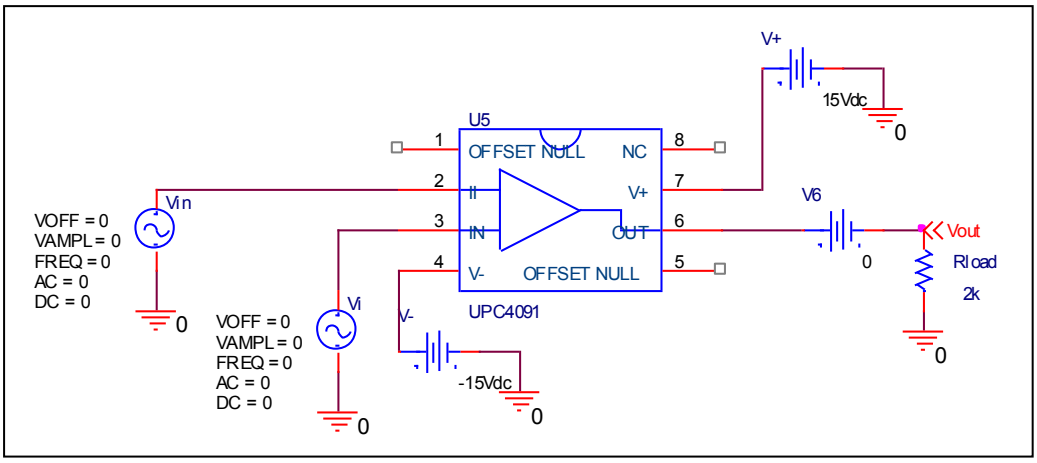
Device Modeling Report

COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER
PART NUMBER:uPC4091G2
MANUFACTURER:NEC ELECTRONICS

Bee Technologies Inc.

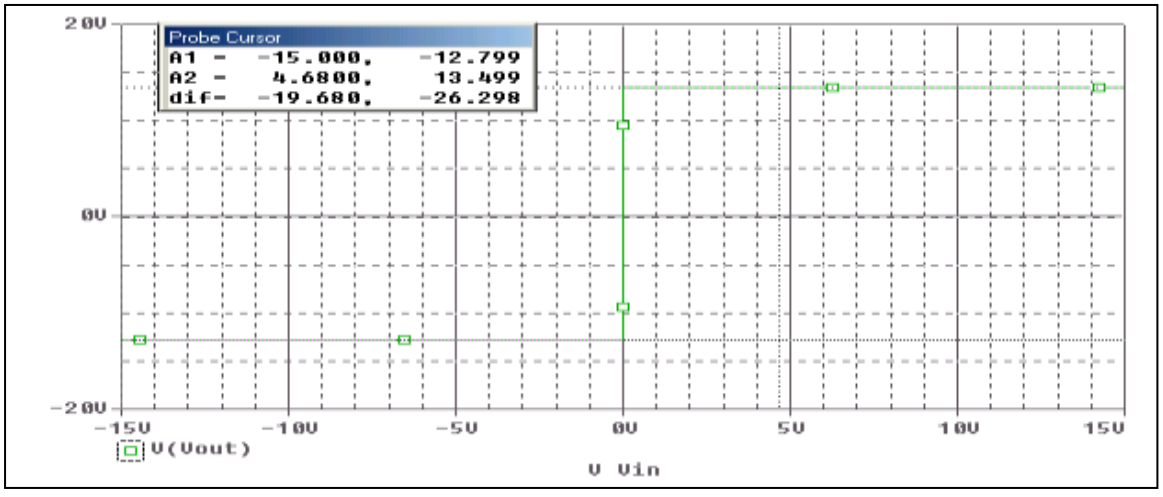
Output Voltage Swing, +Vout and –Vout

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

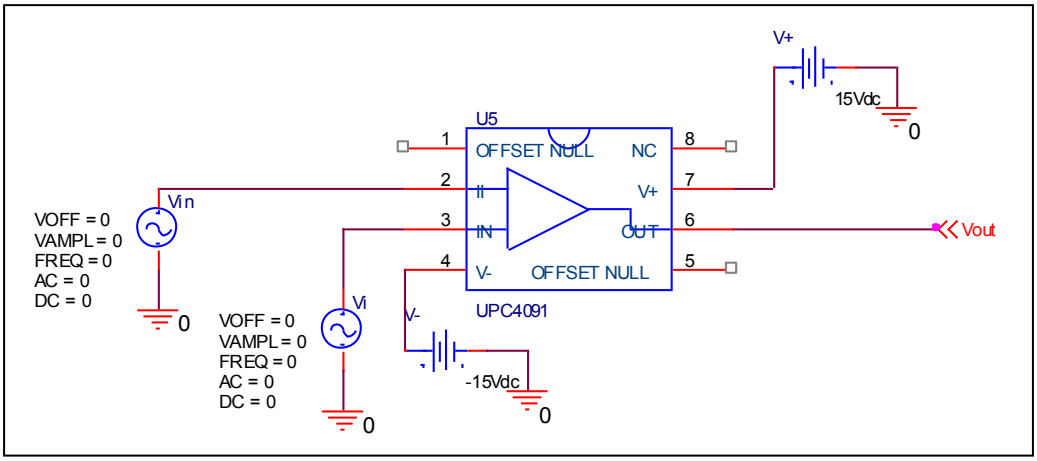


These simulation results are compared with ±Vout

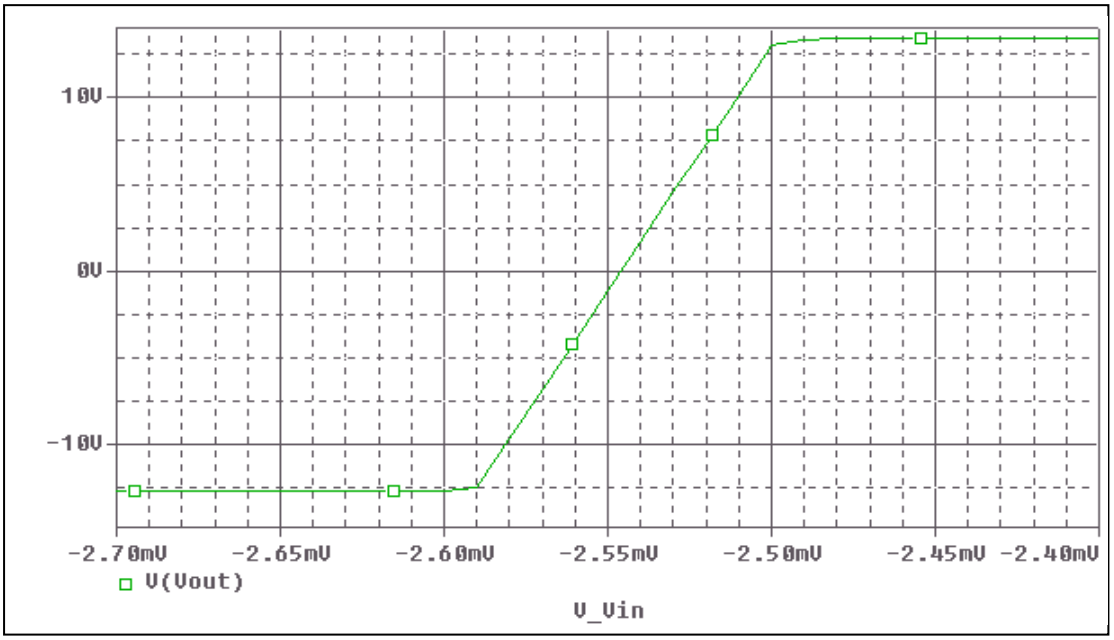
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	+13.5	+13.499	0.007407407
-Vout(V)	-12.8	-12.799	0.0078125

Input Offset Voltage

Evaluation circuit



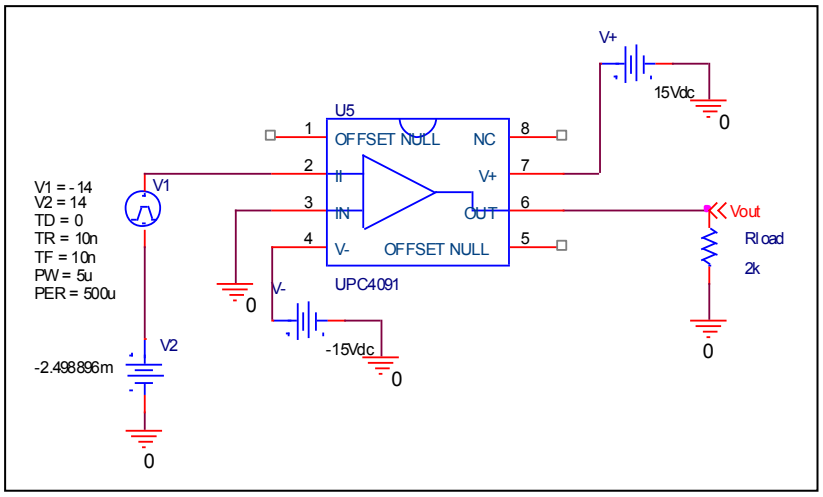
Simulation result



	Measurement		Simulation		Error	
Vos	2.5	mV	2.498896	mV	1.732	%

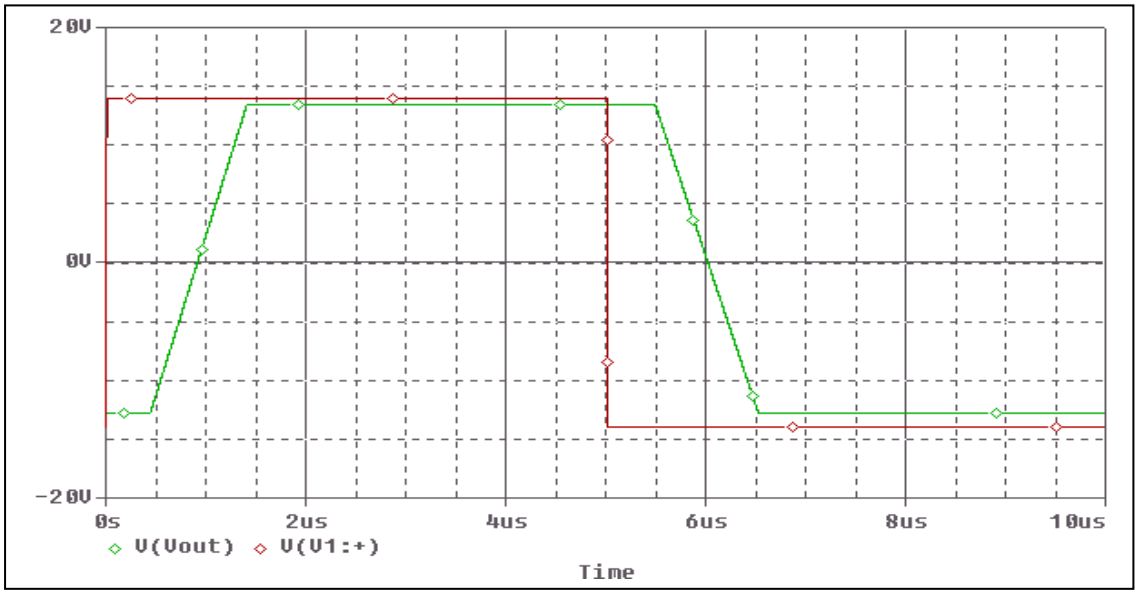
Slew Rate, +SR, -SR

Evaluation circuit



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

Simulation result

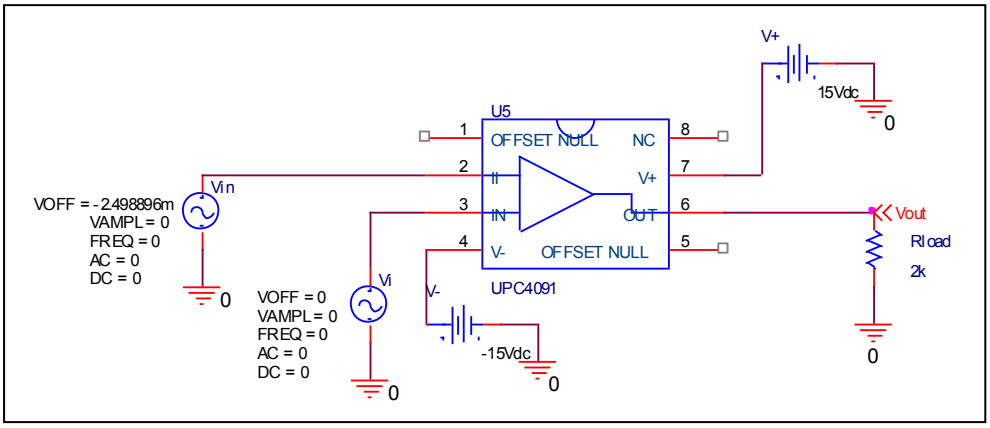


Output voltage change 15V in 1 us (If no good can change **C2** of Spice Model Editor)

Slew Rate(v/us)	Data sheet	Simulation	%Error
	15	15.072	0.48

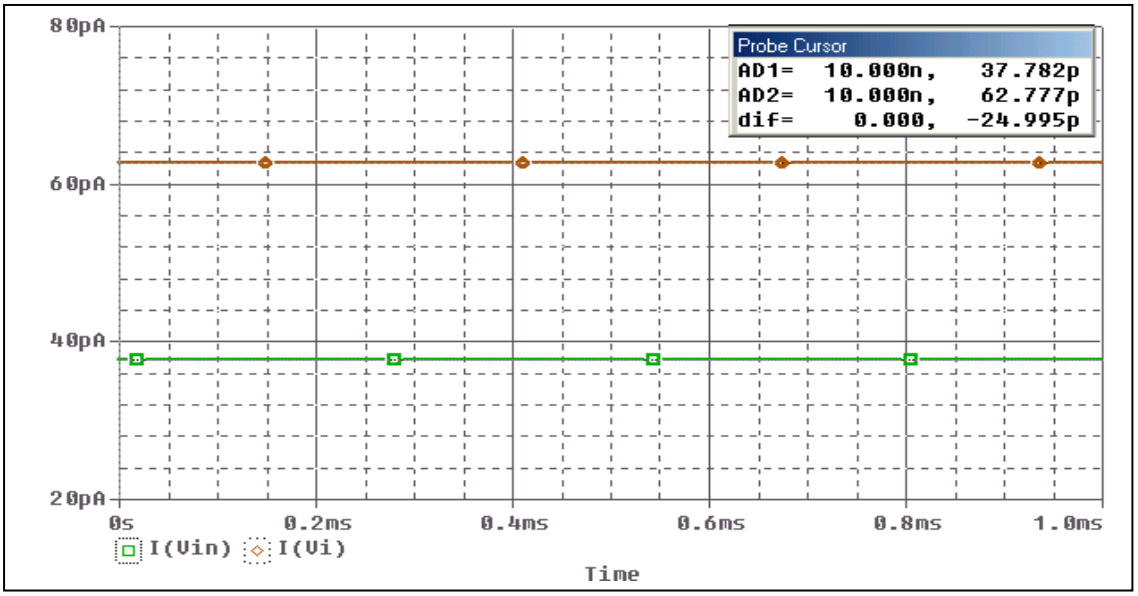
Input current Ib, Ibos

Evaluation circuit



The input offset current when supply voltage to op-amp

Simulation result

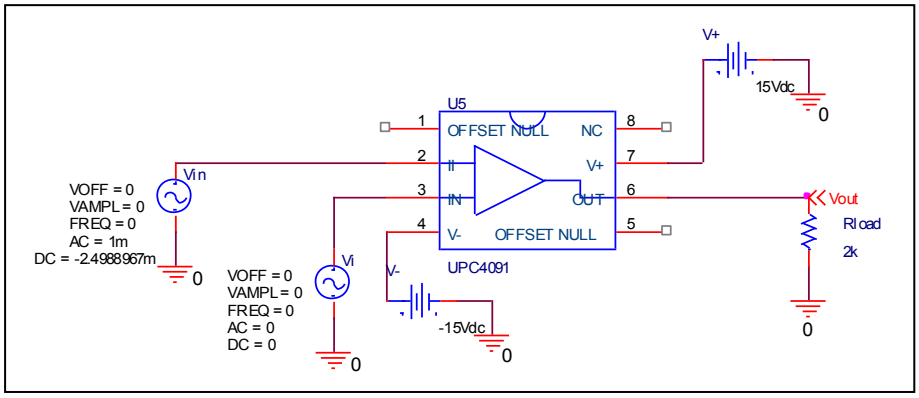


I(Vin) =37.782pA, I(Vi) =62.777pA :Ib =(I(Vin)+ I(Vi))/2=,Ibos =24.988p

	Data sheet	Simulation	%Error
Ib(pA)	50	50.279	0.558
Ibos(pA)	25	24.988	0.048

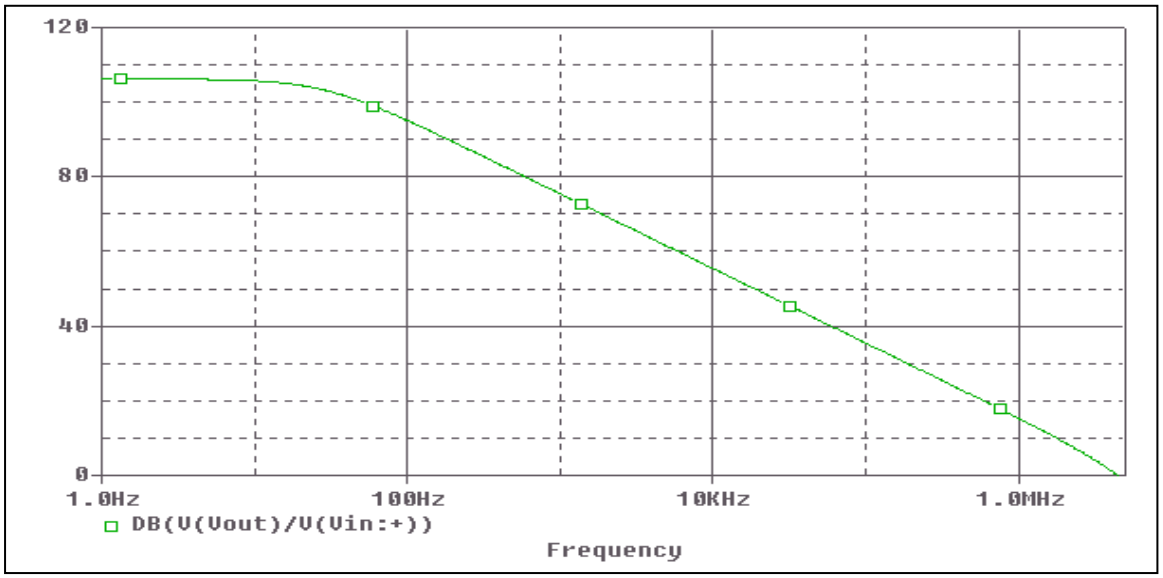
Open Loop Voltage Gain vs. Frequency , Av-dc, f-0dB

Evaluation circuit



The open loop voltage gain of op-amp when supply AC input voltage 4MHz frequecy

Simulation result

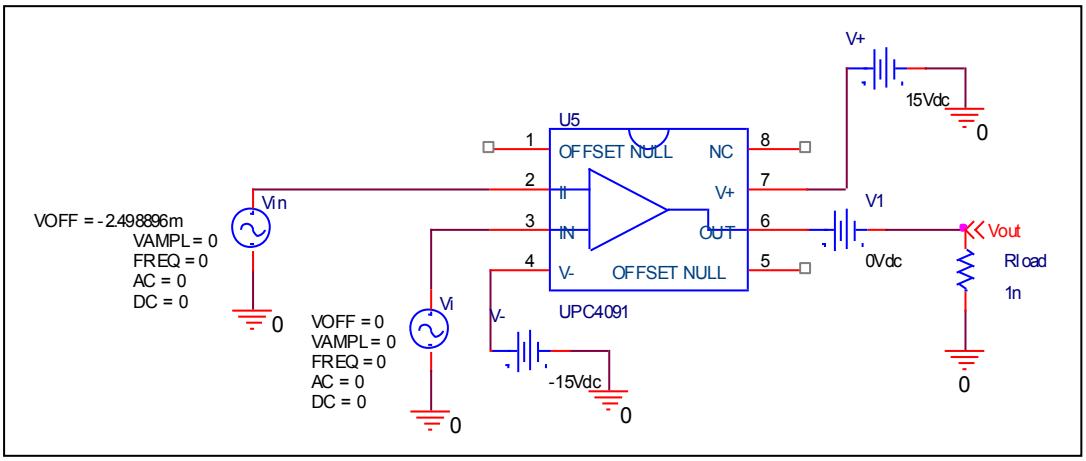


f-0dB ~ 4.385MHz, Av-dc ~ 106.21dB

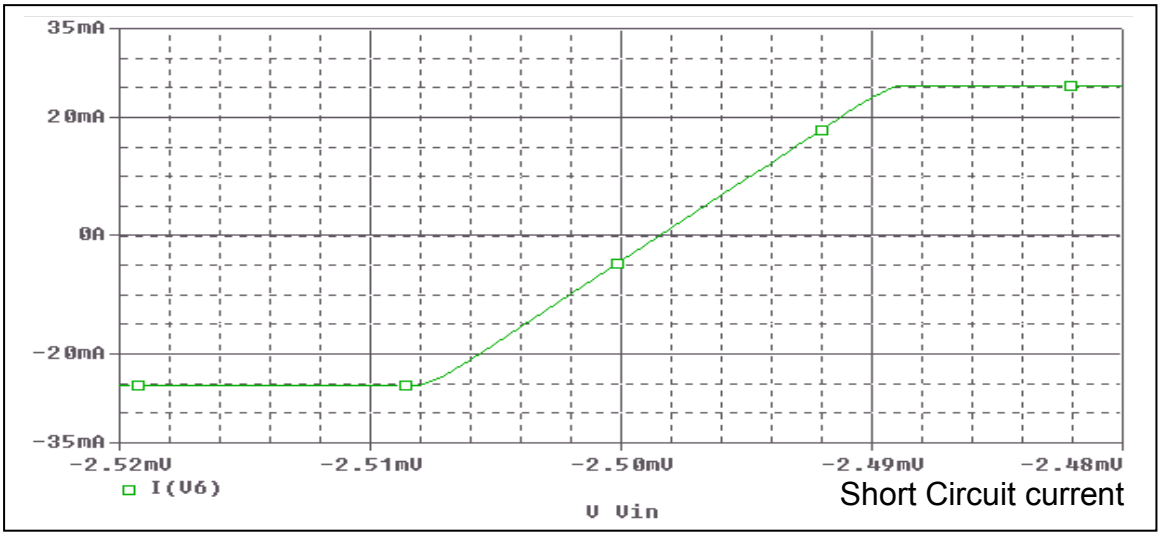
	Data sheet	Simulation	%Error
f-0dB(MHz)	4	4.385	9.625
Av-dc	200000	204408	2.204

Output Short Circuit Current - Ios

Evaluation circuit



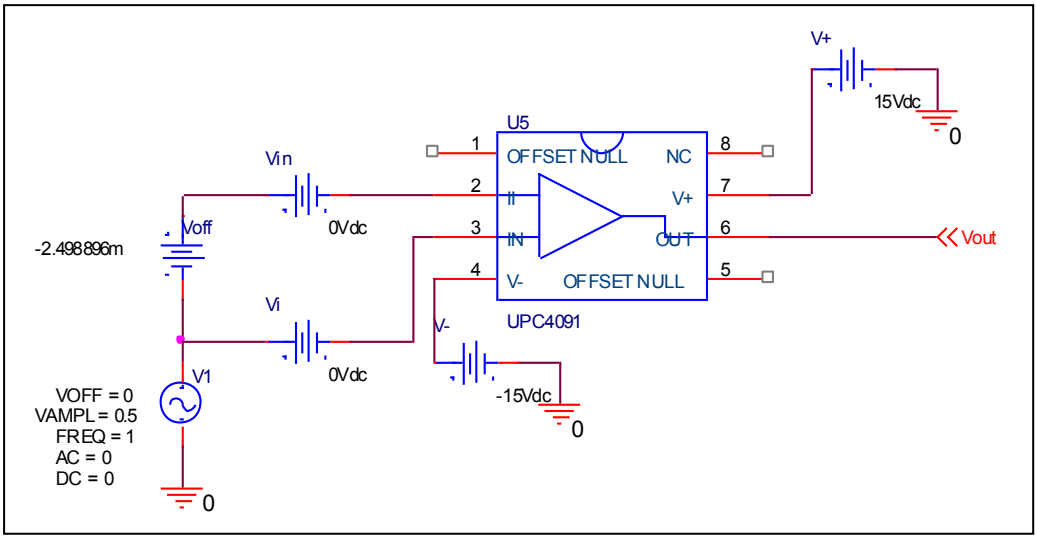
Simulation result



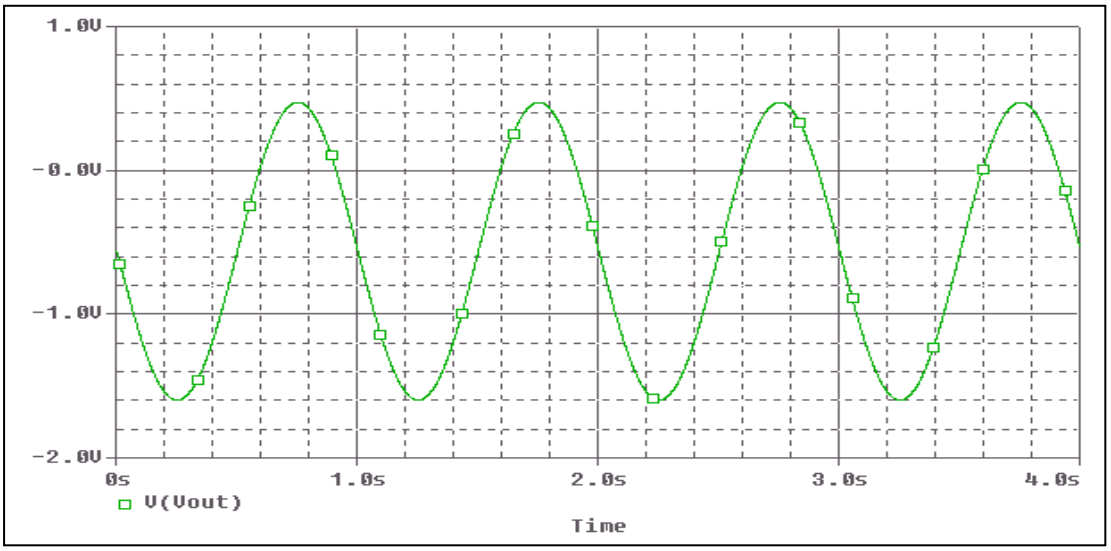
Short Circuit Current	Data sheet	Simulation	%Error
	25mA	25.392mA	1.568

Common-Mode Rejection Voltage gain

Evaluation circuit



Simulation result



Common mode gain=2.071/1
Common Mode Reject Ratio=204408/2.072=98652

CMRR	Data sheet	Simulation	%Error
	100000	98652	1.348