

# Device Modeling Report

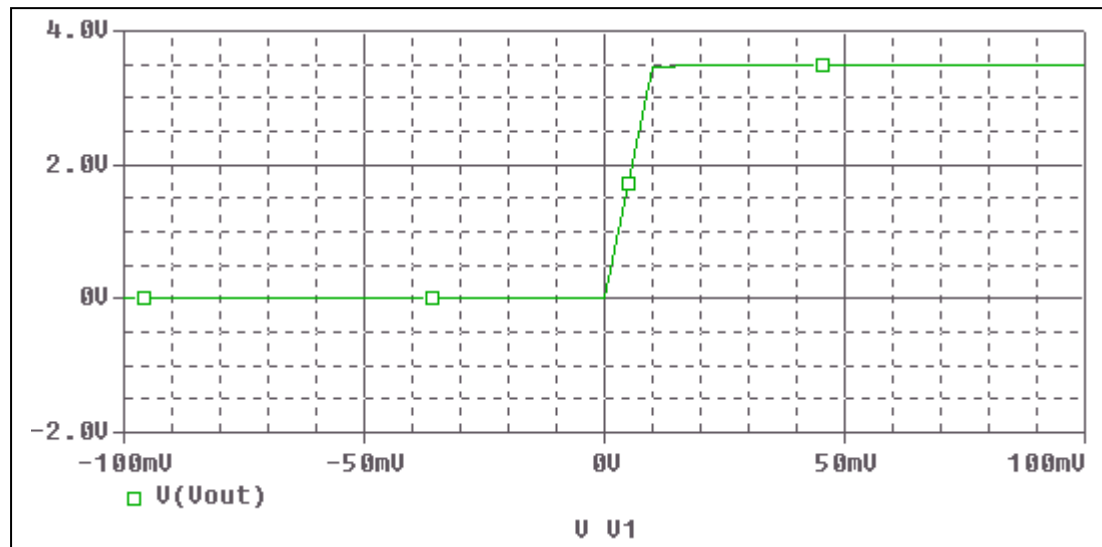
COMPONENTS:MOSFET: OPERATIONAL AMPLIFIER  
PART NUMBER:uPC358G2  
MANUFACTURER:NEC ELECTRONICS



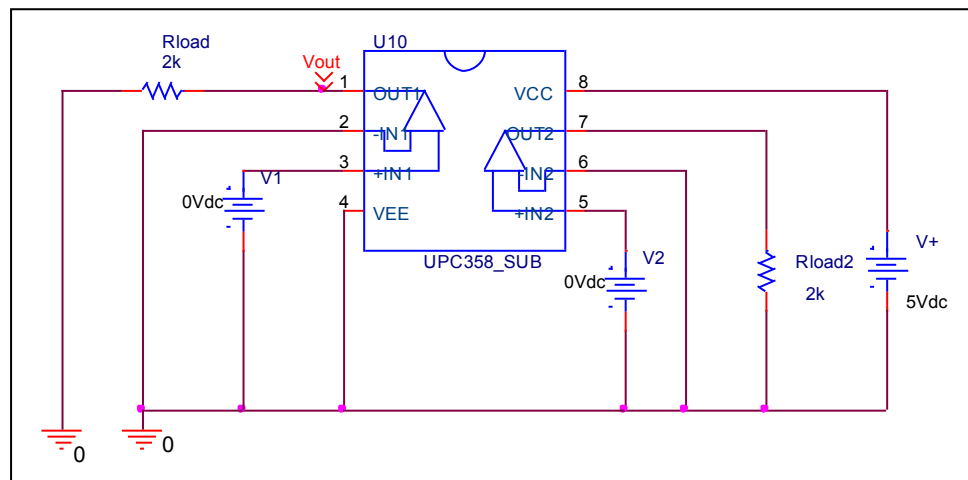
Bee Technologies Inc.

## Output Voltage Swing, +Vout and -Vout

### Simulation result



### Evaluation circuit

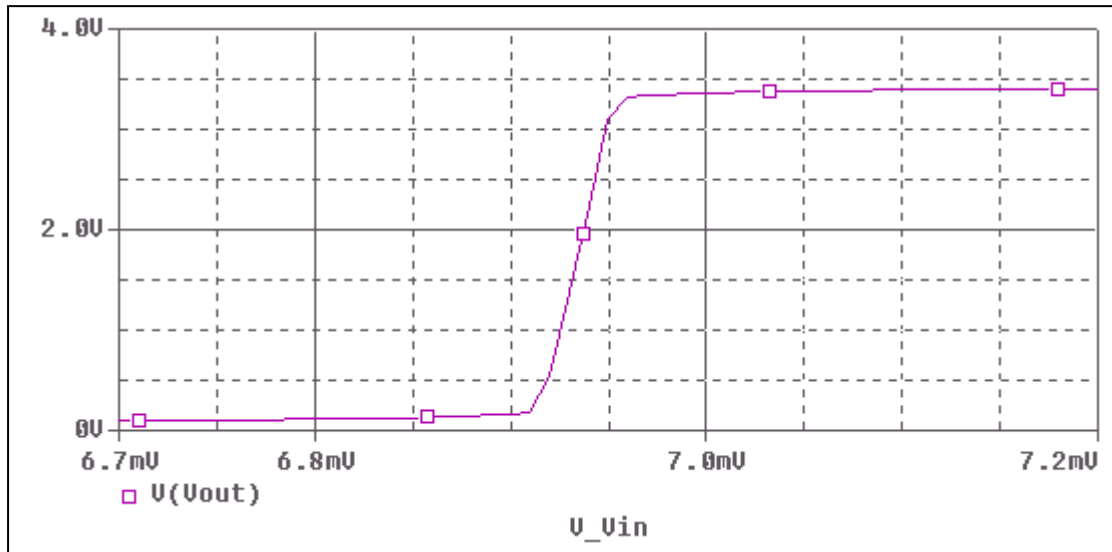


These simulation results are compared with  $\pm V_{out}$

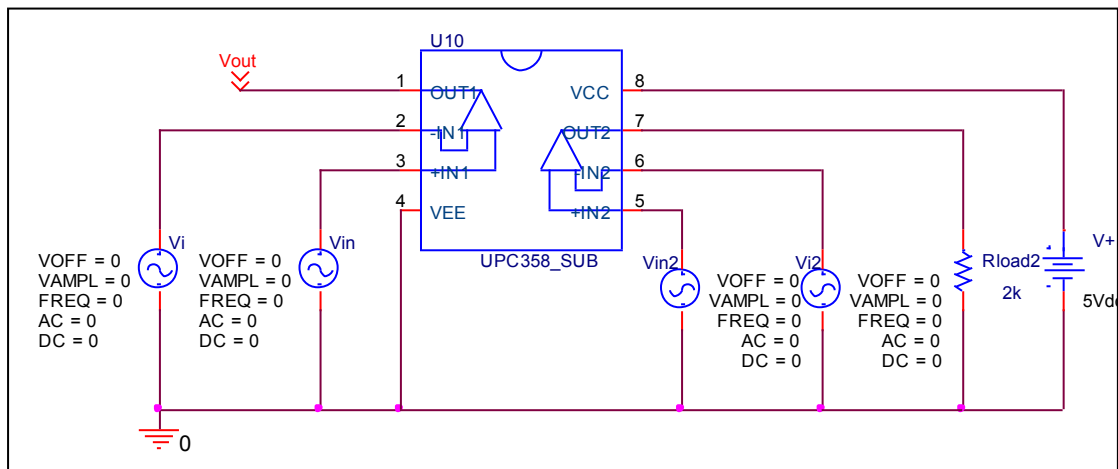
Output Voltage Swing	Data sheet	Simulation	%Error
+Vout(V)	3.5	3.51	0.285
-Vout(V)	0	0	0

# Input Offset Voltage

## Simulation result



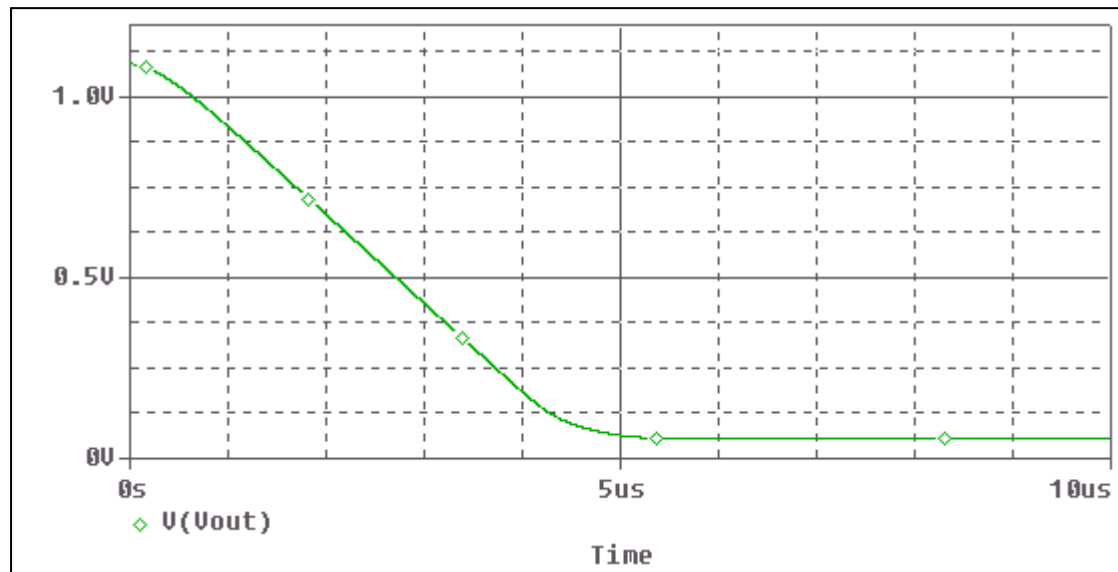
## Evaluation circuit



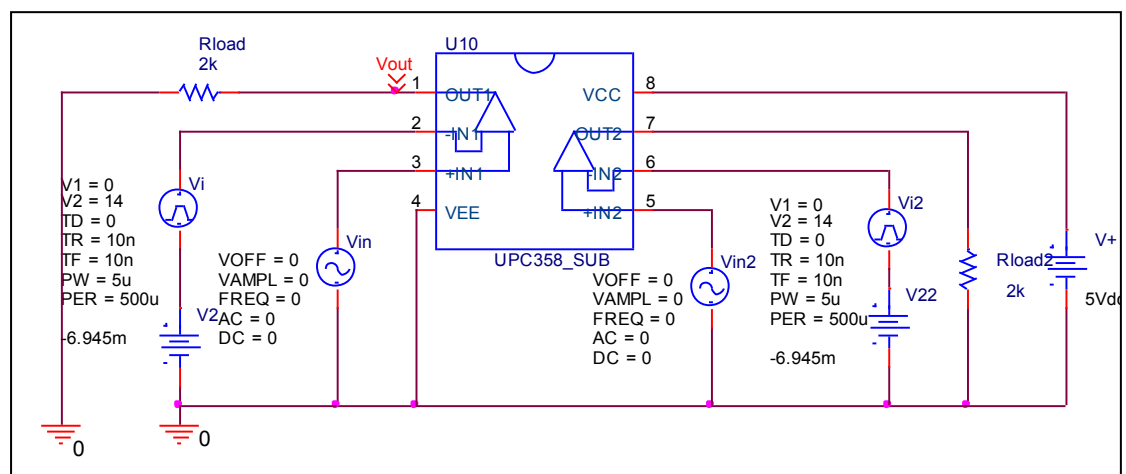
	Measurement		Simulation		Error	
Vos	7	mV	6.945	mV	0.78	%

## Slew Rate, +SR, -SR

### Simulation result



### Evaluation circuit

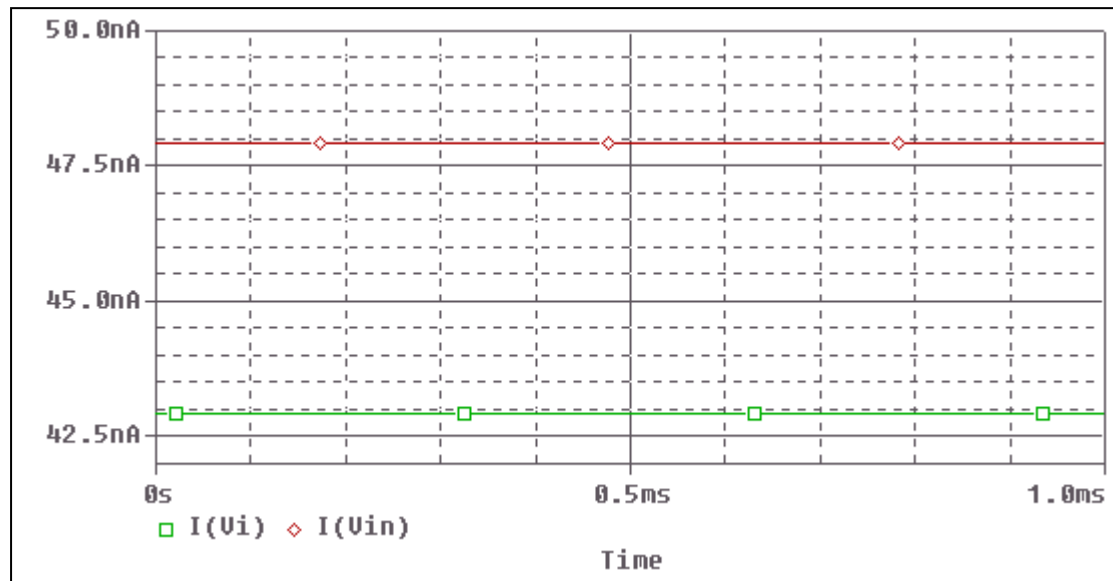


Output voltage change 0.25V in 1 us (If no good can change **C2** of Spice Model Editor)

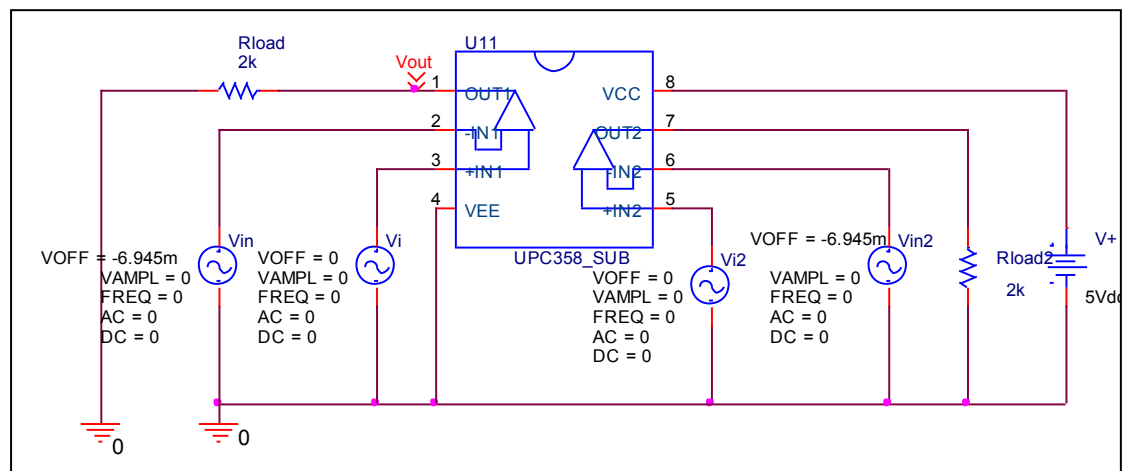
Slew Rate(v/us)	Data sheet	Simulation	%Error
		0.25	0.244

## Input current Ib, Ibos

### Simulation result



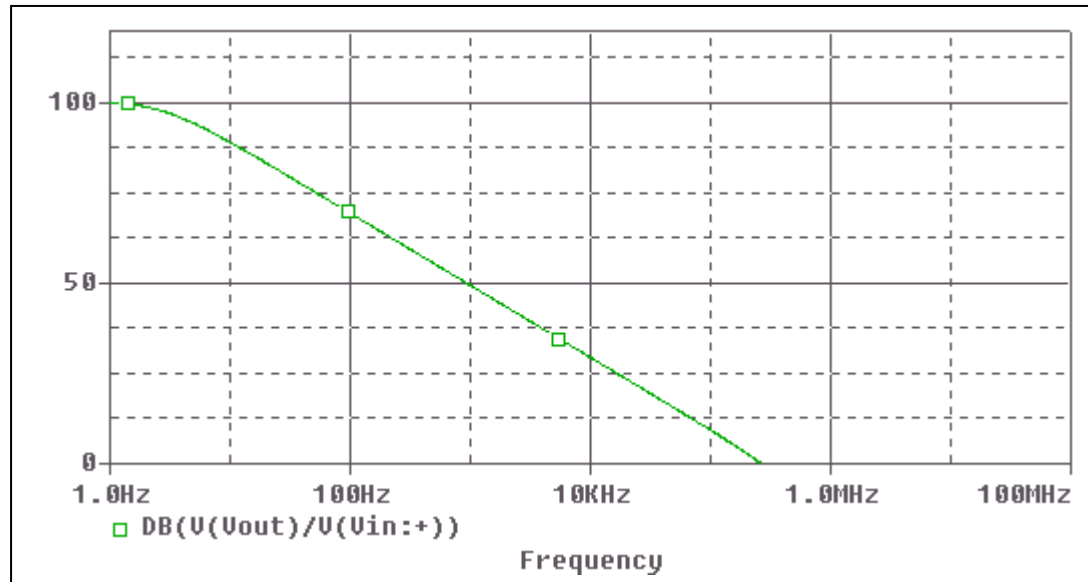
### Evaluation circuit



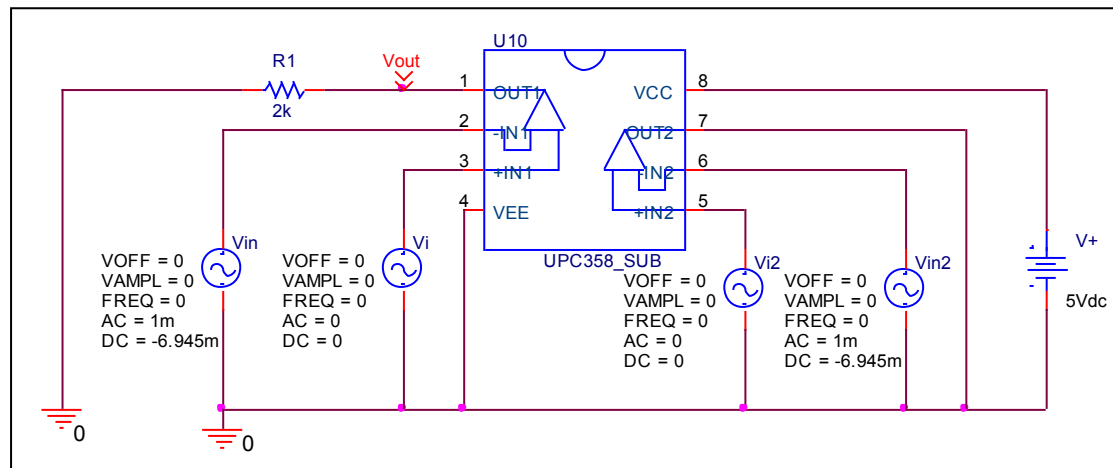
	Data sheet	Simulation	%Error
Ib(nA)	45	45.423	0.941
Ibos(nA)	5	4.973	0.54

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

### Simulation result



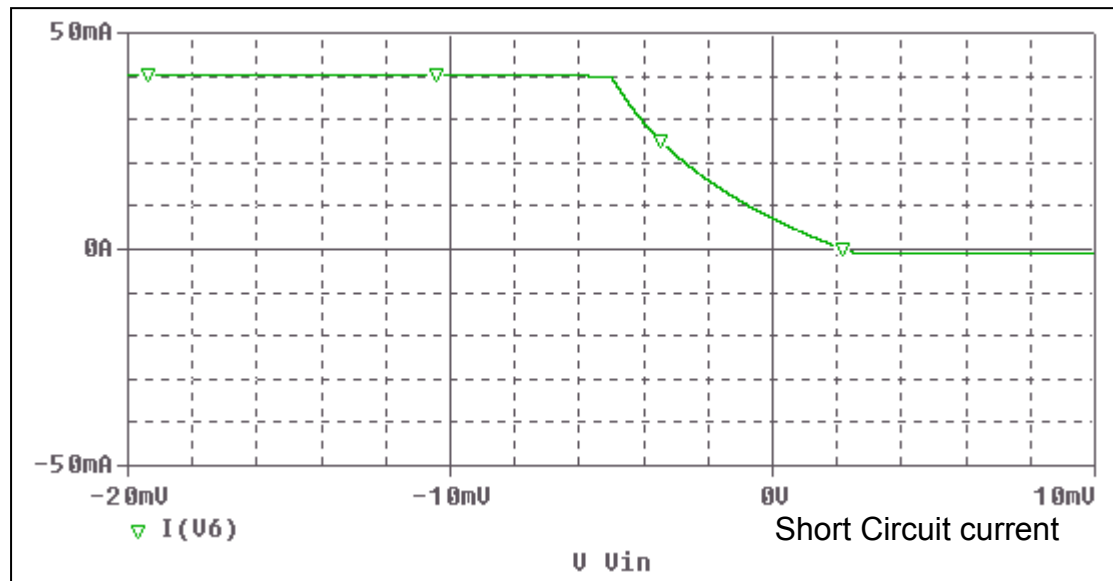
### Evaluation circuit



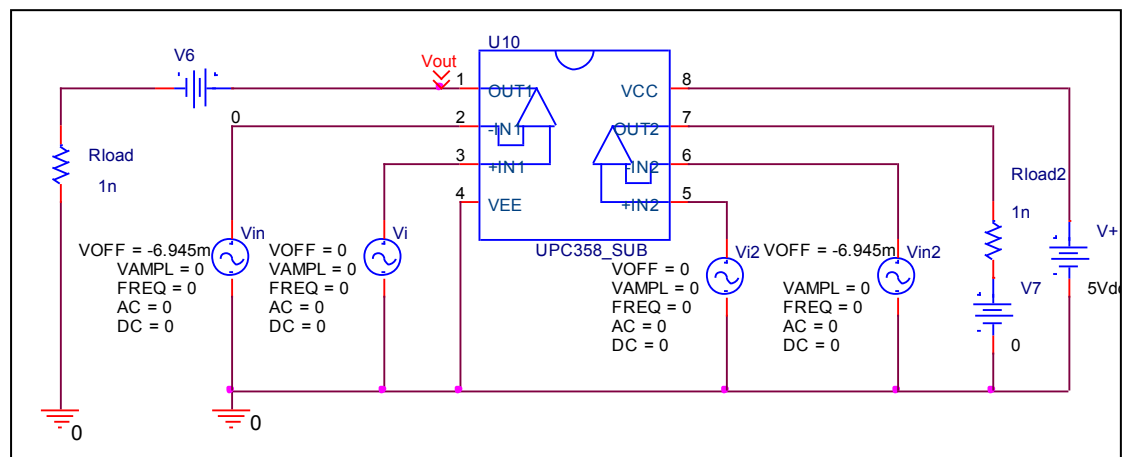
	Data sheet	Simulation	%Error
<b>f-0dB(MHz)</b>	0.3	0.29	3.33
<b>Av-dc</b>	100000	102329	2.329

## Output Short Circuit Current - Ios

Simulation result



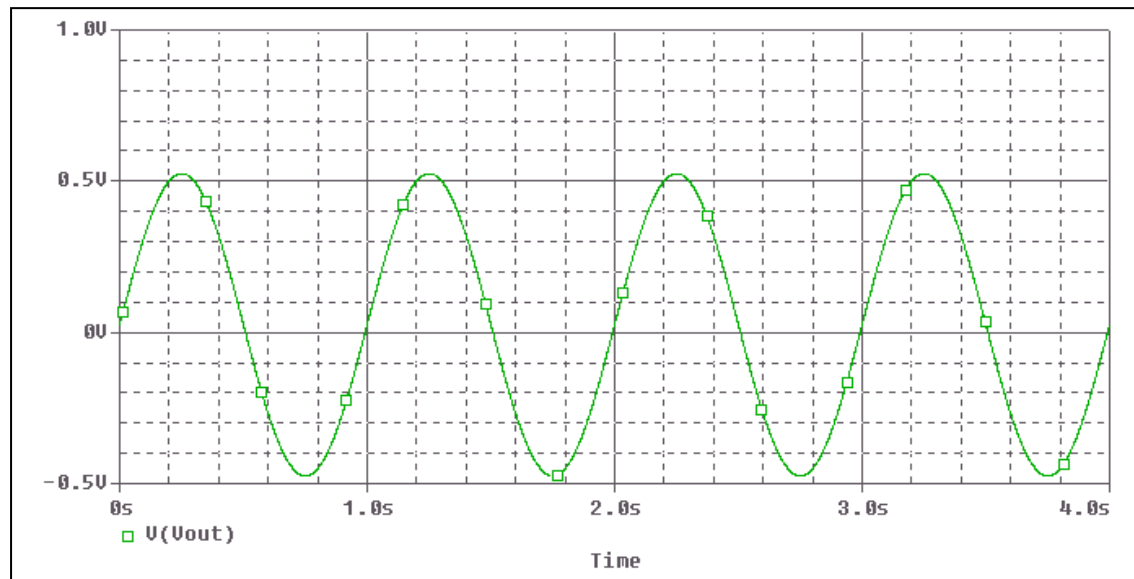
Evaluation circuit



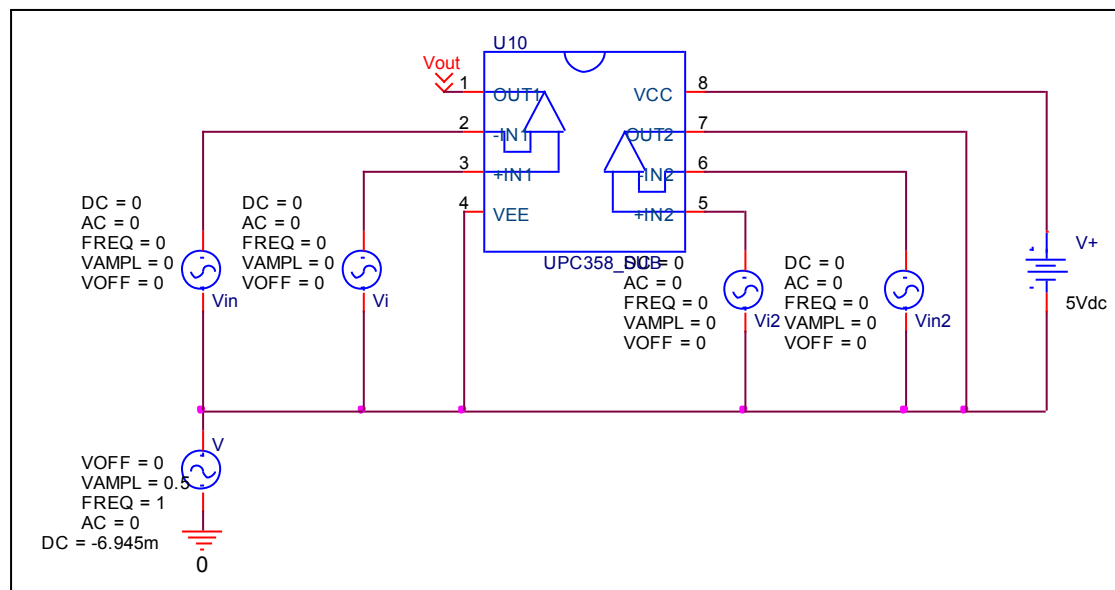
Short Circuit Current	Data sheet	Simulation	%Error
	40mA	40.11mA	0.275

# Common-Mode Rejection Voltage gain

## Simulation result



## Evaluation circuit



Common mode gain=1/0.03162

Common Mode Reject Ratio=102329/31.62=3236.2

CMRR	Data sheet	Simulation	%Error
		3162.3	3236.2