

Device Modeling Report

COMPONENTS : VOLTAGE COMPARATOR
PART NUMBER : LM211M
MANUFACTURER : NATIONAL



Bee Technologies Inc.

BJT MODEL

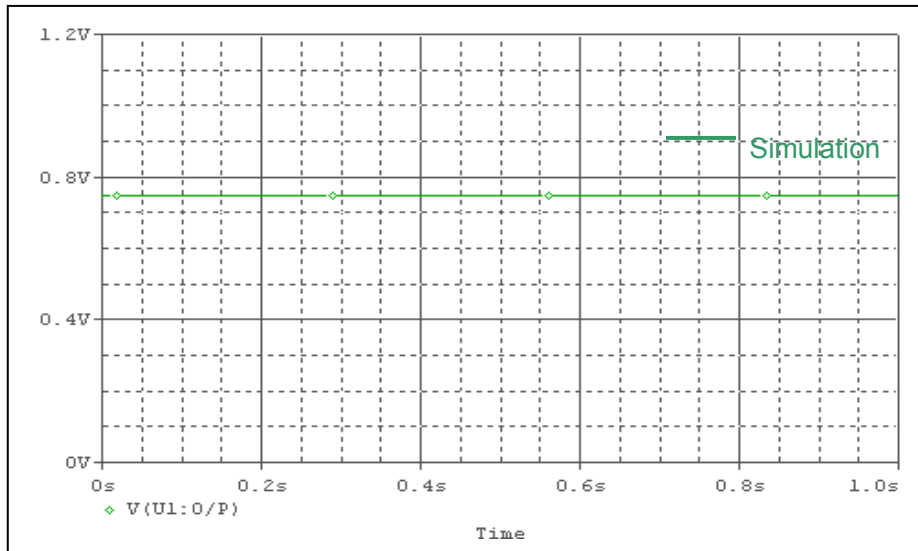
Pspice model parameter	Model description
IS	Saturation Current
BF	Ideal Maximum Forward Beta
CJC	Zero-bias Collector-Base Junction Capacitance
TF	Forward Transit Time
TR	Reverse Transit Time

DIODE MODEL

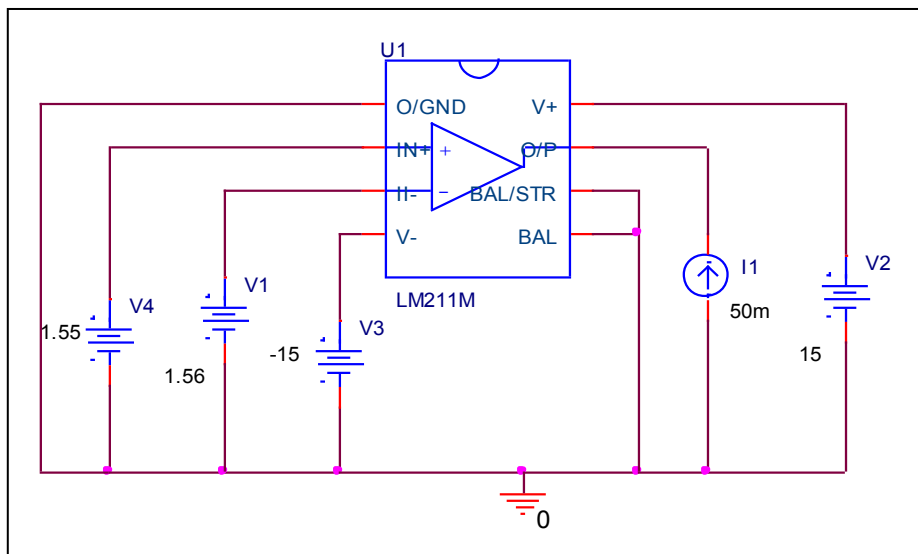
Pspice model parameter	Model description
IS	Saturation Current
RS	Series Resistance

Output Low Voltage

Simulation result



Evaluation Circuit

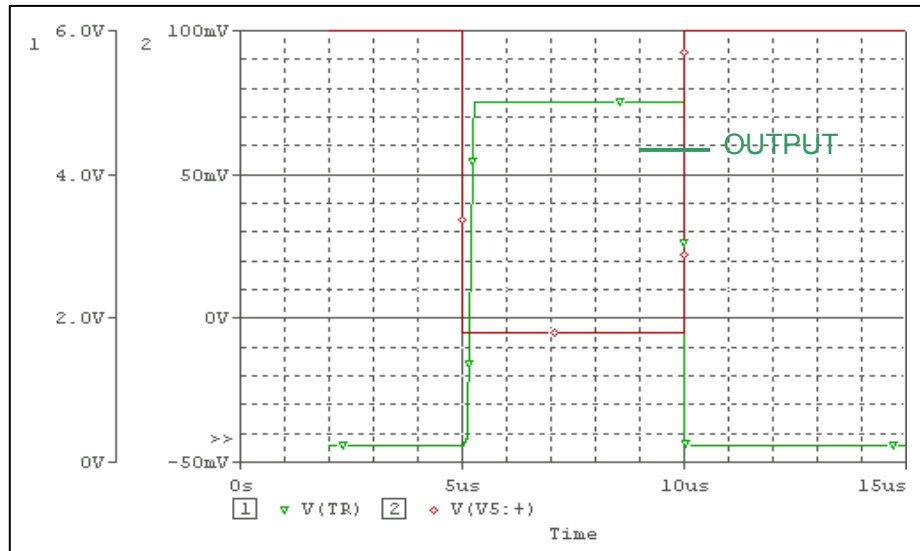


Compasion Table

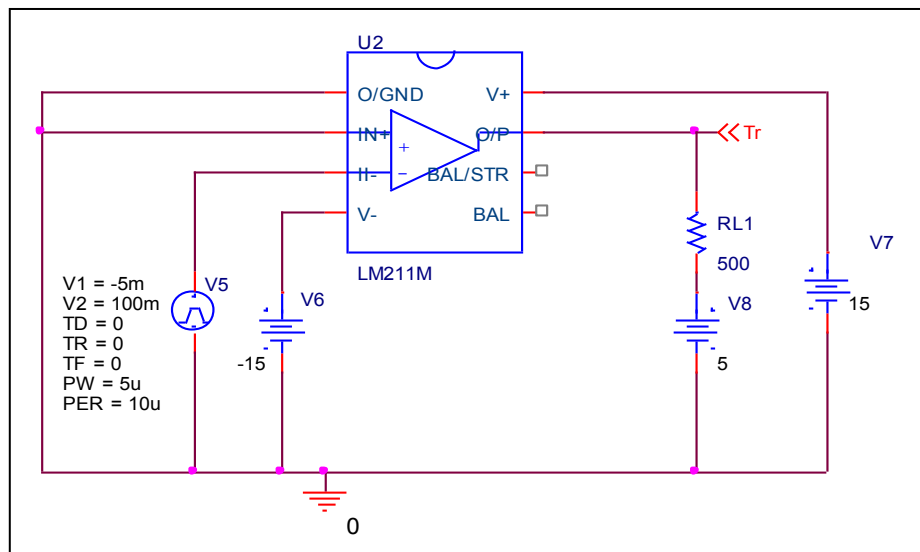
$I_o = 50\text{mA}$	Measurement	Simulation	%Error
$V_{ol} \text{ (V)}$	0.75	0.752605	0.347

Response time (Rise time and Transition time)

Simulation result



Evaluation Circuit

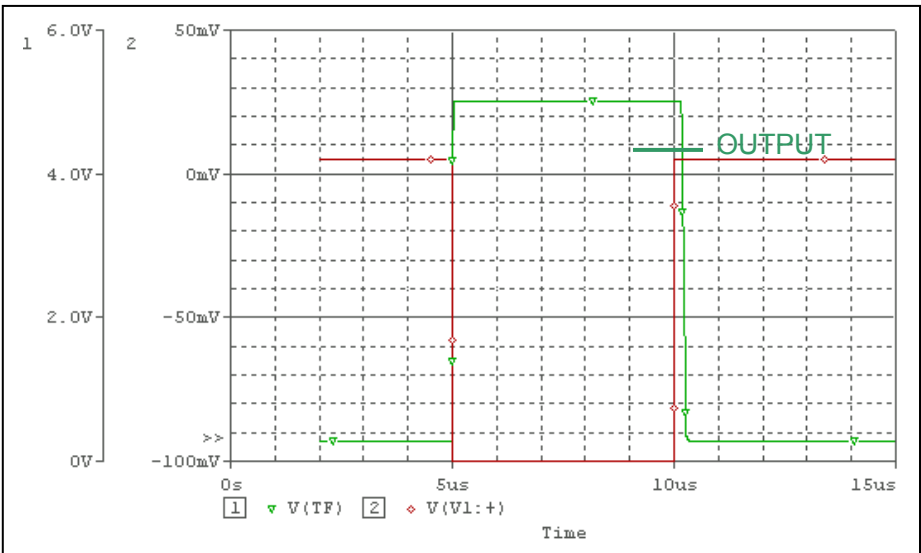


Compasion Table

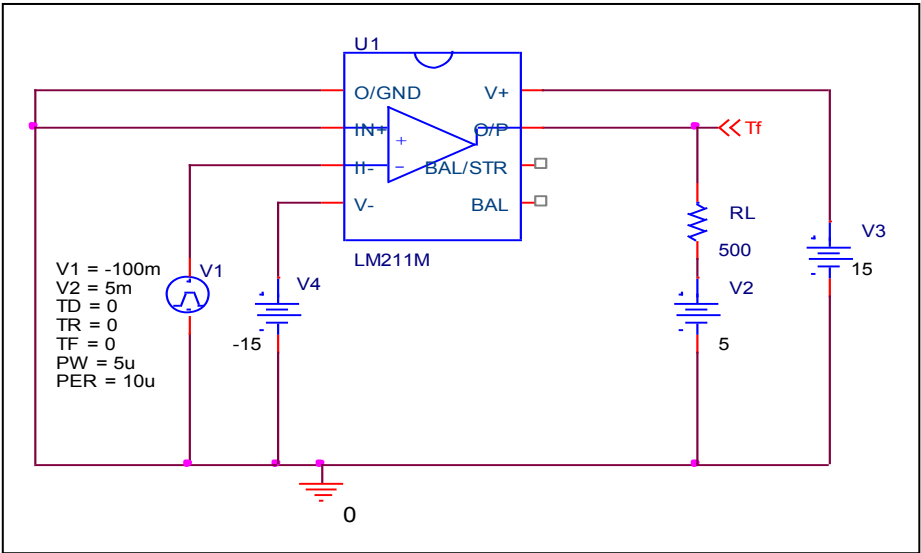
	Measurement	Simulation	% Error
Rising delay time (us)	0.125	0.123911	-0.871
Transition time (us)	0.125	0.125460	0.368

Response time (Falling time)

Simulation result



Evaluation Circuit

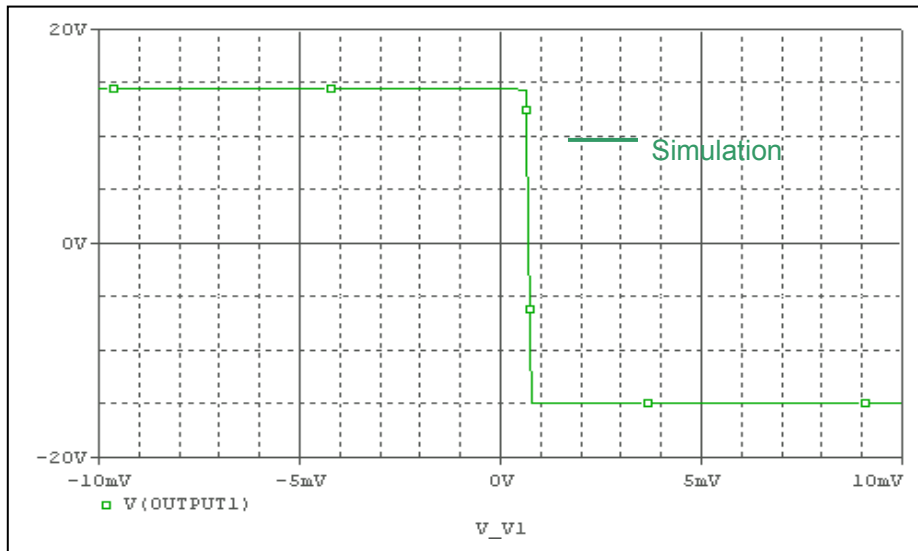


Compasion Table

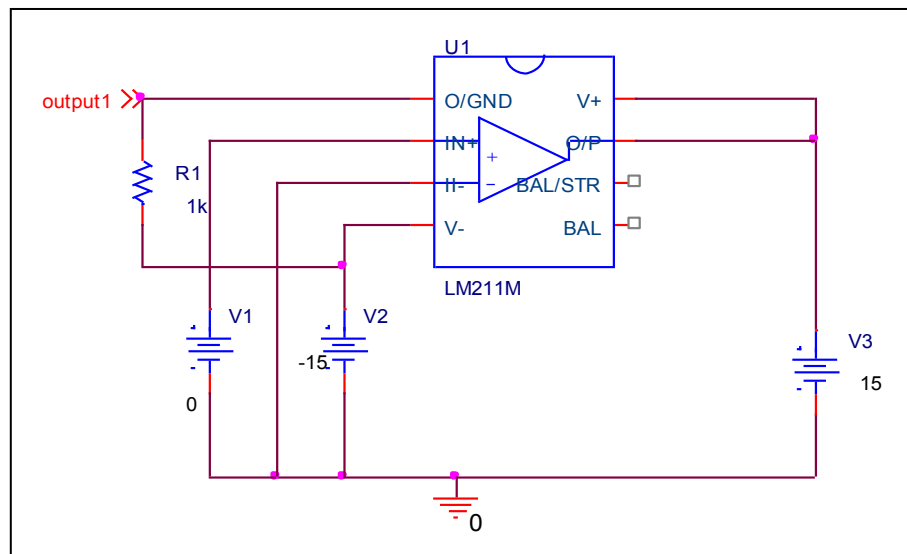
	Measurement	Simulation	% Error
Falling delay time (us)	0.175	0.175134	0.077

Input Offset Voltage Characteristics

Simulation result



Evaluation Circuit

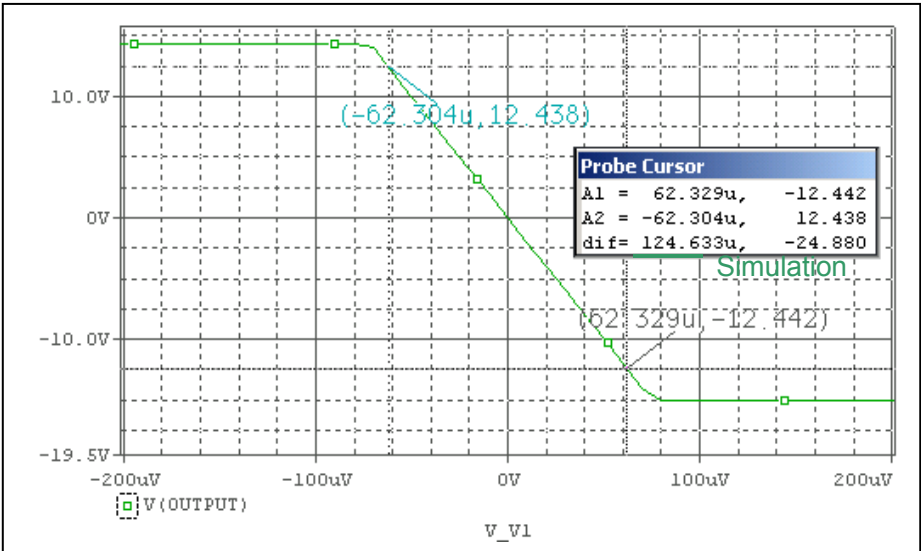


Compasion Table

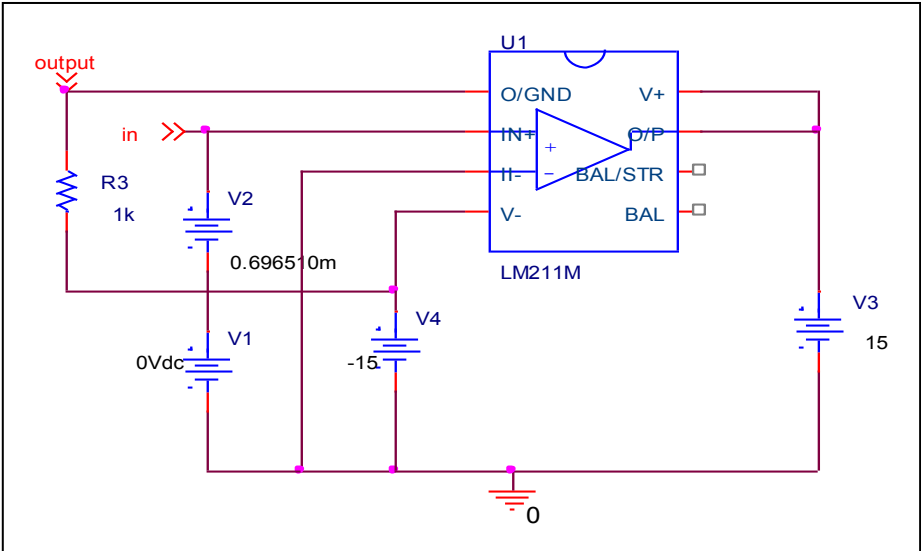
	Measurement	Simulation	%Error
$V_{io}(mV)$	0.7	0.696510	-0.499

Av Characteristics

Simulation result



Evaluation Circuit



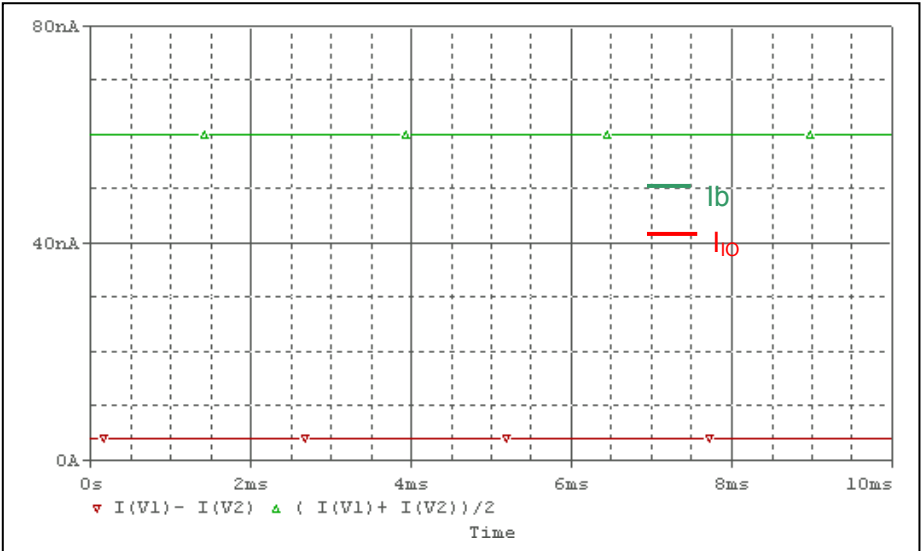
$$A_v = 24.880 / 124.633\mu$$

Comparison Table

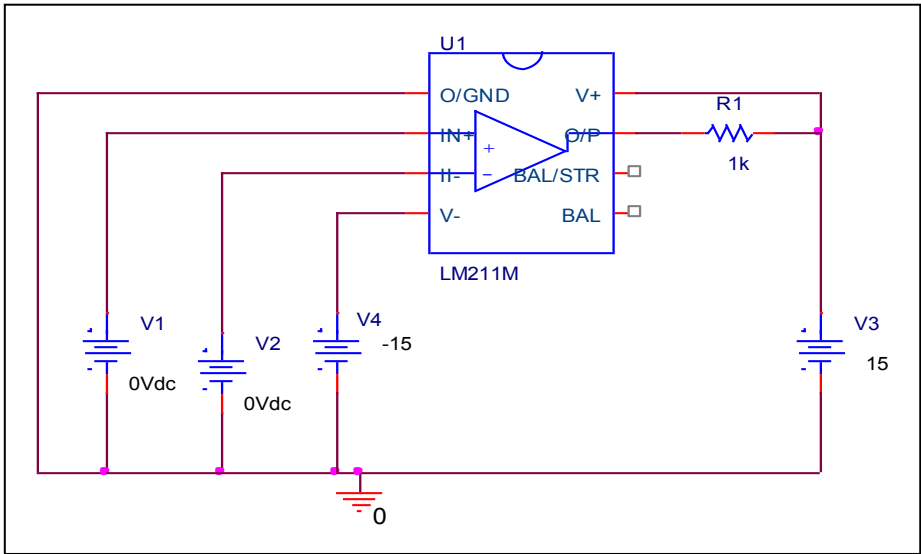
$R_L = 1k\Omega$	Measurement	Simulation	%Error
A_v (V/mV)	200	199.626	-0.187

Input Bias Current Characteristics

Simulation result



Evaluation Circuit



Compasion Table

	Measurement	Simulation	% Error
I_b (nA)	60	60.048	0.080
I_{IO} (nA)	4	3.9812	-0.470