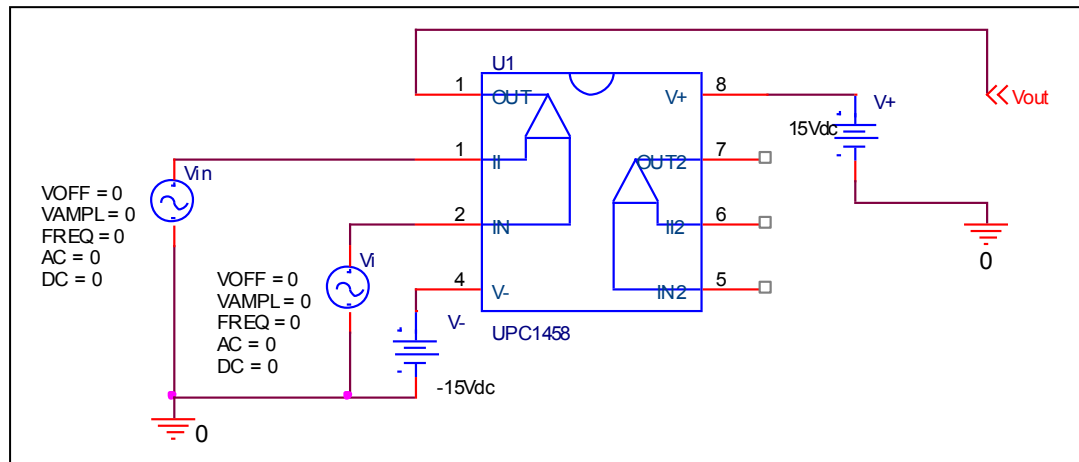


These simulation results are compared with $\pm V_{out}$

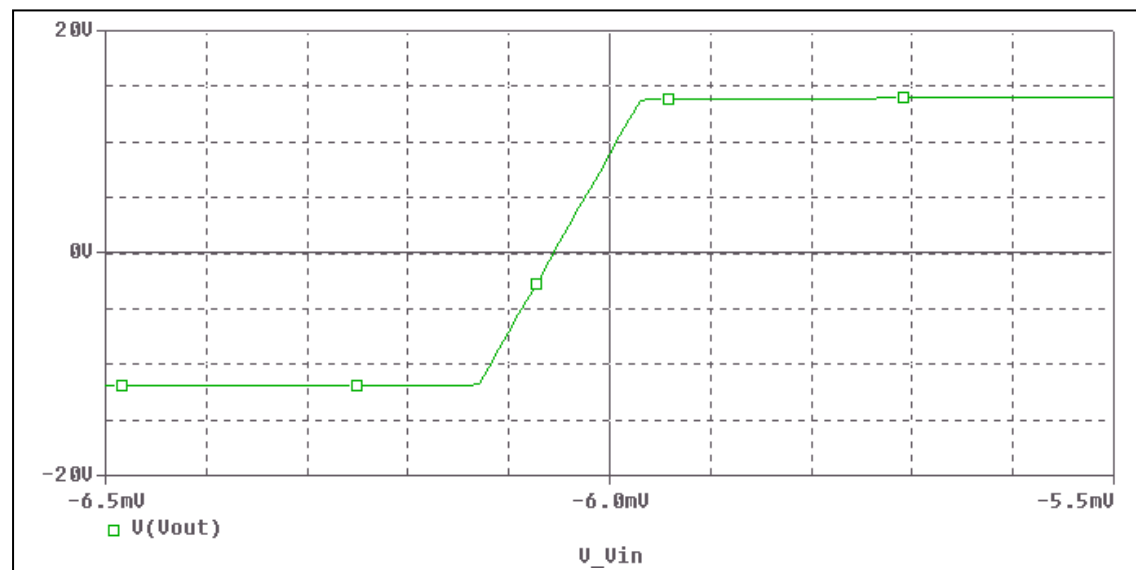
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	+14	+13.999	0.007142
-Vout(V)	-12	-11.999	0.008333

Input Offset Voltage

Evaluation circuit



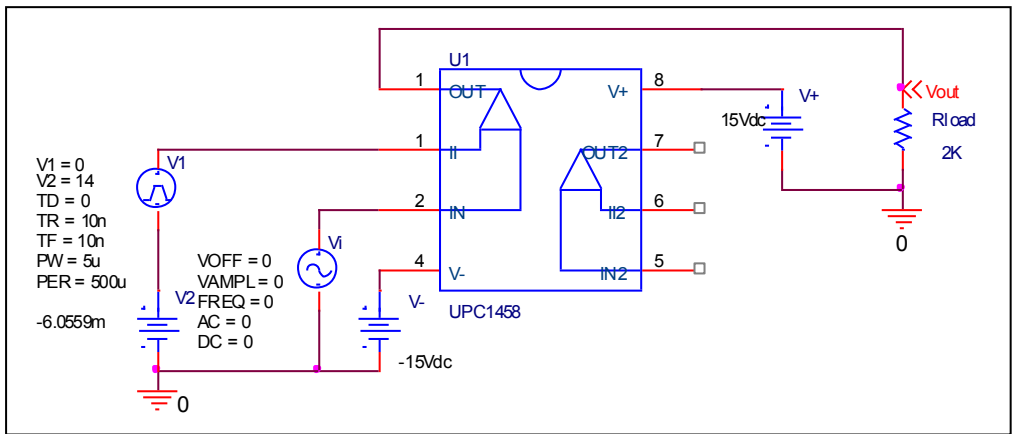
Simulation result



	Measurement		Simulation		Error	
Vos	6	mV	6.0559	mV	0.9316	%

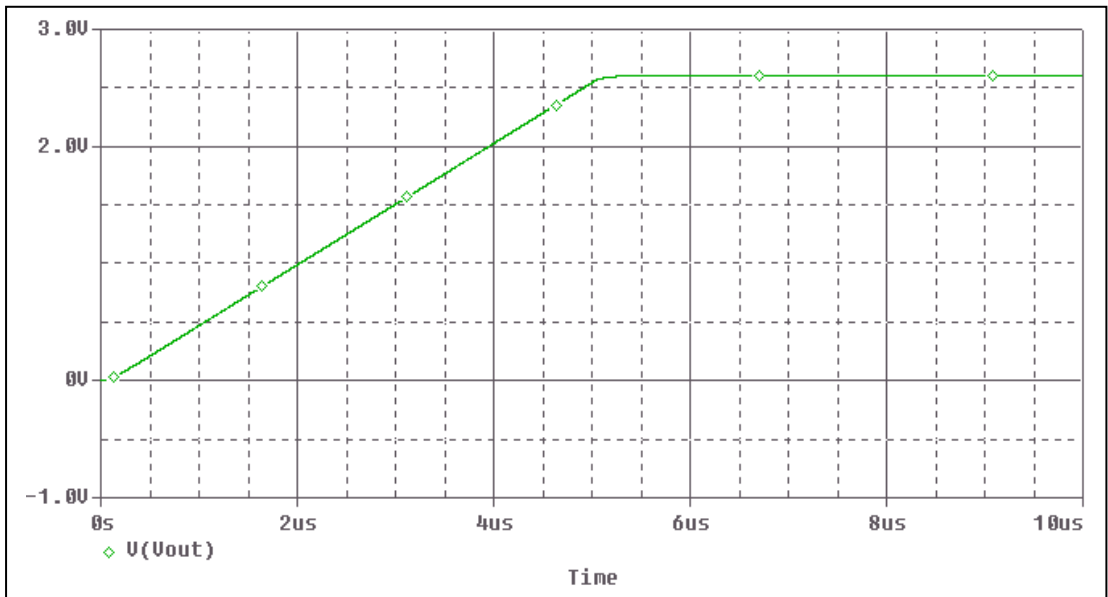
Slew Rate, +SR, -SR

Evaluation circuit



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

Simulation result

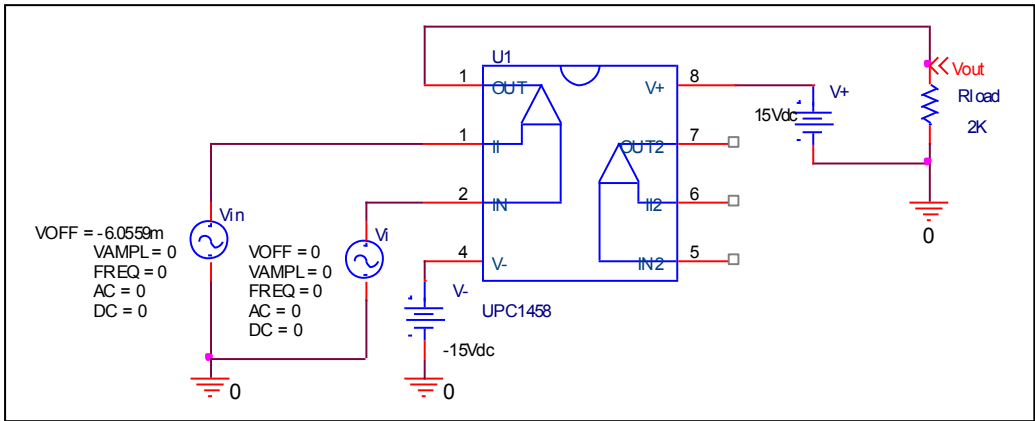


Output voltage change 0.5V in 1 us (If no good can change **C2** of Spice Model Editor)

Slew Rate(v/us)	Data sheet	Simulation	%Error
	0.5	0.473	5.4

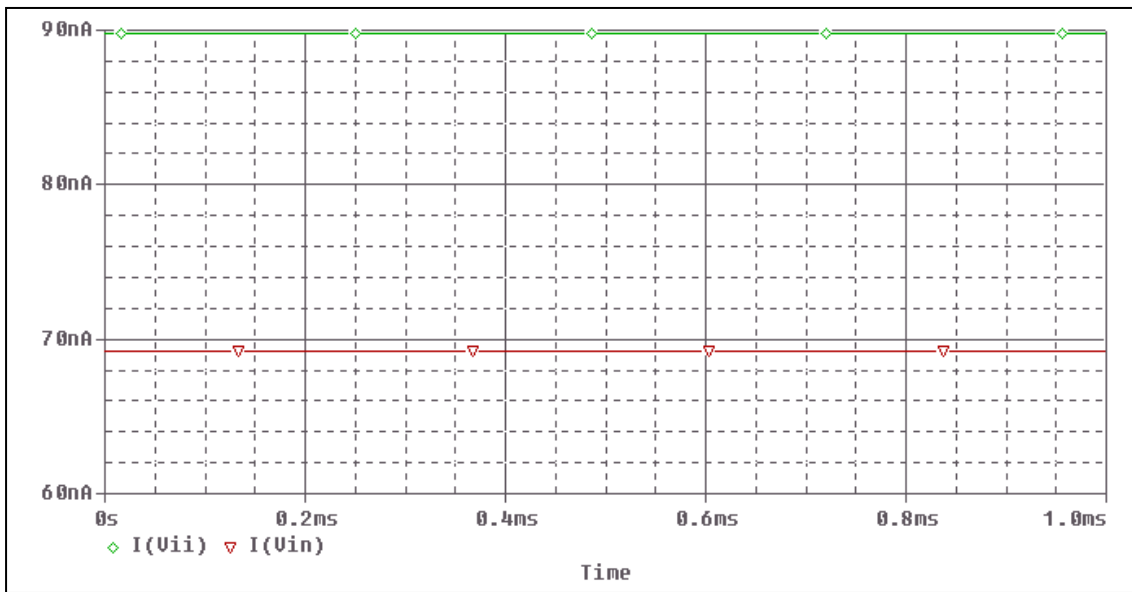
Input current Ib, Ibos

Evaluation circuit



The input offset current when supply voltage to op-amp

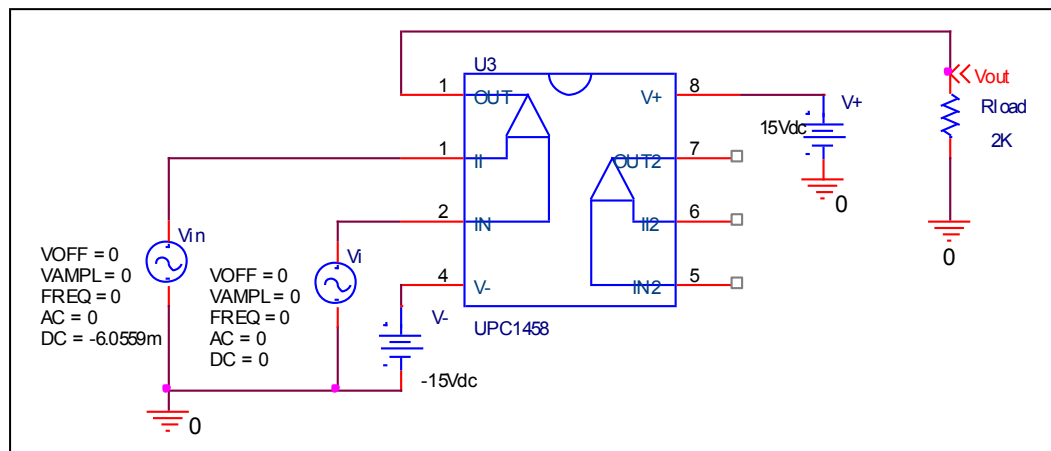
Simulation result



	Data sheet	Simulation	%Error
Ib(nA)	80	79.46	0.675
Ibos(nA)	20	20.61	3.05

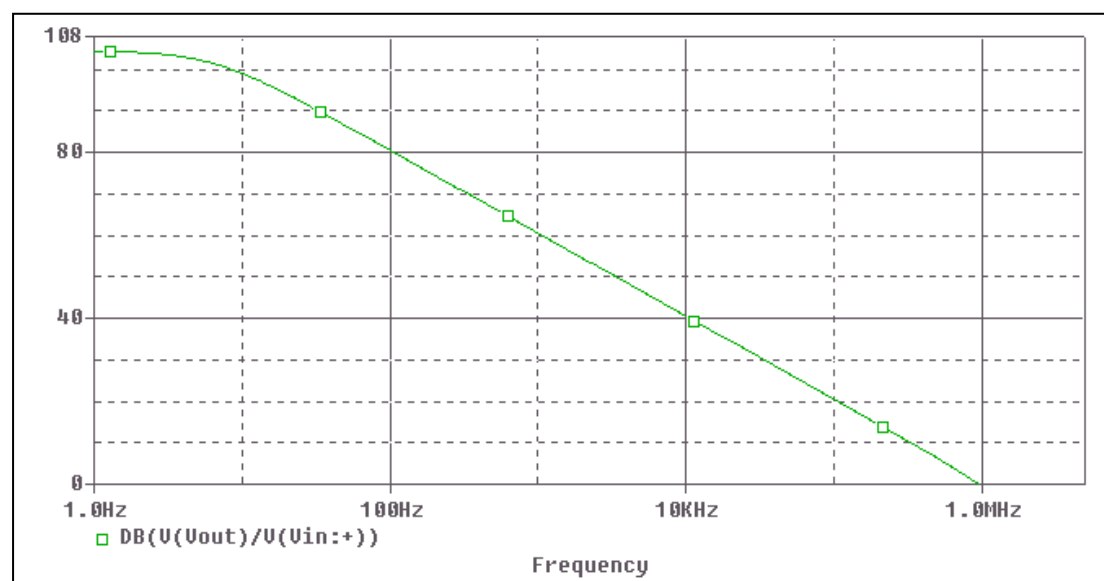
Open Loop Voltage Gain vs. Frequency , Av-dc, f-0dB

Evaluation circuit



The open loop voltage gain of op-amp when supply AC input voltage 1MHz frequency

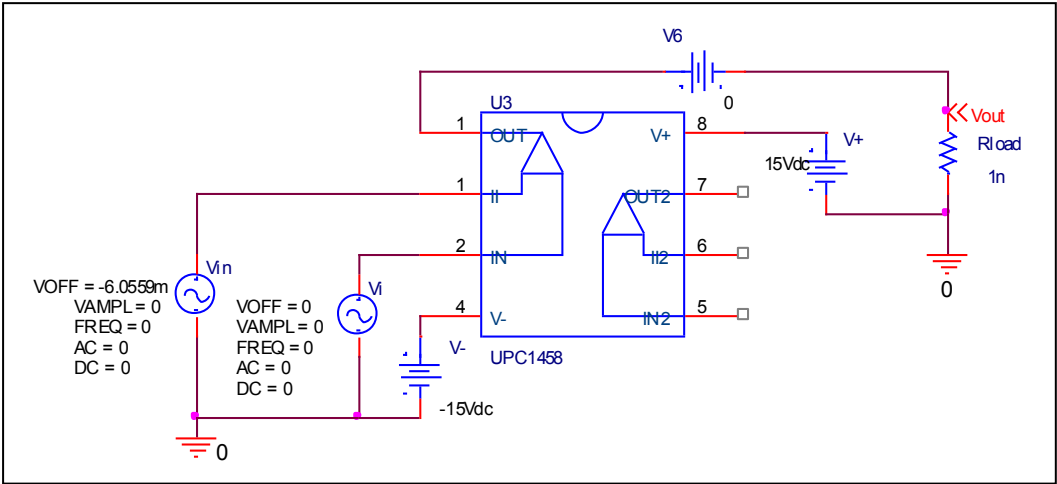
Simulation result



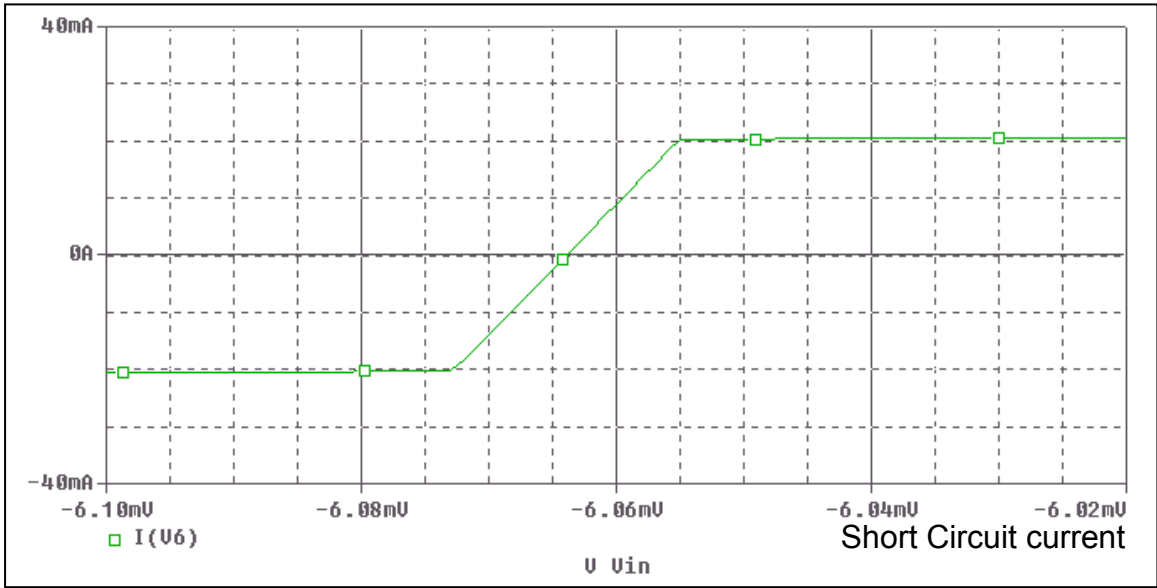
	Data sheet	Simulation	%Error
f-0dB(MHz)	1	0.961	3.9
Av-dc	160000	165958	3.723

Output Short Circuit Current - Ios

Evaluation circuit



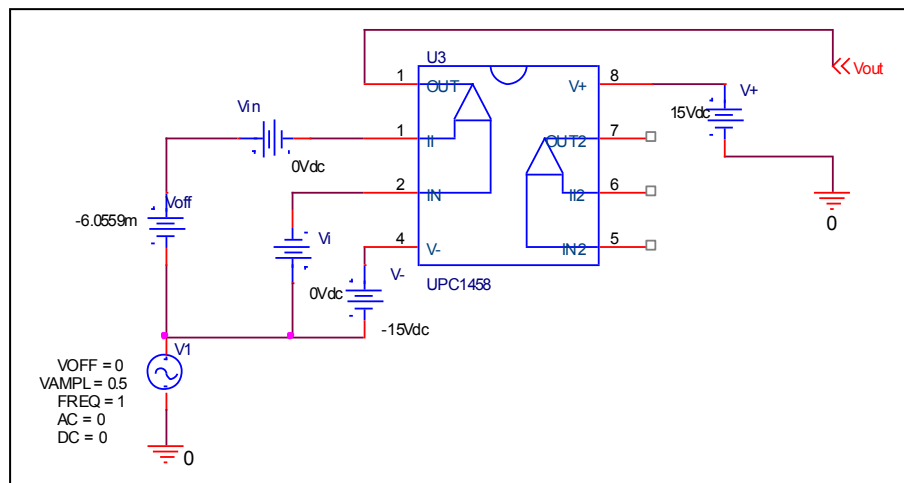
Simulation result



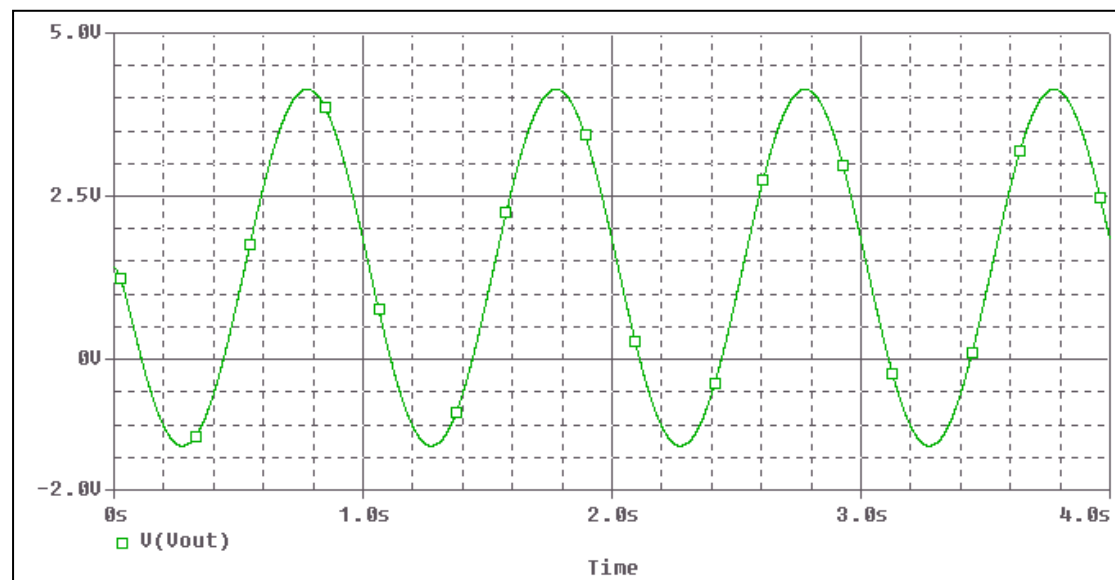
Short Circuit Current	Data sheet	Simulation	%Error
	20mA	20.569mA	2.845

Common-Mode Rejection Voltage gain

Evaluation circuit



Simulation result



Common mode gain=5.462/1

Common Mode Reject Ratio=165958/5.462=30380

CMRR	Data sheet	Simulation	%Error
	31622	30380	3.927