Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: 1SS400
MANUFACTURER: ROHM

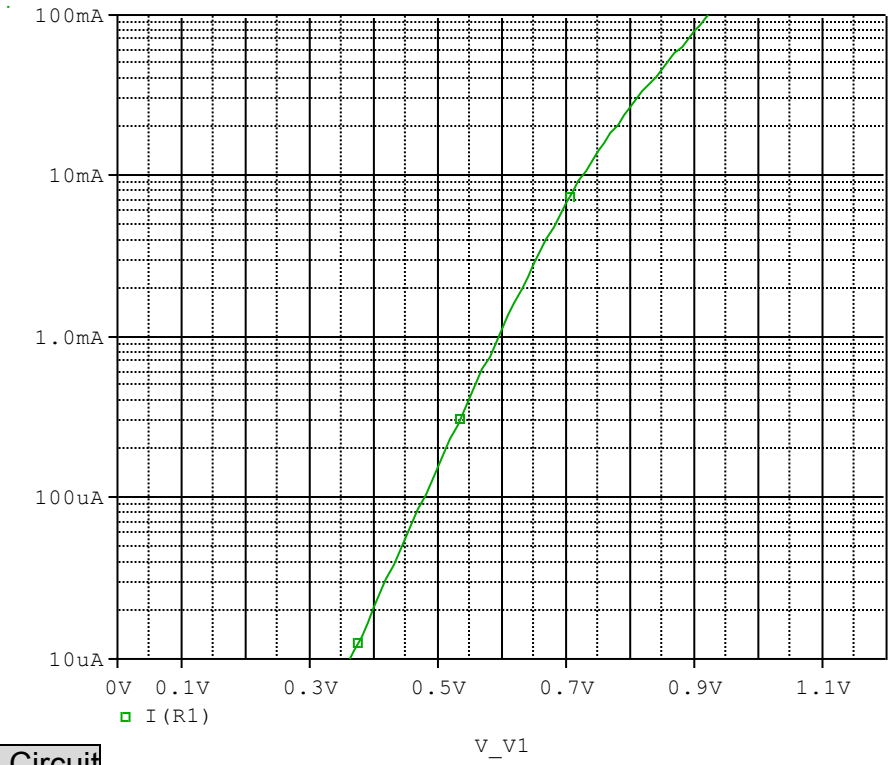
Bee Technologies Inc.

DIODE MODEL PARAMETERS

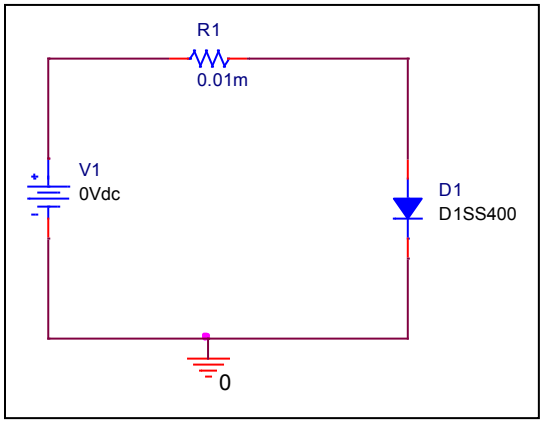
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

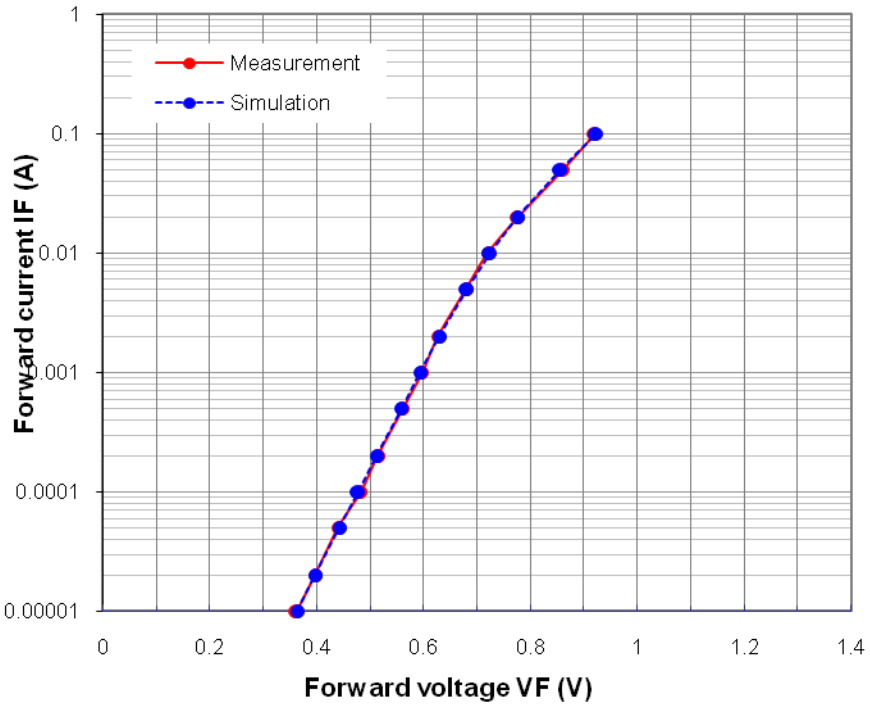


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

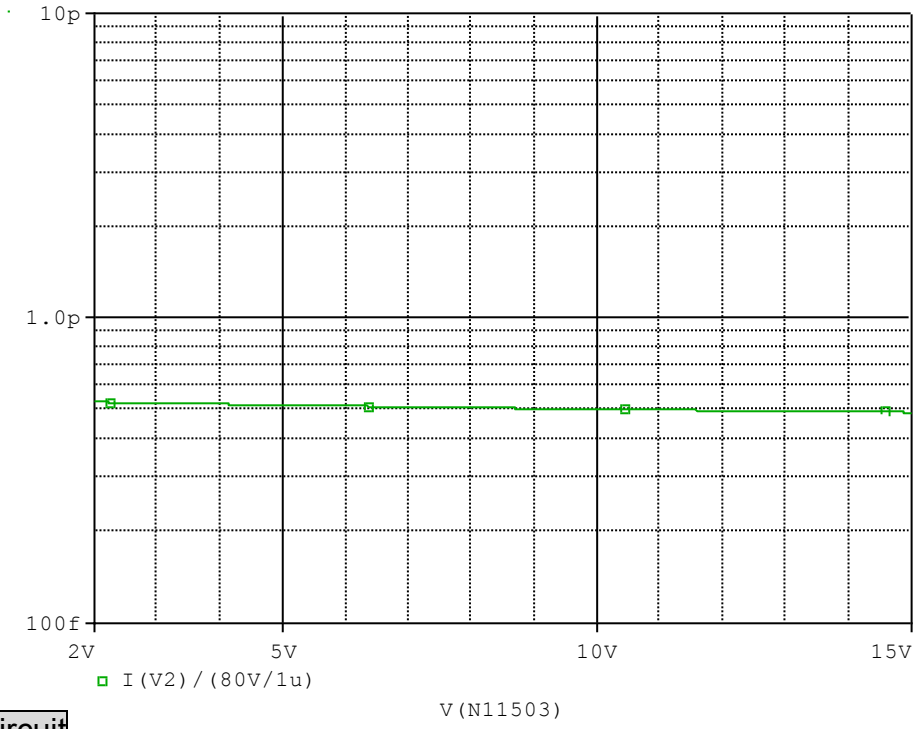


Simulation Result

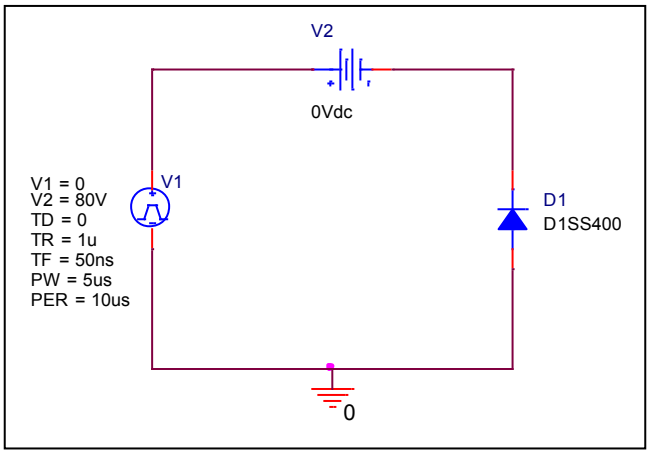
Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.00001	0.362	0.364	-0.55
0.00002	0.397	0.398	-0.25
0.00005	0.441	0.443	-0.45
0.0001	0.482	0.478	0.83
0.0002	0.515	0.513	0.39
0.0005	0.561	0.559	0.36
0.001	0.597	0.594	0.50
0.002	0.628	0.630	-0.32
0.005	0.680	0.681	-0.15
0.01	0.721	0.725	-0.55
0.02	0.777	0.776	0.13
0.05	0.861	0.857	0.46
0.1	0.921	0.923	-0.22

Capacitance Characteristic

Circuit Simulation Result

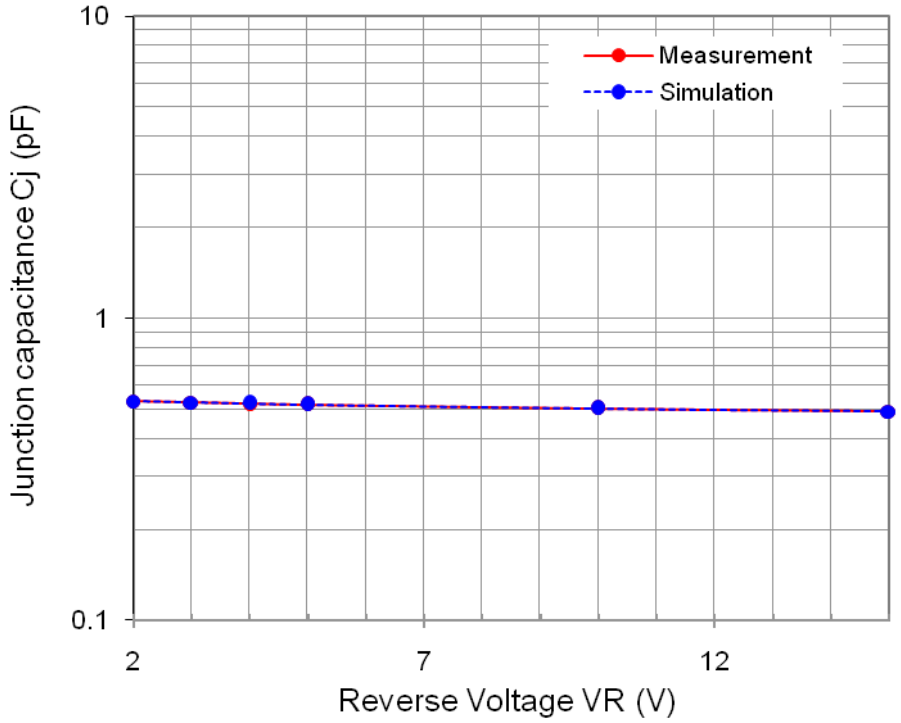


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

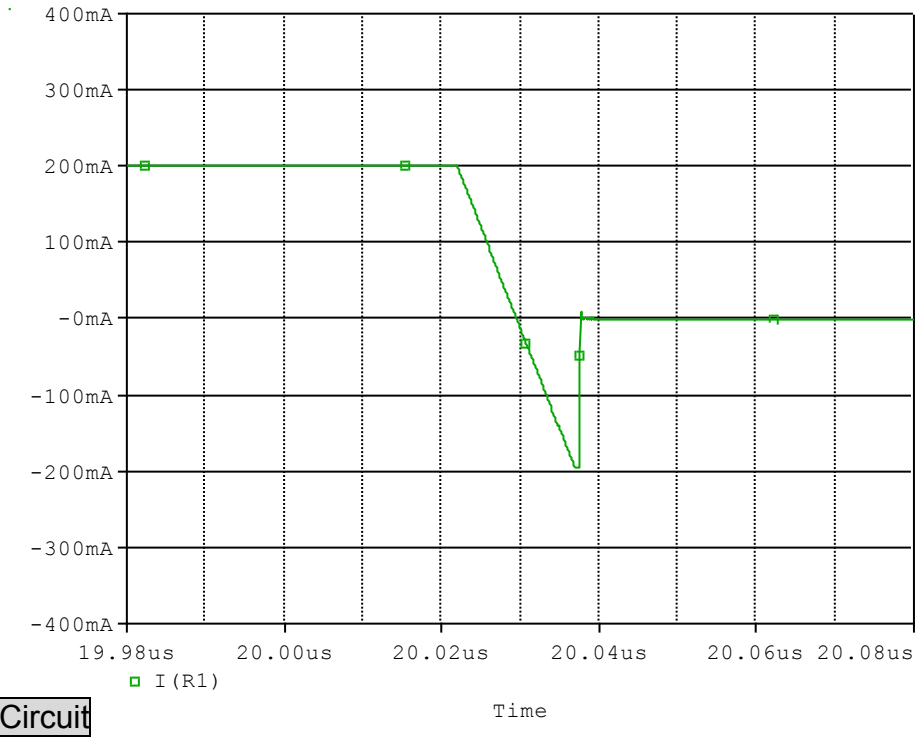


Simulation Result

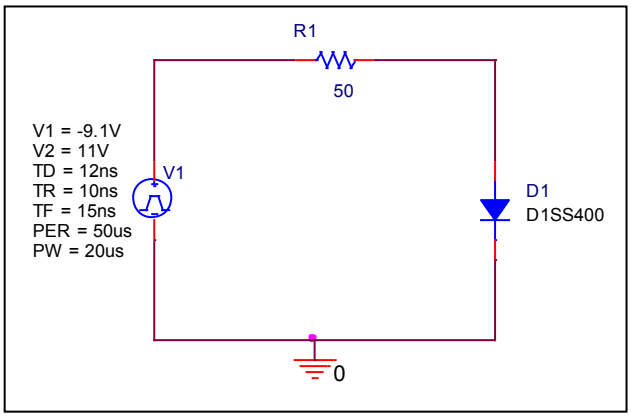
Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
2	0.532	0.531	-0.19
3	0.527	0.527	0.00
4	0.522	0.523	0.17
5	0.518	0.519	0.19
10	0.503	0.503	0.00
15	0.492	0.491	-0.20

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

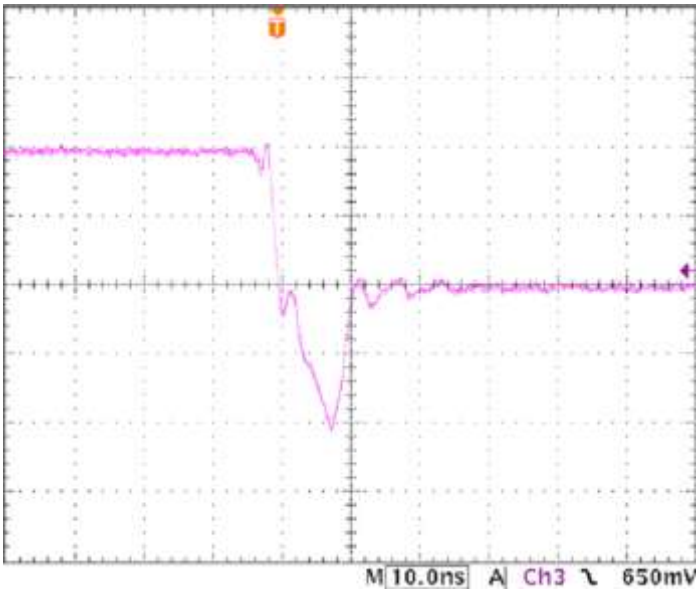


Compare Measurement vs. Simulation

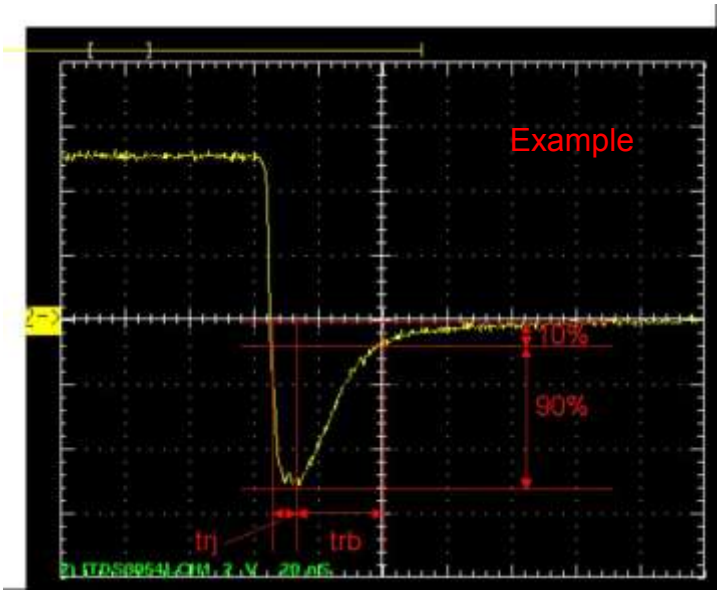
		Measurement	Simulation	%Error
trj	**ns**	**7.40**	**7.70**	**4.04**

Reverse Recovery Characteristic Reference

Measurement



Trj =7.40(ns)
Trb= 3.20 (ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb