

Device Modeling Report

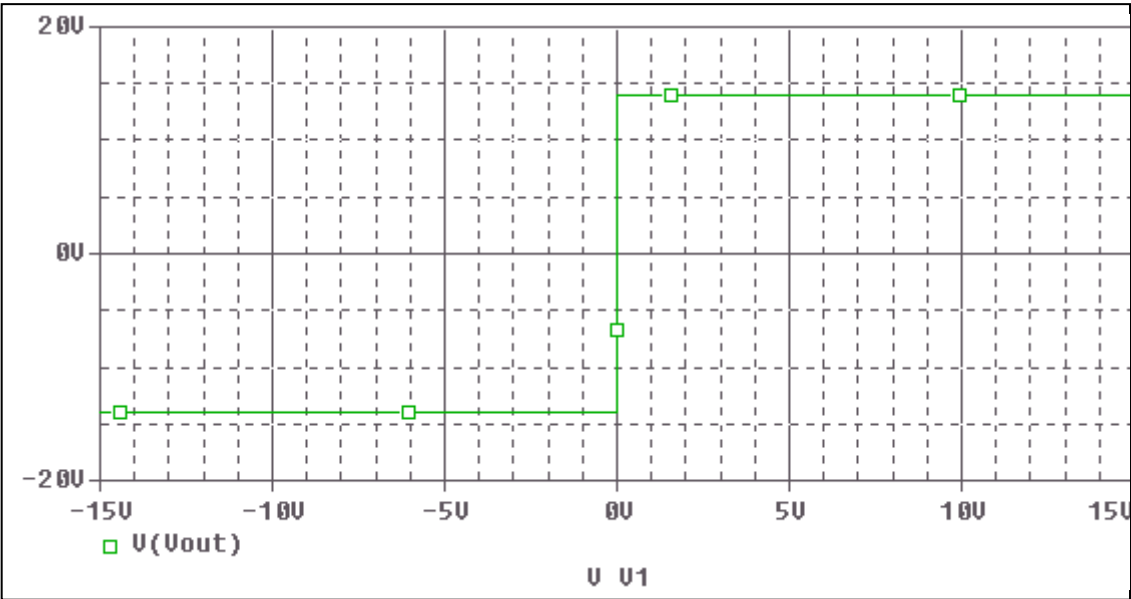
COMPONENTS: OPERATIONAL AMPLIFIER
PART NUMBER: NJM4560M
MANUFACTURER: NEW JAPAN RADIO CO., LTD



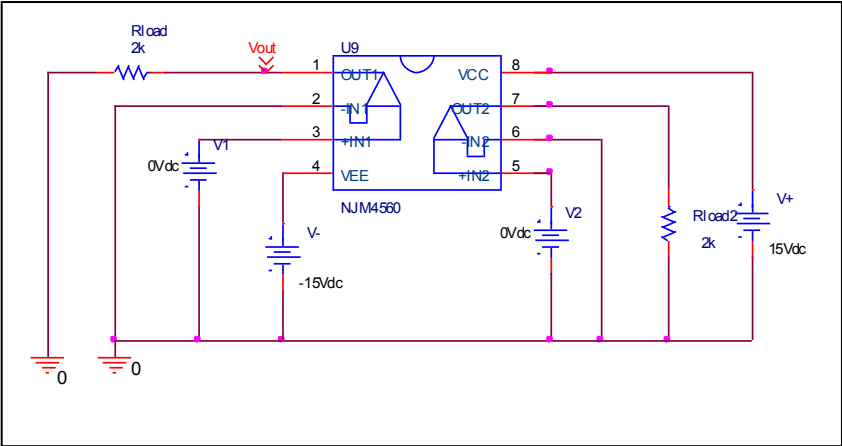
Bee Technologies Inc.

Output Voltage Swing, +Vout and -Vout

Simulation result



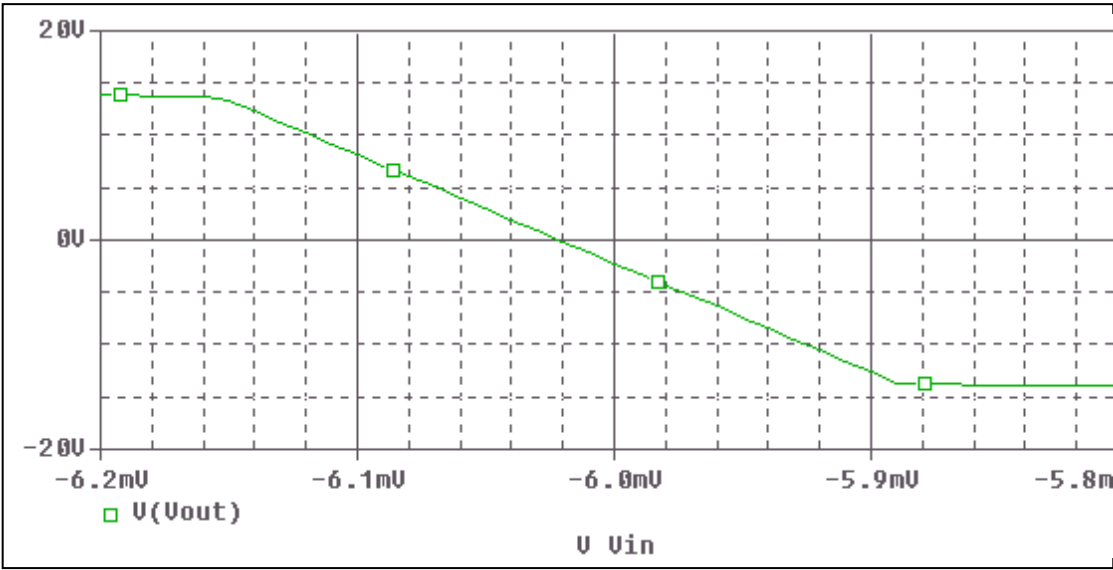
Evaluation circuit



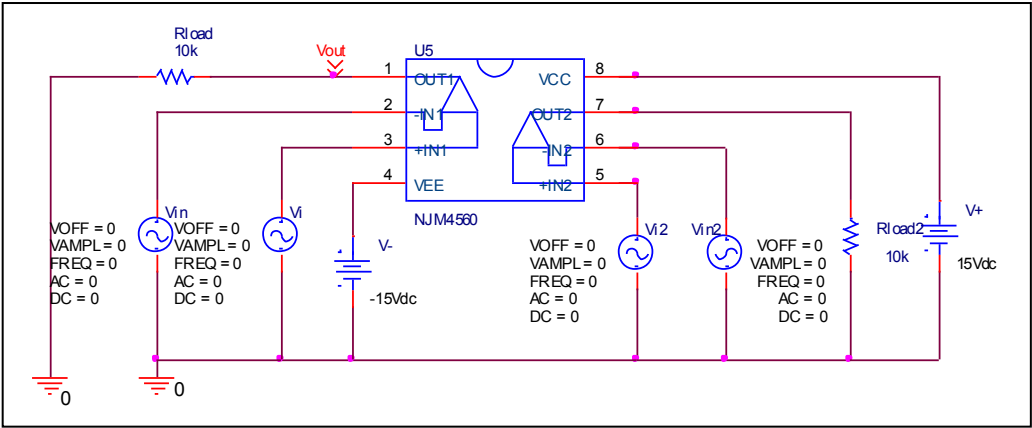
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	+14	+13.998	0.0142
-Vout(V)	-14	-13.998	0.0142

Input Offset Voltage

Simulation result



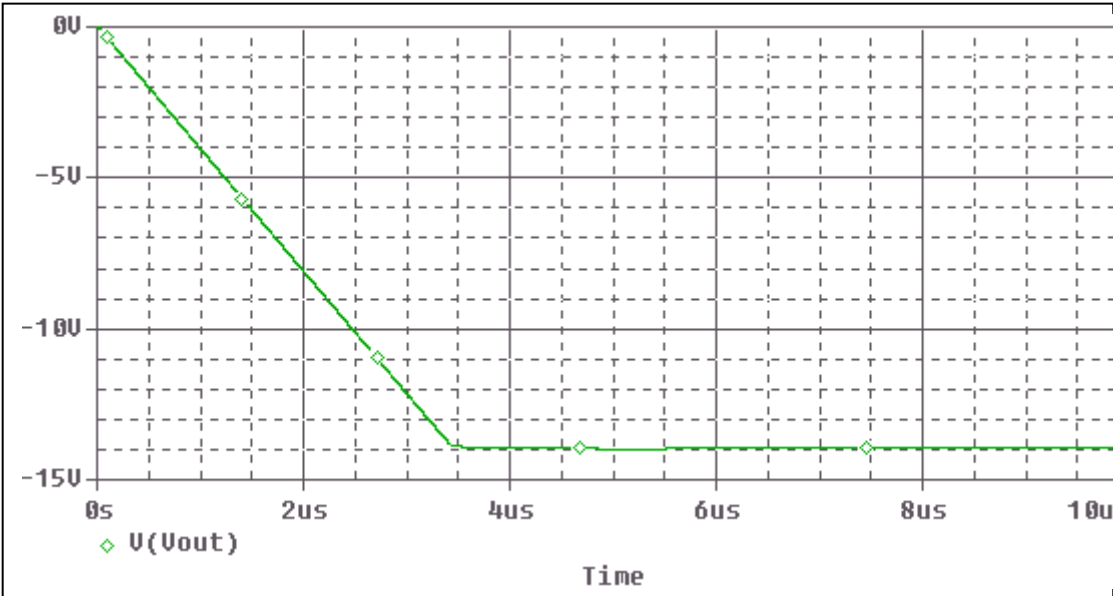
Evaluation circuit



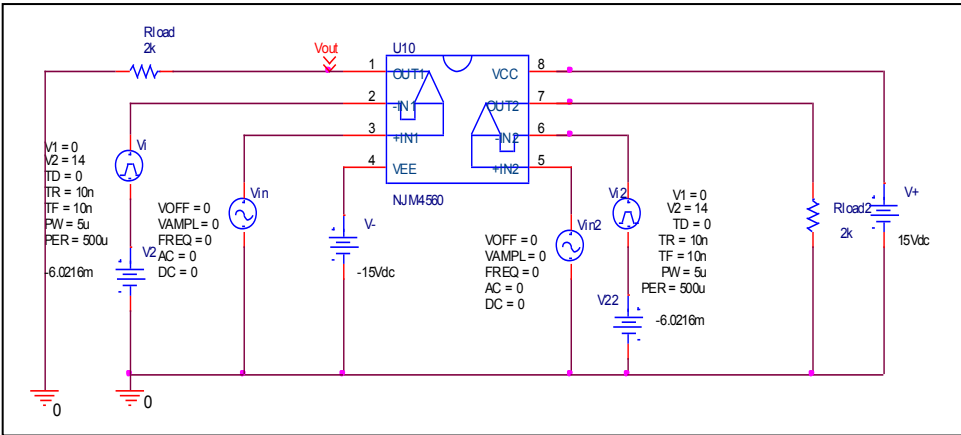
	Measurement		Simulation		Error	
Vos	6	mV	6.0216	mV	0.36	%

Slew Rate, +SR, -SR

Simulation result



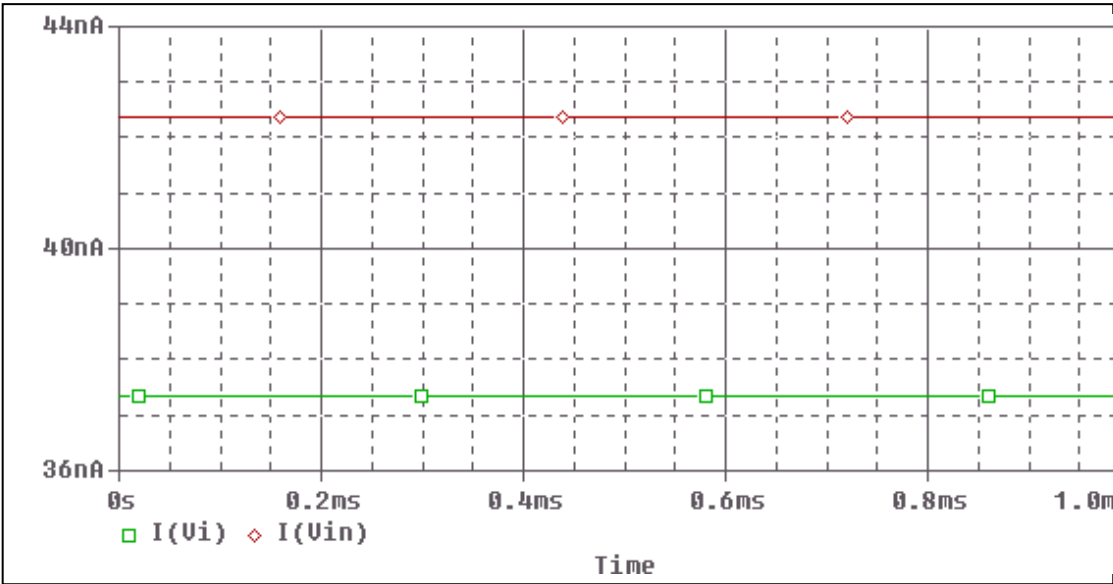
Evaluation circuit



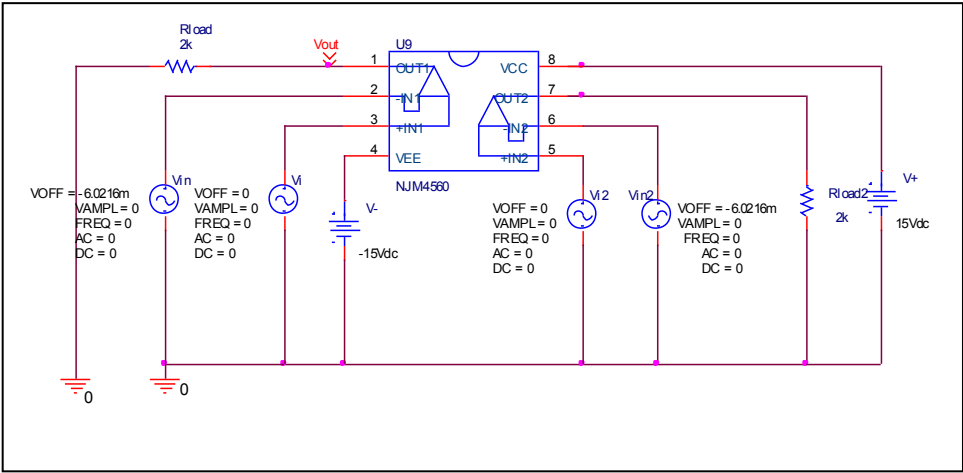
Slew Rate(v/us)	Data sheet	Simulation	%Error
	4	4.0619	1.54

Input current Ib, Ibos

Simulation result



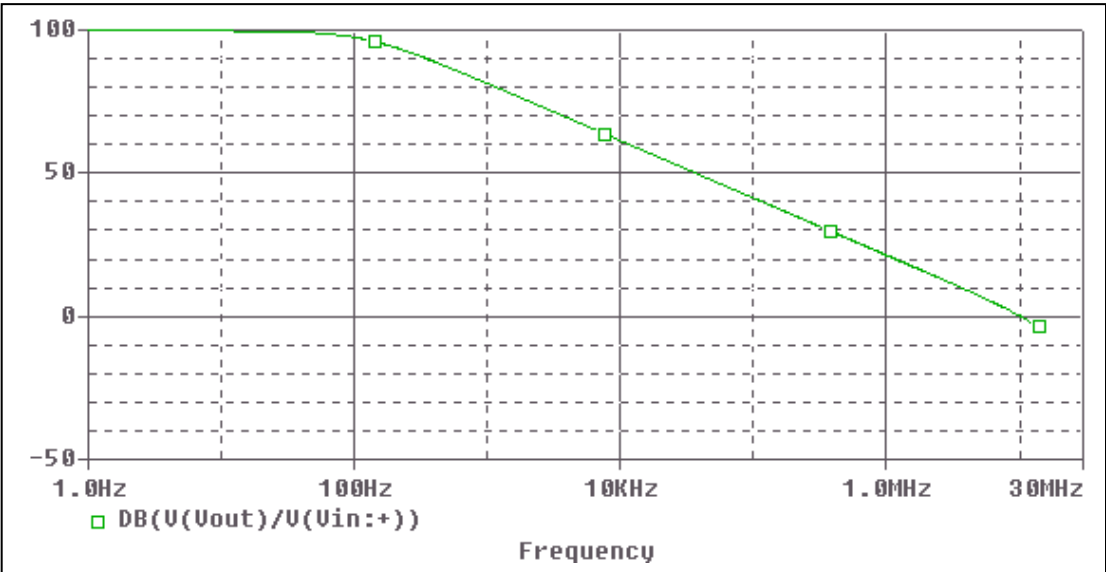
Evaluation circuit



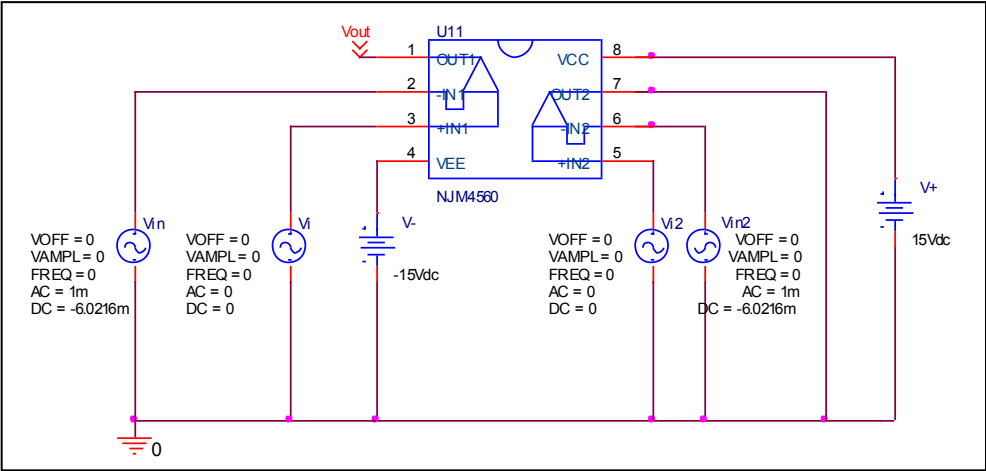
	Data sheet	Simulation	%Error
Ib(nA)	40	39.856	0.36
Ibos(nA)	5	5.011	0.22

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

Simulation result



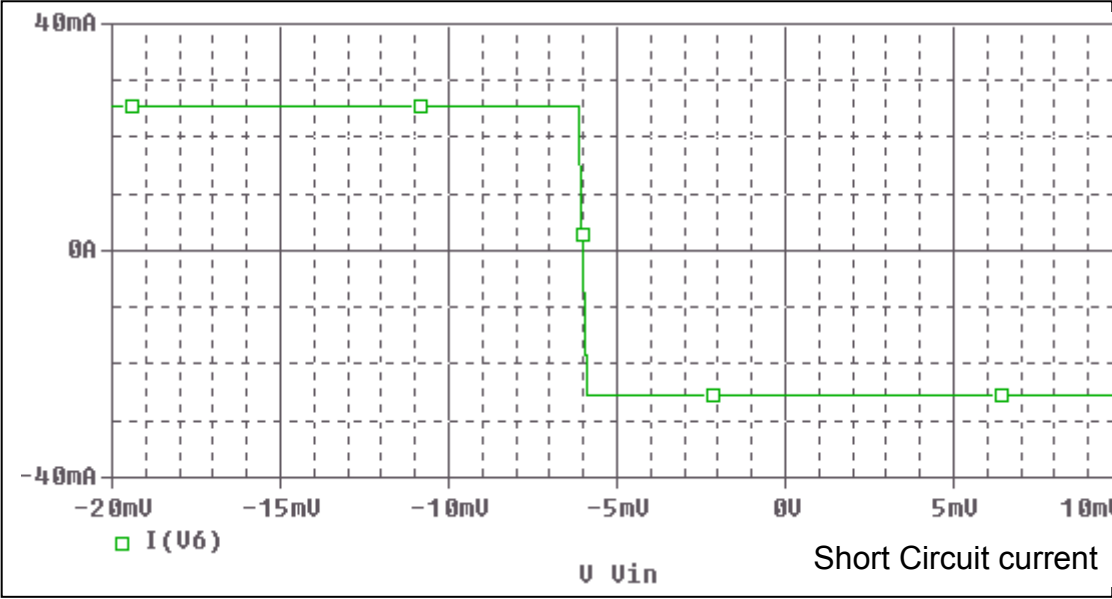
Evaluation circuit



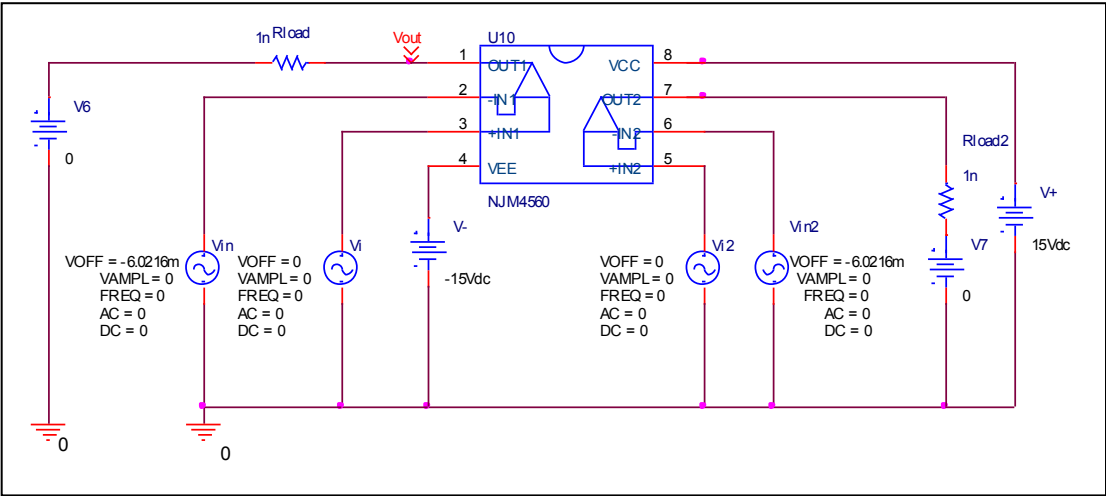
	Data sheet	Simulation	%Error
f-0dB(MHz)	10	10.165	1.65
Av-dc	100000	97723	2.27

Output Short Circuit Current - Ios

Simulation result



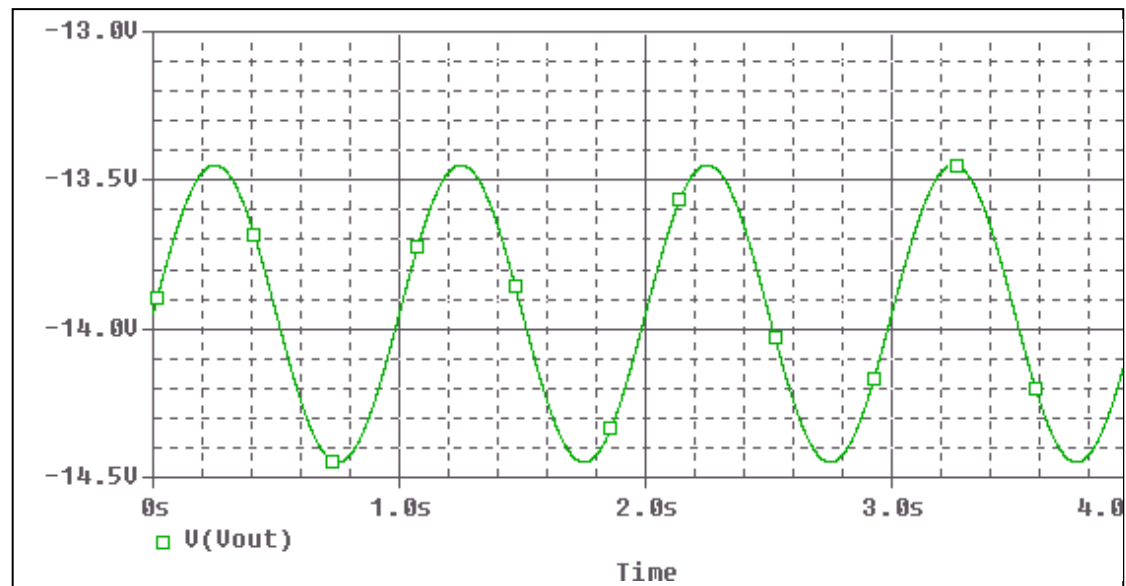
Evaluation circuit



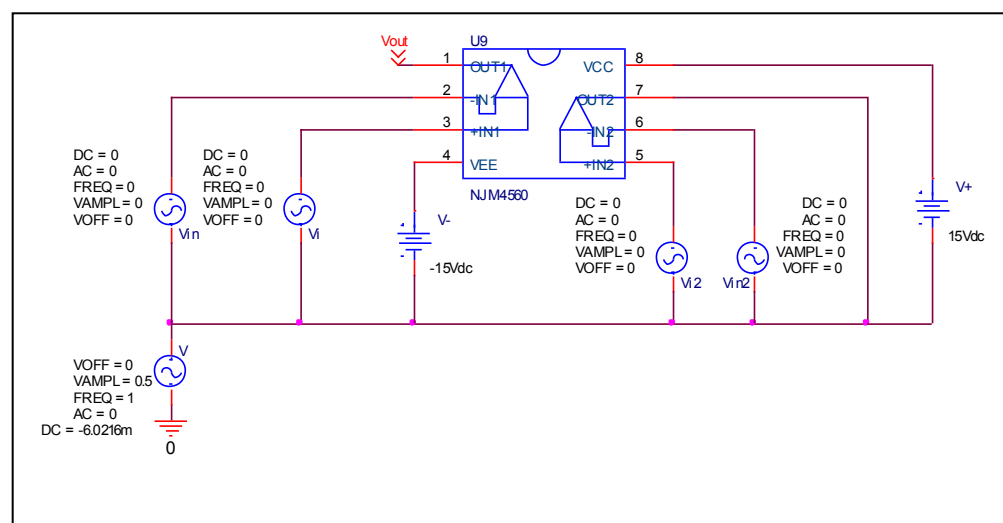
Short Circuit Current	Data sheet	Simulation	%Error
	25mA	25.6mA	2.4

Common-Mode Rejection Voltage gain

Simulation result



Evaluation circuit



Common mode gain=1/0.3162

Common Mode Reject Ratio=97723/3.1625=30900

CMRR	Data sheet	Simulation	%Error
	31622	30900	2.28