Device Modeling Report

COMPONENTS: VOLTAGE COMPARATOR
PART NUMBER: uPC311C
MANUFACTURER: NEC

Bee Technologies Inc.

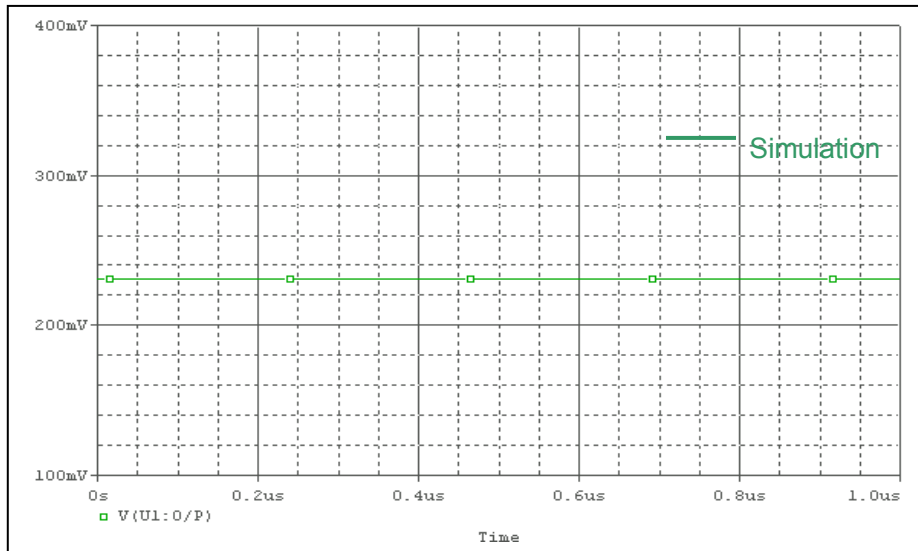## BJT MODEL

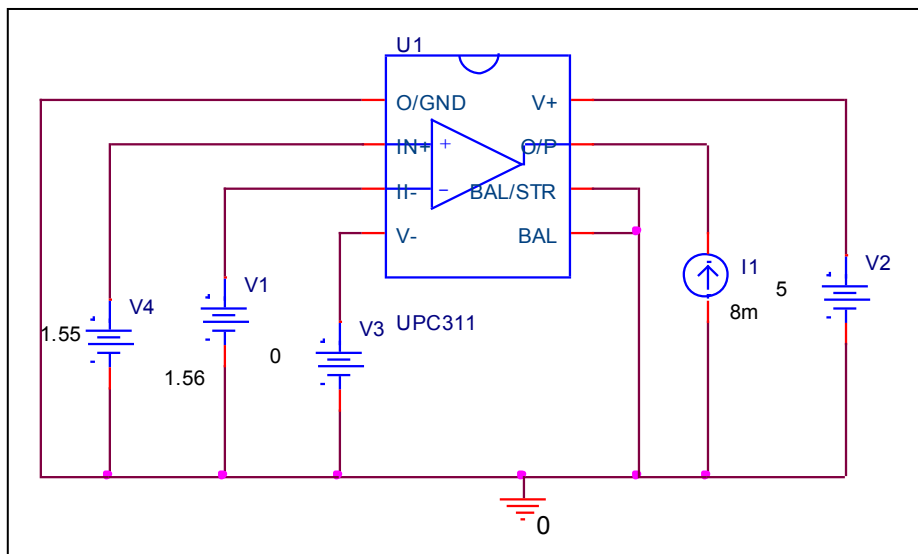| Pspice model parameter	Model description
IS	Saturation Current
BF	Ideal Maximum Forward Beta
CJC	Zero-bias Collector-Base Junction Capacitance
TF	Forward Transit Time
TR	Reverse Transit Time

DIODE MODEL

Pspice model parameter	Model description
IS	Saturation Current
RS	Series Resistance

Output Low Voltage

Simulation result

Evaluation Circuit

Comparision Table

I_O = 8mA	Measurement	Simulation	%Error
V_{ol} (V)	0.23	0.22944	-0.243

Response time (Rise time and Transition time)

Simulation result
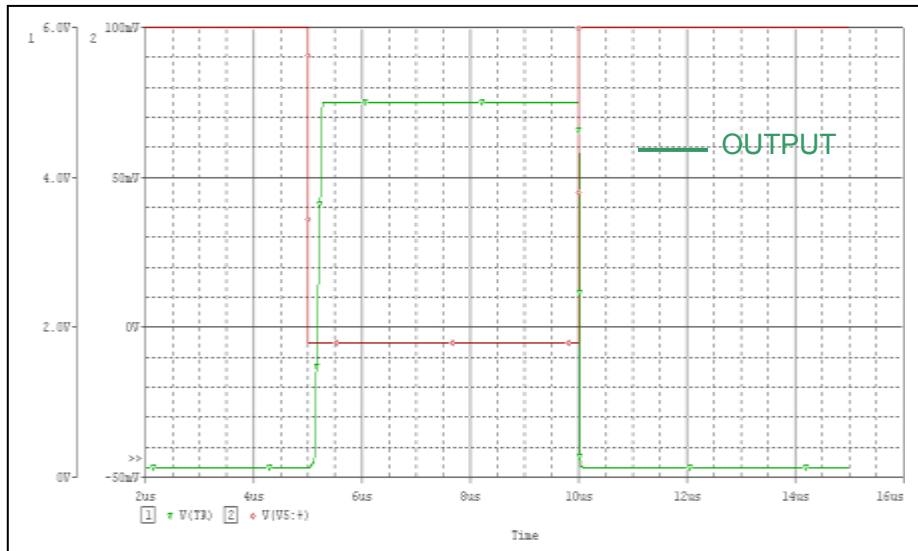
Evaluation Circuit
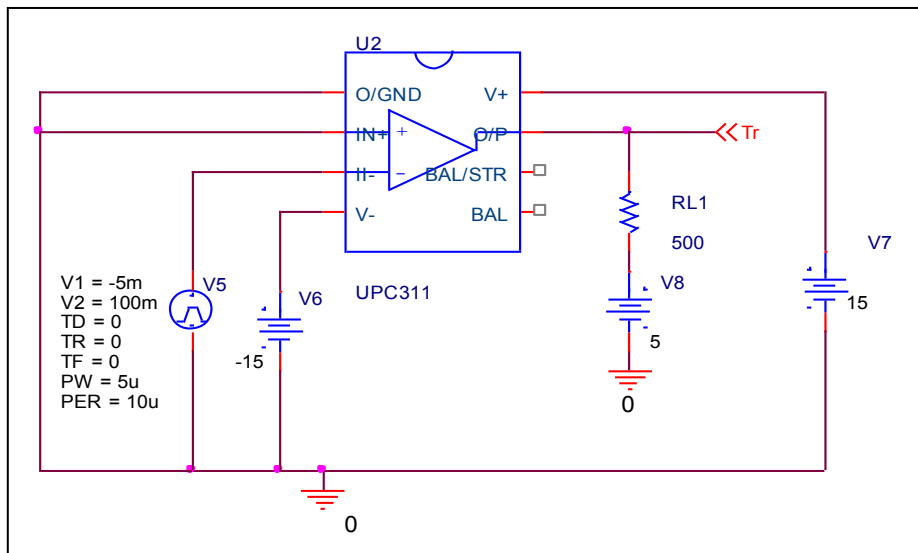
Comparision Table
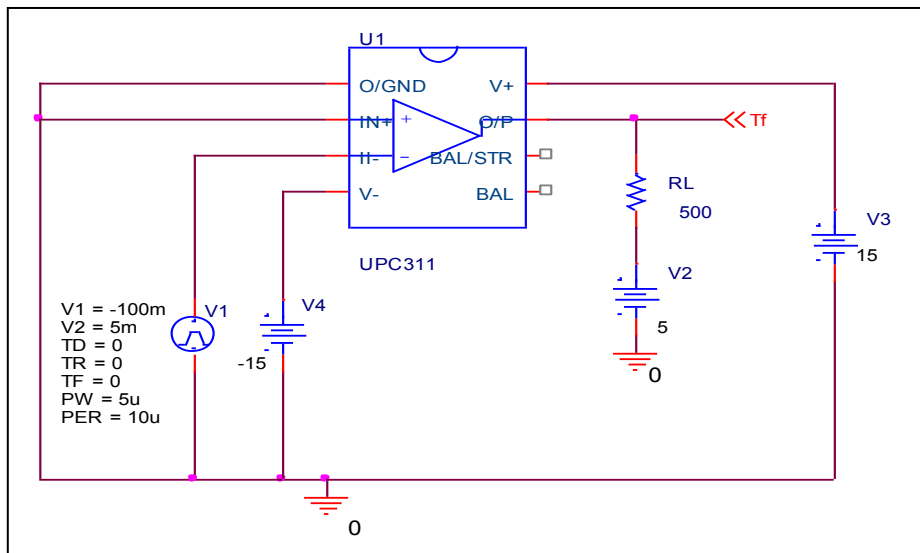
	Measurement	Simulation	% Error
Rising delay time (us)	0.13	0.131465	1.127
Transition time (us)	0.12	0.119992	-0.007

Response time (Falling time)

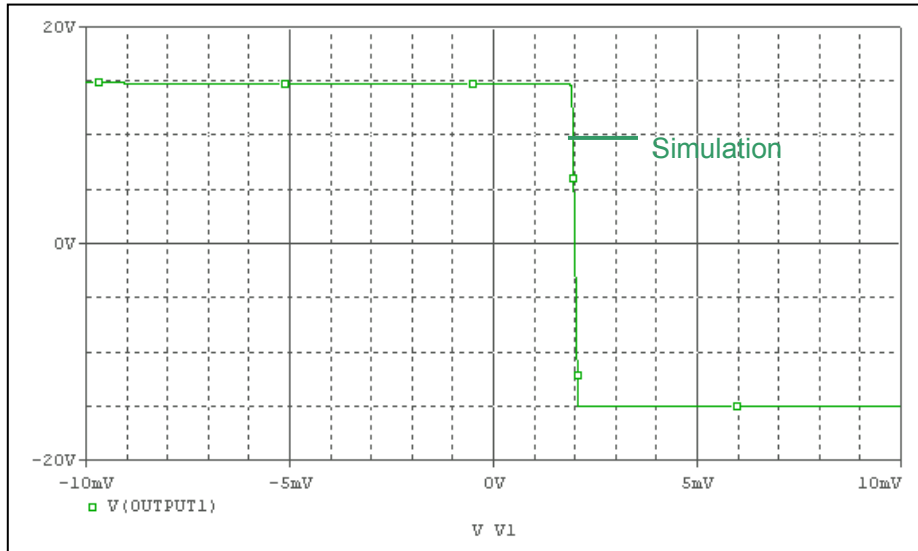Simulation result
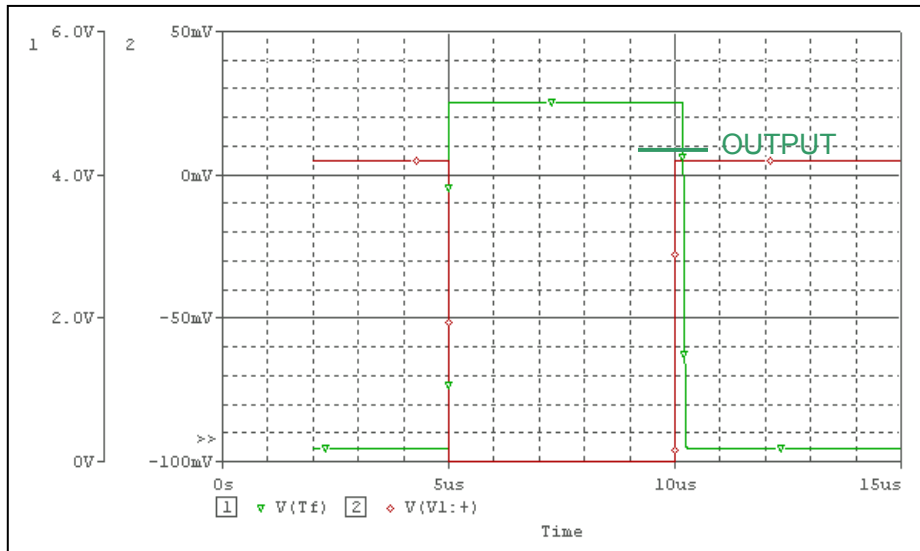
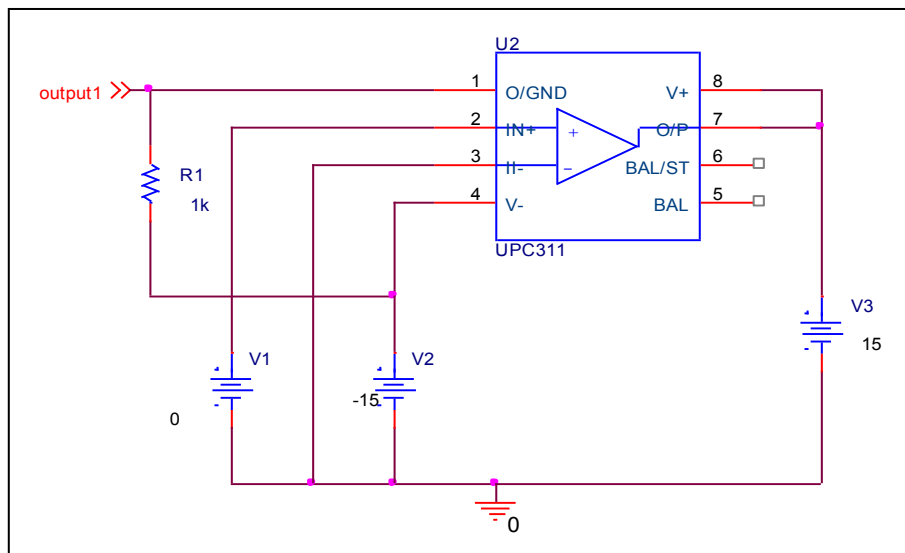

Evaluation Circuit

Comparision Table

	Measurement	Simulation	% Error
Falling delay time (us)	0.18	0.180730	0.406

Input Offset Voltage Characteristics

Simulation result
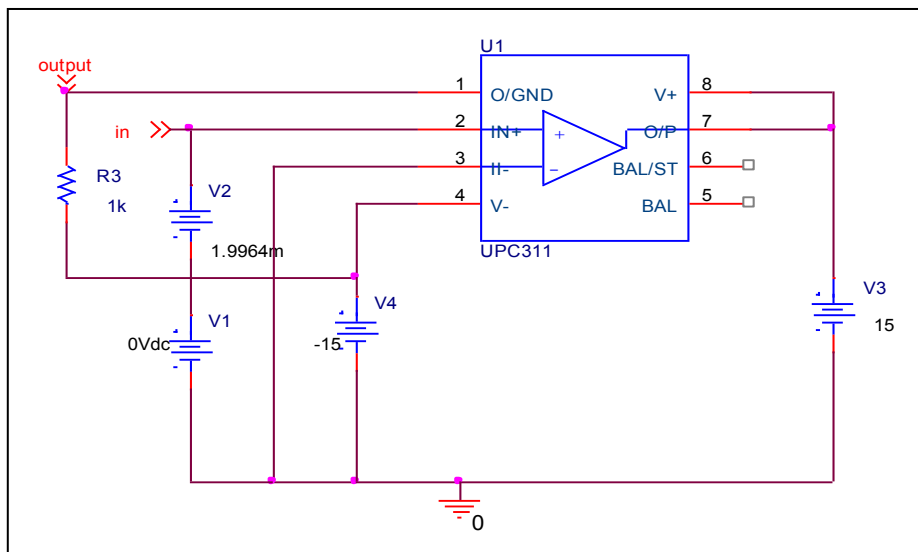

Evaluation Circuit

Comparision Table

	Measurement	Simulation	%Error
V_{io}(mV)	2	1.9964	-0.18

Av Characteristics
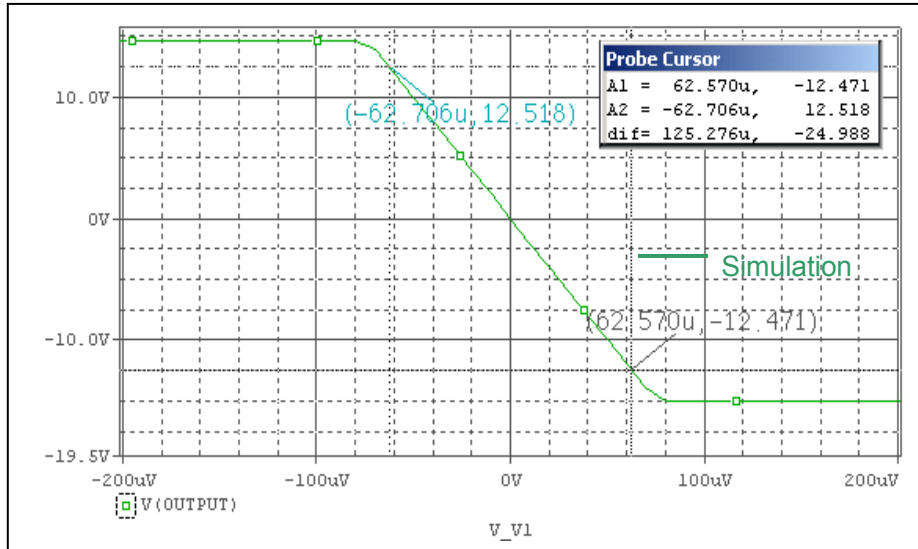
Av = 24.988 / 125.276u

RL = 1kΩ	Measurement	Simulation	%Error
Av	200,000	199,464	-0.268

Input Bias Current Characteristics

Simulation result
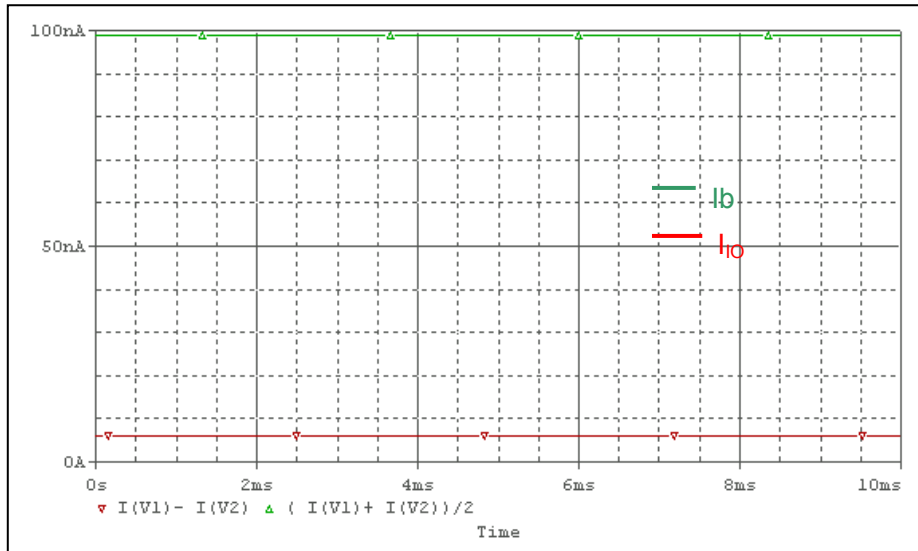
Evaluation Circuit
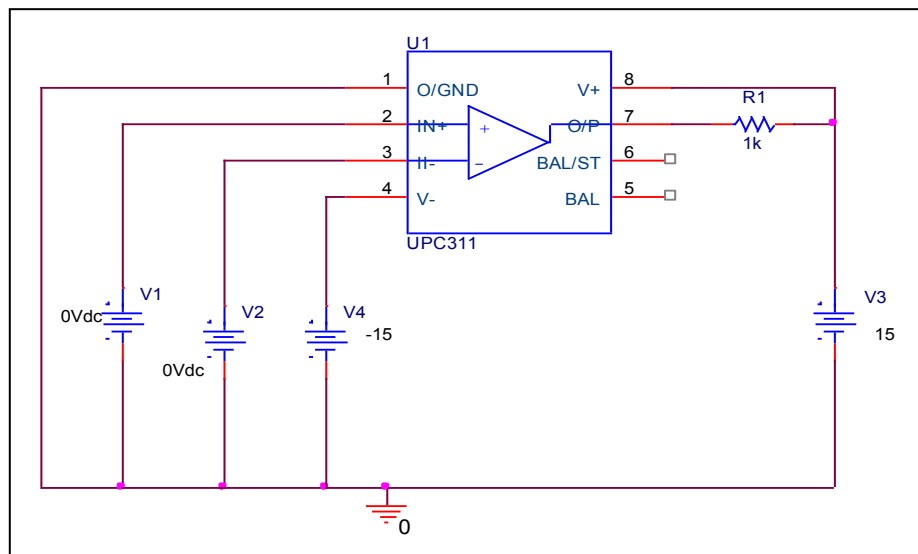
Comparision Table

	Measurement	Simulation	% Error
Ib (nA)	100	98.872	-1.128
I$_{IO}$ (nA)	6	5.9586	-0.690