Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: 1SS250
MANUFACTURER: TOSHIBA

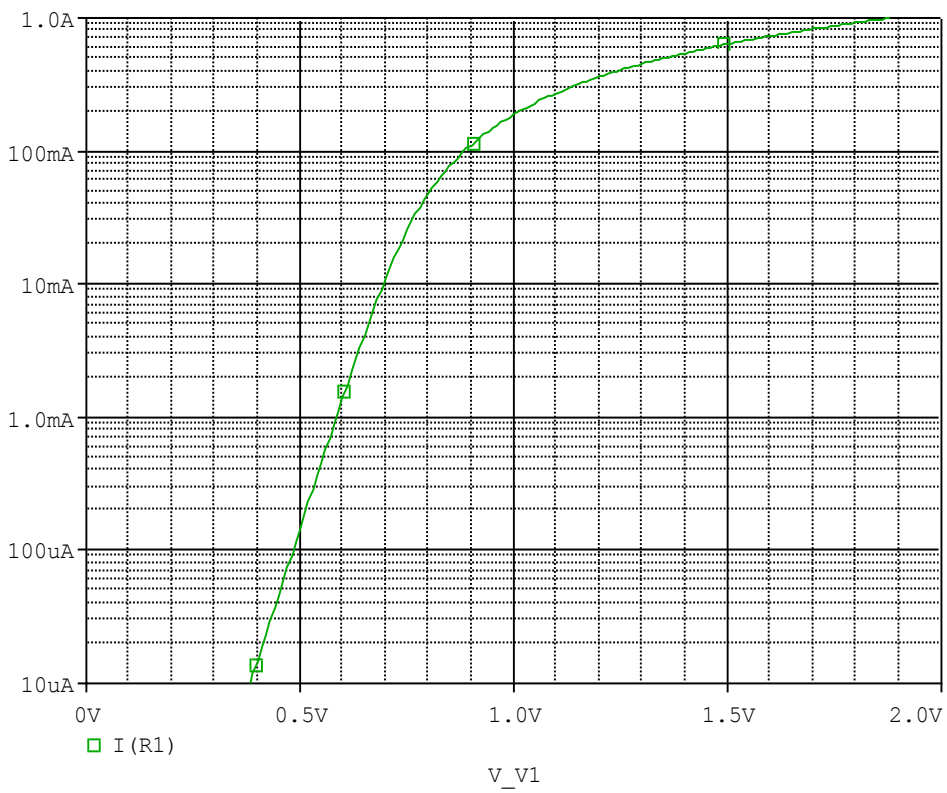
Bee Technologies Inc.

DIODE MODEL PARAMETERS

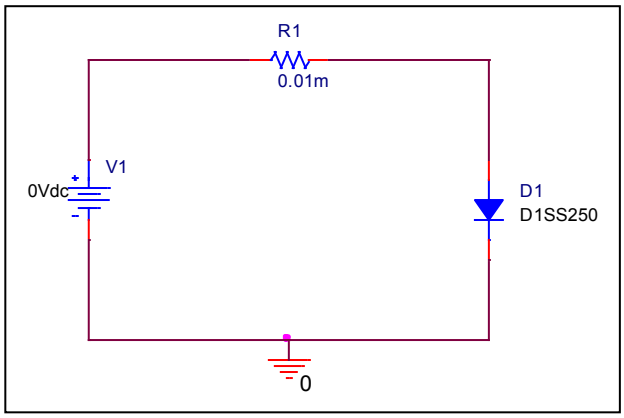
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

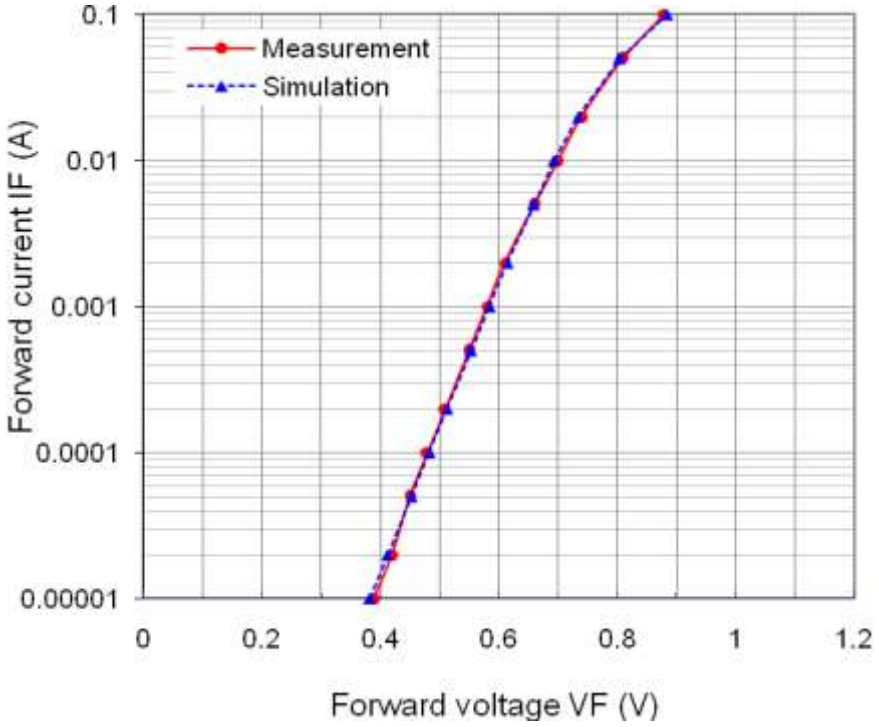


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

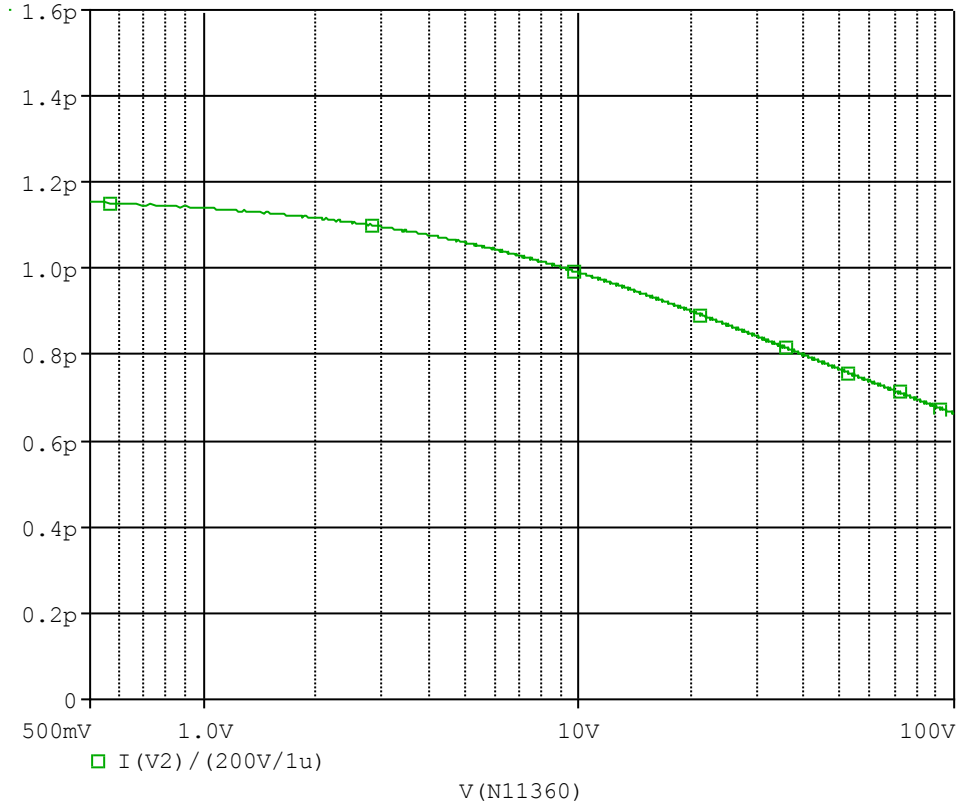


Simulation Result

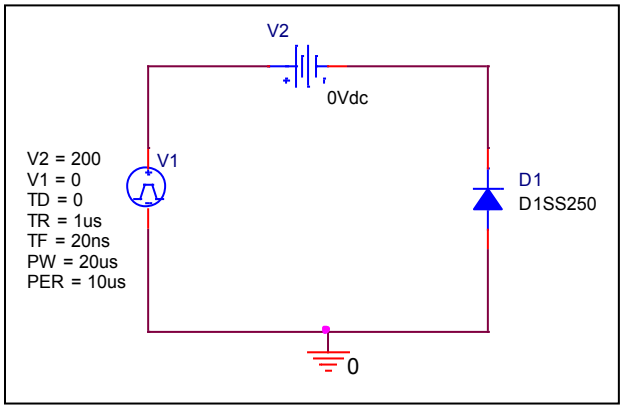
Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.00001	0.390	0.382	-2.05
0.00002	0.420	0.412	-1.90
0.00005	0.450	0.452	0.44
0.0001	0.480	0.483	0.63
0.0002	0.510	0.513	0.59
0.0005	0.550	0.553	0.55
0.001	0.580	0.584	0.69
0.002	0.610	0.615	0.82
0.005	0.660	0.659	-0.15
0.01	0.700	0.694	-0.86
0.02	0.740	0.734	-0.81
0.05	0.810	0.804	-0.74
0.1	0.880	0.884	0.45

Capacitance Characteristic

Circuit Simulation Result

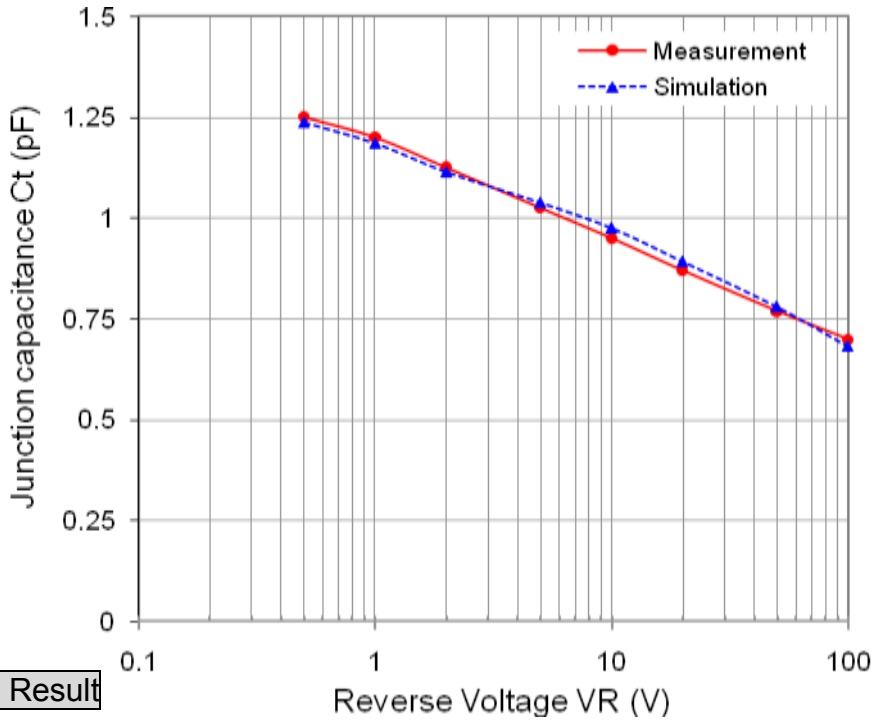


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

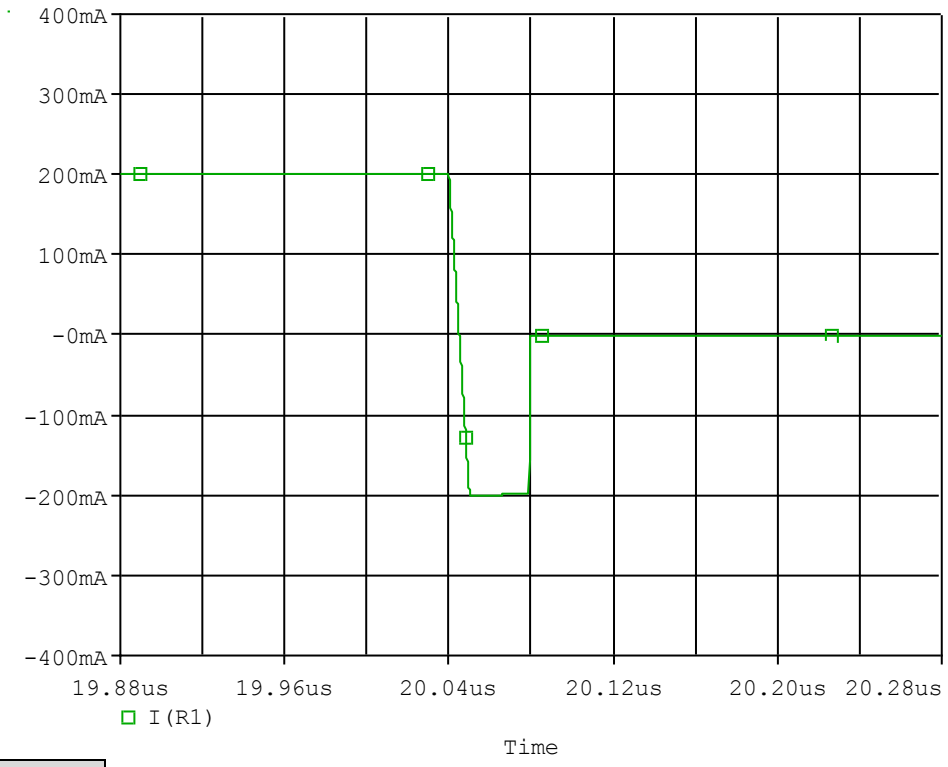


Simulation Result

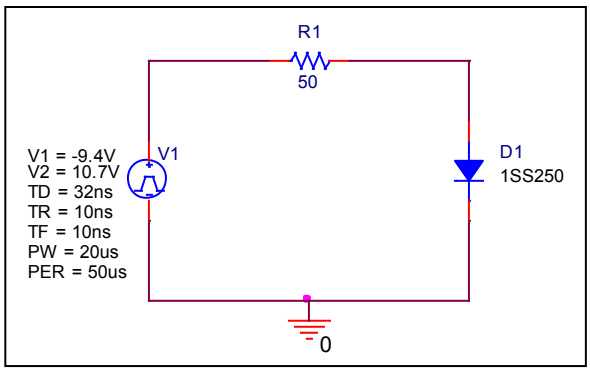
Vrev (V)	Ct (pF)		%Error
	Measurement	Simulation	
0.5	1.250	1.237	-1.04
1	1.200	1.185	-1.25
2	1.125	1.114	-0.98
5	1.025	1.038	1.27
10	0.950	0.975	2.63
20	0.870	0.892	2.53
50	0.770	0.780	1.30
100	0.700	0.682	-2.57

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

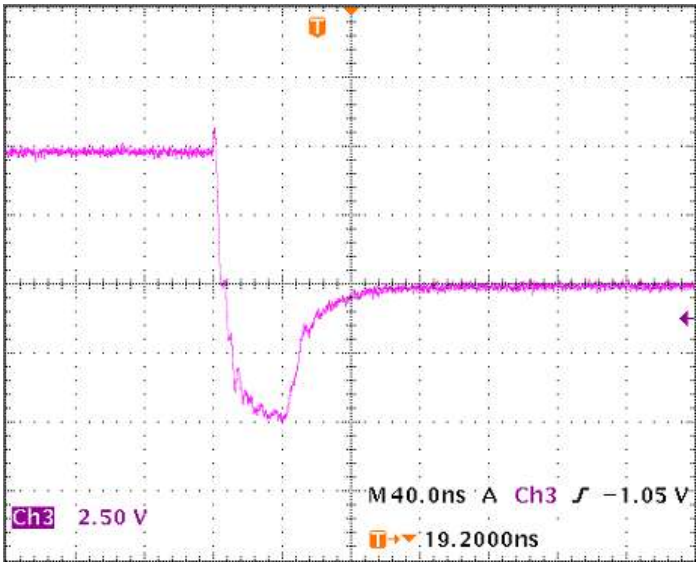


Compare Measurement vs. Simulation

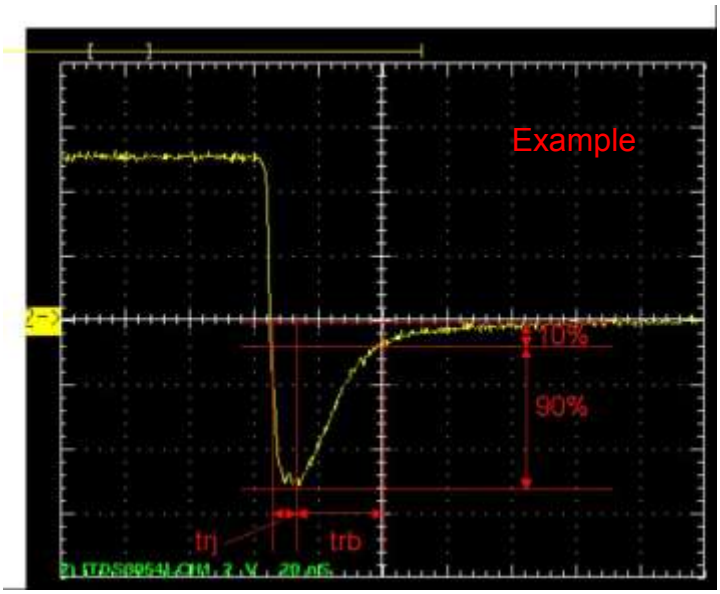
		Measurement	Simulation	%Error
trj	**ns**	**32.80**	**32.52**	**-0.83**

Reverse Recovery Characteristic Reference

Measurement



Trj =32.8(ns)
Trb= 39.2(ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb