

Device Modeling Report

COMPONENTS: VOLTAGE COMPARATOR
PART NUMBER: NJM2903
MANUFACTURER: NEW JAPN RADIO



Bee Technologies Inc.

BJT MODEL

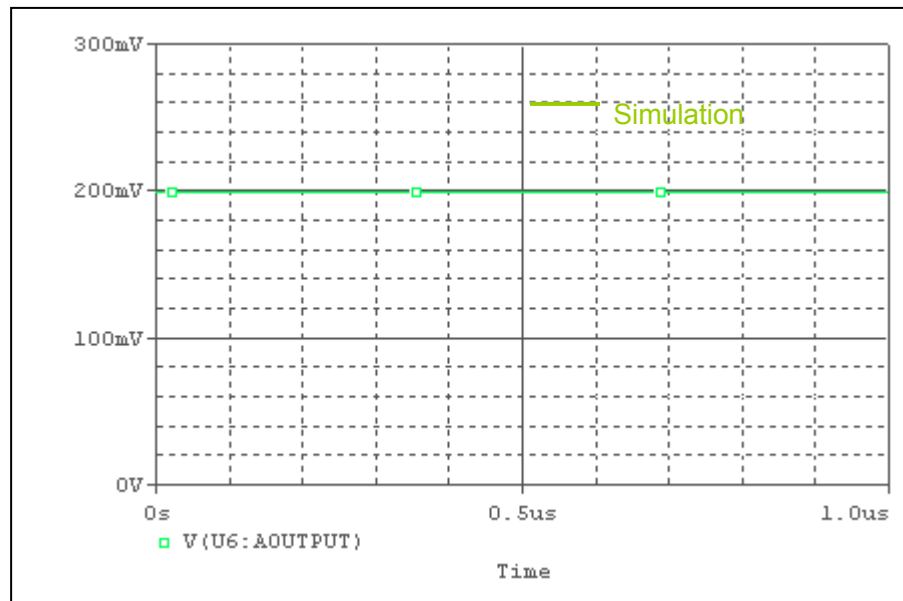
Pspice model parameter	Model description
IS	Saturation Current
BF	Ideal Maximum Forward Beta
CJC	Zero-bias Collector-Base Junction Capacitance
TF	Forward Transit Time
TR	Reverse Transit Time

DIODE MODEL

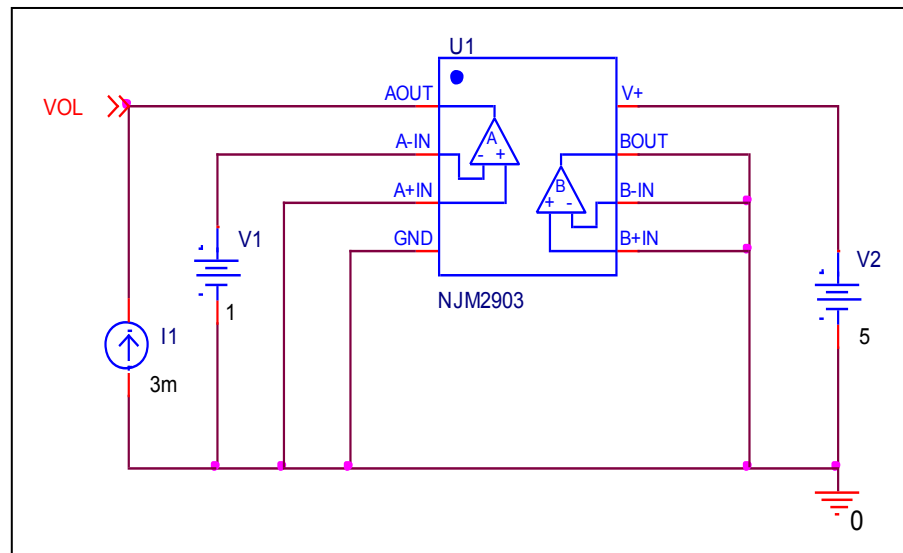
Pspice model parameter	Model description
IS	Saturation Current
RS	Series Resistance

Output Low Voltage

Simulation result



Evaluation Circuit

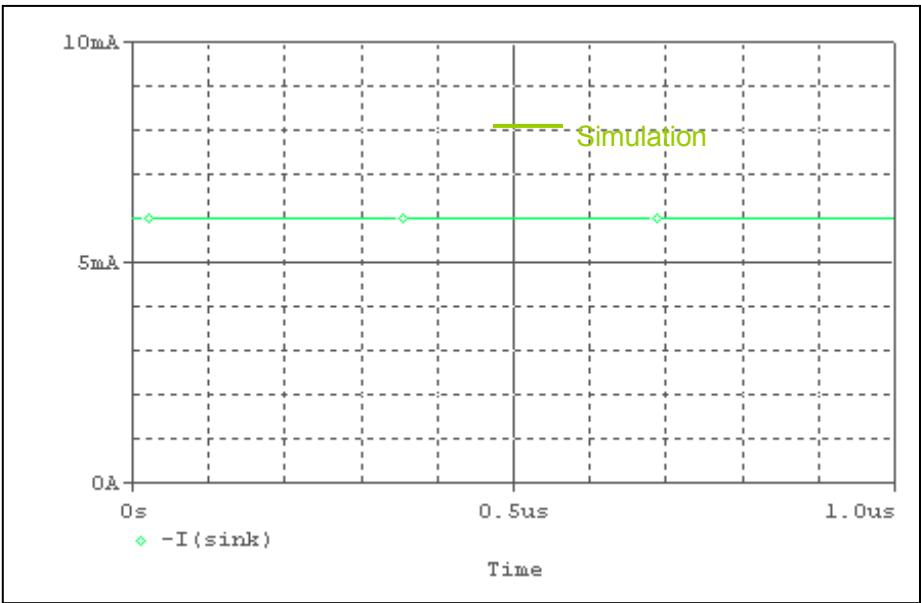


Comparison Table

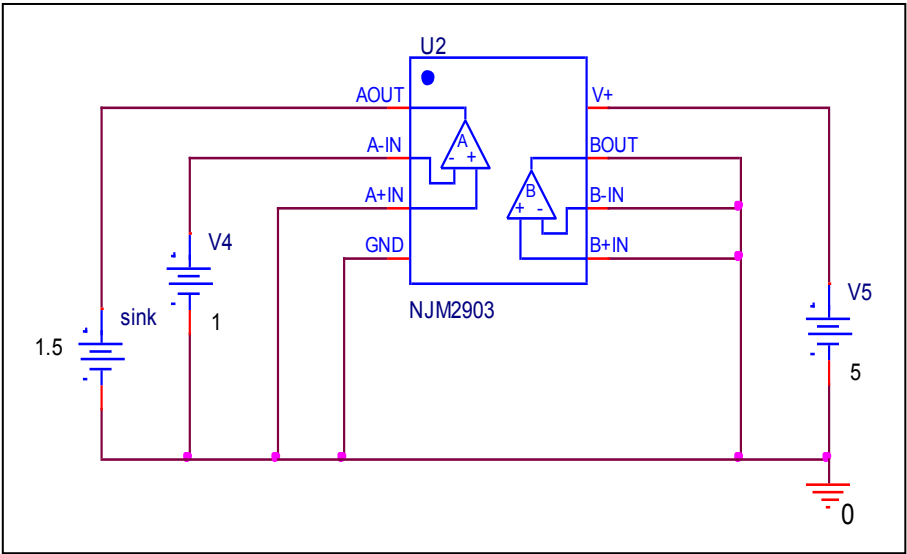
$I_{\text{sink}} = 3\text{mA}$	Measurement	Simulation	%Error
$V_{\text{ol}} \text{ (mV)}$	200	198.557	-0.7215

Sink Current

Simulation result



Evaluation Circuit

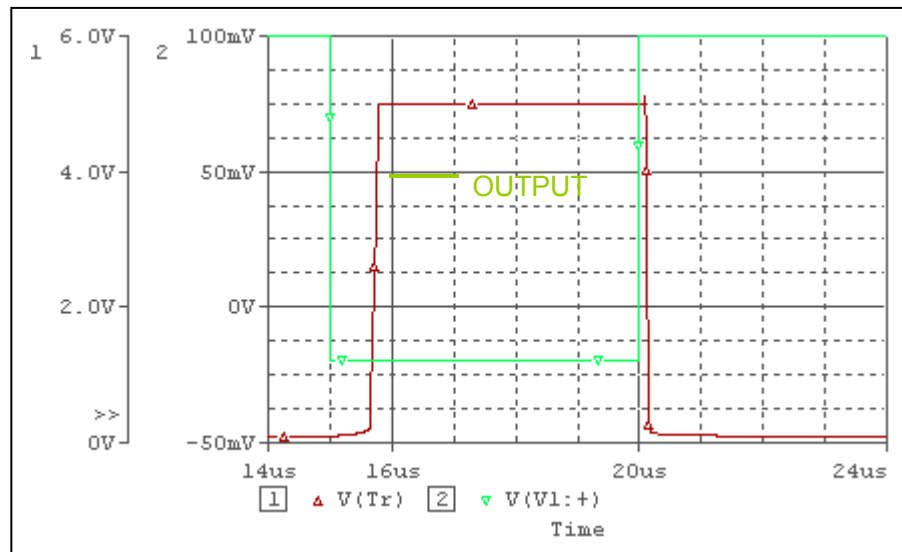


Comparison Table

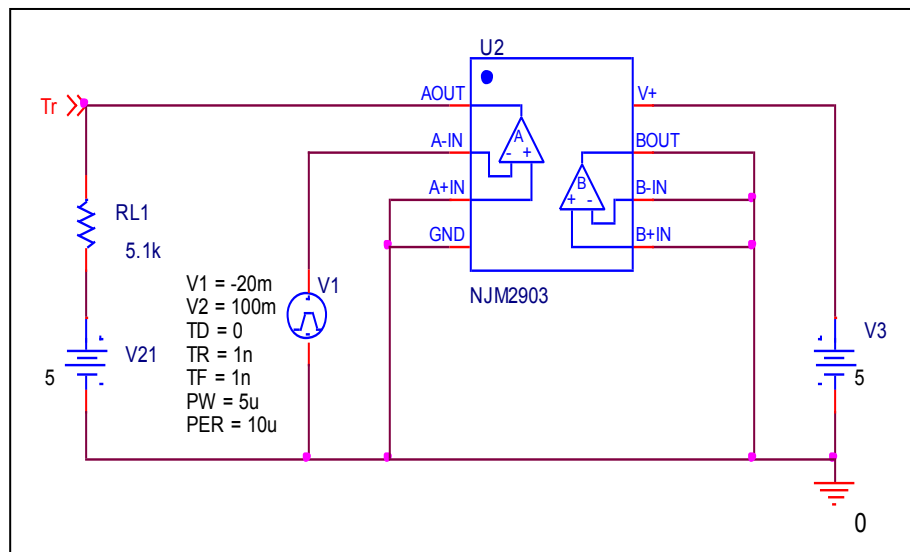
$V_{ol} = 1.5\text{ V}$	Measurement	Simulation	%Error
$I_{\text{sink}}\text{ (mA)}$	6	6.0172	0.2867

Response time (Rise time and Transition time)

Simulation result



Evaluation Circuit

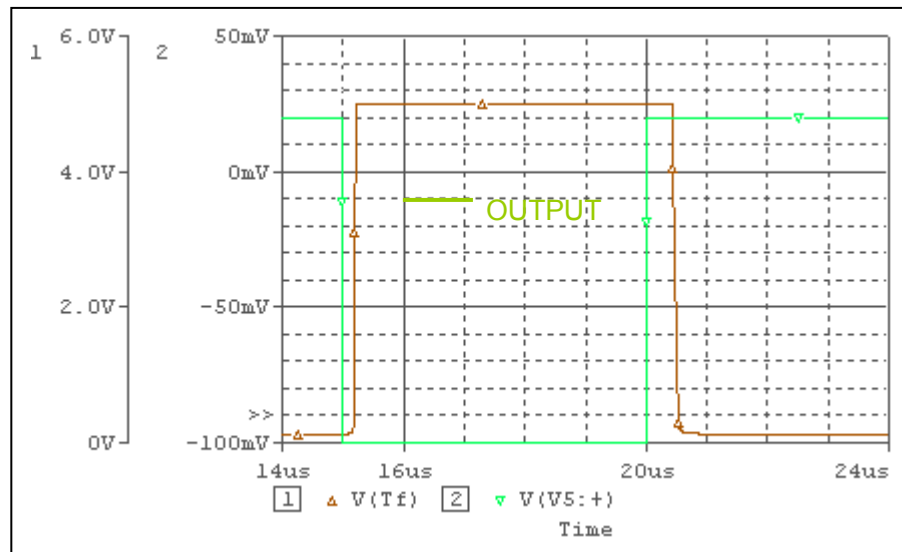


Comparison Table

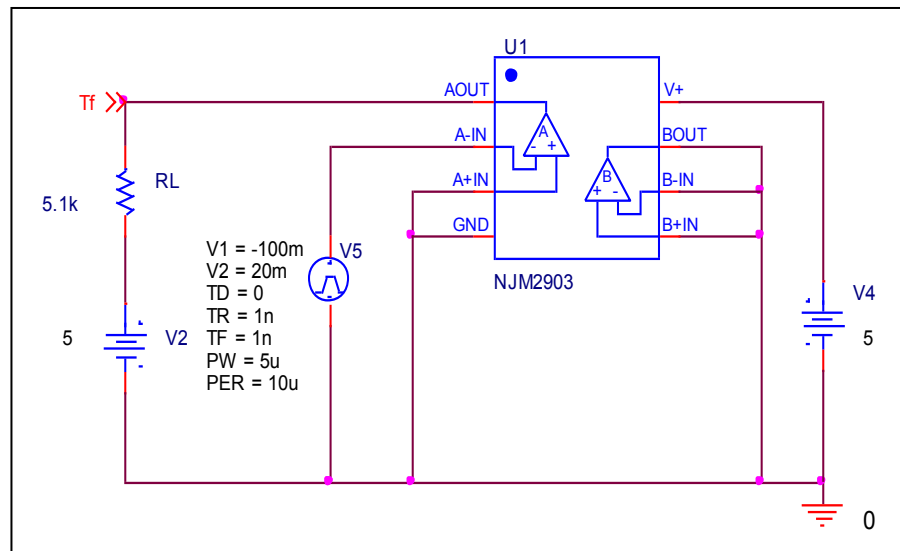
	Measurement	Simulation	% Error
Rising delay time (us)	0.63	0.628491	-0.2395
Transition time (us)	0.12	0.124967	4.1392

Response time (Falling time)

Simulation result



Evaluation Circuit

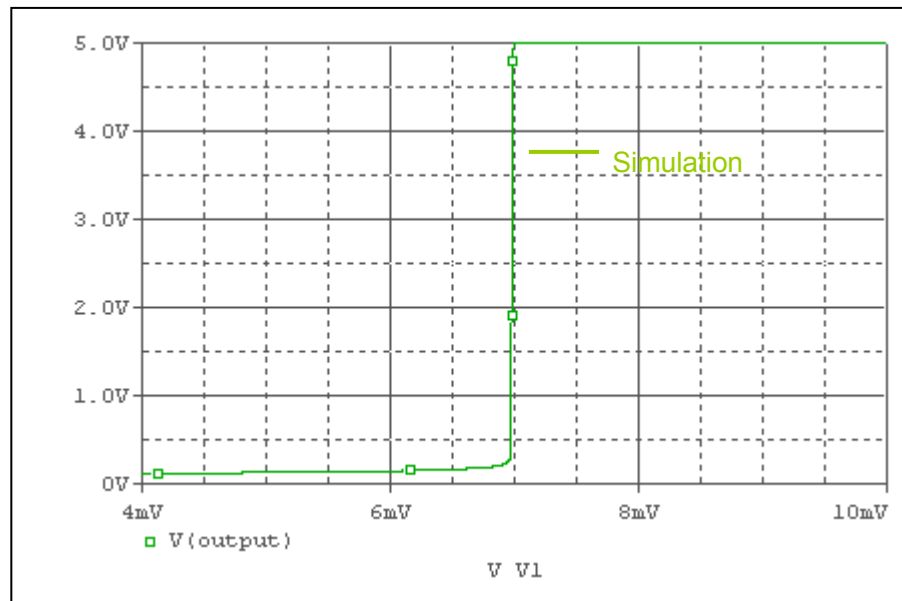


Comparison Table

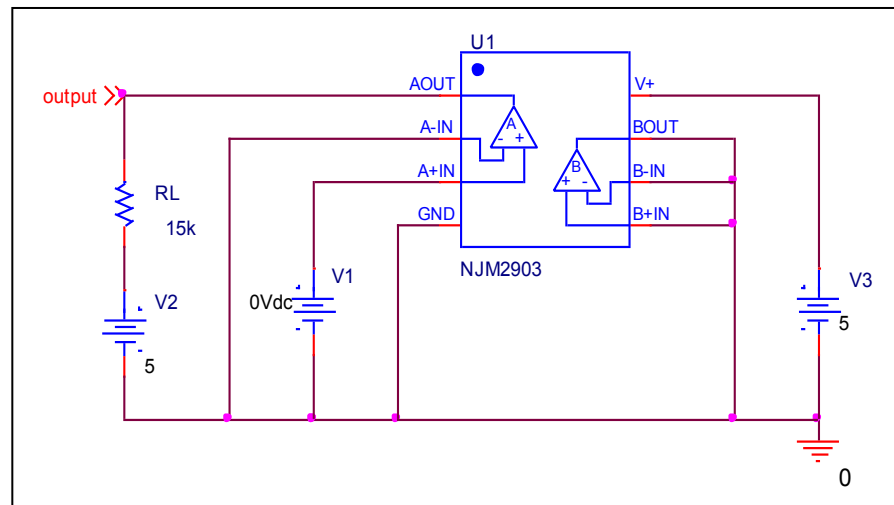
	Measurement	Simulation	% Error
Falling delay time (us)	0.43	0.429501	-0.1160

Input Offset Voltage Characteristics

Simulation result



Evaluation Circuit

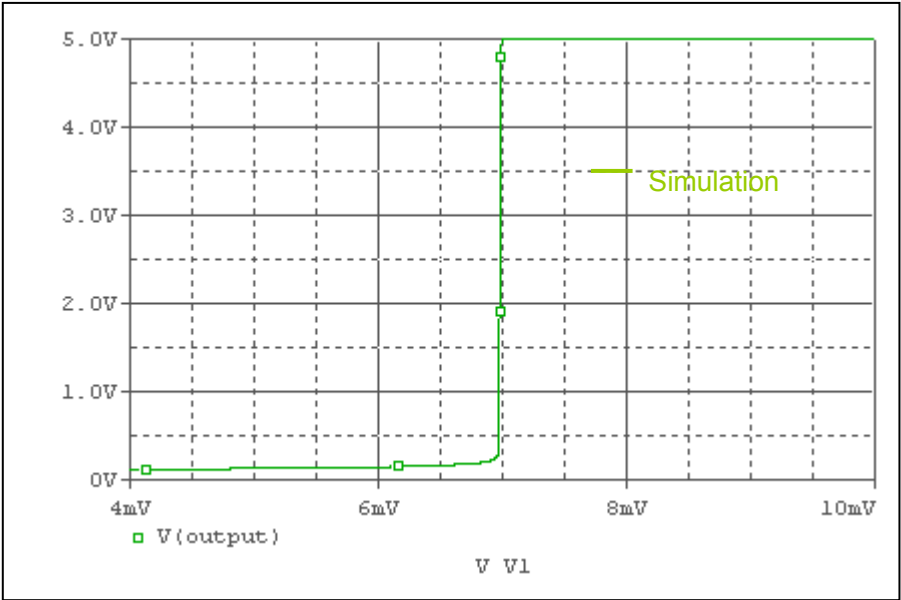


Comparison Table

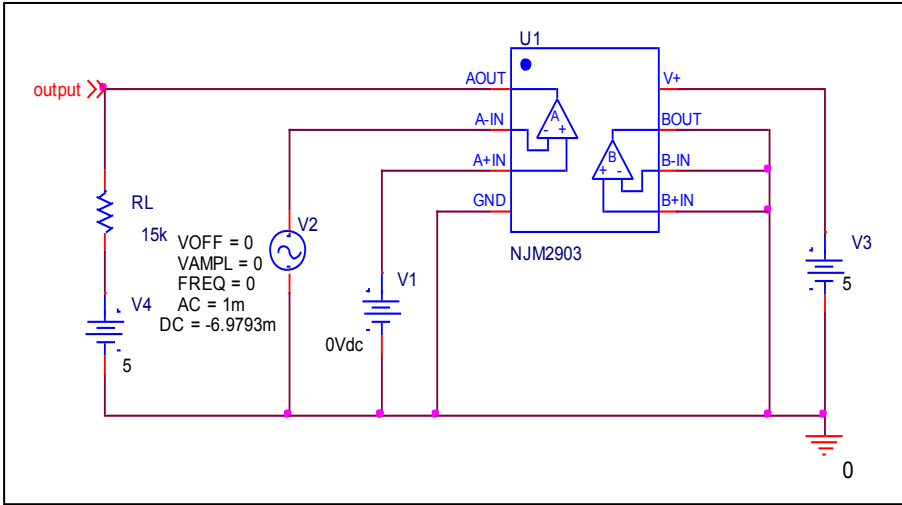
	Measurement	Simulation	%Error
$V_{io}(mV)$	7	6.9793	-0.2957

Av Characteristics

Simulation result



Evaluation Circuit

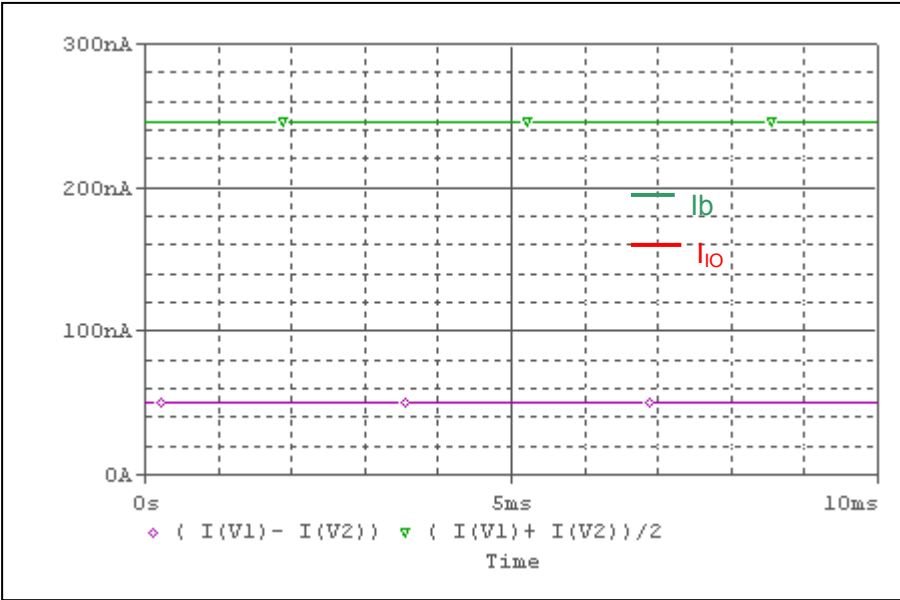


Comparison Table

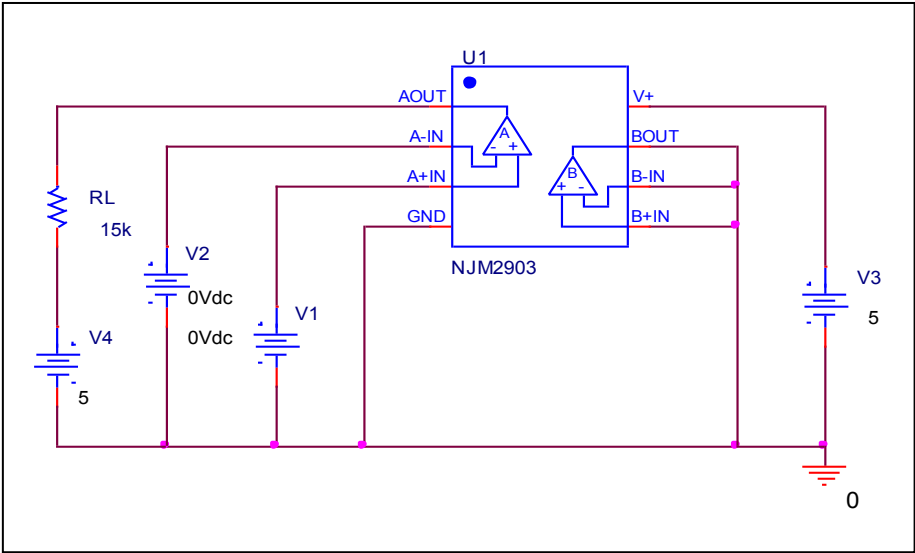
$R_L = 15k\Omega$	Measurement	Simulation	%Error
A_v (dB)	106	105.599	-0.3783

Input Bias Current Characteristics

Simulation result



Evaluation Circuit



Comparison Table

	Measurement	Simulation	% Error
I_b (nA)	50	49.804	-0.3920
I_{IO} (nA)	250	246.035	-1.5860