Device Modeling Report

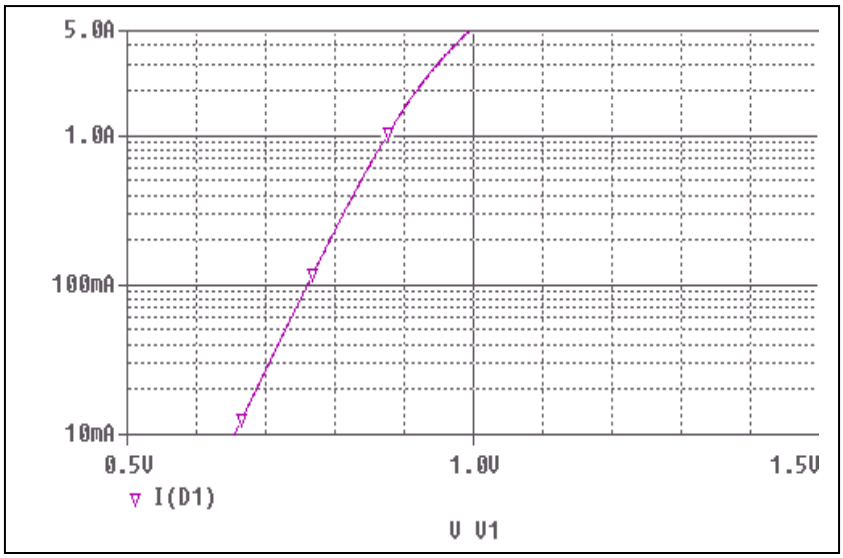
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: S5688G
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

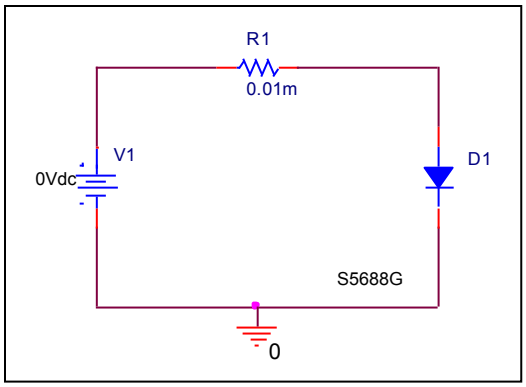
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

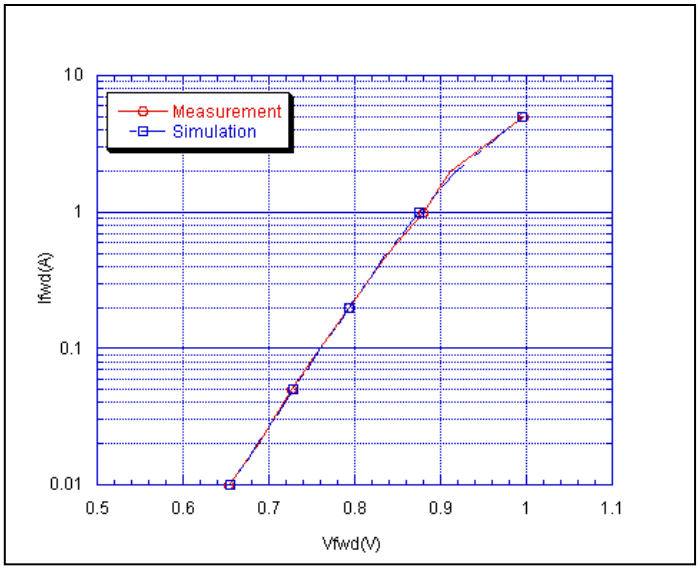


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

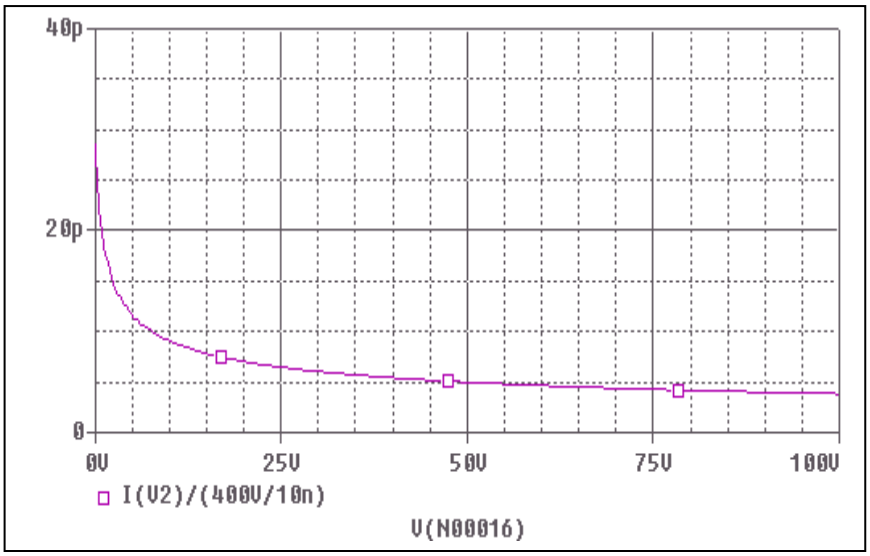


Simulation Result

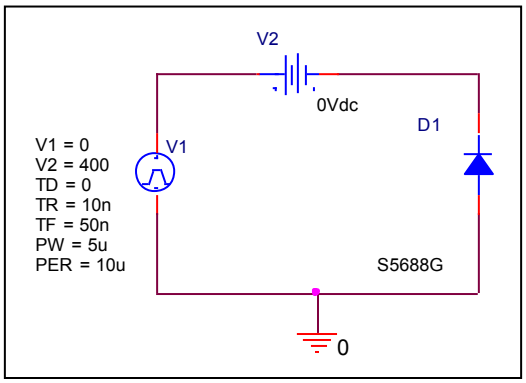
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.654	0.654	-0.061
0.02	0.688	0.686	0.247
0.05	0.726	0.729	-0.399
0.1	0.760	0.760	-0.053
0.2	0.794	0.793	0.151
0.5	0.838	0.837	0.107
1	0.880	0.875	0.557
2	0.912	0.918	-0.669
5	0.996	0.995	0.151

Junction Capacitance Characteristic

Circuit Simulation Result

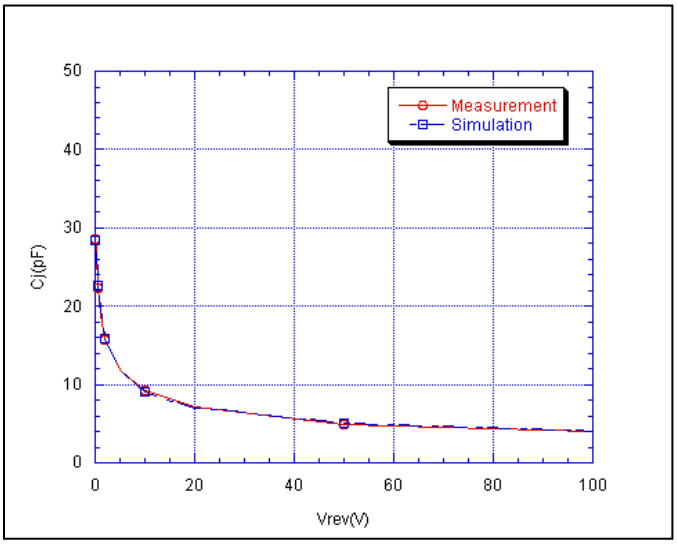


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

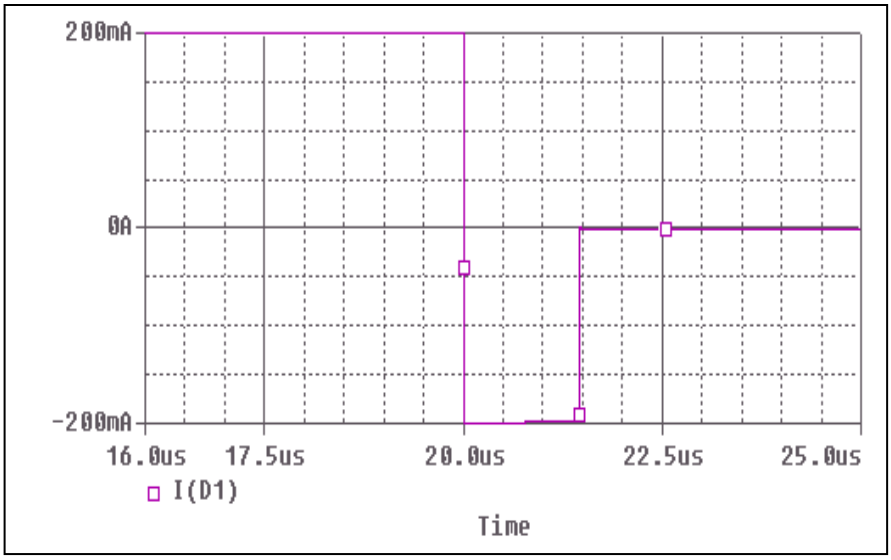


Simulation Result

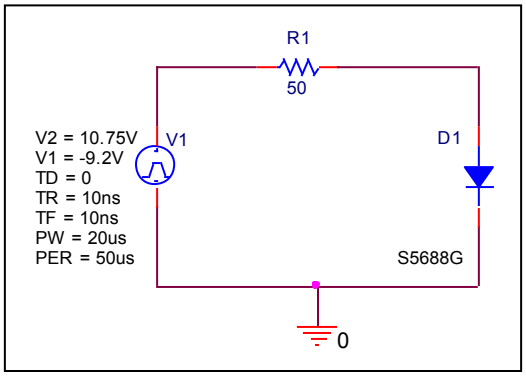
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	29.665	29.665	0.000
0.1	28.603	28.420	0.640
0.2	26.935	26.660	1.021
0.5	22.235	22.716	-2.163
1	19.051	19.561	-2.677
2	15.747	15.855	-0.686
5	11.817	11.786	0.262
10	9.250	9.100	1.626
20	7.129	7.039	1.257
50	4.932	4.995	-1.283
100	3.780	3.839	-1.566

Reverse Recovery Characteristic

Circuit Simulation Result



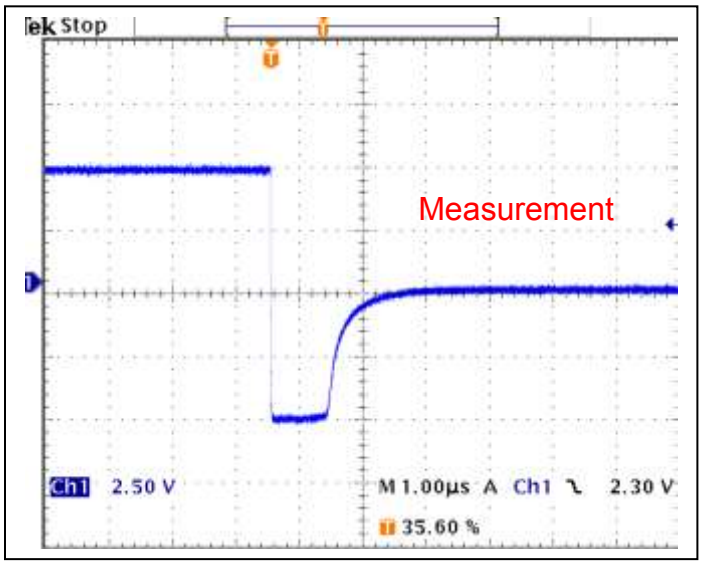
Evaluation Circuit



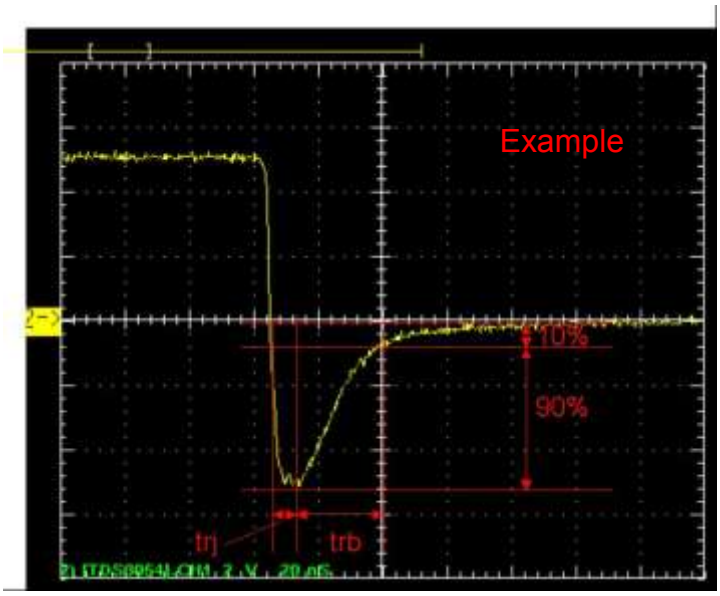
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	1.440	us	1.444	us	0.27

Reverse Recovery Characteristic Reference



Trj =860(ns)
Trb=580(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb