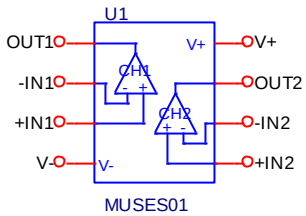
Device Modeling Report

COMPONENTS: OPERATIONAL AMPLIFIER
PART NUMBER: MUSES01
MANUFACTURER: New Japan Radio
REMARK TYPE: (OPAMP)

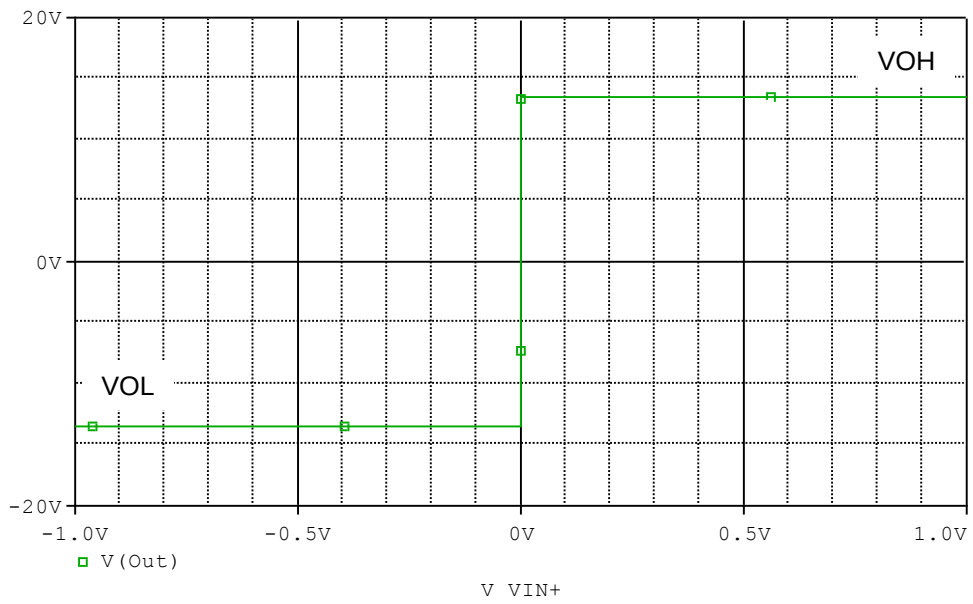
Bee Technologies Inc.

SPICE MODEL

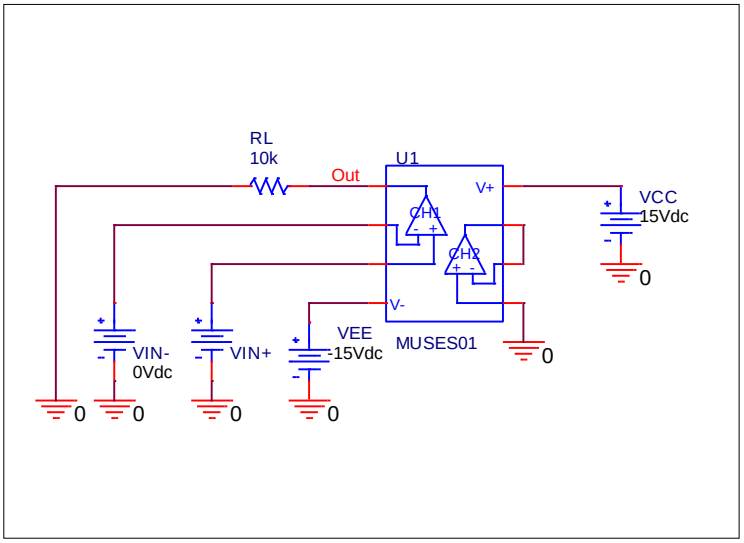


Output Voltage Swing

Simulation result



Evaluation circuit

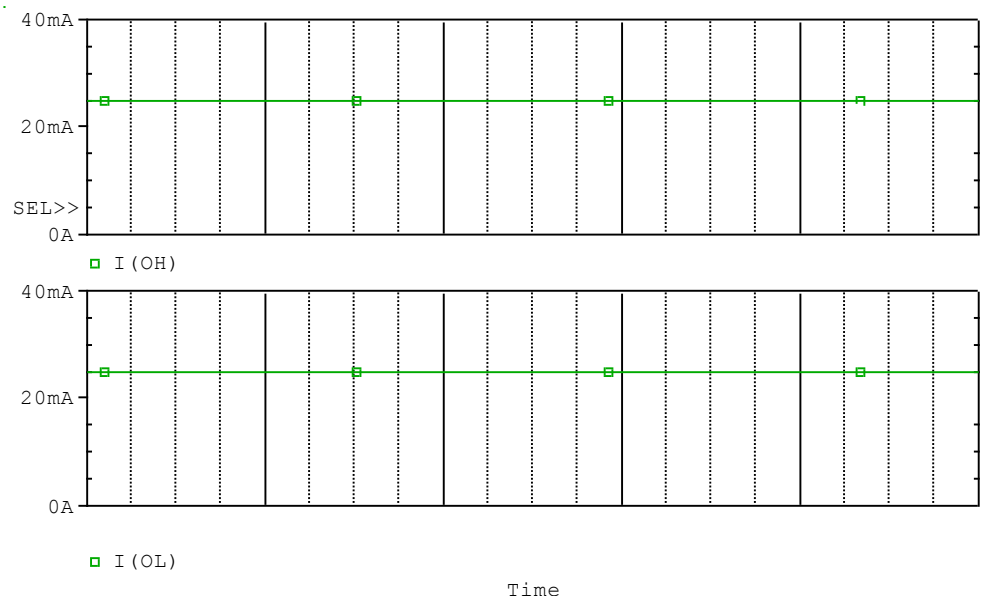


Comparison table

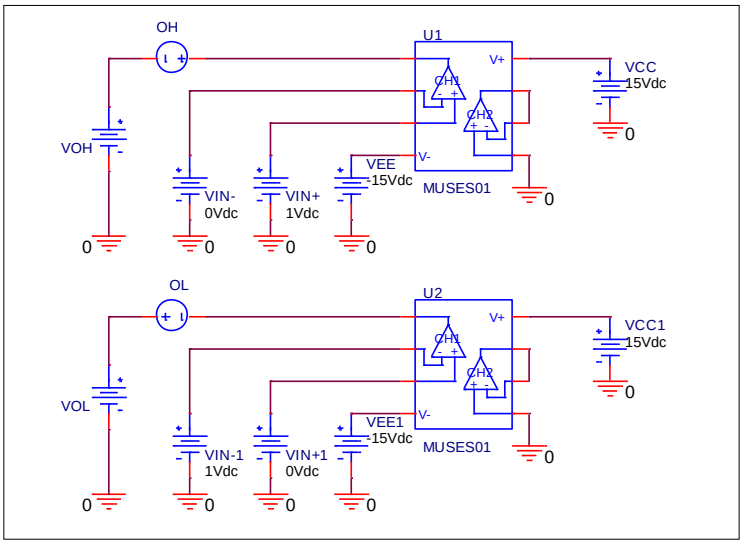
Parameter	Measurement	Simulation	%Error
VOH (V)	13.500	13.499	-0.01
VOL (V)	-13.500	-13.499	-0.01

Output Short Circuit Current

Simulation result



Evaluation circuit

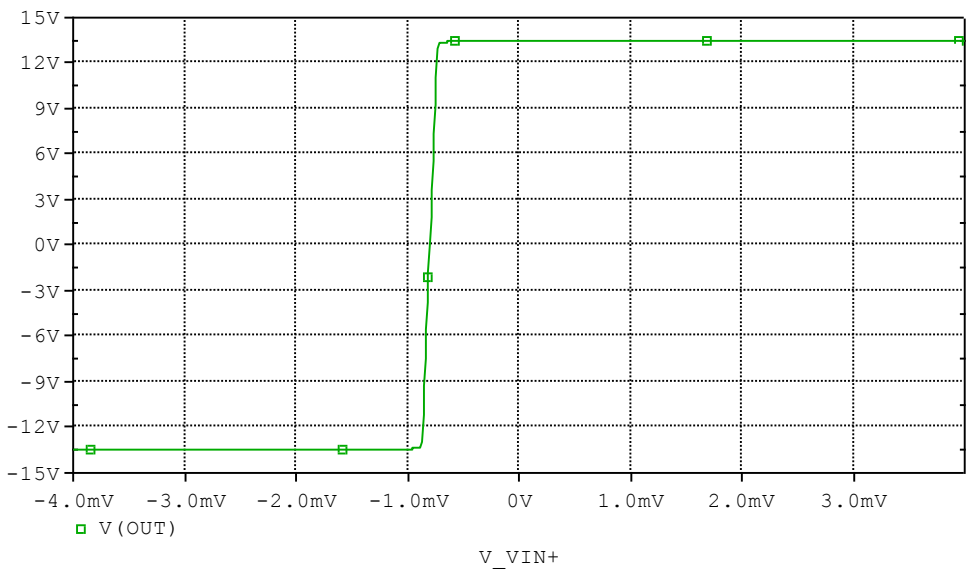


Comparison table

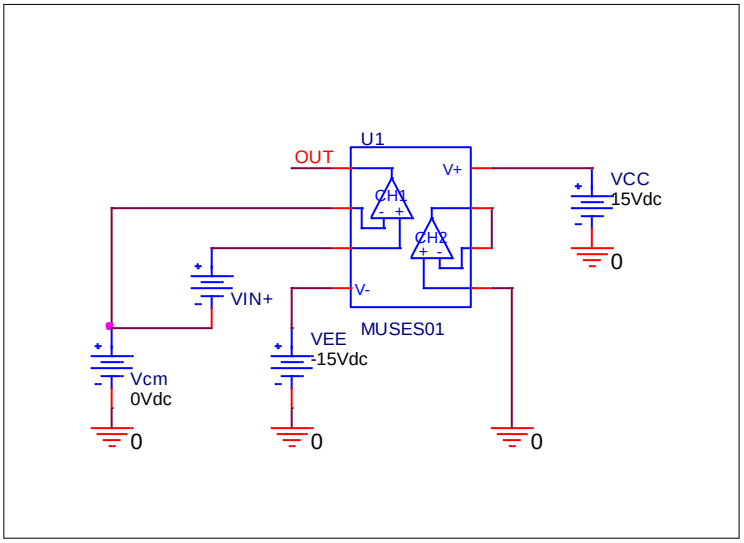
Parameter	Measurement	Simulation	%Error
IOH (mA)	25.000	25.007	0.03
IOL (mA)	25.000	25.007	0.03

Input Offset Voltage

Simulation result



Evaluation circuit

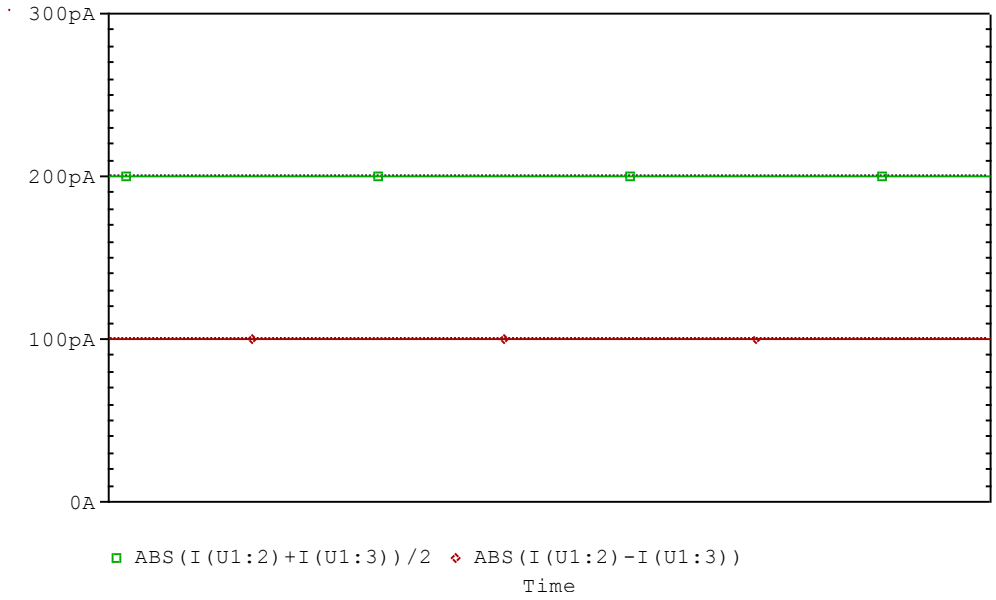


Comparison table

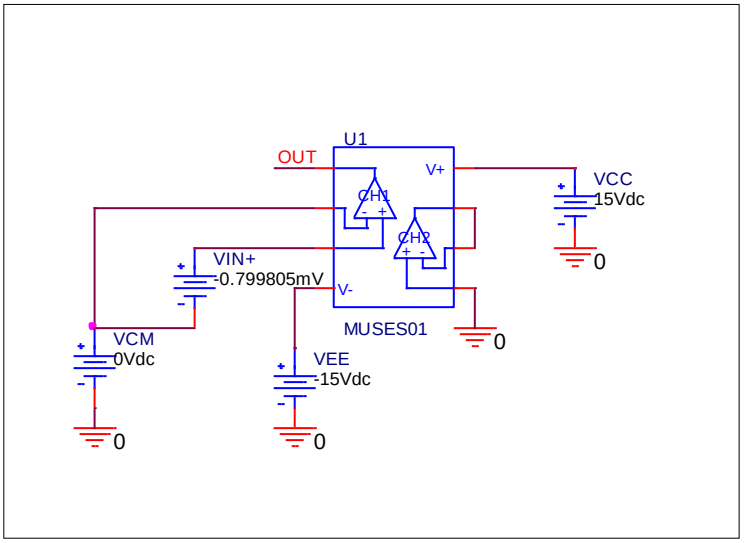
Parameter	Measurement	Simulation	%Error
Vio (mV)	0.800	0.800	-0.02

Input Current Ib, Ibos

Simulation result



Evaluation circuit

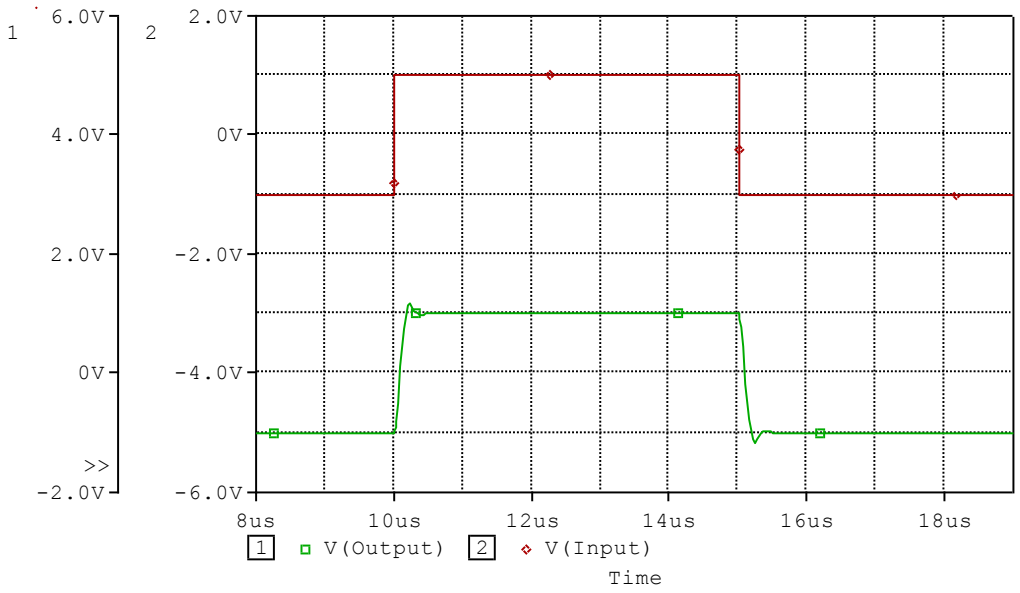


Comparison table

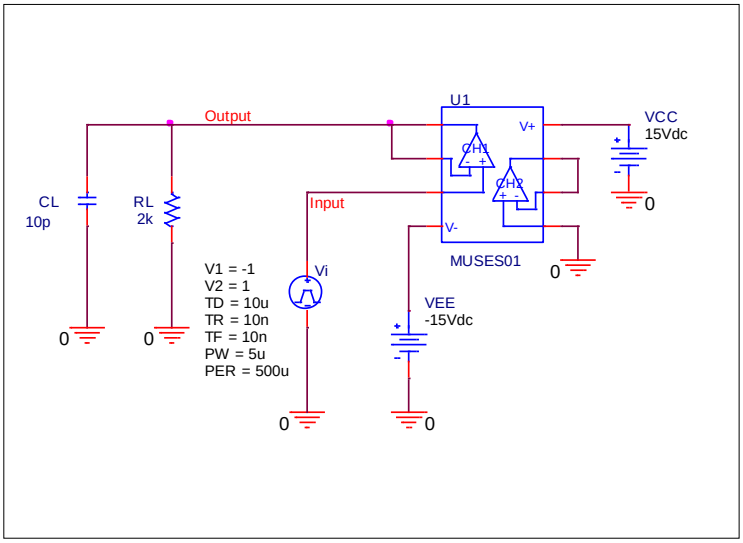
Parameter	Measurement	Simulation	%Error
Iio (nA)	100.000	100.000	0.00
Ib (nA)	200.000	199.501	-0.25

Slew Rate

Simulation result



Evaluation circuit

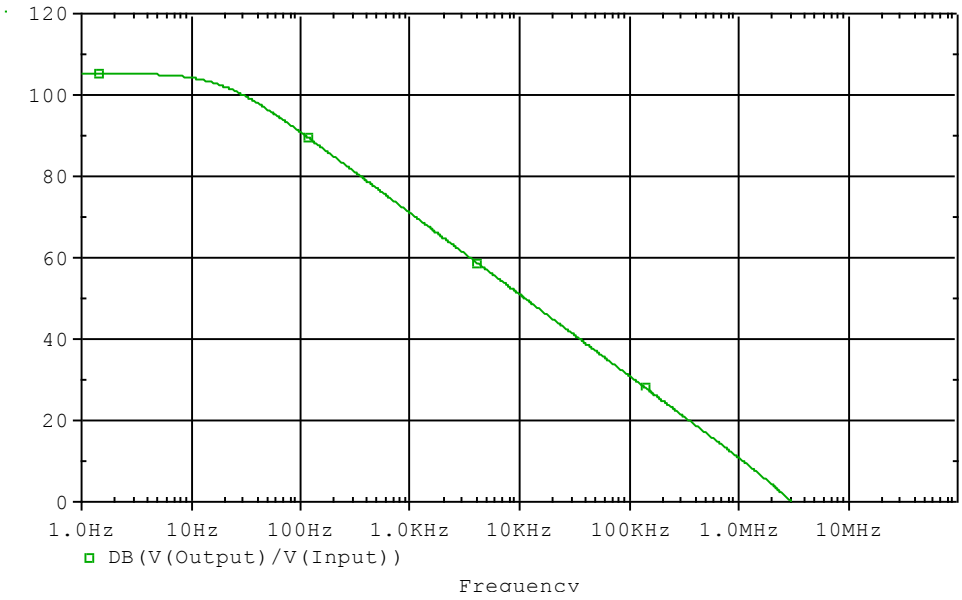


Comparison table

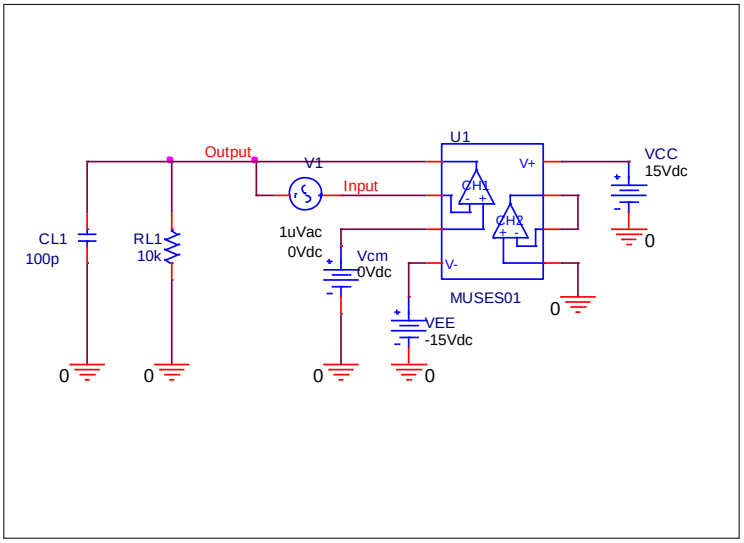
Parameter	Measurement	Simulation	%Error
+SR (V/us)	12.000	12.432	3.60
-SR (V/us)	13.000	12.638	-2.78

Open loop voltage gain

Simulation result



Evaluation circuit

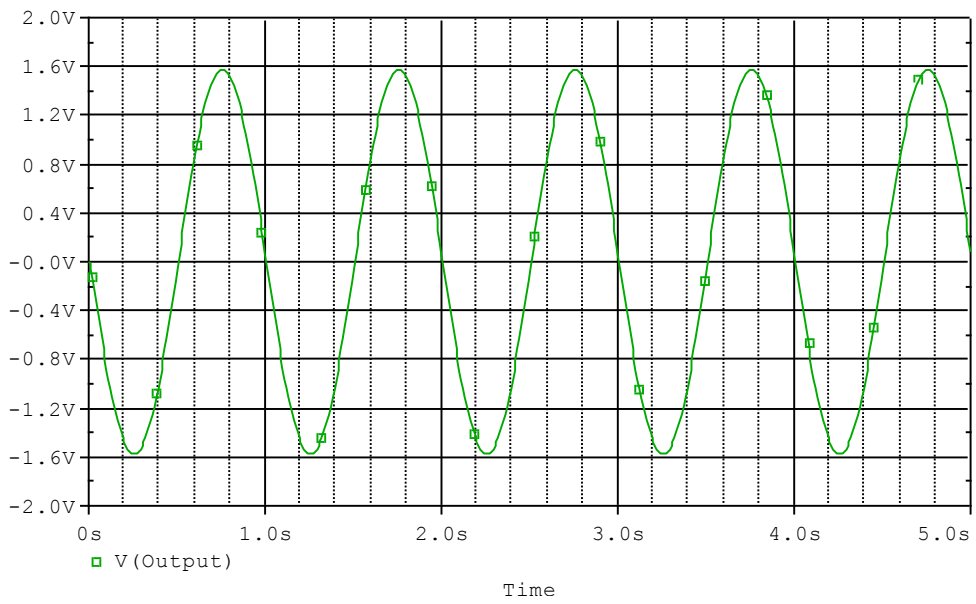


Comparison table

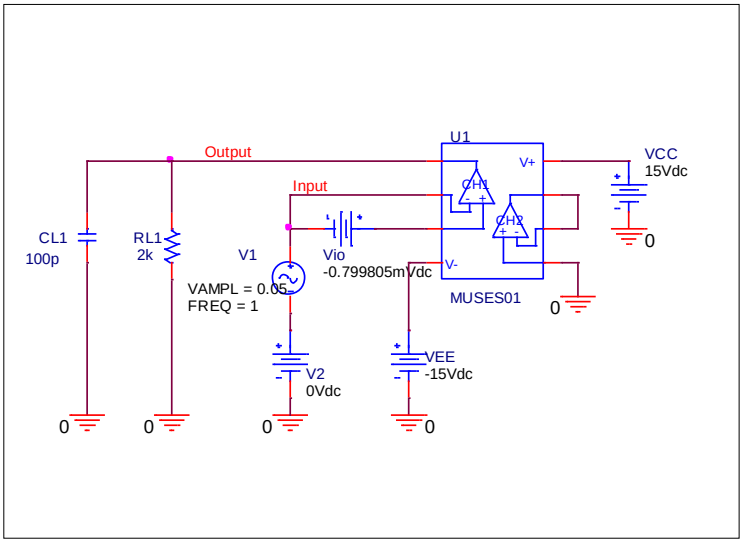
Parameter	Measurement	Simulation	%Error
AV (db)	105.000	105.261	0.25

Common-mode rejection voltage gain

Simulation result



Evaluation circuit



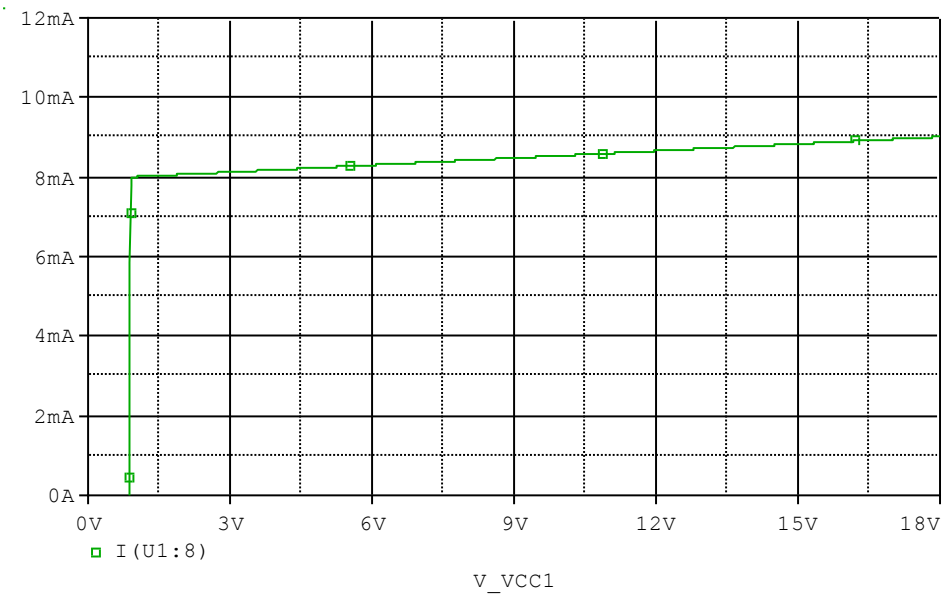
Comparison table

Common mode gain = 31.473V/V
CMRR = 20log(177827.941/31.473) = 75.041

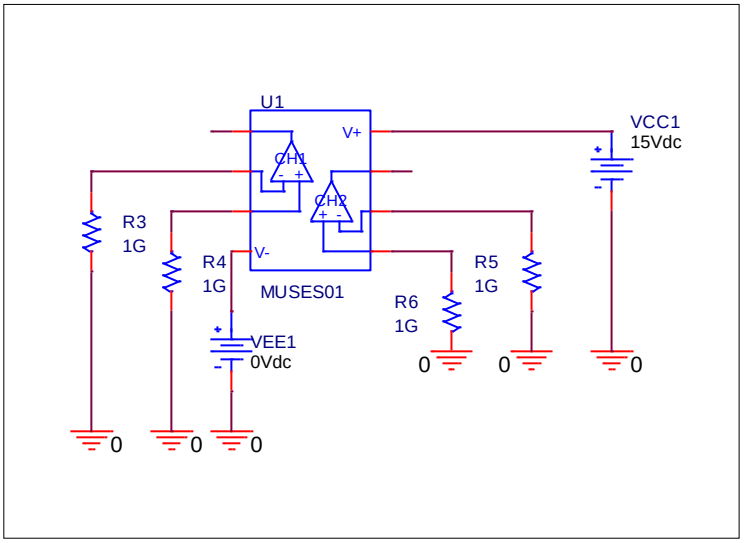
Parameter	Measurement	Simulation	%Error
CMRR(dB)	**75.000**	**75.041**	**0.05**

Supply Current

Simulation result



Evaluation circuit

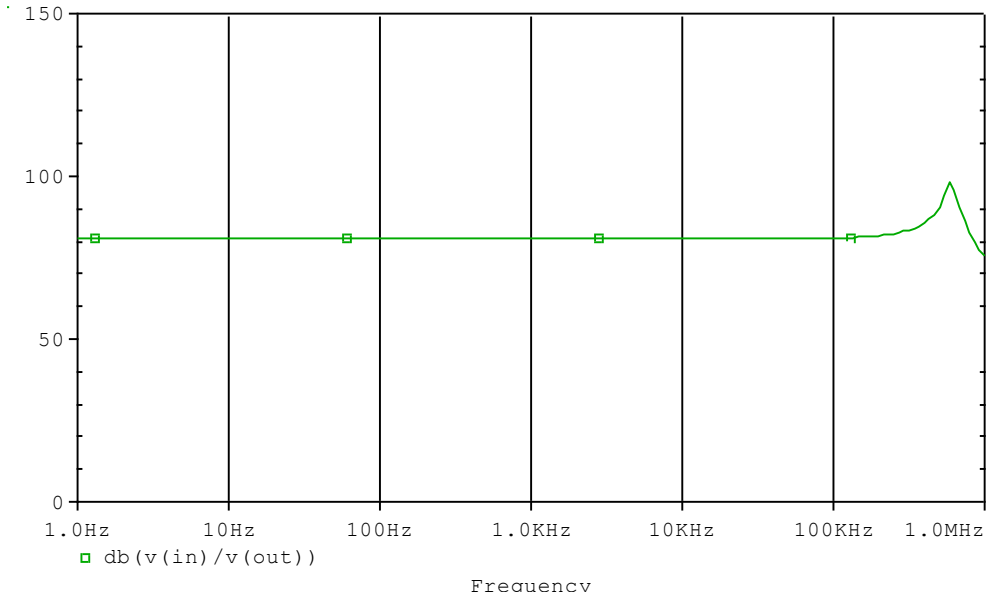


Comparison table

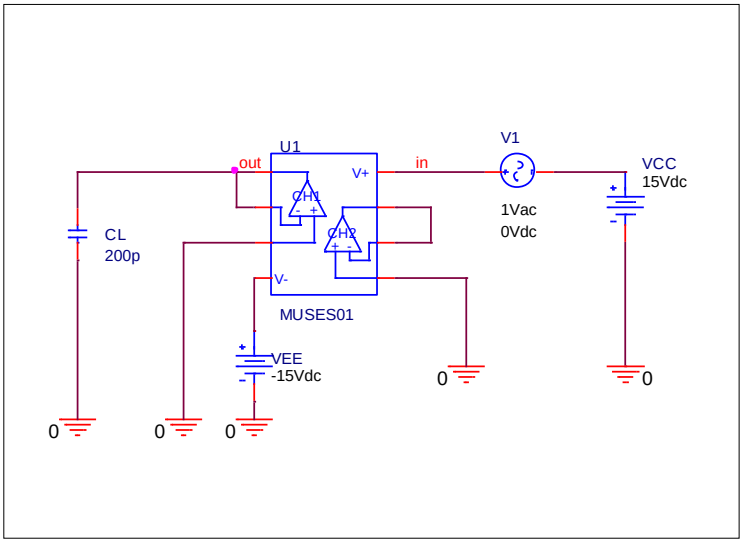
Parameter	Measurement	Simulation	%Error
ICC (mA)	9.000	9.009	0.10

Power supply rejection ration

Simulation result



Evaluation circuit

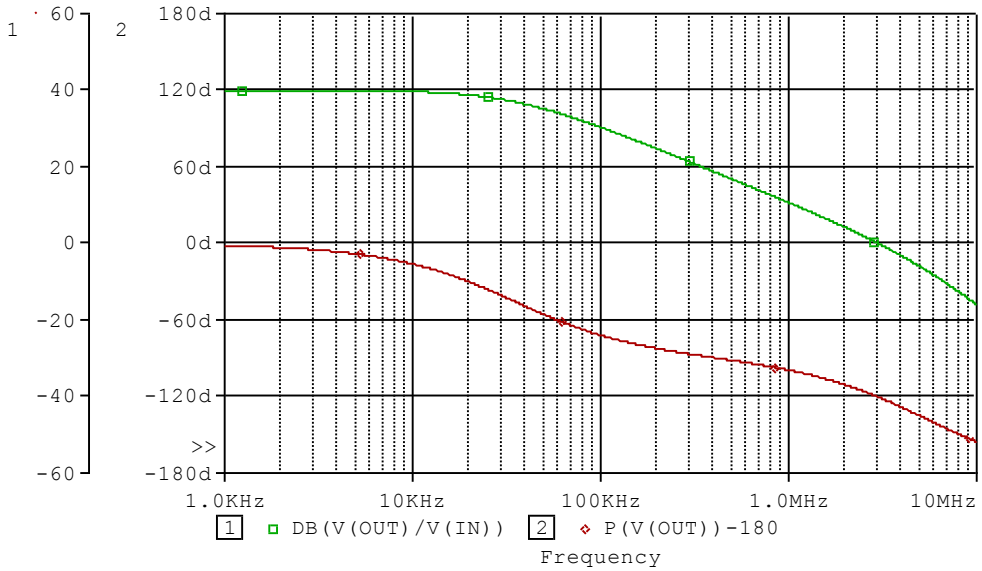


Comparison table

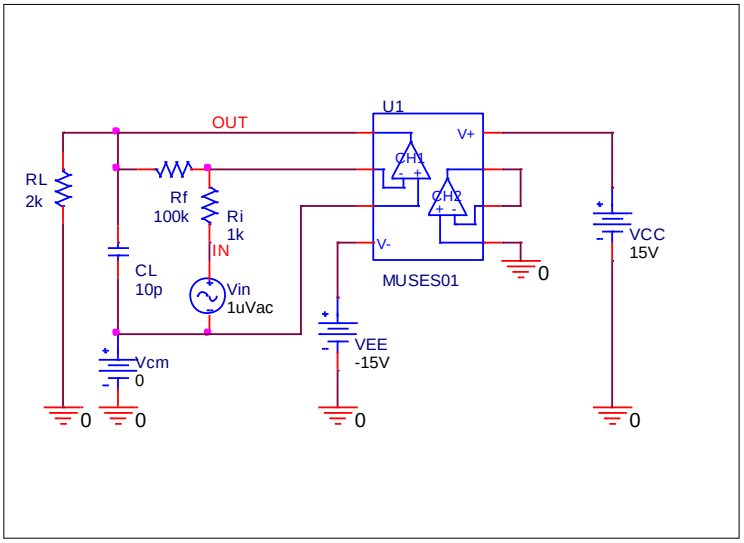
Parameter	Measurement	Simulation	%Error
PSRR (dB)	83.000	80.797	-2.65

Gain Bandwidth Product

Simulation result



Evaluation circuit



Comparison table

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

Parameter	Measurement	Simulation	%Error
Ft (MHz)	**3.000**	**2.994**	**-0.19**
Phase margin θ (°)	**60.000**	**59.550**	**-0.75**