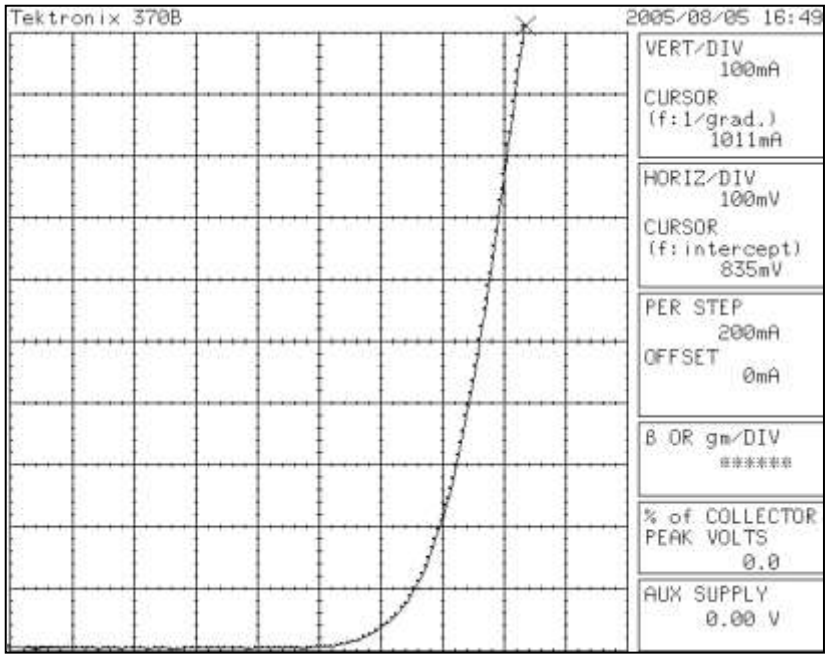
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: D1NL20U
MANUFACTURER: SHINDENGEN
REMARK: TC=25C

Bee Technologies Inc.

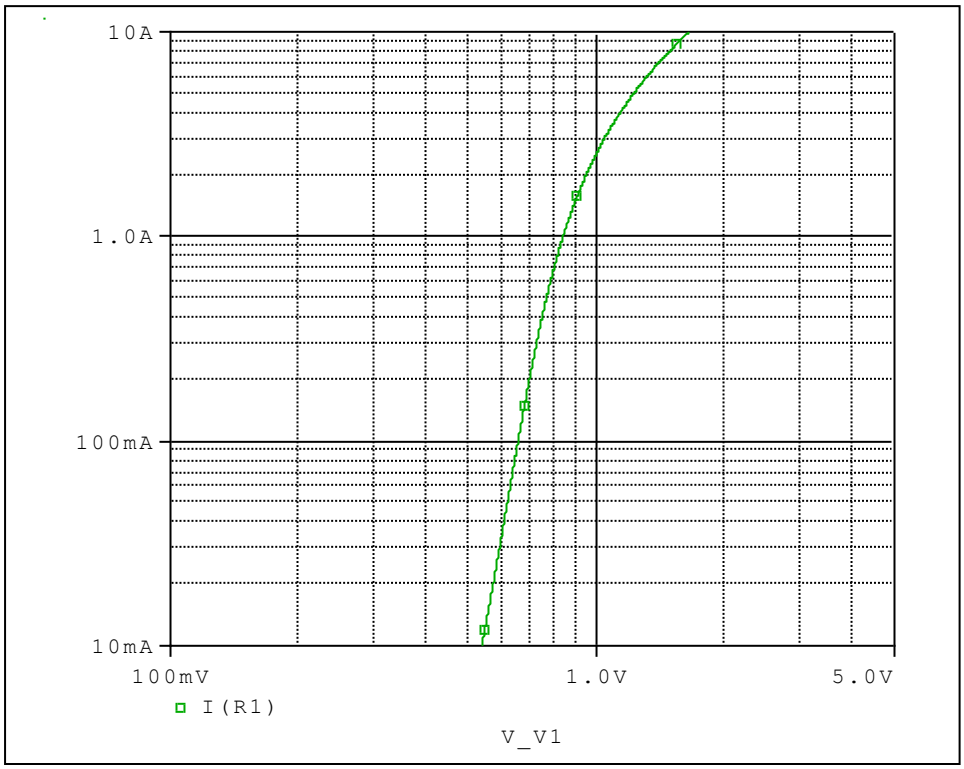
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic Reference

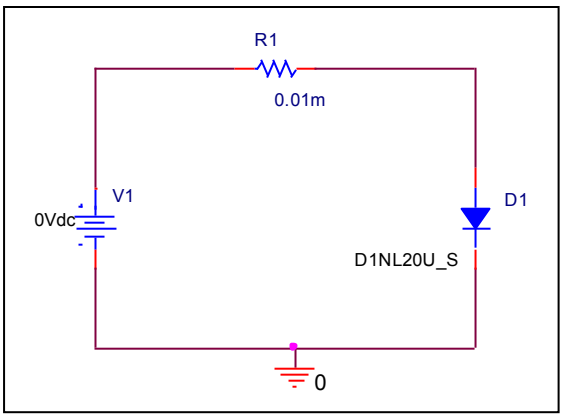


Forward Current Characteristic

Circuit Simulation Result

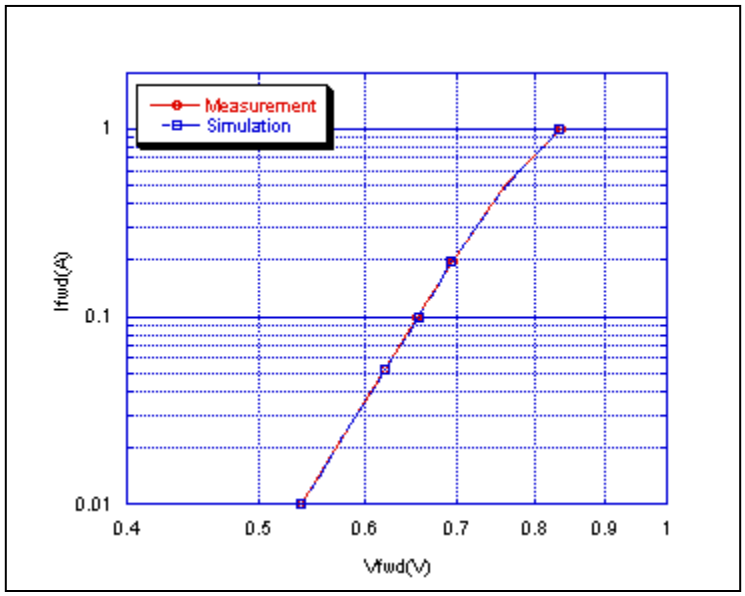


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

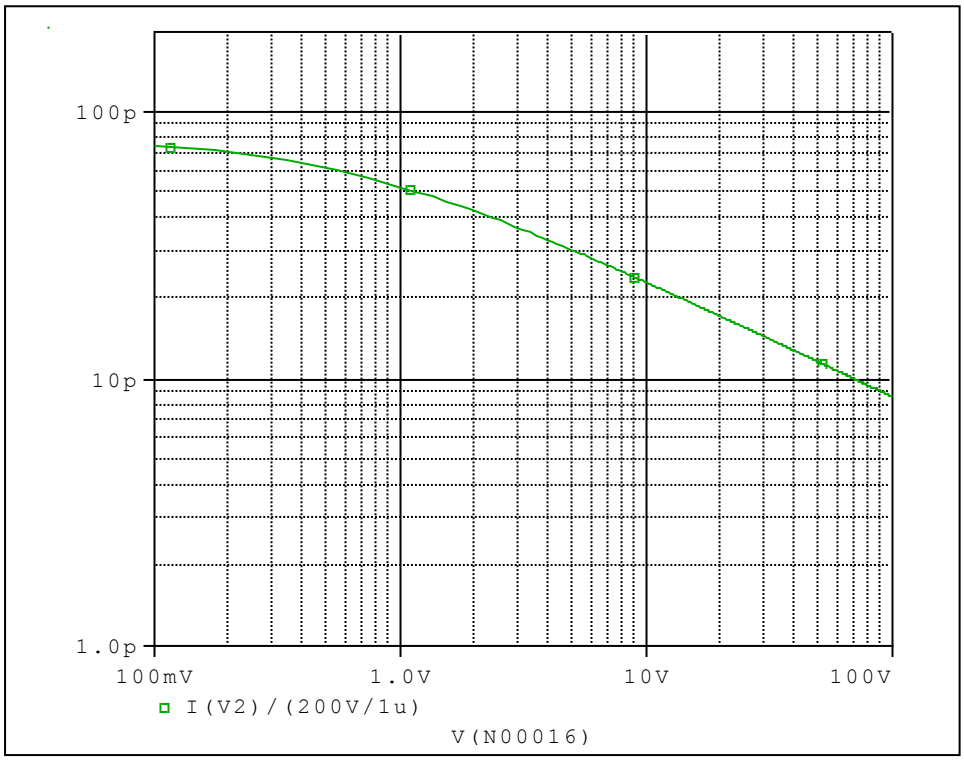


Simulation Result

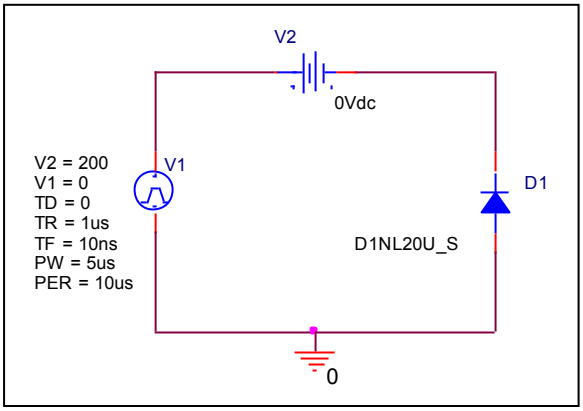
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.538	0.537	0.186
0.02	0.575	0.576	-0.174
0.05	0.620	0.619	0.161
0.1	0.655	0.656	-0.153
0.2	0.695	0.694	0.144
0.5	0.761	0.762	-0.131
1	0.835	0.834	0.120

Capacitance Characteristic

Circuit Simulation Result

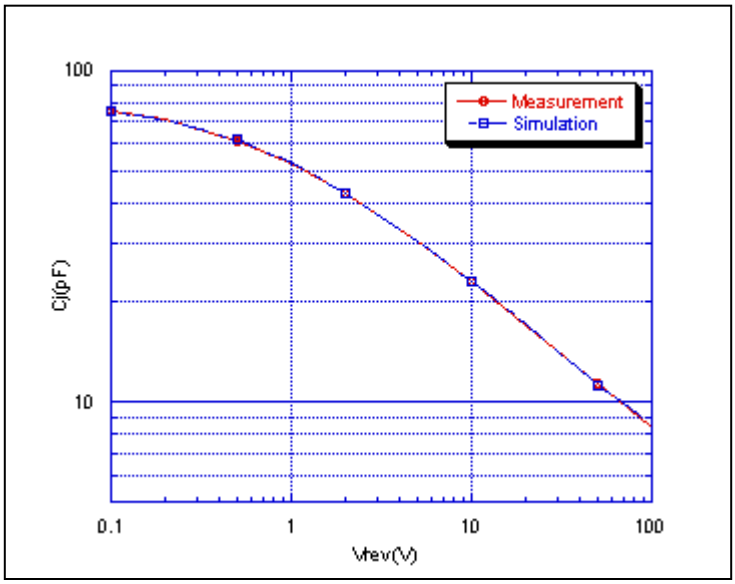


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

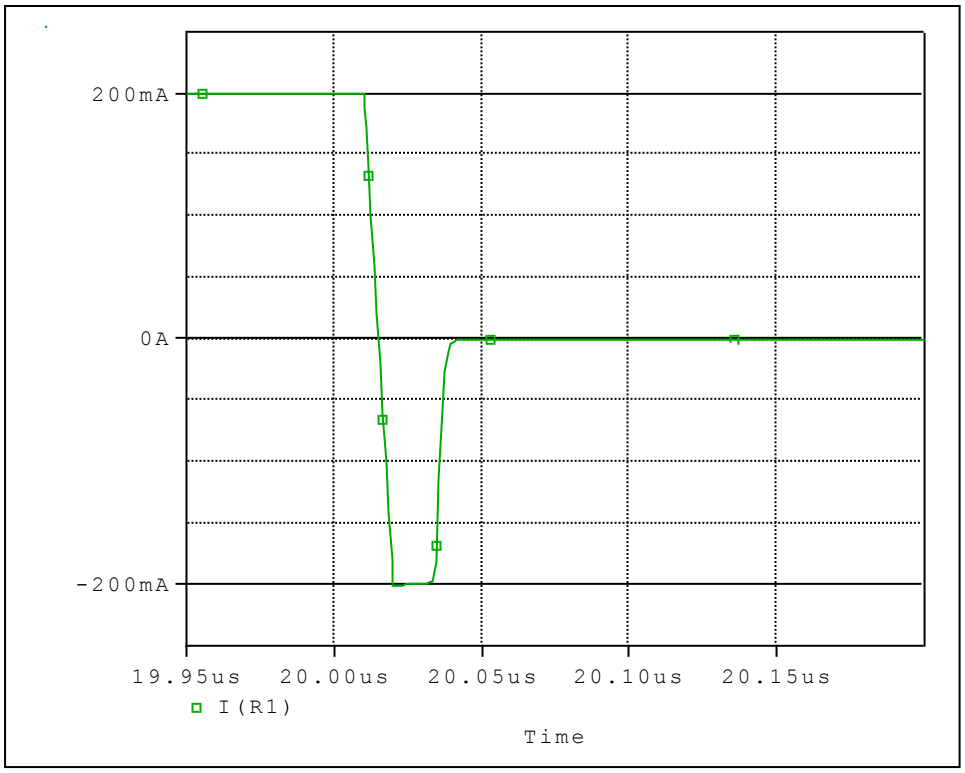


Simulation Result

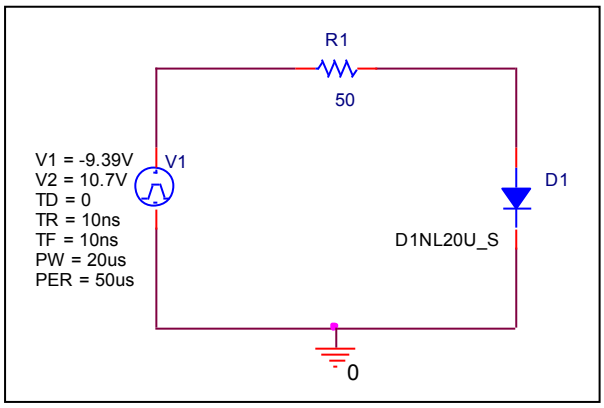
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	80.123	80.123	0.00
0.1	74.873	75.131	-0.34
0.2	70.813	70.830	-0.02
0.5	61.405	61.746	-0.56
1	52.473	52.521	-0.09
2	42.600	42.458	0.33
5	30.635	30.433	0.66
10	23.100	22.981	0.52
20	17.150	17.218	-0.40
50	11.448	11.161	2.51
100	8.418	8.581	-1.94

Reverse Recovery Characteristic

Circuit Simulation Result



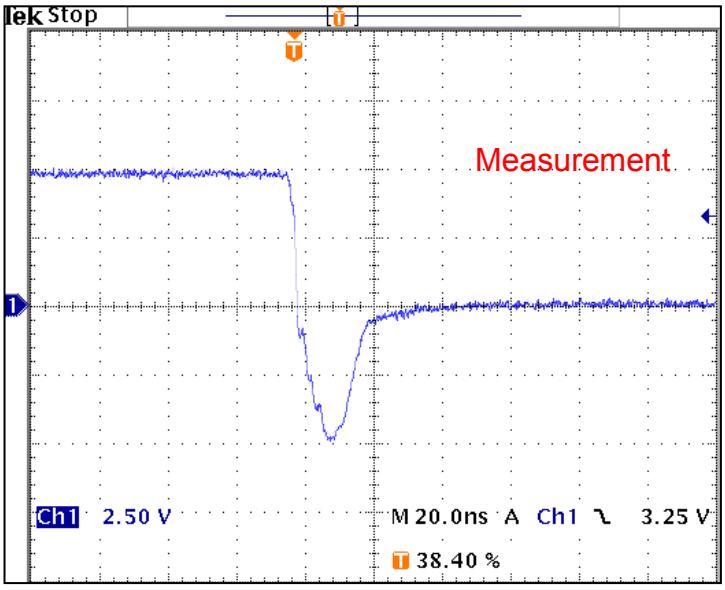
Evaluation Circuit



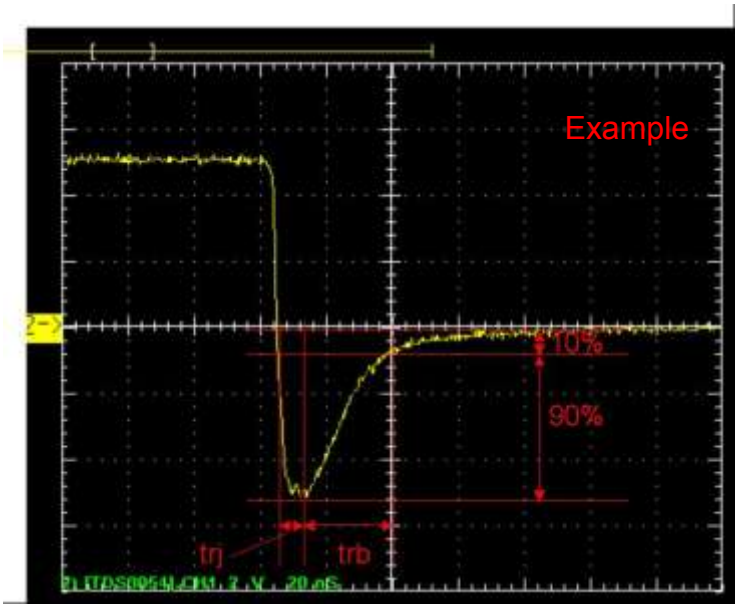
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	22.40	ns	22.38	ns	0.089

Reverse Recovery Characteristic Reference



Trj =10.4 (ns)
Trb= 12.0 (ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb