Device Modeling Report

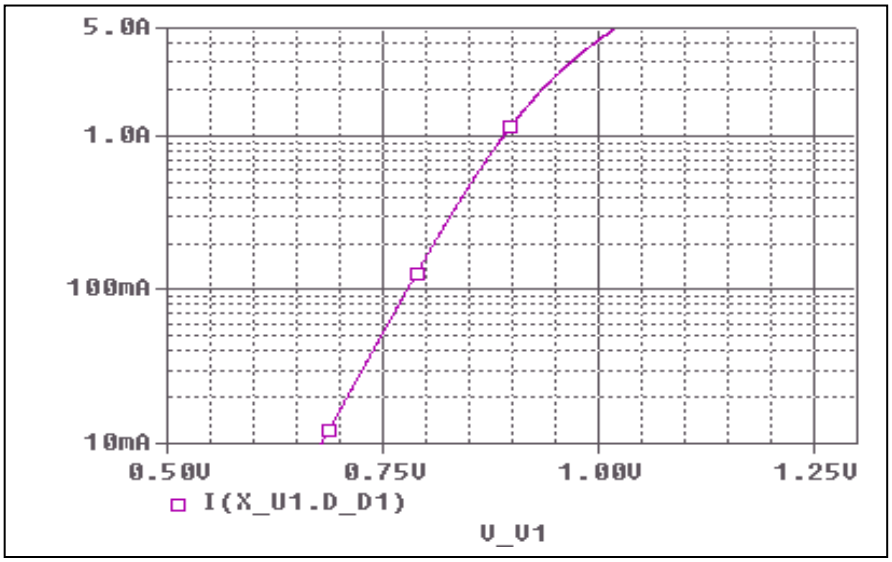
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: S5566G
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

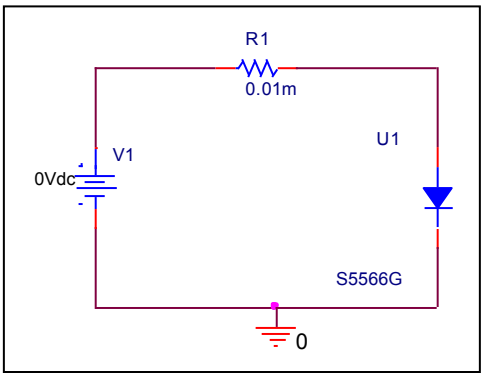
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

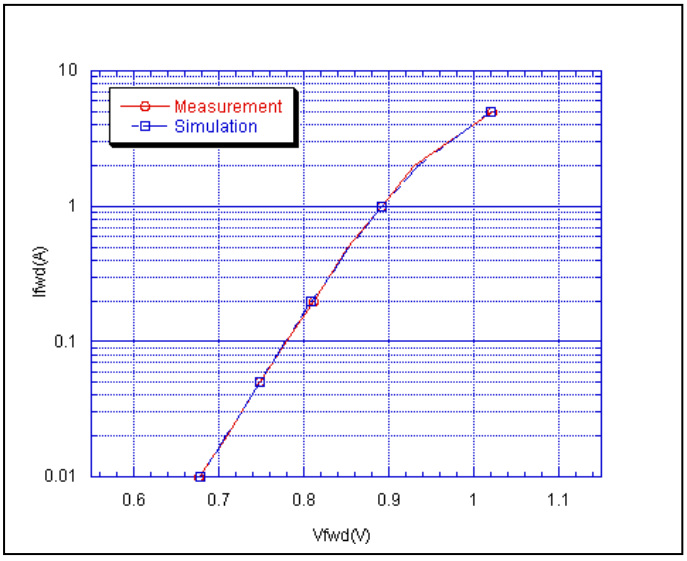


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

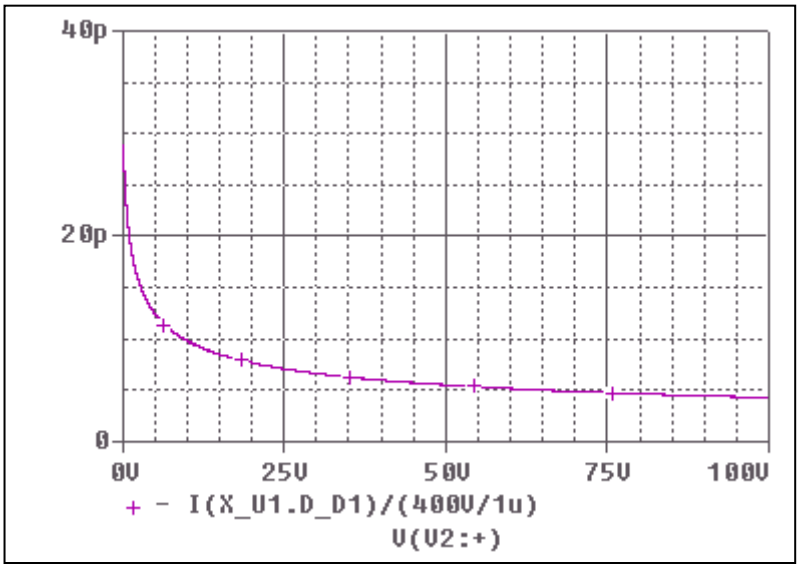


Simulation Result

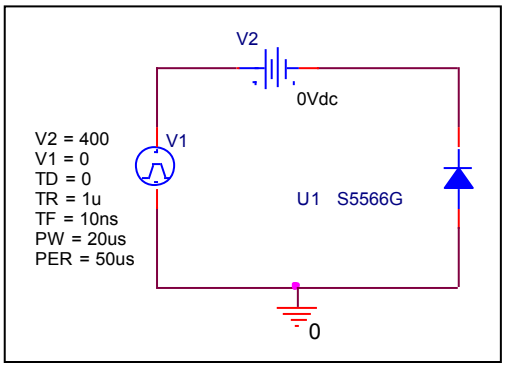
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.676	0.679	-0.444
0.02	0.710	0.708	0.282
0.05	0.748	0.744	0.535
0.1	0.780	0.778	0.256
0.2	0.812	0.809	0.369
0.5	0.852	0.853	-0.117
1	0.892	0.891	0.112
2	0.930	0.935	-0.538
5	1.022	1.020	0.196

Junction Capacitance Characteristic

Circuit Simulation Result

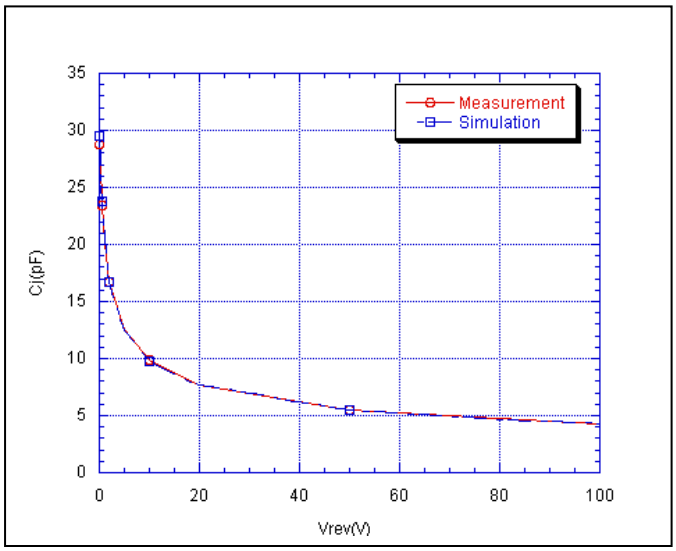


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

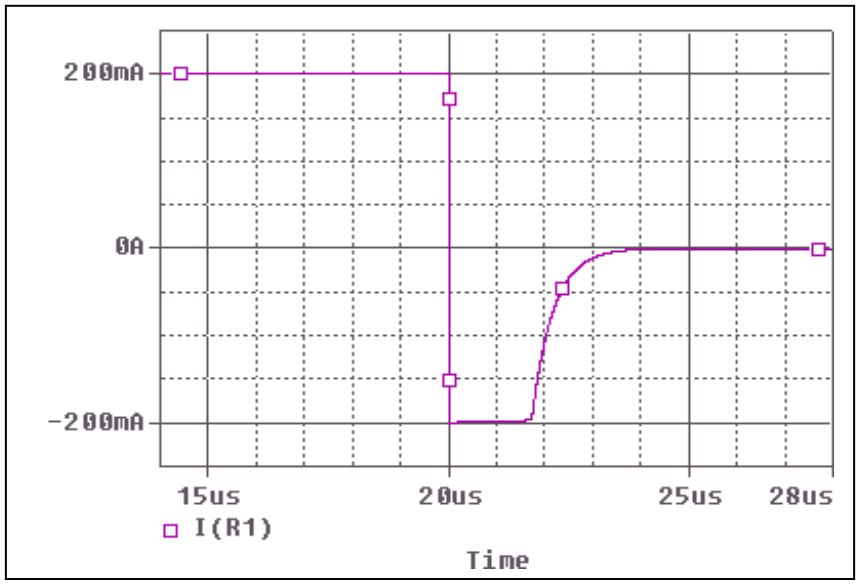


Simulation Result

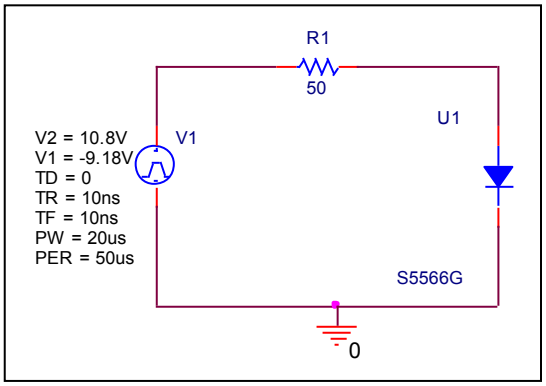
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	31.000	31.000	0.000
0.1	28.800	29.543	-2.580
0.2	27.087	27.654	-2.093
0.5	23.444	23.771	-1.395
1	20.166	20.571	-2.008
2	16.680	16.737	-0.342
5	12.569	12.449	0.955
10	9.935	9.815	1.209
20	7.741	7.685	0.722
50	5.445	5.525	-1.473
100	4.111	4.202	-2.221

Reverse Recovery Characteristic

Circuit Simulation Result



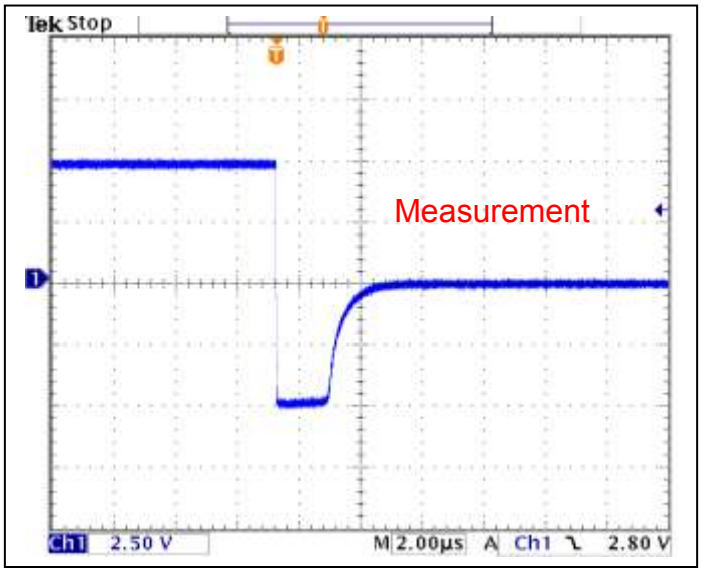
Evaluation Circuit



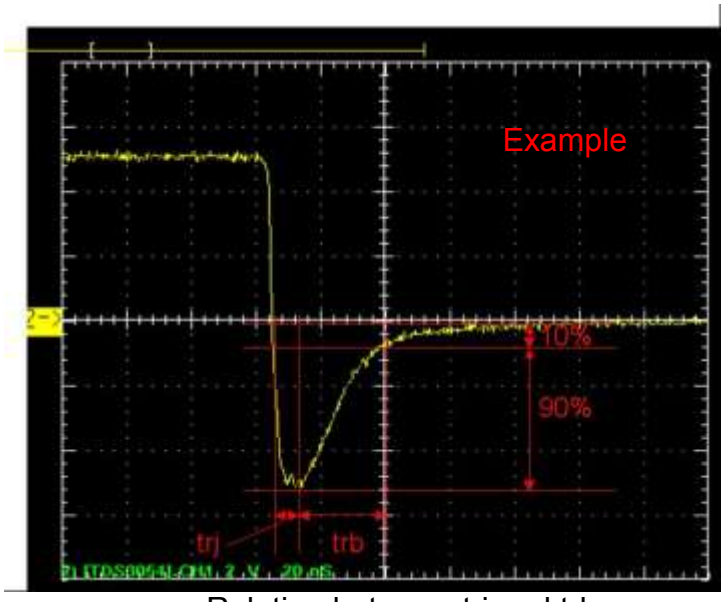
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**1.64**	**us**	**1.63**	**us**	**0.819**
trb	**1.08**	**us**	**1.06**	**us**	**1.851**

Reverse Recovery Characteristic Reference



Trj =1.64(us)
Trb=1.08(us)
Conditions: Ifwd=0.2(A),Irev=0.2(A), Rl=50



Relation between trj and trb