Device Modeling Report

COMPONENTS:
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PART NUMBER: 1N5820
MANUFACTURER: ON SEMICONDUCTOR

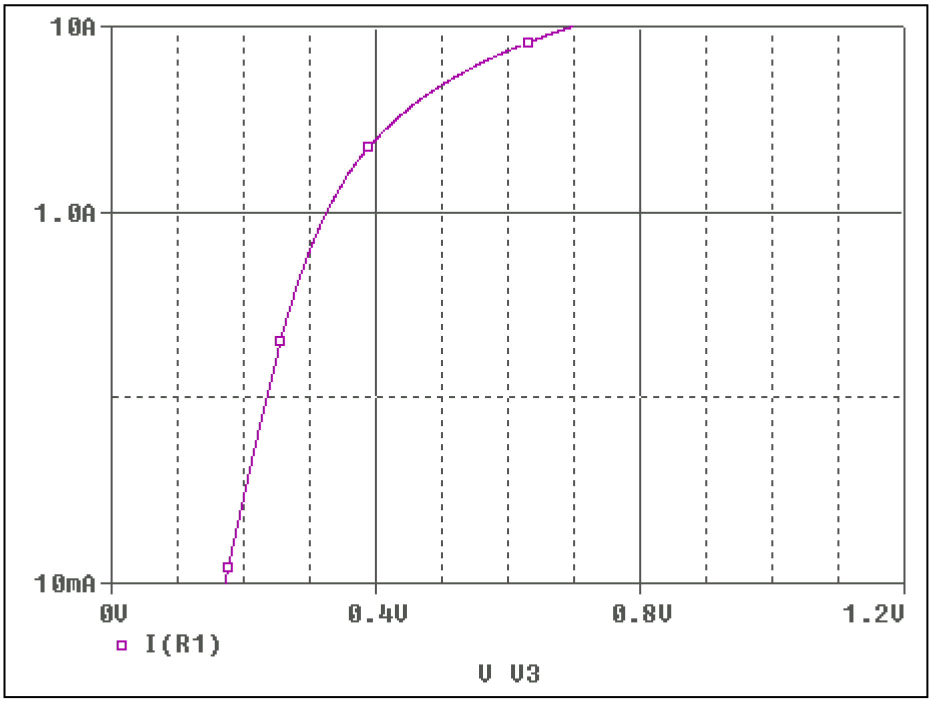
Bee Technologies

Bee Technologies Inc.

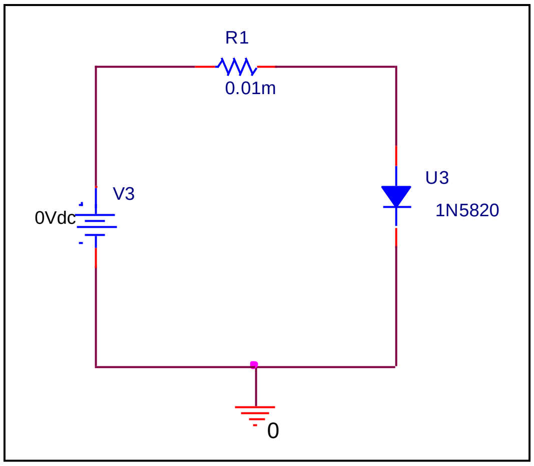
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive value)
IBV	Reverse Breakdown Current(a positive value)
TT	Transit Time
EG	Energy-band Gap

Forward Current Characteristic

Circuit Simulation Result

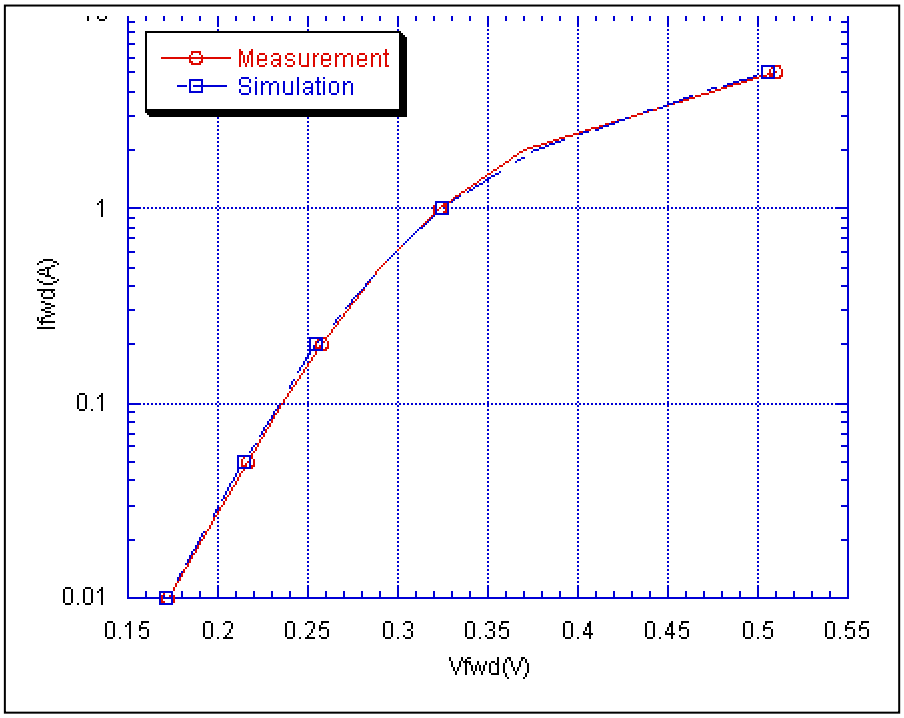


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

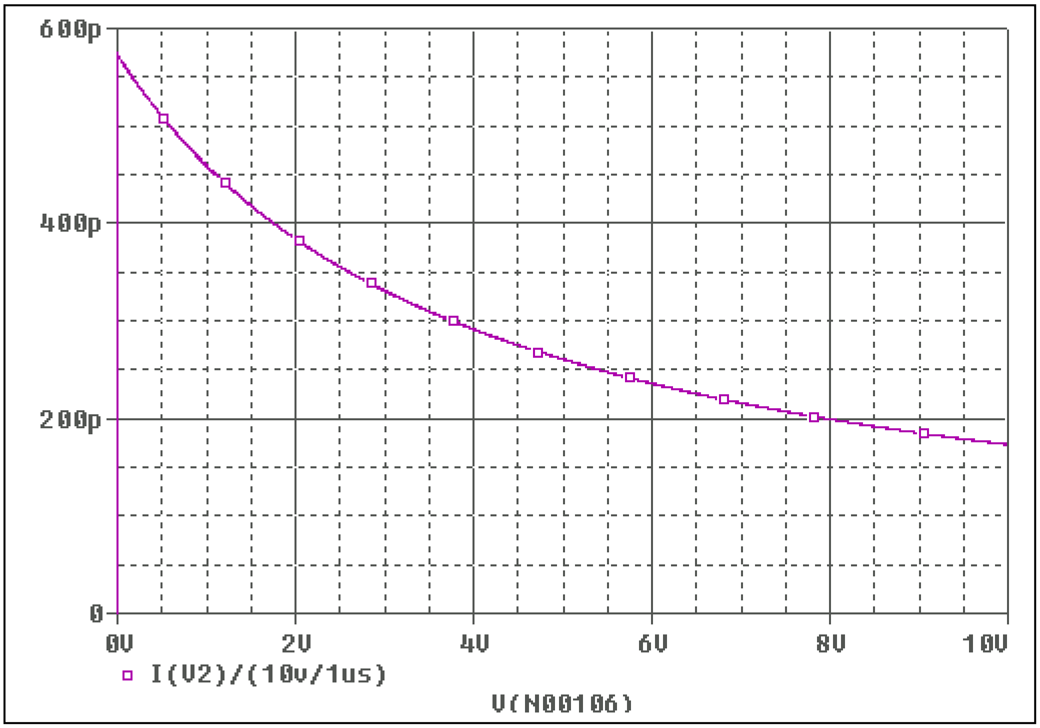


Simulation Result

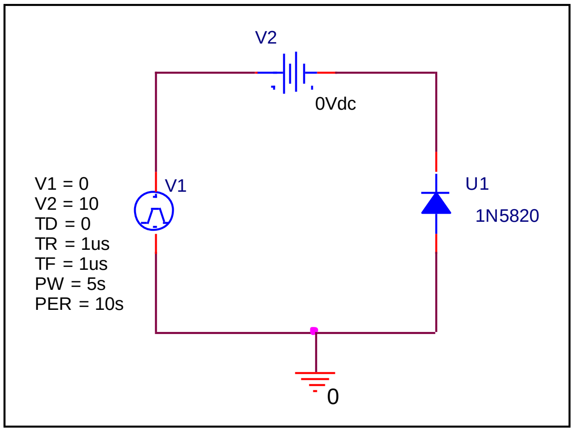
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.17	0.17	-0.58
0.02	0.19	0.19	-0.52
0.05	0.22	0.22	-0.92
0.1	0.24	0.23	-0.85
0.2	0.26	0.26	-1.16
0.5	0.29	0.29	-0.41
1	0.32	0.33	0.62
2	0.37	0.38	1.89
5	0.51	0.51	-0.78

Junction Capacitance Characteristic

Circuit Simulation Result

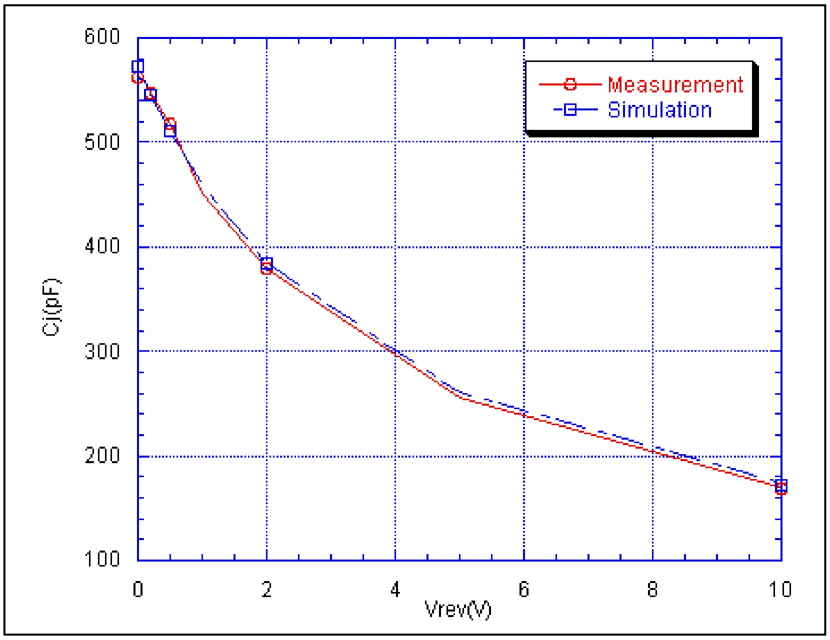


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

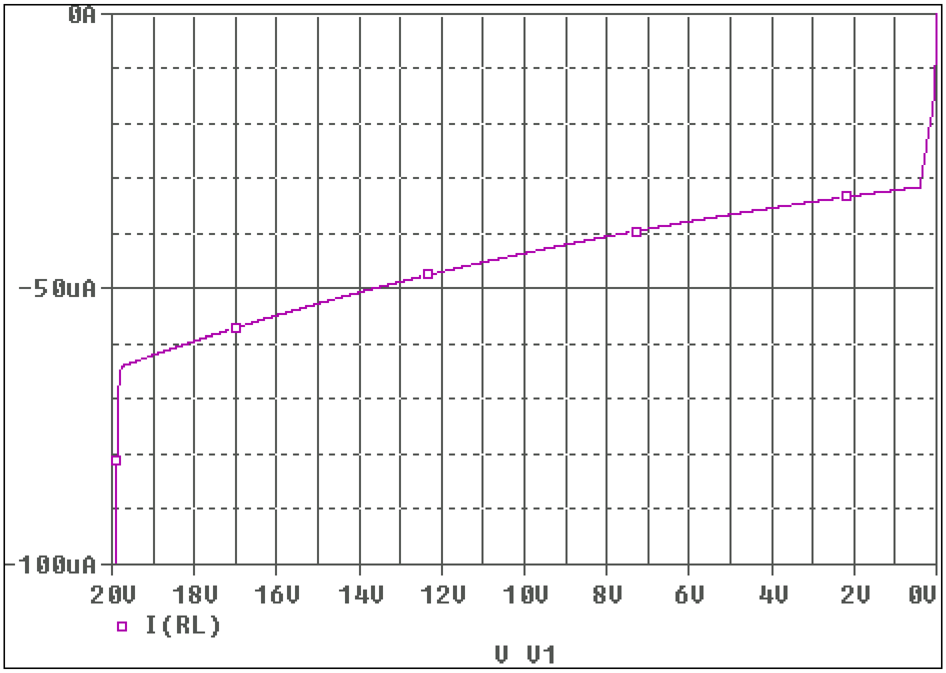


Simulation Result

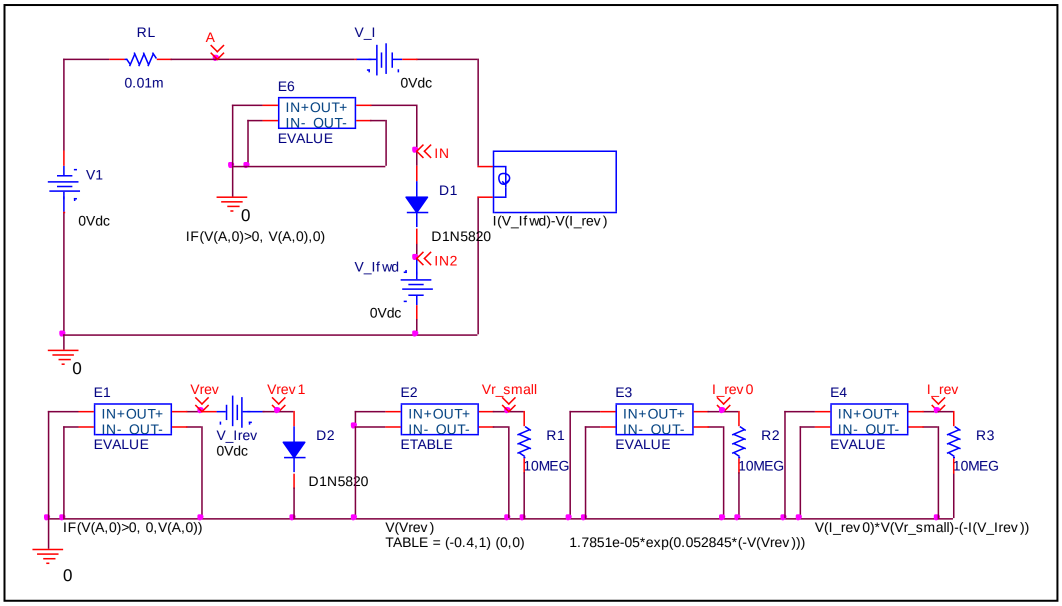
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	562.57	571.98	1.67
0.1	558.81	559.68	0.16
0.2	546.19	544.83	-0.25
0.5	518.24	510.84	-1.43
1	450.78	458.93	1.81
2	378.62	384.20	1.47
5	255.94	260.42	1.75
10	168.84	172.82	2.35

Reverse Characteristic

Circuit Simulation Result

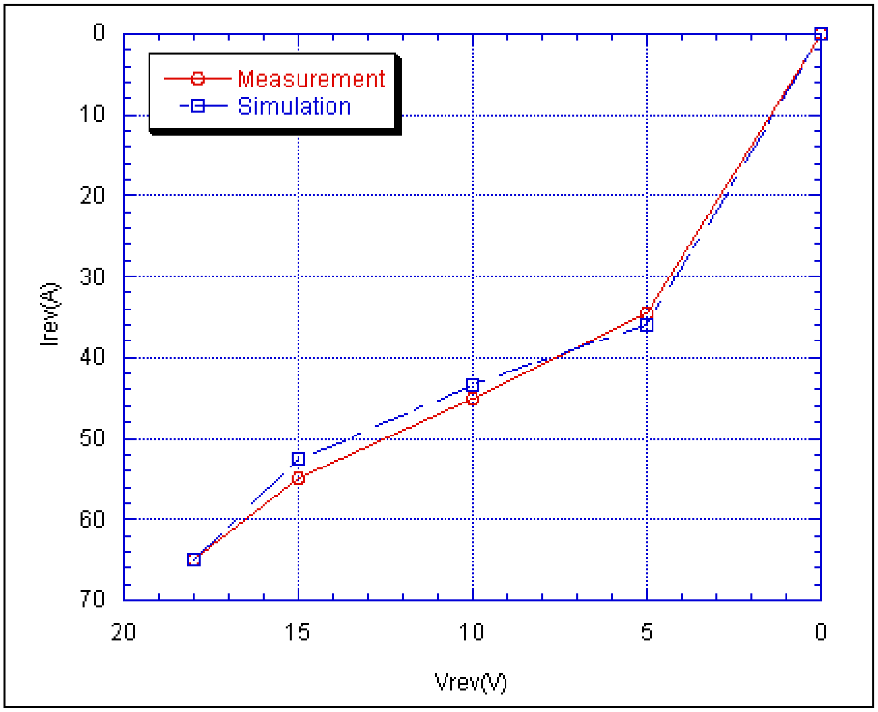


Evaluation Circuit



Comparison Graph

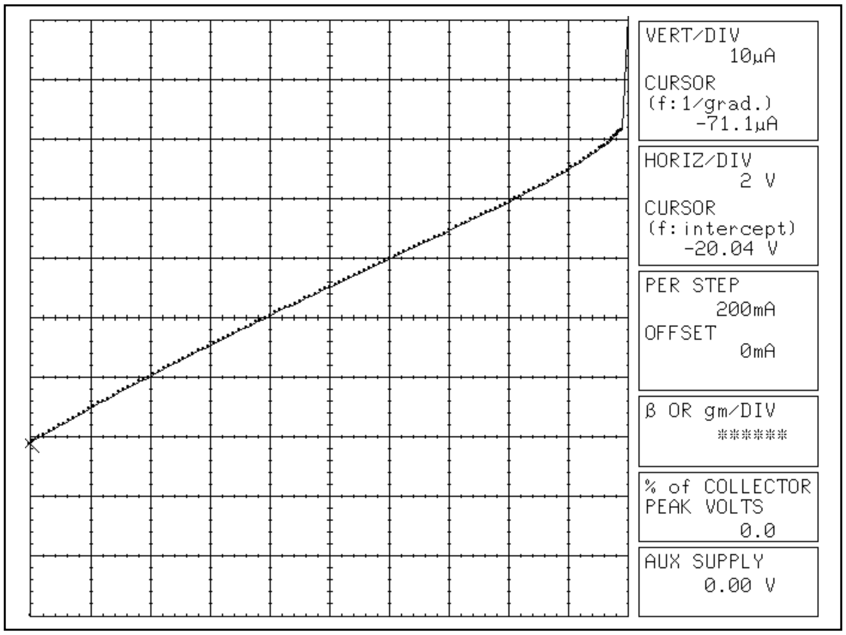
Circuit Simulation Result



Simulation Result

Vrev(V)	Irev(uA) Measurement	Irev(uA) Simulation	%Error
5	34.50	36.00	4.35
10	45.00	43.50	-3.33
15	55.00	52.60	-4.36

Reverse Characteristic Reference



VERT/DIV
10µA
CURSOR
(f:1/grad.)
-71.1µA

HORIZ/DIV
2 V
CURSOR
(f:intercept)
-20.04 V

PER STEP
200mA
OFFSET
0mA

β OR gm/DIV
******

% of COLLECTOR
PEAK VOLTS
0.0

AUX SUPPLY
0.00 V