Device Modeling Report

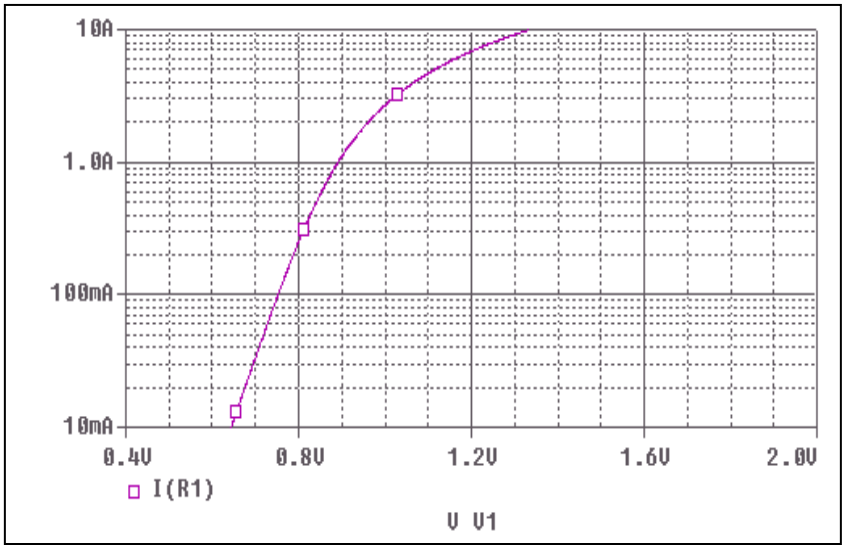
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: S5295G
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

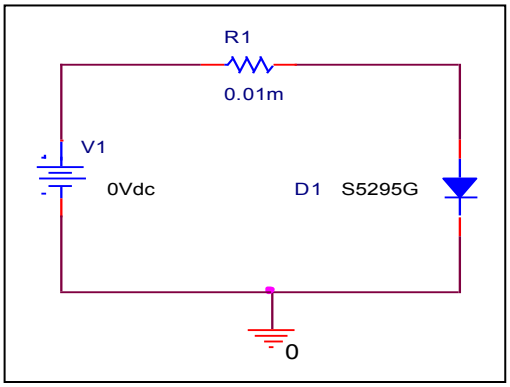
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

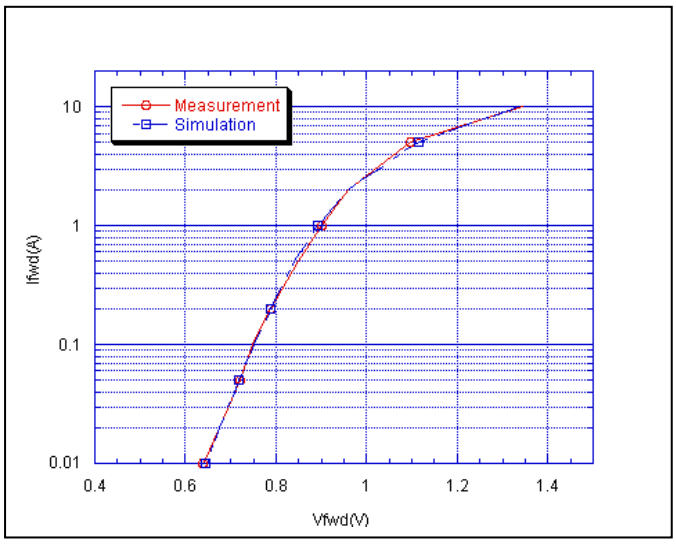


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

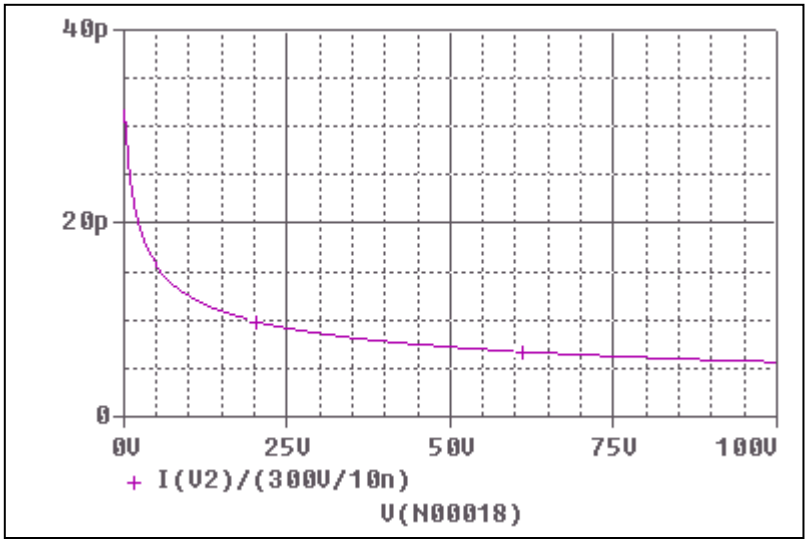


Simulation Result

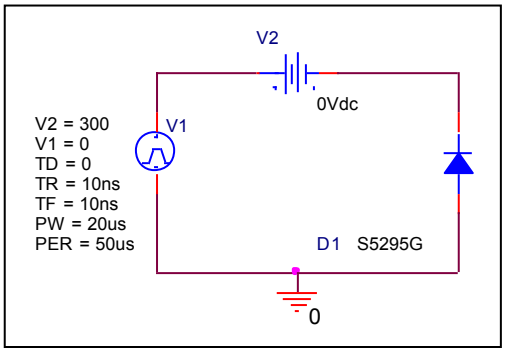
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.640	0.644	-0.609
0.02	0.675	0.676	-0.163
0.05	0.722	0.719	0.429
0.1	0.750	0.752	-0.320
0.2	0.788	0.789	-0.102
0.5	0.850	0.841	1.059
1	0.900	0.891	1.000
2	0.958	0.961	-0.282
5	1.096	1.115	-1.770
10	1.344	1.334	0.751

Junction Capacitance Characteristic

Circuit Simulation Result

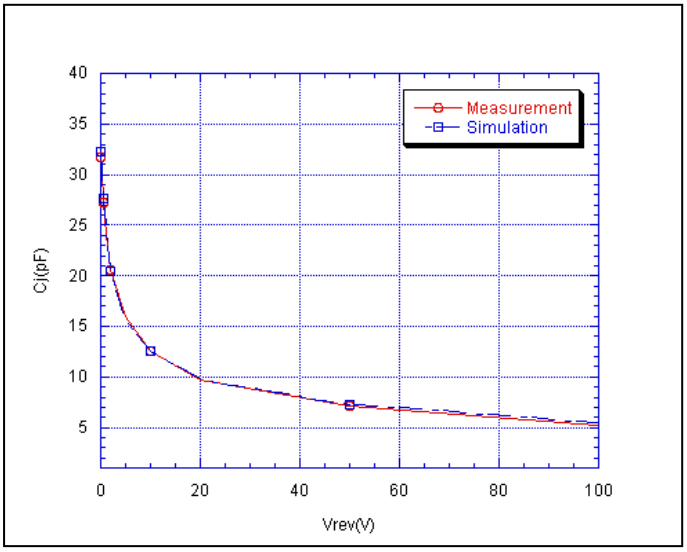


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

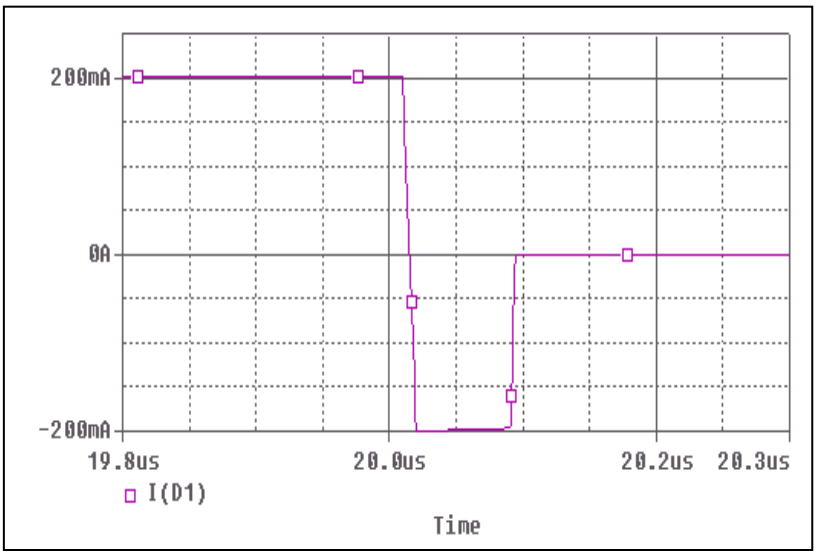


Simulation Result

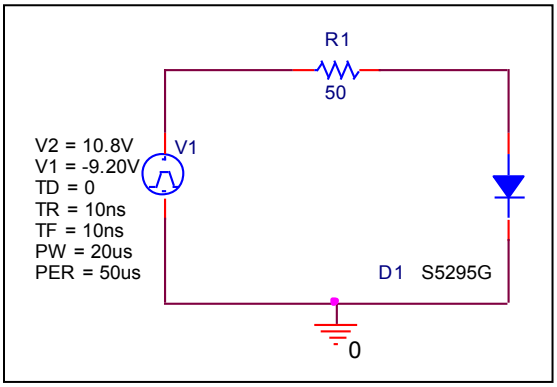
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	33.743	33.743	0.000
0.1	31.722	32.242	-1.639
0.2	30.298	30.769	-1.555
0.5	27.184	27.588	-1.486
1	24.135	24.238	-0.427
2	20.581	20.503	0.379
5	15.931	15.656	1.726
10	12.581	12.504	0.612
20	9.744	9.897	-1.567
50	7.112	7.212	-1.412
100	5.058	5.280	-4.407

Reverse Recovery Characteristic

Circuit Simulation Result



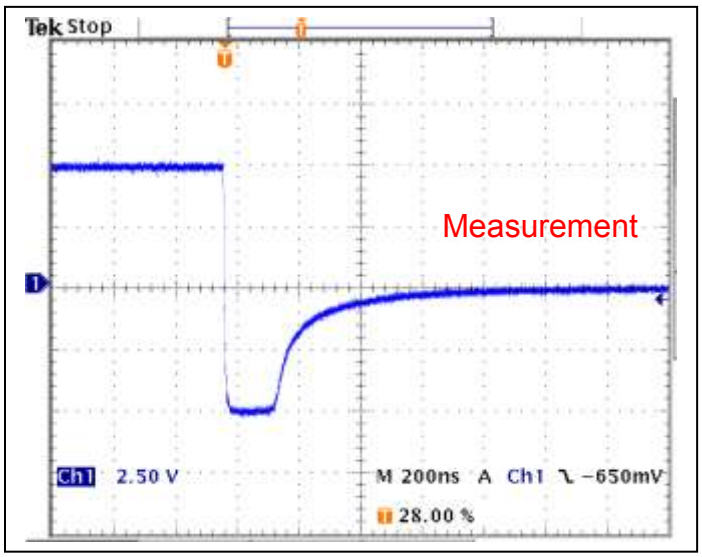
Evaluation Circuit



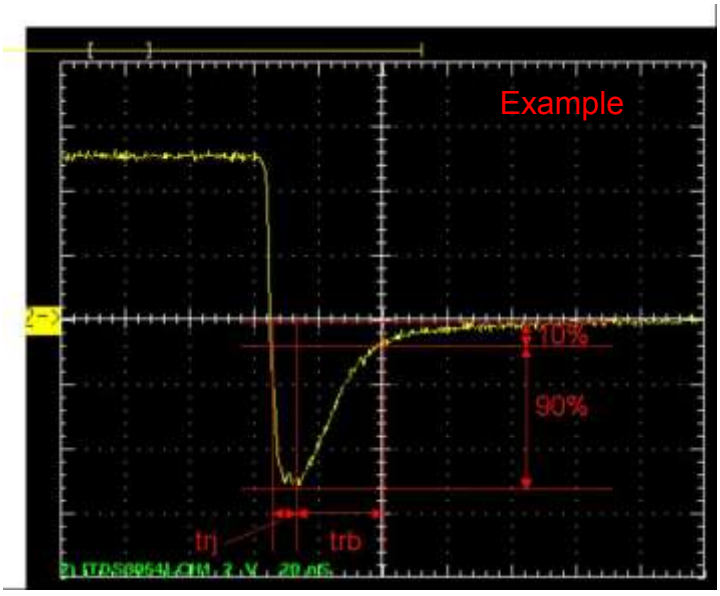
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	**440.00**	**ns**	**445.50**	**ns**	**1.25**

Reverse Recovery Characteristic Reference



Trj =76(ns)
Trb=364(ns)
Conditions: Ifwd=0.2(A),Irev=0.2(A), Rl=50



Relation between trj and trb