Device Modeling Report

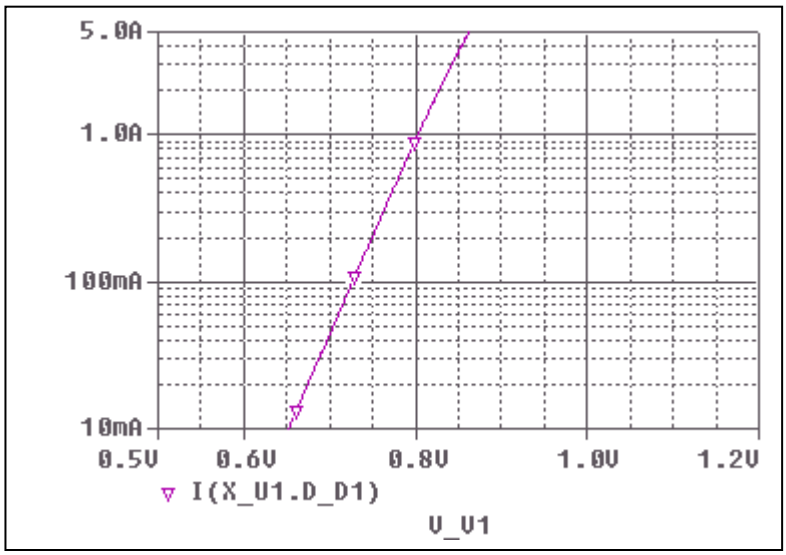
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: 1S1887A
MANUFACTURER: TOSHIBA
REMARK: TC=25C

Bee Technologies Inc.

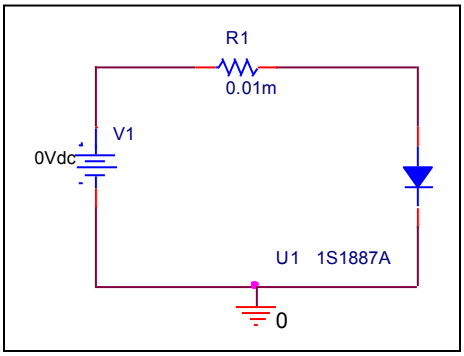
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

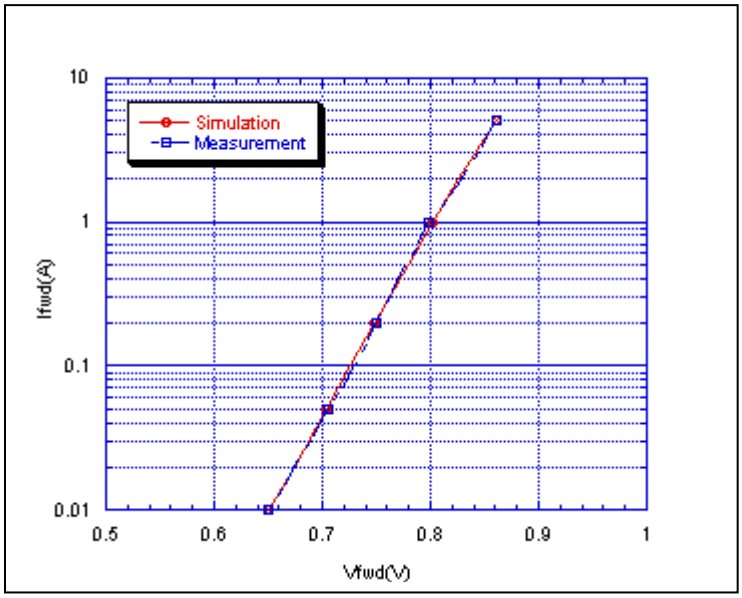


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

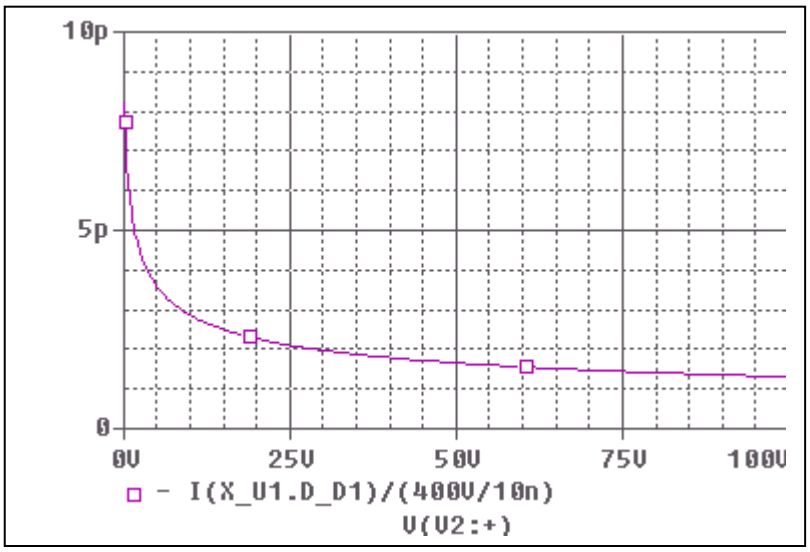


Simulation Result

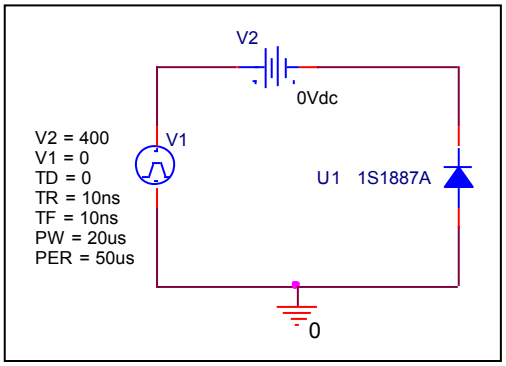
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.650	0.649	0.154
0.02	0.674	0.674	-0.045
0.05	0.705	0.704	0.156
0.1	0.730	0.727	0.438
0.2	0.750	0.749	0.133
0.5	0.778	0.779	-0.129
1	0.798	0.802	-0.501
2	0.830	0.826	0.482
5	0.862	0.860	0.232

Junction Capacitance Characteristic

Circuit Simulation Result

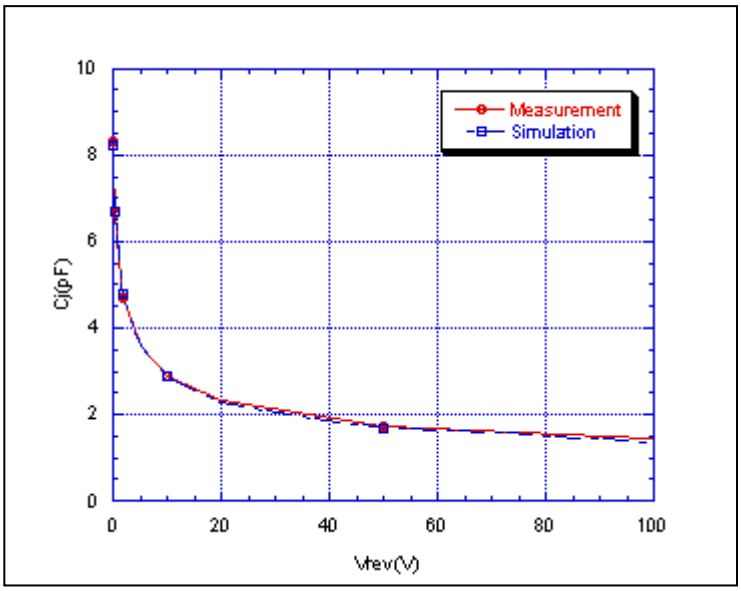


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

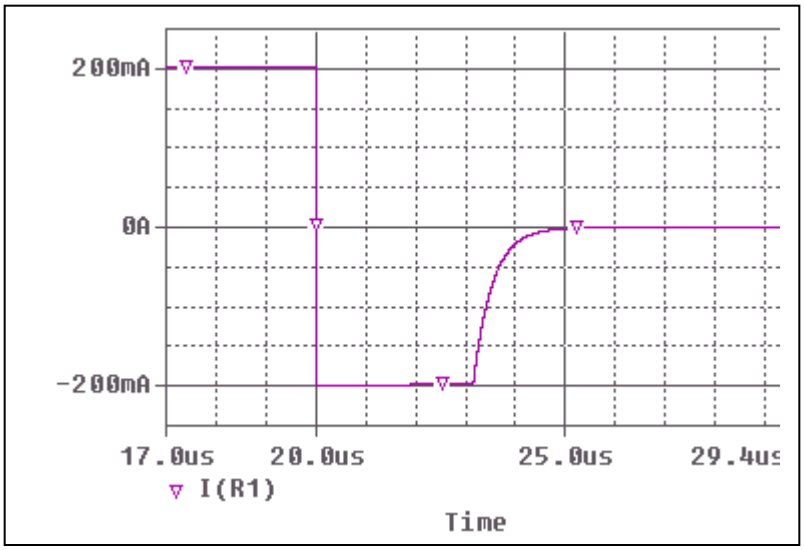


Simulation Result

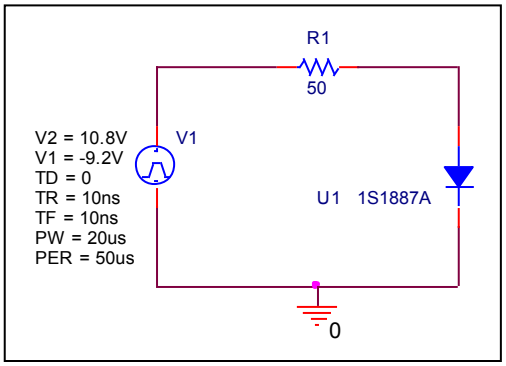
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	8.925	8.920	0.056
0.1	8.312	8.240	0.858
0.2	7.783	7.728	0.707
0.5	6.660	6.683	-0.342
1	5.568	5.732	-2.945
2	4.681	4.776	-2.023
5	3.584	3.571	0.352
10	2.880	2.870	0.347
20	2.323	2.272	2.179
50	1.734	1.660	4.228
100	1.387	1.320	4.837

Reverse Recovery Characteristic

Circuit Simulation Result



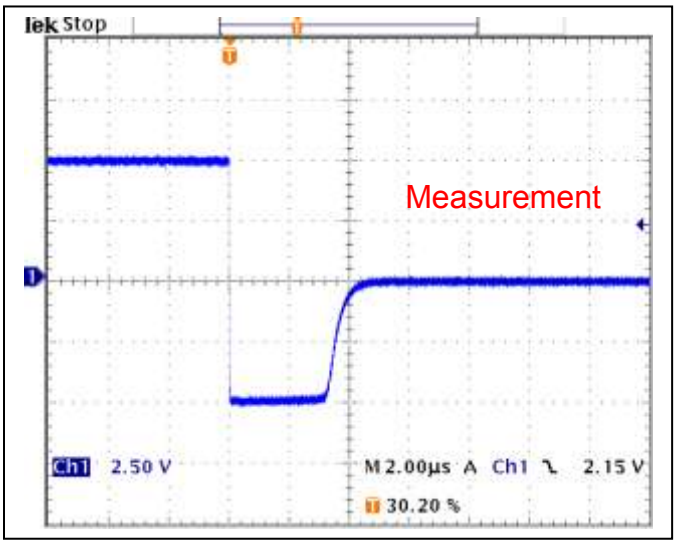
Evaluation Circuit



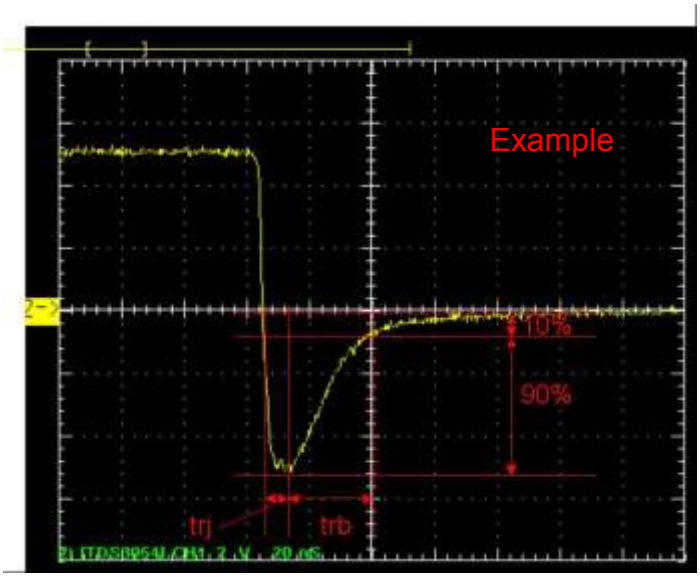
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	3.120	us	3.110	us	0.321
trb	0.880	us	0.883	us	-0.341

Reverse Recovery Characteristic Reference



Trj = 3.12(us)
Trb= 0.88(us)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb