

Device Modeling Report

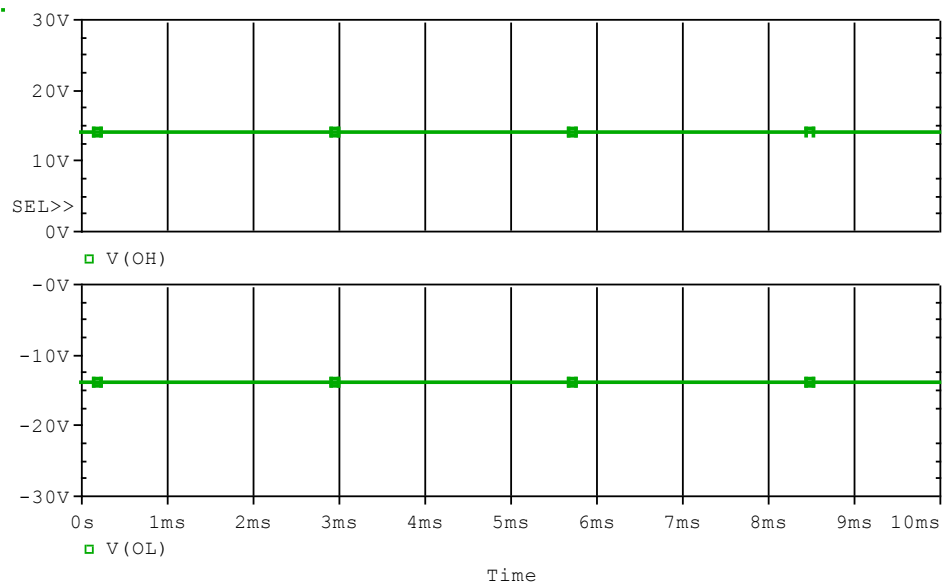
COMPONENTS: OPERATIONAL AMPLIFIER
PART NUMBER: BA4560R
MANUFACTURER: ROHM CO., LTD.



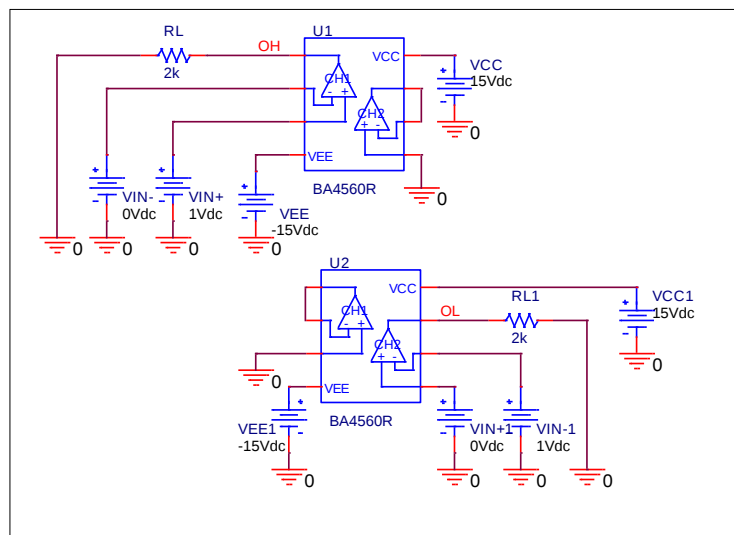
Bee Technologies Inc.

Output Voltage Swing

Simulation result



Evaluation circuit

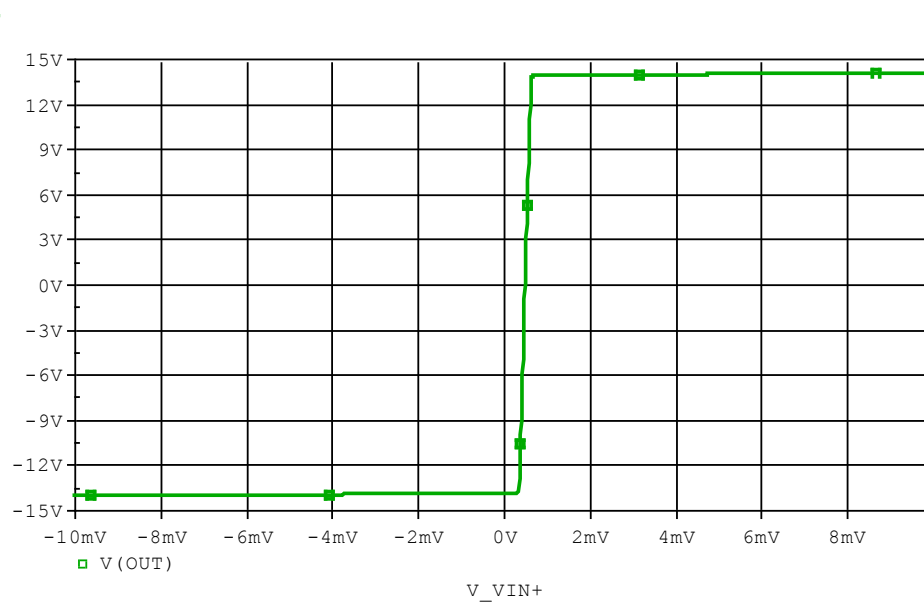


Comparison table

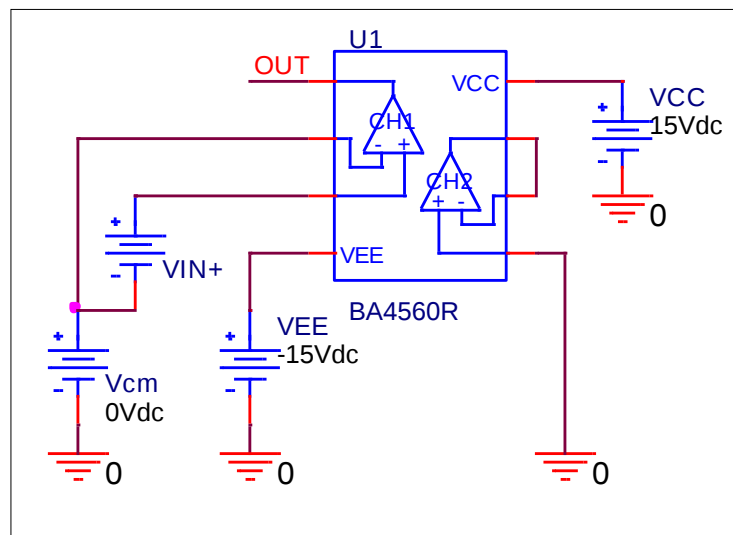
Parameter	Measurement	Simulation	%Error
VOH (V)	14.000	13.998	-0.01
VOL (V)	-14.000	-13.998	-0.01

Input Offset Voltage

Simulation result



Evaluation circuit

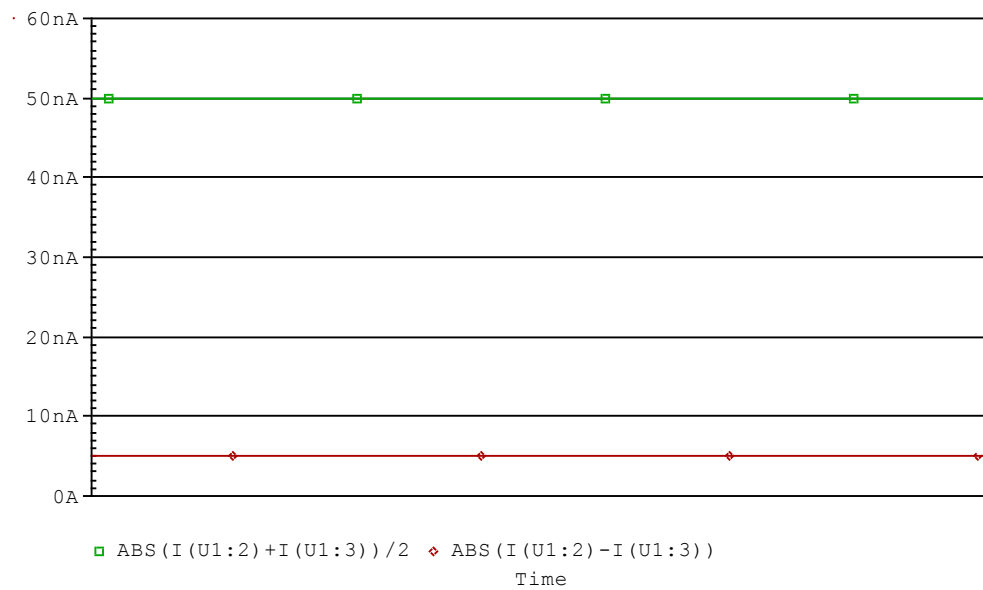


Comparison table

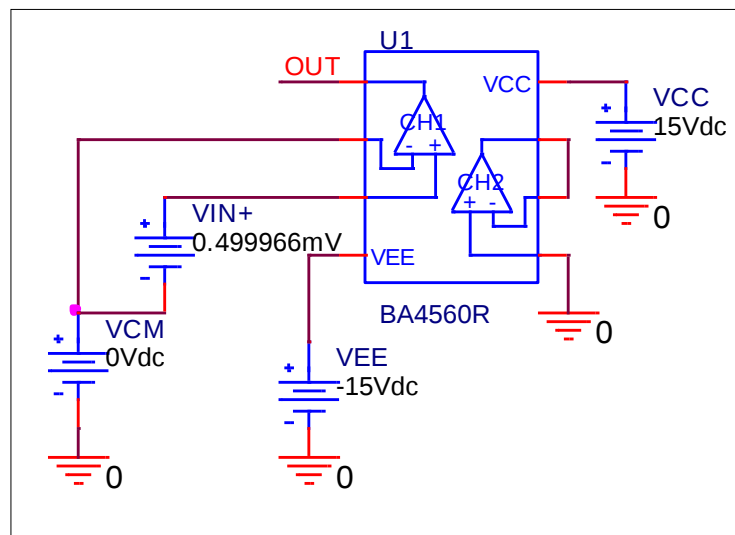
Parameter	Measurement	Simulation	%Error
V_{io} (mV)	0.500	0.500	-0.01

Input Current Ib, Ibos

Simulation result



Evaluation circuit

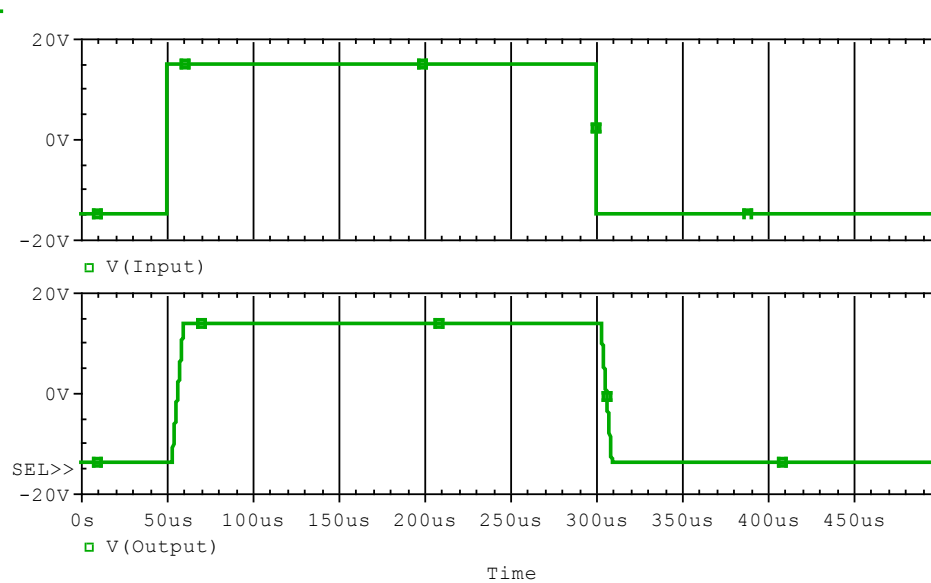


Comparison table

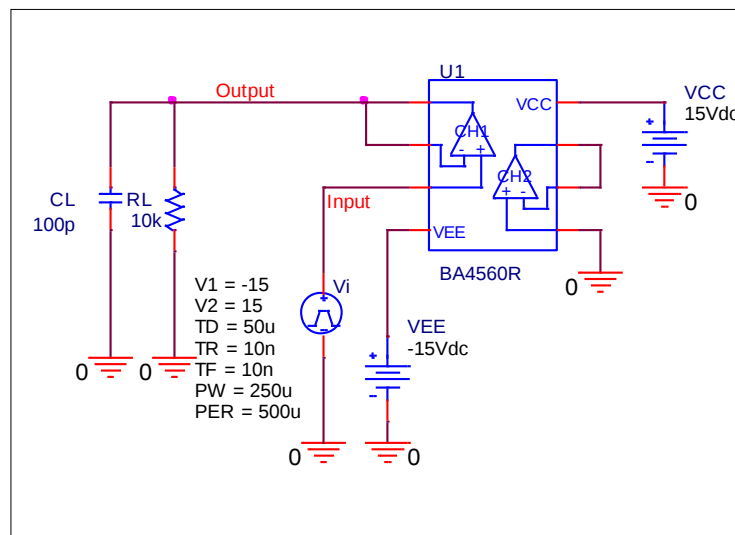
Parameter	Measurement	Simulation	%Error
Iio (nA)	5.000	5.002	0.04
Ib (nA)	50.000	49.815	-0.37

Slew Rate

Simulation result



Evaluation circuit

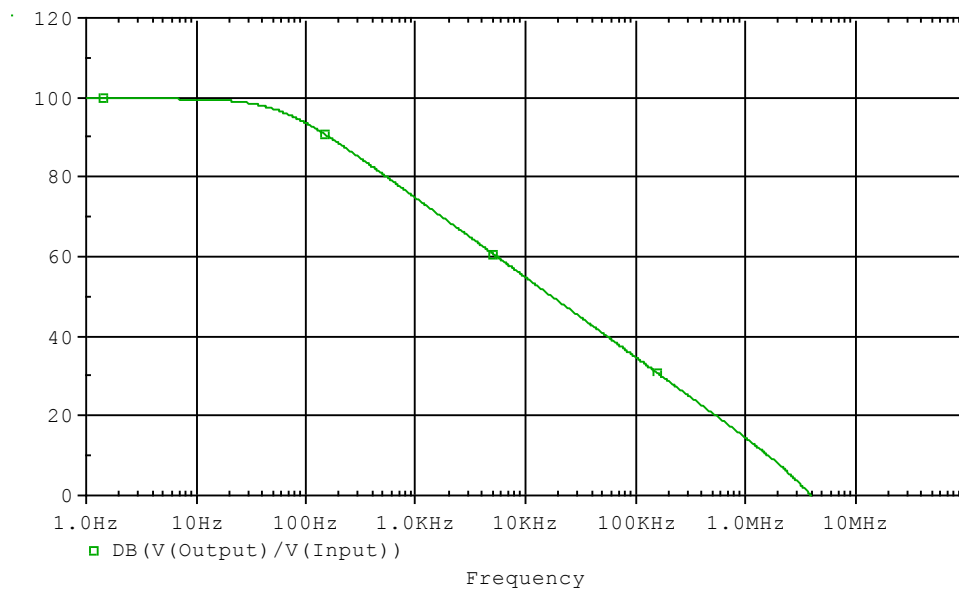


Comparison table

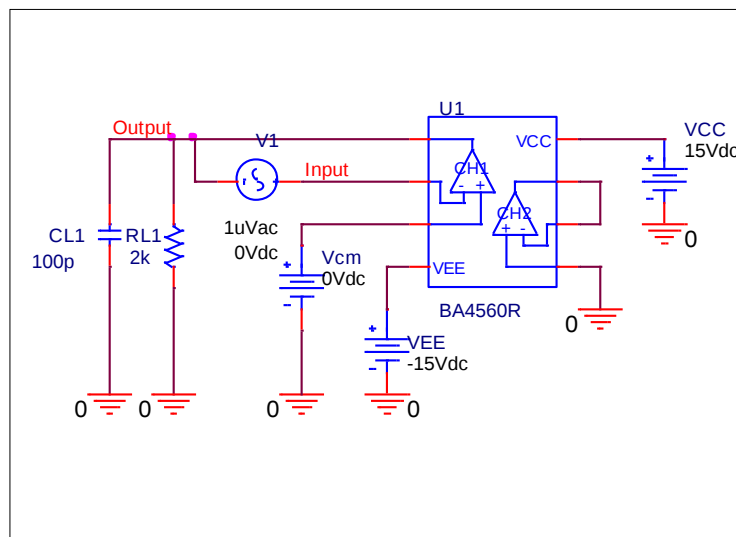
Parameter	Measurement	Simulation	%Error
Slew Rate (V/us)	4.000	3.909	-2.27

Open loop voltage gain

Simulation result



Evaluation circuit

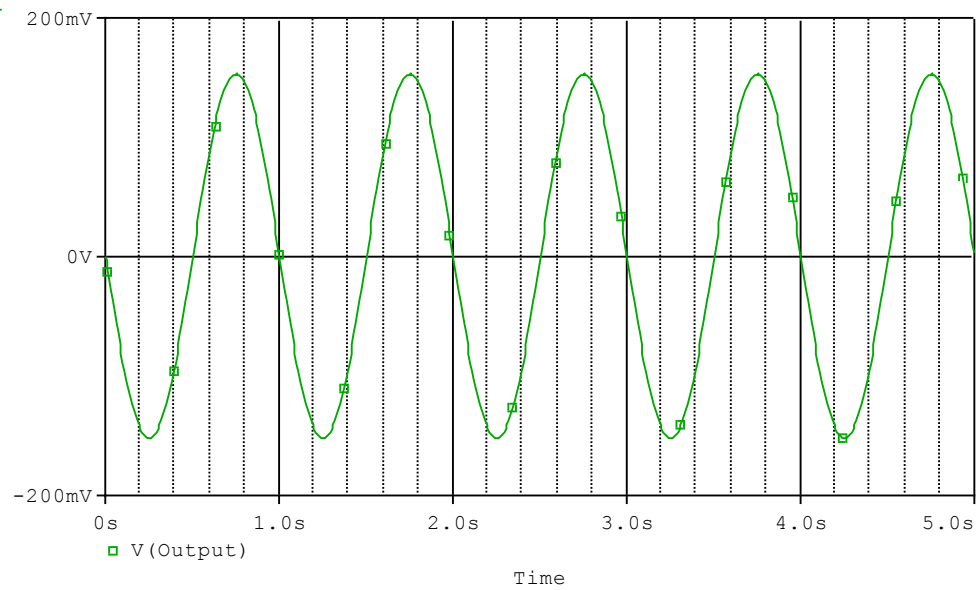


Comparison table

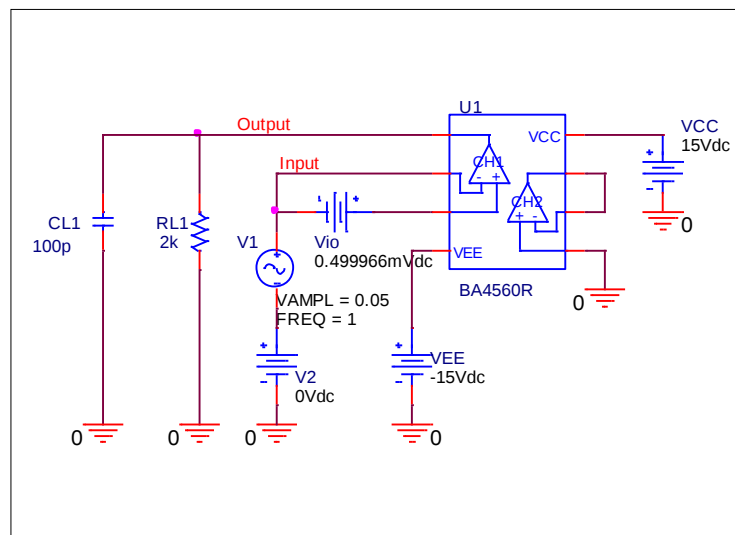
Parameter	Measurement	Simulation	%Error
Ft (MHz)	4.000	4.004	0.09
AV (db)	100.000	99.665	-0.33

Common-mode rejection voltage gain

Simulation result



Evaluation circuit



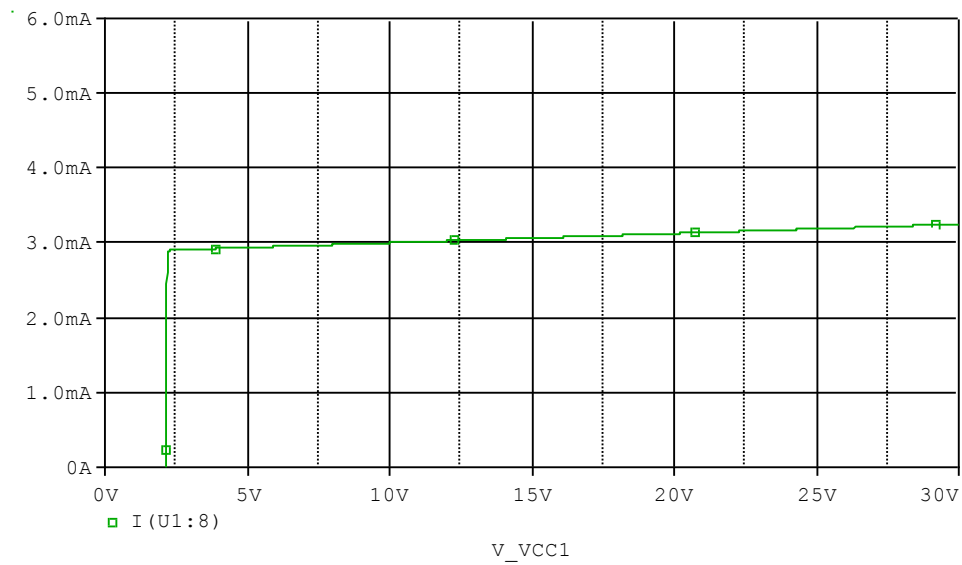
Comparison table

Common mode gain = 0.00305 V/mV
 $CMRR = 20\log(100/0.00305) = 90.314$

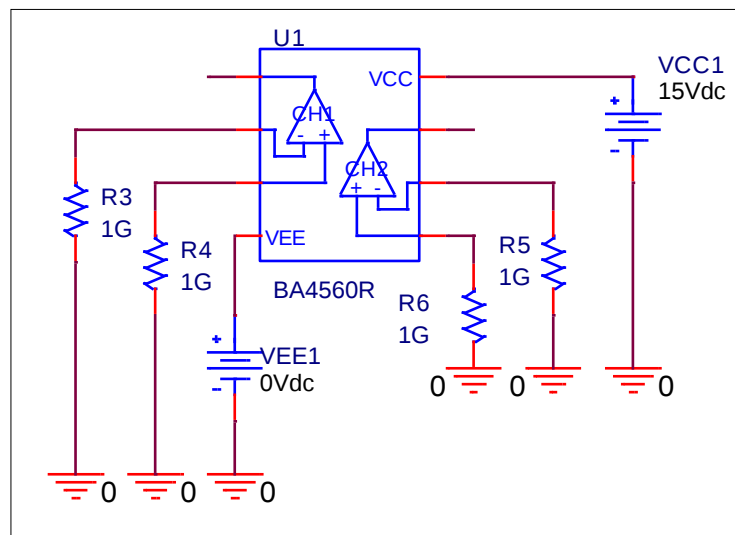
Parameter	Measurement	Simulation	%Error
CMRR(dB)	90.000	90.314	0.35

Supply Current

Simulation result



Evaluation circuit

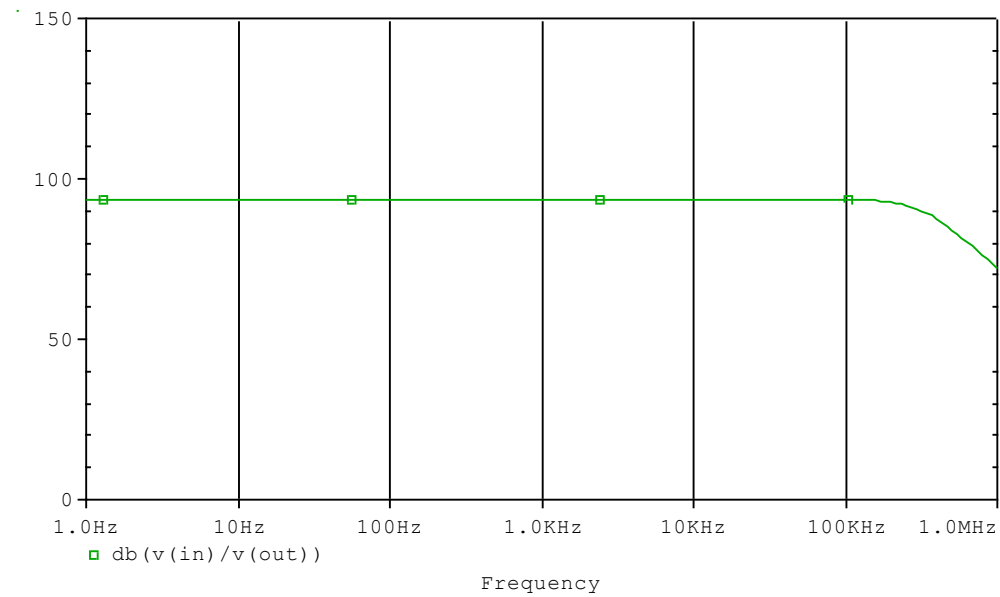


Comparison table

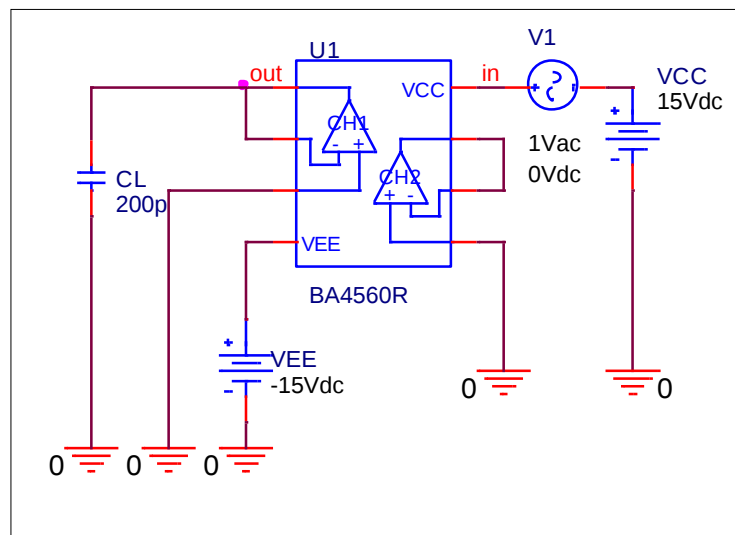
Parameter	Measurement	Simulation	%Error
ICC (mA)	3.250	3.250	0.00

Power supply rejection ration

Simulation result



Evaluation circuit

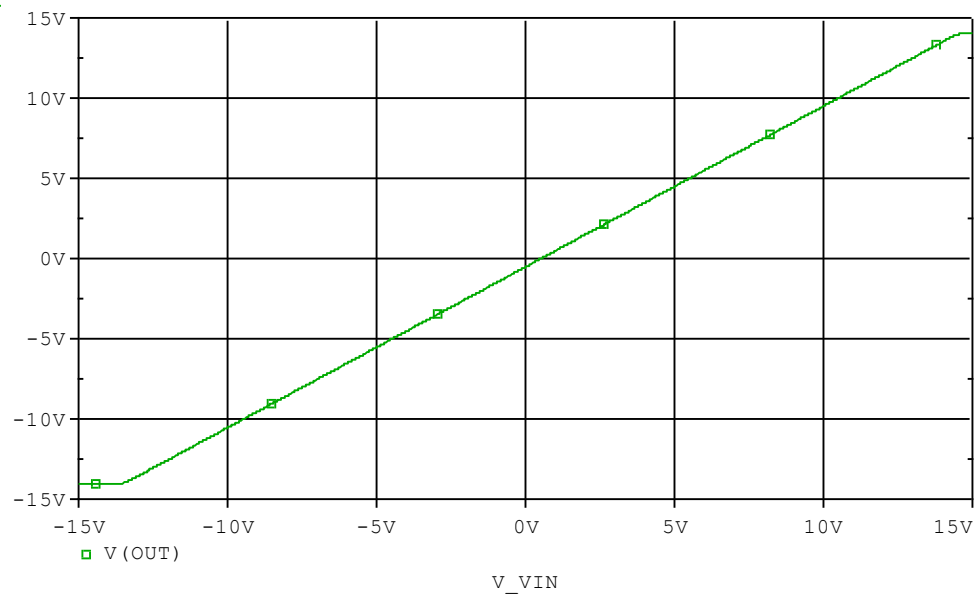


Comparison table

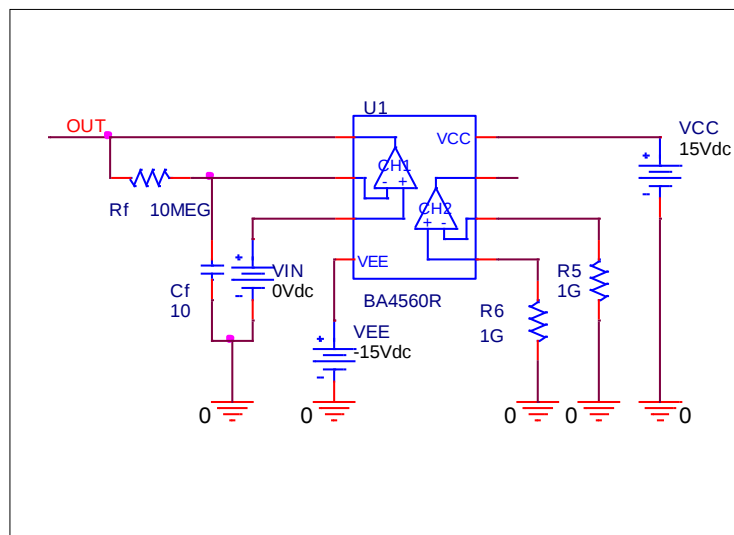
Parameter	Measurement	Simulation	%Error
PSRR (dB)	90.000	93.615	4.02

Input common-mode voltage range

Simulation result



Evaluation circuit

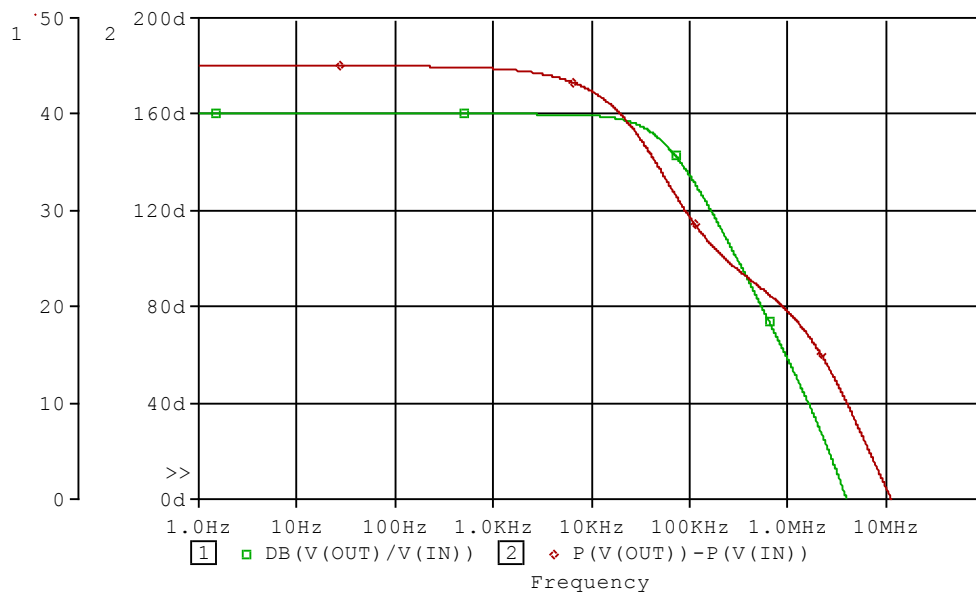


Comparison table

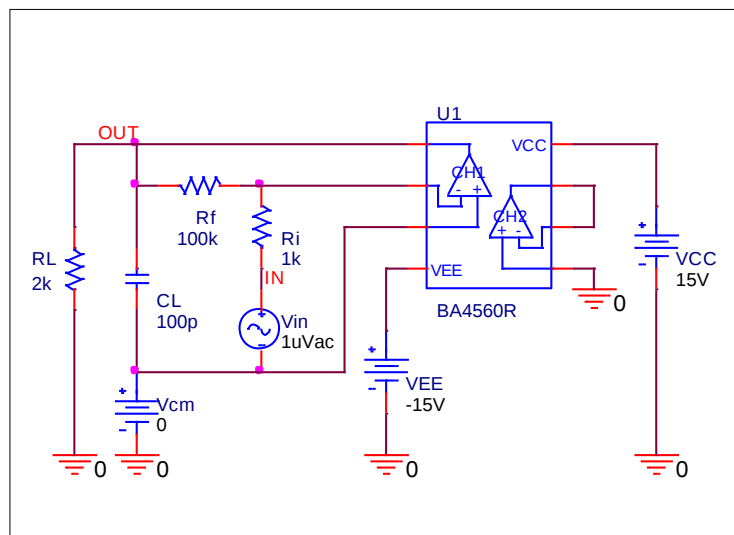
Parameter	Measurement	Simulation	%Error
V_{icm} (V)	28.000	28.109	0.39

Gain Bandwidth Product

Simulation result



Evaluation circuit



Comparison table

VCC=15[V], VEE=-15[V], Av=40[dB]

Parameter	Measurement	Simulation	%Error
Ft (MHz)	4.000	3.996	-0.11
Phase margin θ (°)	40.000	40.138	0.34