Device Modeling Report

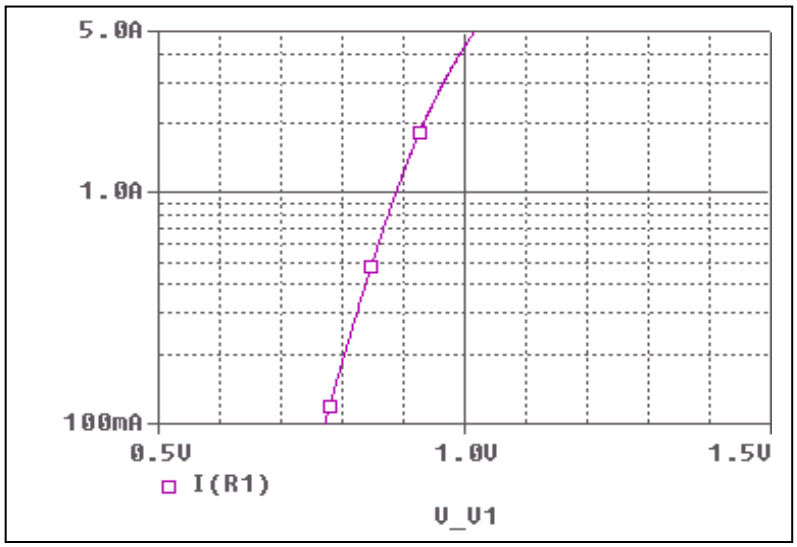
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: S5277G
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

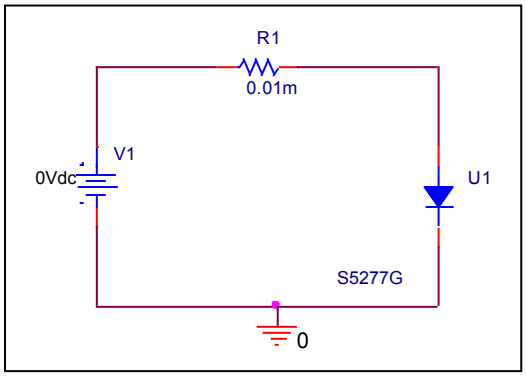
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

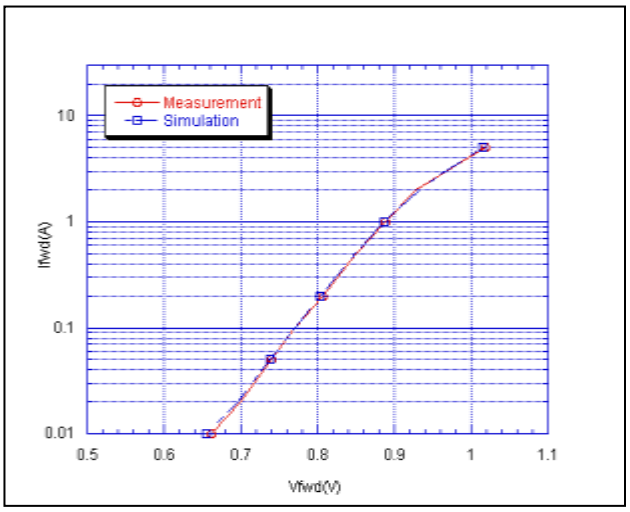


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

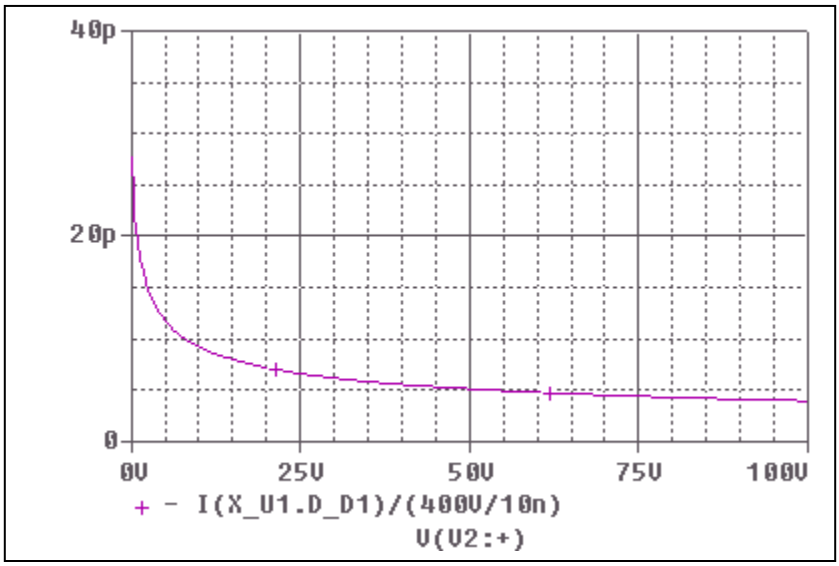


Simulation Result

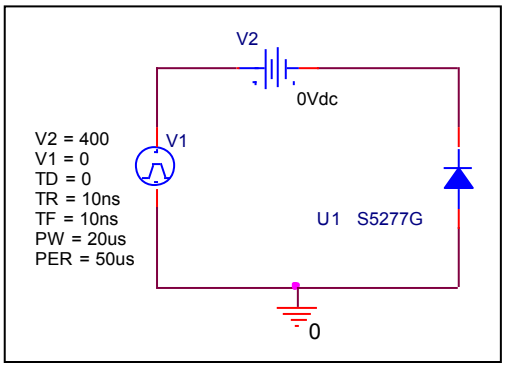
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.662	0.656	0.982
0.02	0.700	0.697	0.371
0.05	0.740	0.739	0.149
0.1	0.770	0.771	-0.104
0.2	0.806	0.803	0.323
0.5	0.850	0.849	0.106
1	0.888	0.887	0.068
2	0.928	0.933	-0.517
5	1.018	1.016	0.226

Junction Capacitance Characteristic

Circuit Simulation Result

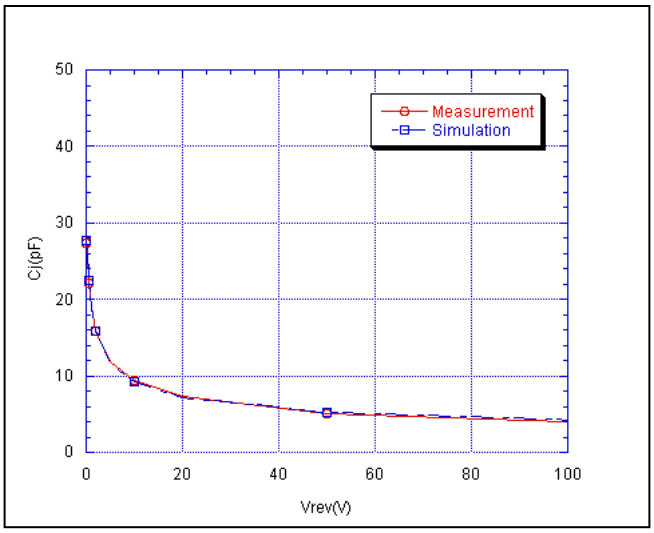


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

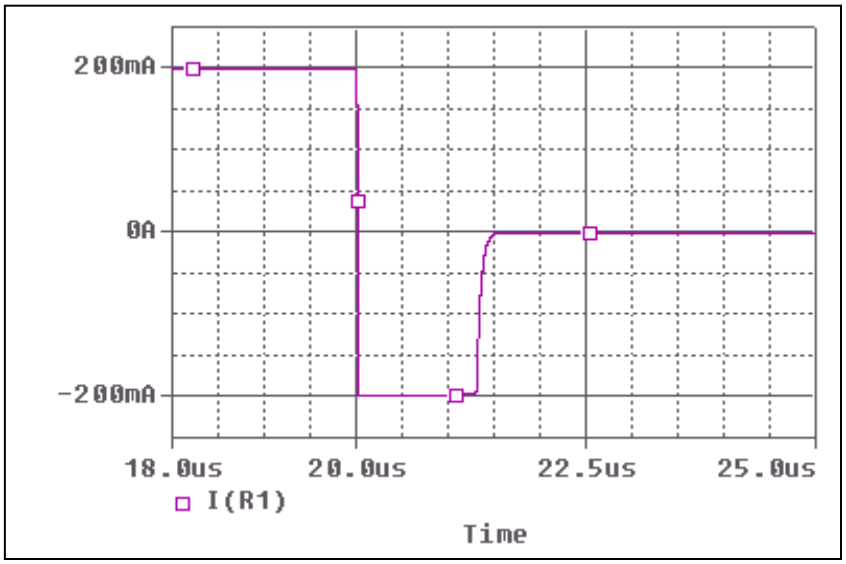


Simulation Result

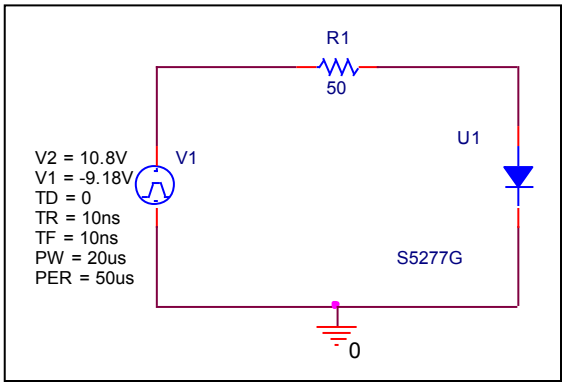
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	28.770	28.770	0.000
0.1	27.362	27.766	-1.477
0.2	25.737	25.992	-0.991
0.5	22.218	22.494	-1.242
1	18.955	19.247	-1.540
2	15.785	15.879	-0.596
5	11.877	11.764	0.951
10	9.362	9.250	1.193
20	7.277	7.200	1.047
50	5.107	5.148	-0.797
100	3.862	3.981	-3.065

Reverse Recovery Characteristic

Circuit Simulation Result



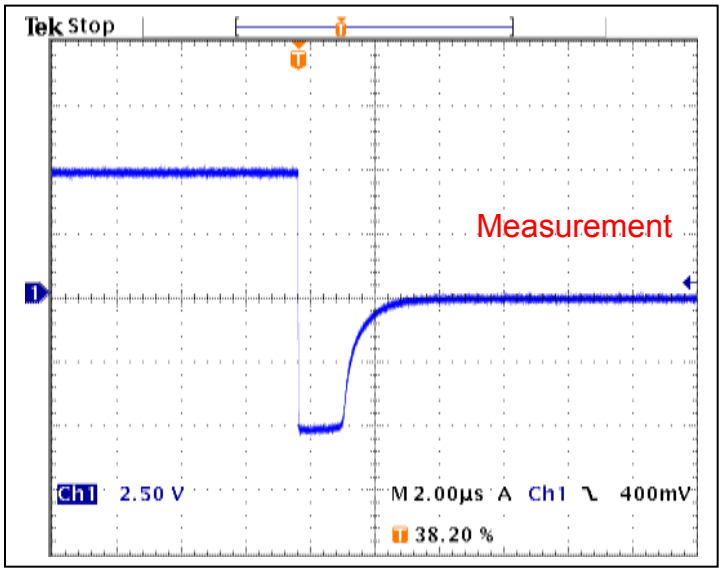
Evaluation Circuit



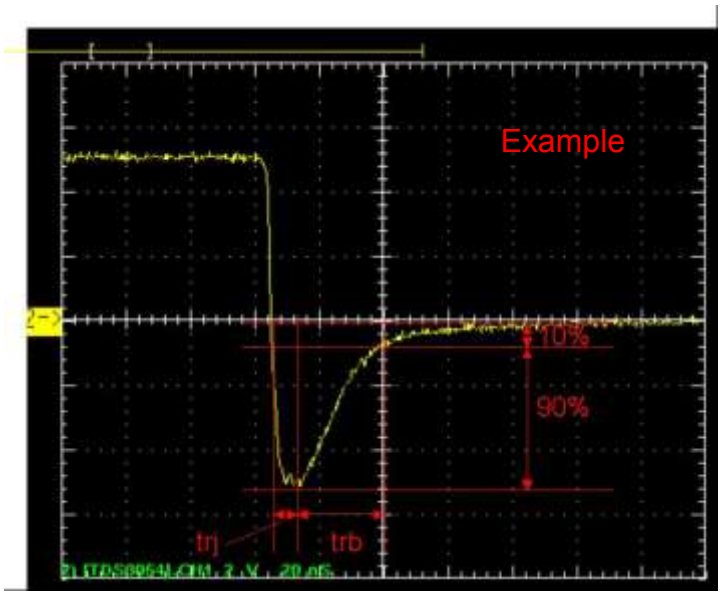
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**1.28**	**us**	**1.29**	**us**	**0.781**
trb	**1.12**	**us**	**1.11**	**us**	**0.892**

Reverse Recovery Characteristic Reference



Trj =1.28(us)
Trb=1.12(us)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb