Device Modeling Report

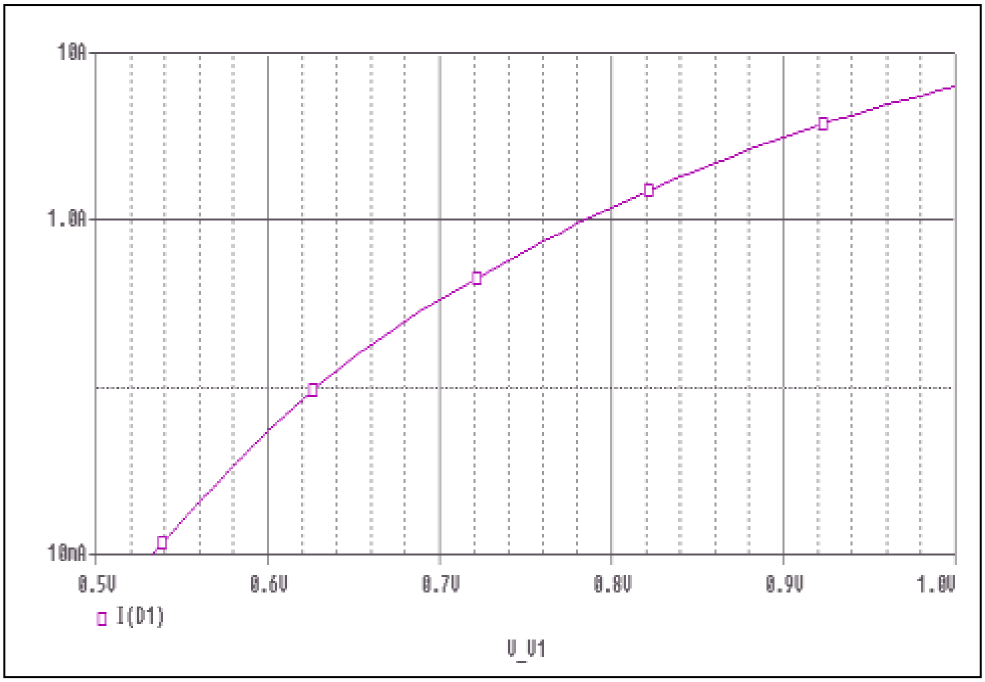
COMPONENTS:
DIODE/GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: D5LC20U
MANUFACTURER: SHINDENGEN
REMARK: TC=25C

Bee Technologies Inc.

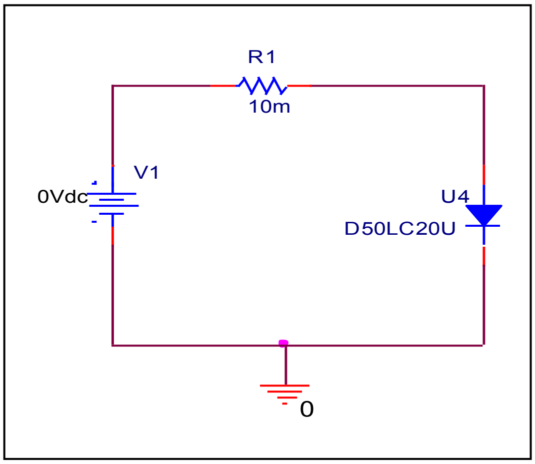
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

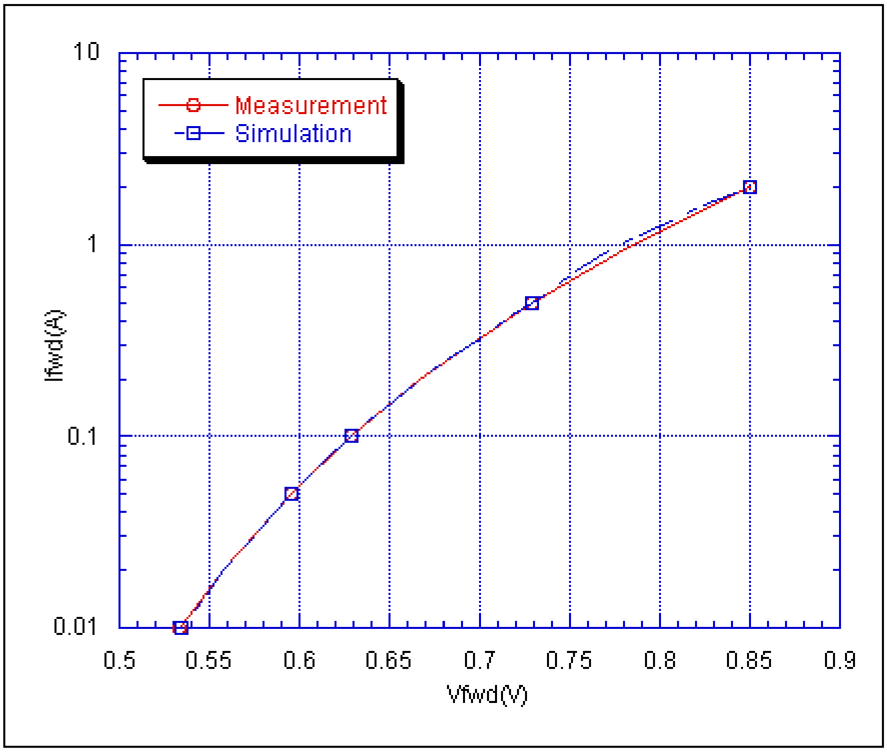


Evaluation circuit



Comparison graph

Circuit Simulation Result

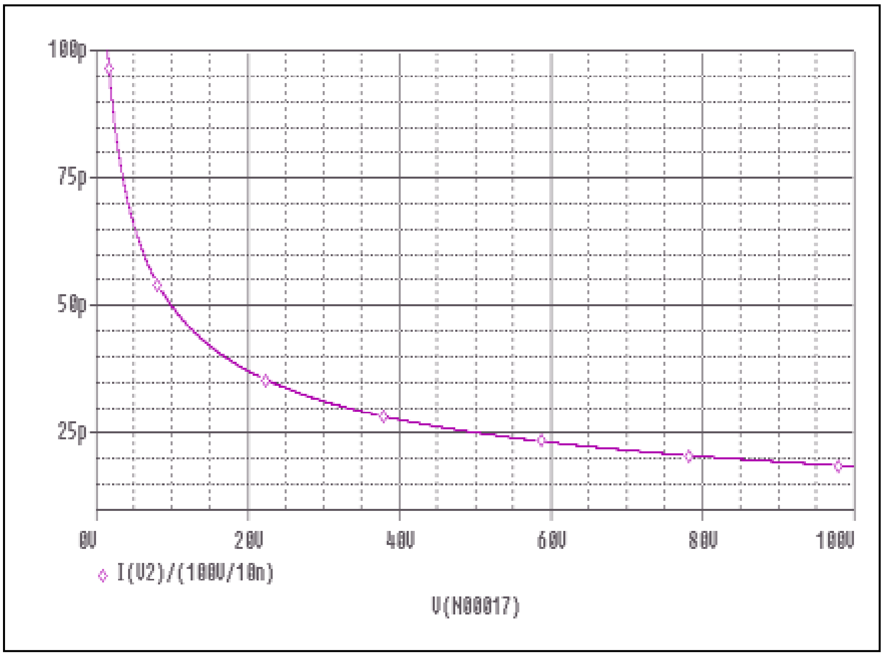


Simulation Result

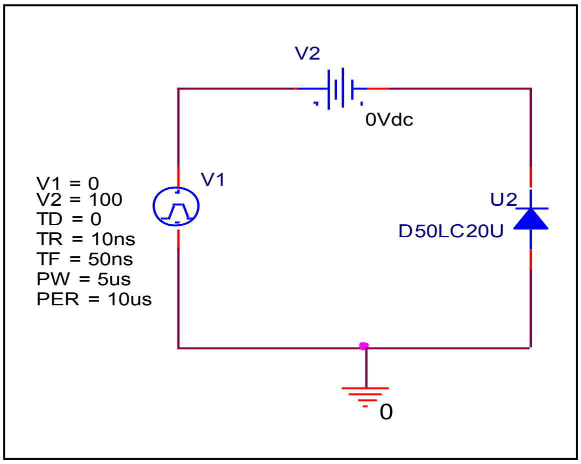
Ifwd (A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	**0.533**	**0.534**	**-0.19**
0.02	**0.558**	**0.558**	**0.00**
0.05	**0.596**	**0.596**	**0.00**
0.1	**0.629**	**0.629**	**0.00**
0.2	**0.667**	**0.667**	**0.00**
0.5	**0.729**	**0.729**	**0.00**
1	**0.784**	**0.777**	**0.89**
2	**0.850**	**0.850**	**0.00**

Junction Capacitance Characteristic

Circuit Simulation Result

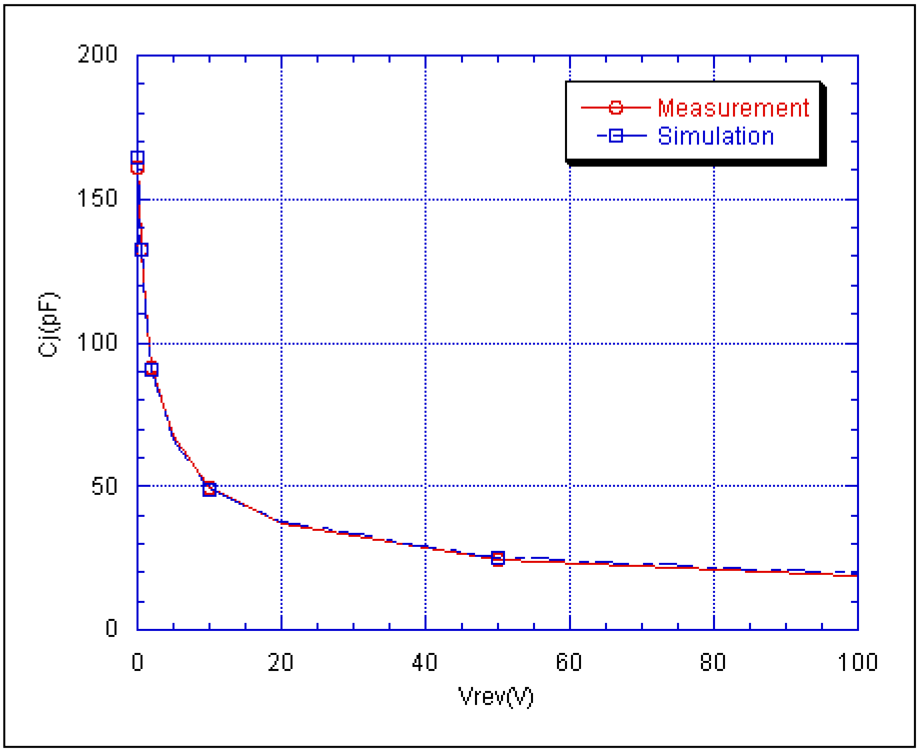


Evaluation circuit



Comparison graph

Circuit Simulation Result

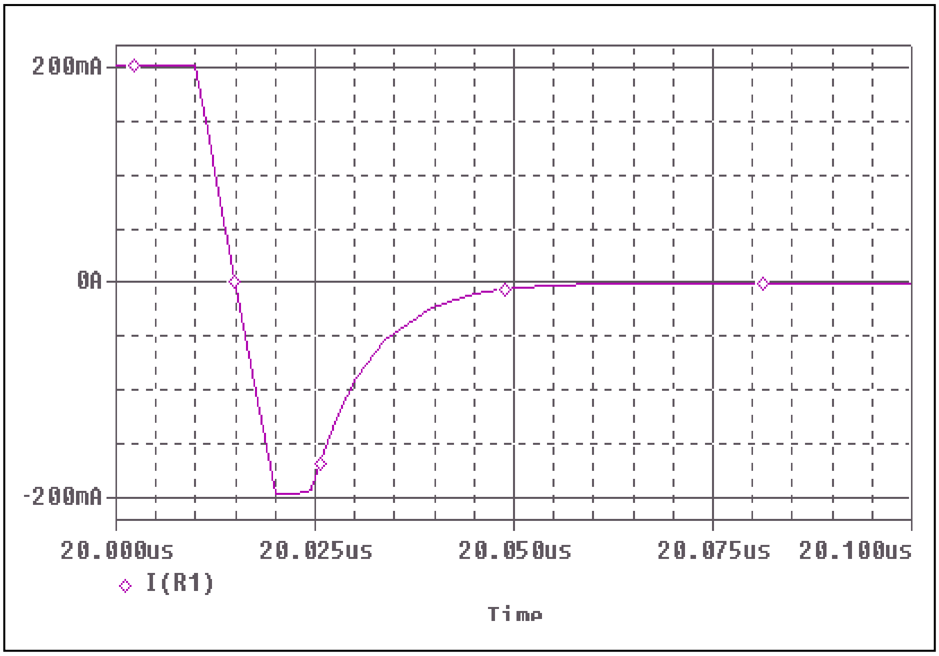


Simulation Result

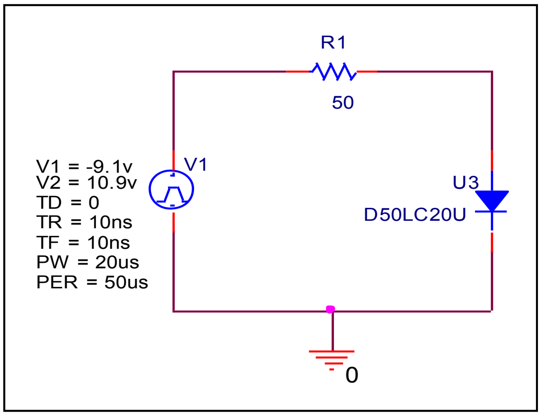
Vrev (V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	171.100	171.100	0.00
0.1	161.080	164.148	-1.90
0.2	151.940	151.313	0.41
0.5	132.450	132.190	0.20
1	113.360	113.945	-0.52
2	91.239	90.893	0.38
5	67.456	66.025	2.12
10	49.853	49.157	1.40
20	37.106	37.358	-0.68
50	24.760	25.165	-1.64
100	18.178	18.569	-2.15

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation circuit

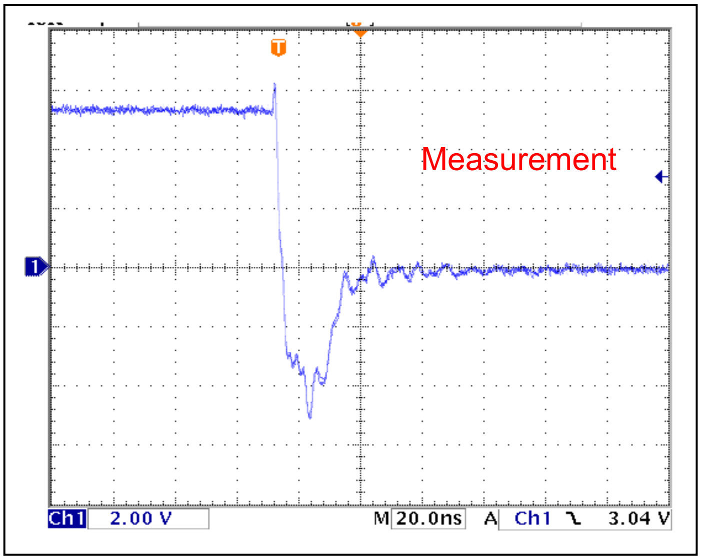


Compare Measurement vs. Simulation

	Measurement		**Simulation**		**Error (%)**
trj	**8.80**	**ns**	**8.81**	**ns**	**0.159**
trb	**16.40**	**ns**	**16.49**	**ns**	**0.597**

Reverse Recovery Characteristic

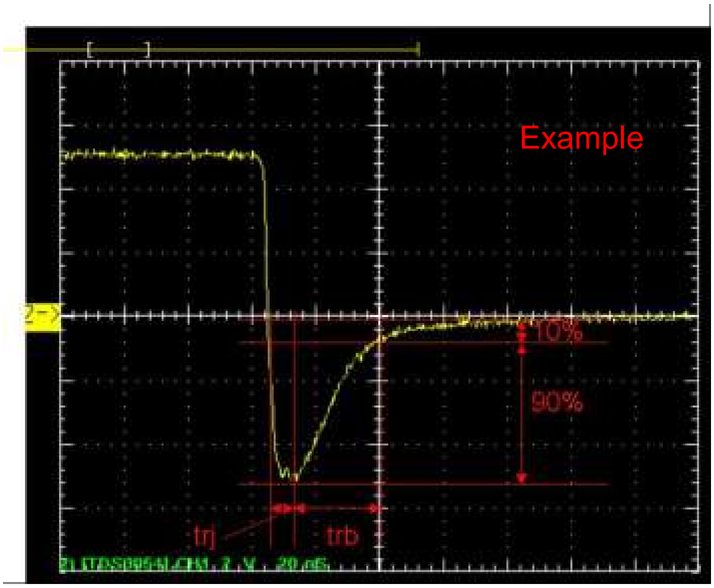
Reference



trj=8.8(ns)

trb=16.4(ns)

Conditions:Ifwd=Irev=0.2(A),Rl=50



Relation between trj and trb