

Device Modeling Report

COMPONENTS: VOLTAGE COMPARATOR
PART NUMBER: NJM2901
MANUFACTURER: NEW JAPN RADIO



Bee Technologies Inc.

BJT MODEL

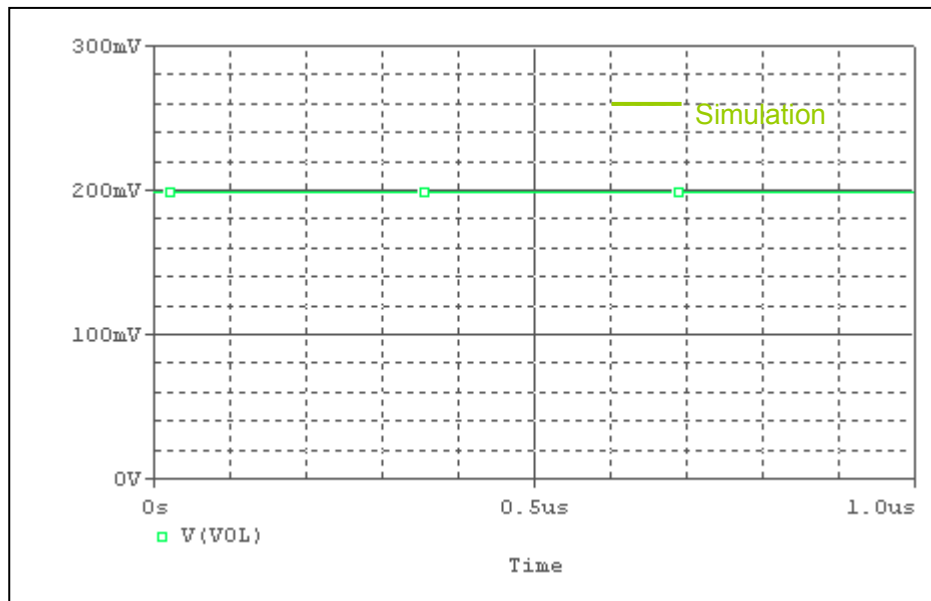
Pspice model parameter	Model description
IS	Saturation Current
BF	Ideal Maximum Forward Beta
CJC	Zero-bias Collector-Base Junction Capacitance
TF	Forward Transit Time
TR	Reverse Transit Time

DIODE MODEL

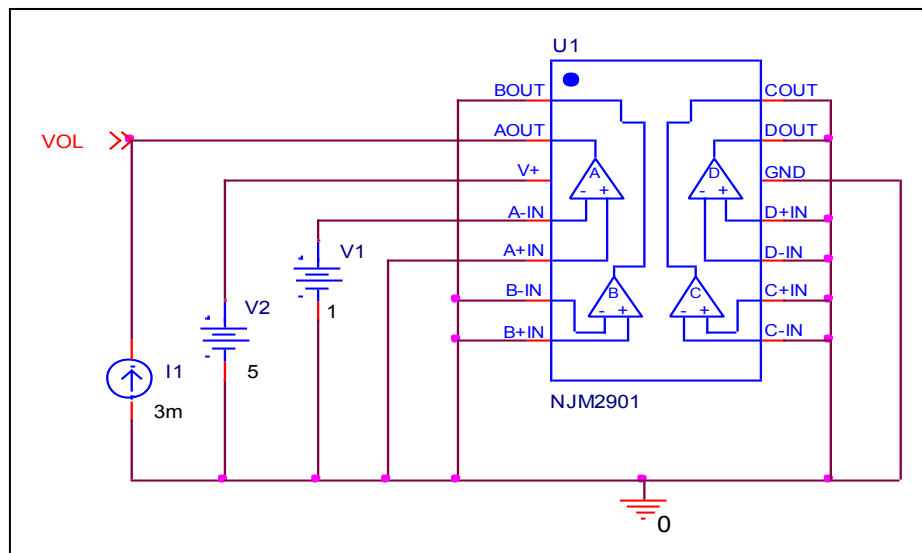
Pspice model parameter	Model description
IS	Saturation Current
RS	Series Resistance

Output Low Voltage

Simulation result



Evaluation Circuit

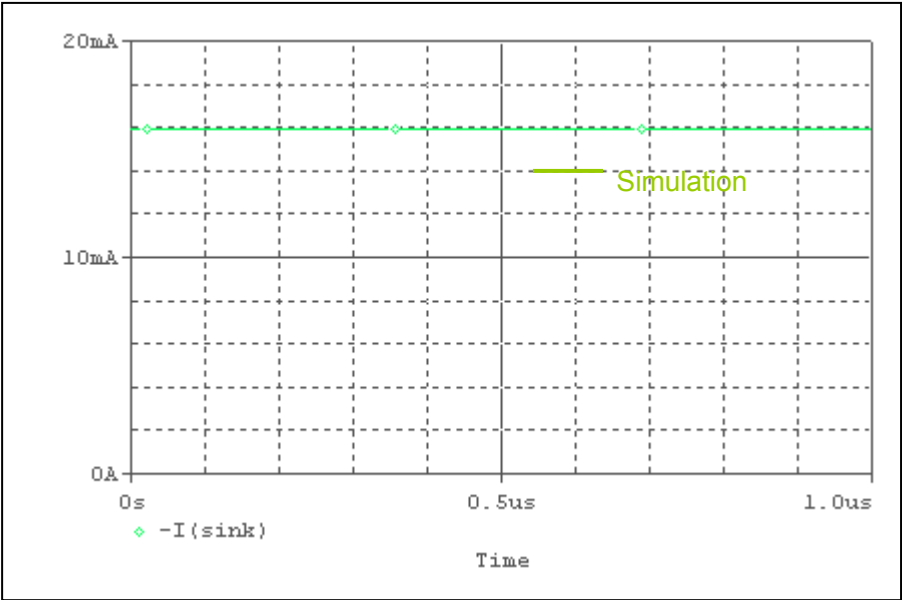


Comparison Table

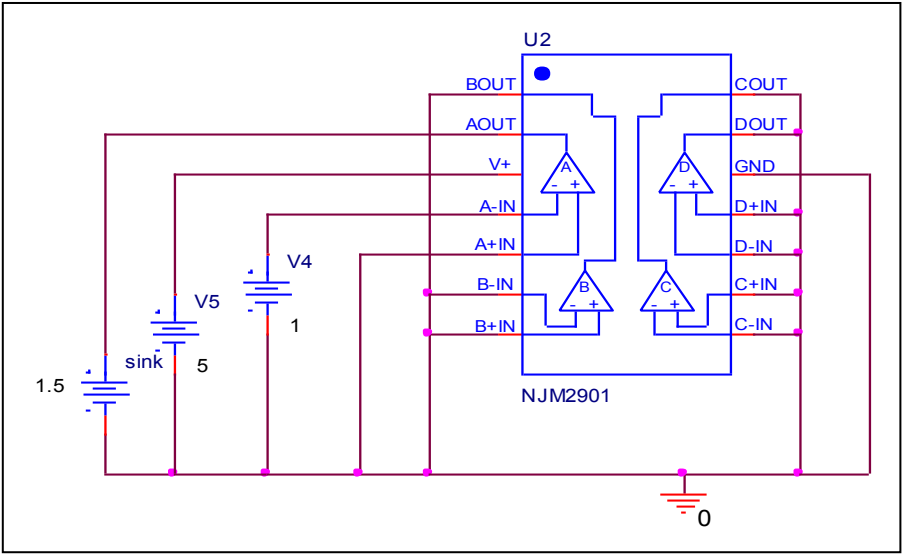
$I_{\text{sink}} = 3\text{mA}$	Measurement	Simulation	%Error
$V_{\text{ol}} \text{ (mV)}$	200	198.257	-0.8715

Sink Current

Simulation result



Evaluation Circuit

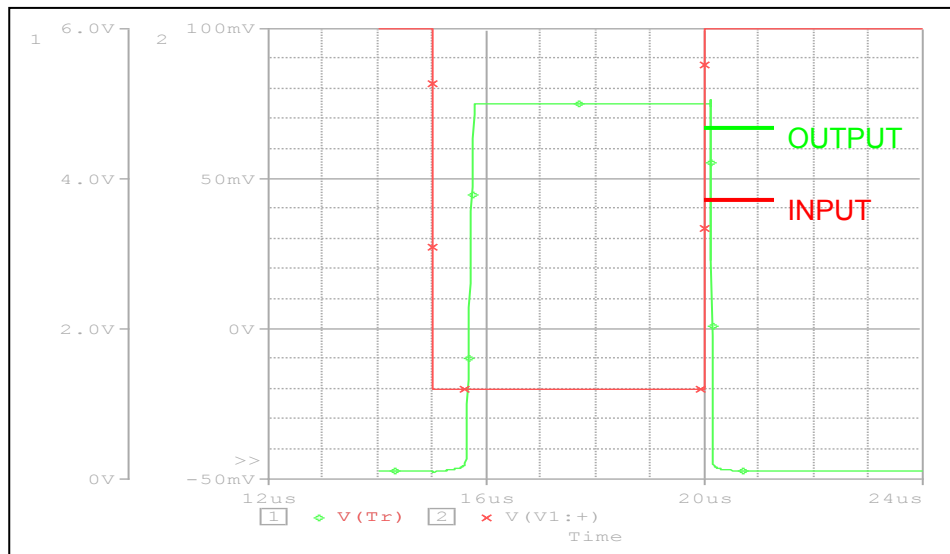


Comparison Table

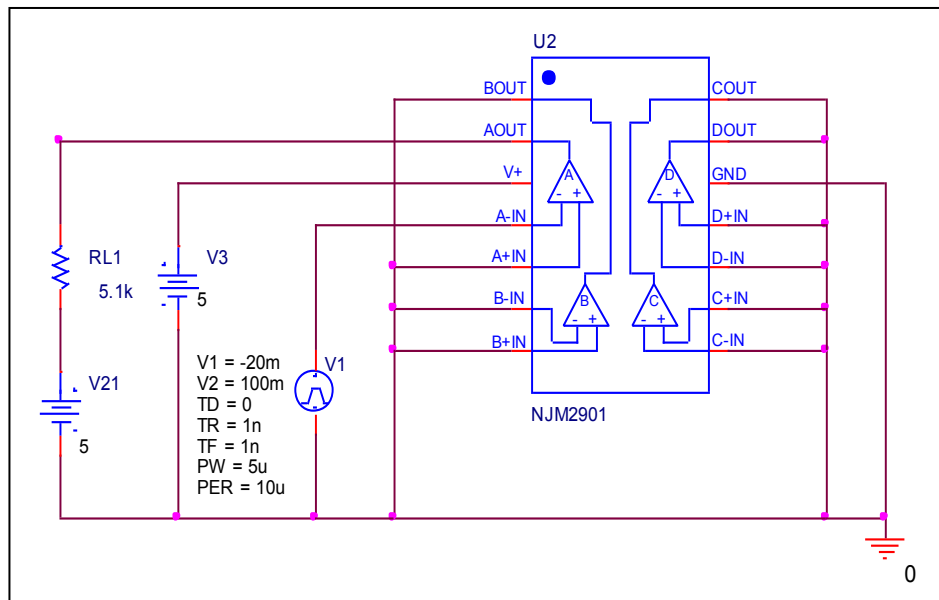
$V_{ol} = 1.5\text{ V}$	Measurement	Simulation	%Error
$I_{\text{sink}}\text{ (mA)}$	16	15.947	-0.3313

Response time (Rise time and Transition time)

Simulation result



Evaluation Circuit

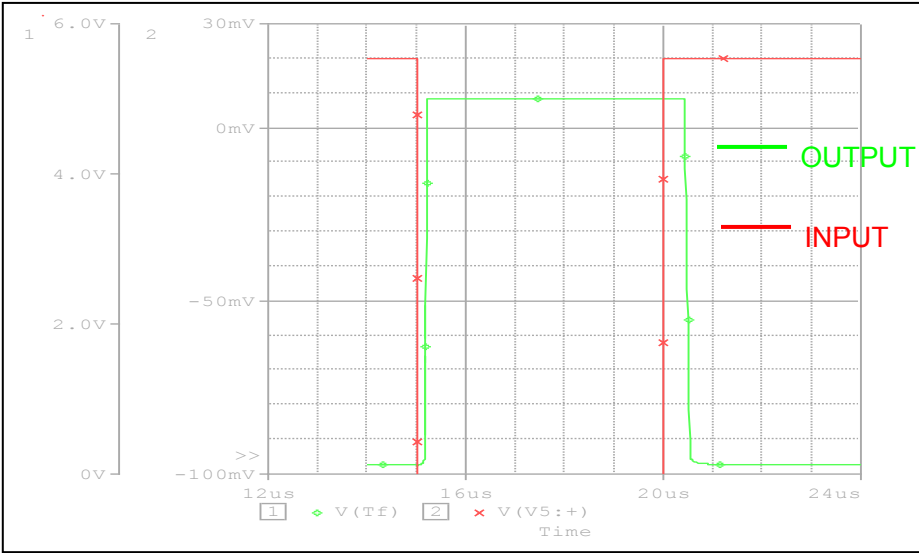


Comparison Table

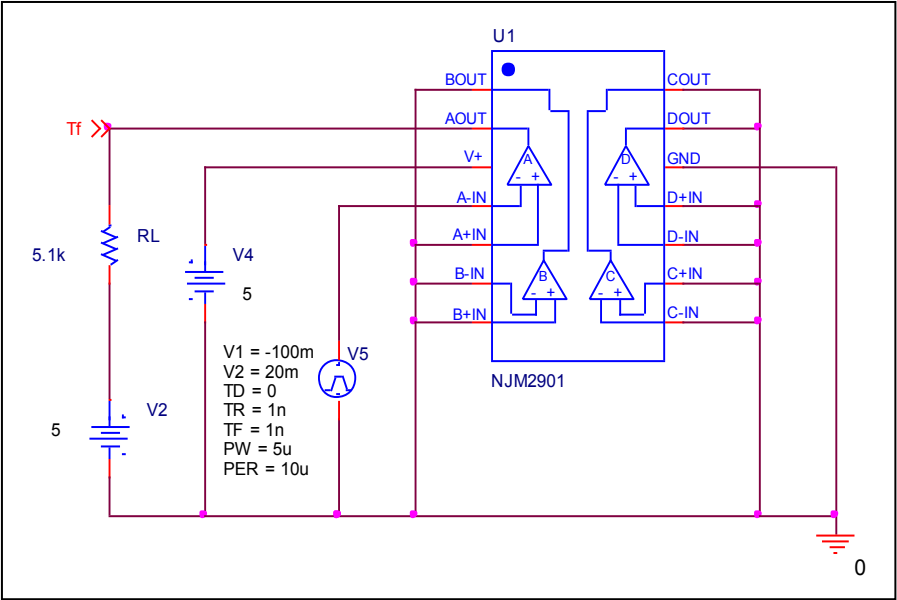
	Measurement	Simulation	% Error
Rising delay time (us)	0.63	0.629410	-0.094
Transition time (us)	0.12	0.123361	2.801

Response time (Falling time)

Simulation result



Evaluation Circuit

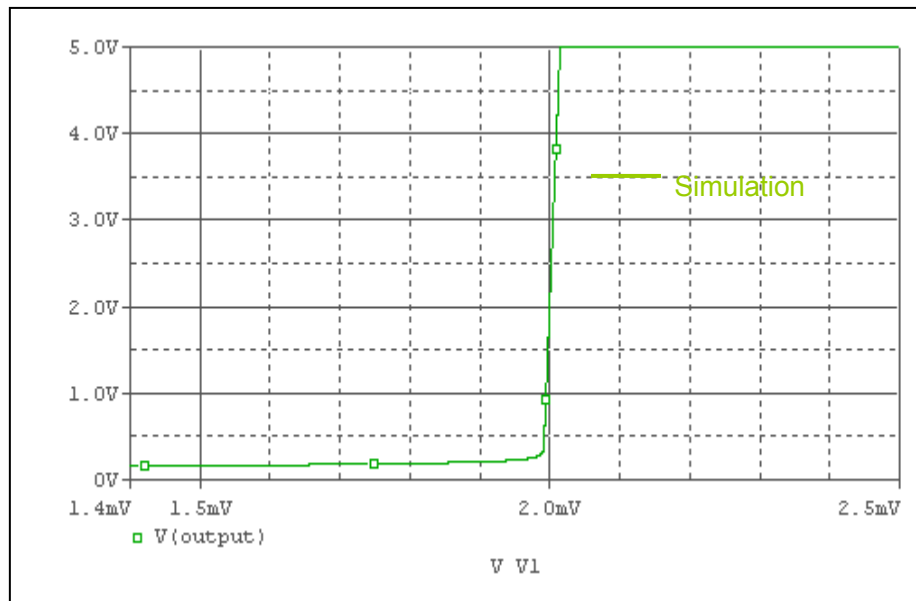


Comparison Table

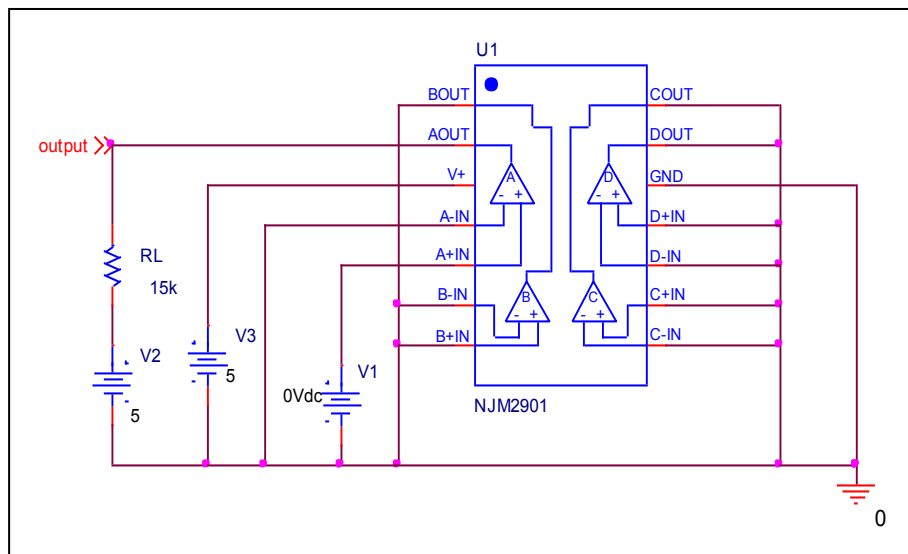
	Measurement	Simulation	% Error
Falling delay time (us)	0.43	0.431389	0.323

Input Offset Voltage Characteristics

Simulation result



Evaluation Circuit

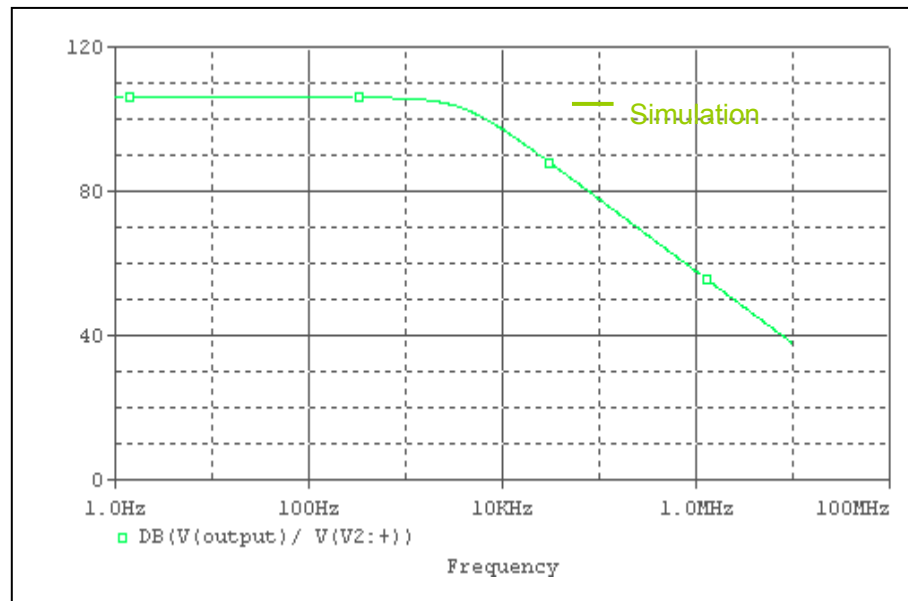


Comparison Table

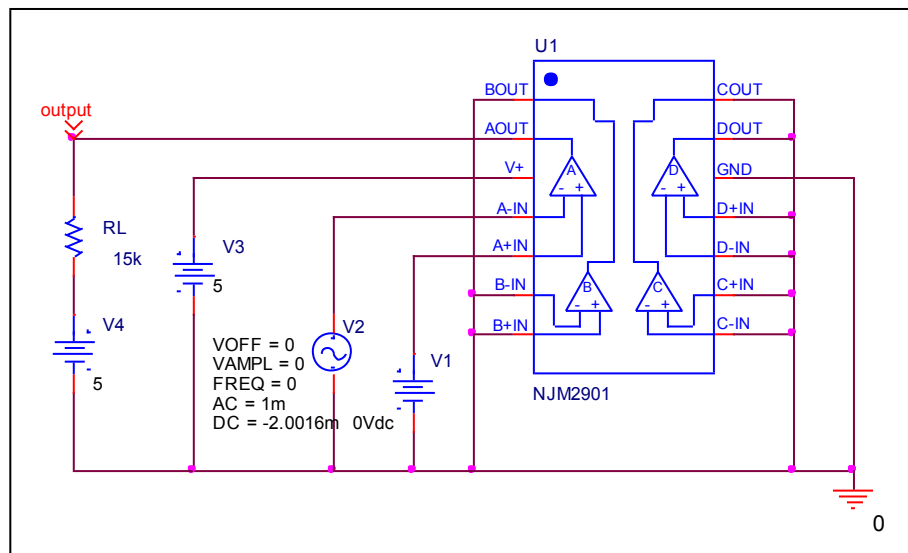
	Measurement	Simulation	%Error
$V_{io}(mV)$	2	2.0016	0.0800

Av Characteristics

Simulation result



Evaluation Circuit

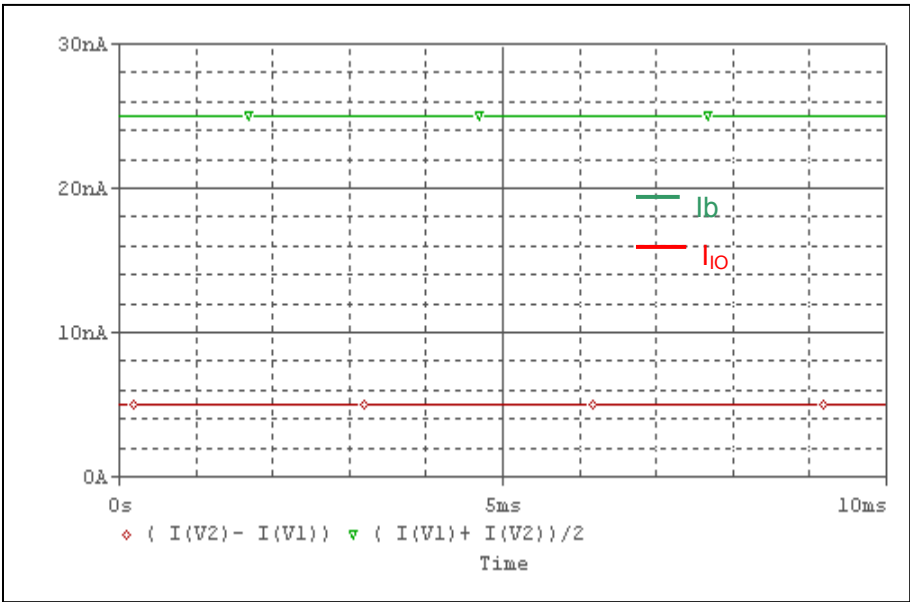


Comparison Table

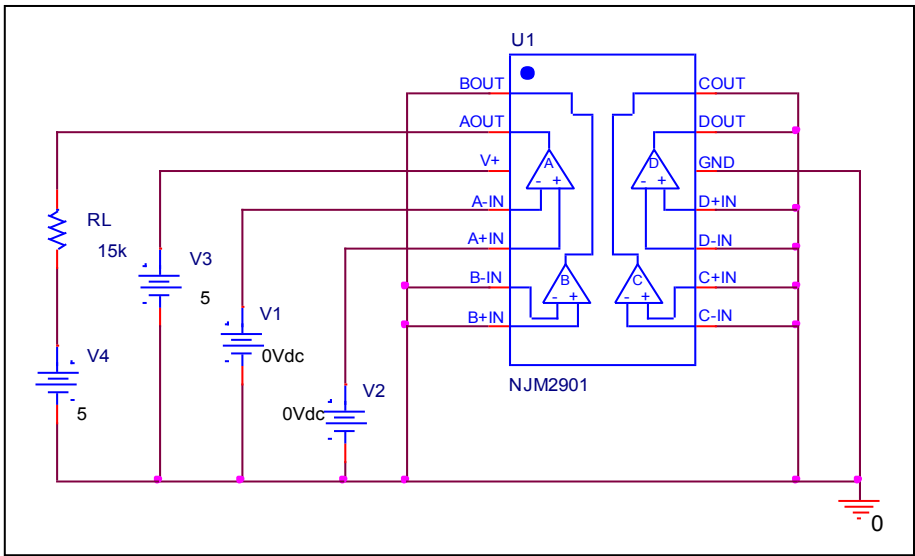
$R_L = 15k\Omega$	Measurement	Simulation	%Error
Av (dB)	106	105.988	-0.011

Input Bias Current Characteristics

Simulation result



Evaluation Circuit



Comparison Table

	Measurement	Simulation	% Error
Ib (nA)	25	25.027	0.1080
Iio (nA)	5	5.0130	0.2600