Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: SF10LC40
MANUFACTURER: SHINDENGEN

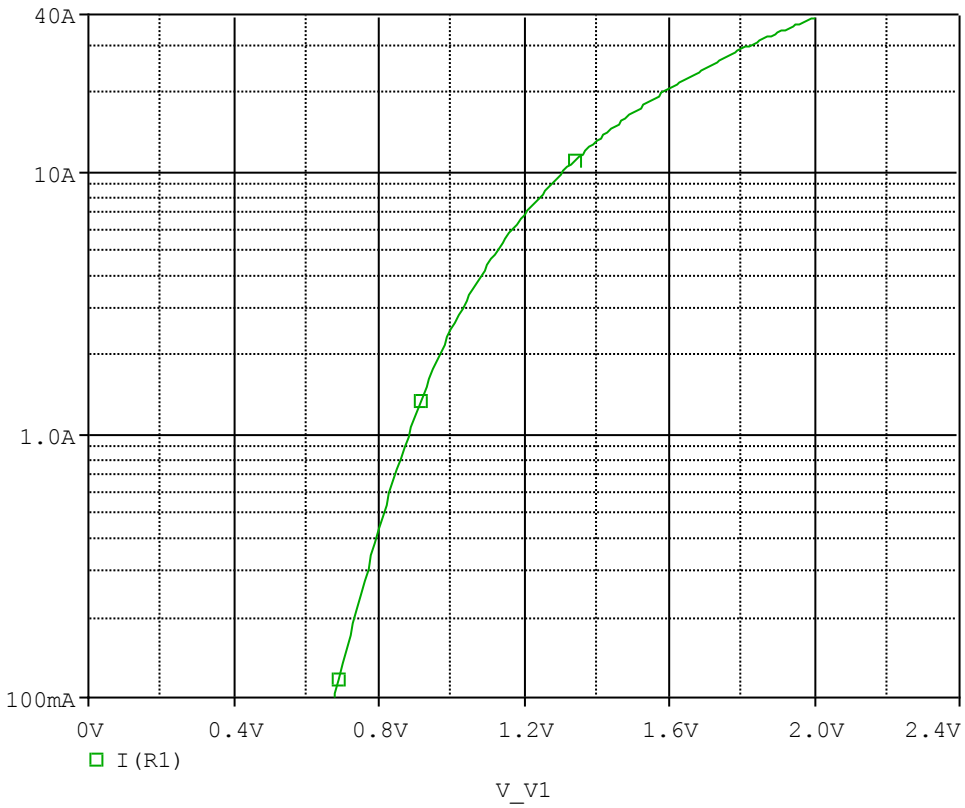
Bee Technologies Inc.

DIODE MODEL PARAMETERS

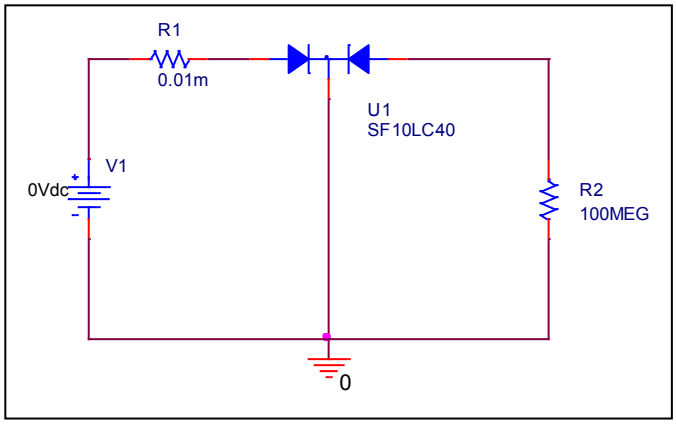
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

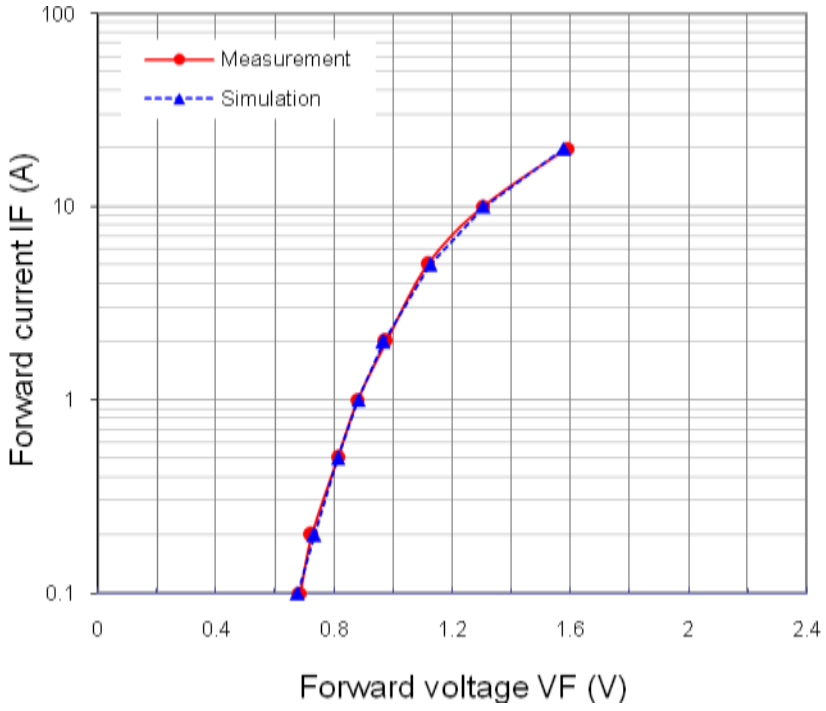


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

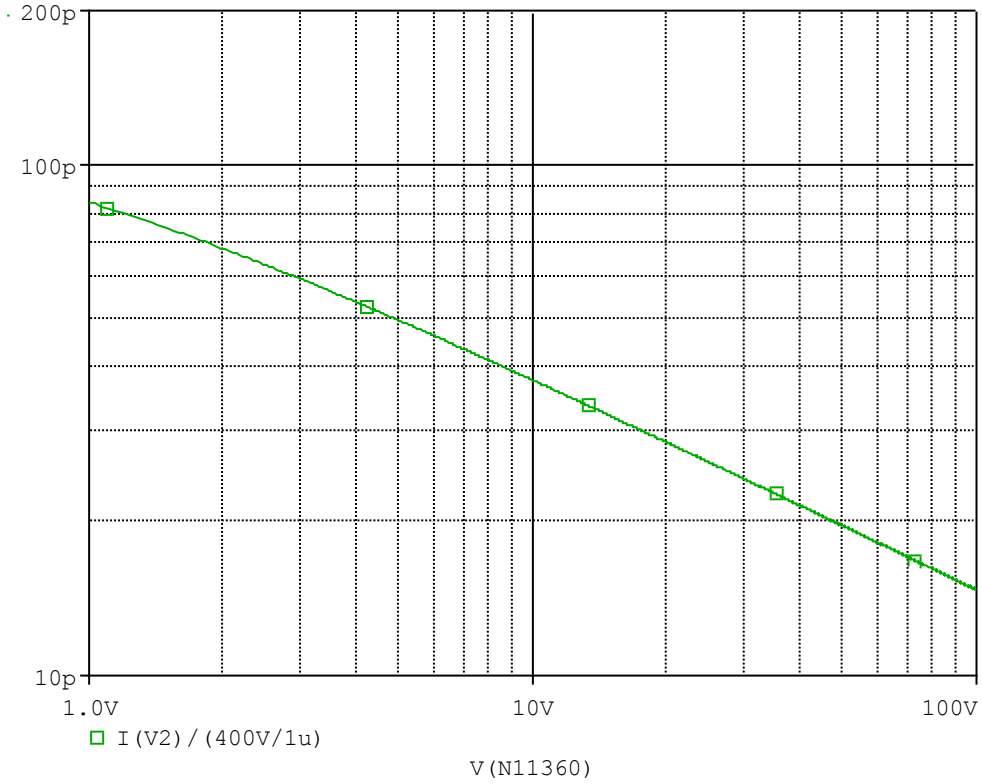


Simulation Result

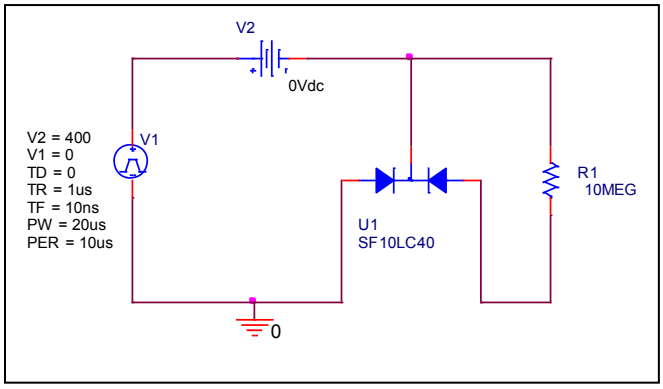
Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	0.685	0.676	-1.31
0.2	0.724	0.732	1.10
0.5	0.812	0.812	0.00
1	0.879	0.881	0.23
2	0.976	0.966	-1.02
5	1.117	1.124	0.63
10	1.302	1.306	0.31
20	1.589	1.579	-0.63

Capacitance Characteristic

Circuit Simulation Result

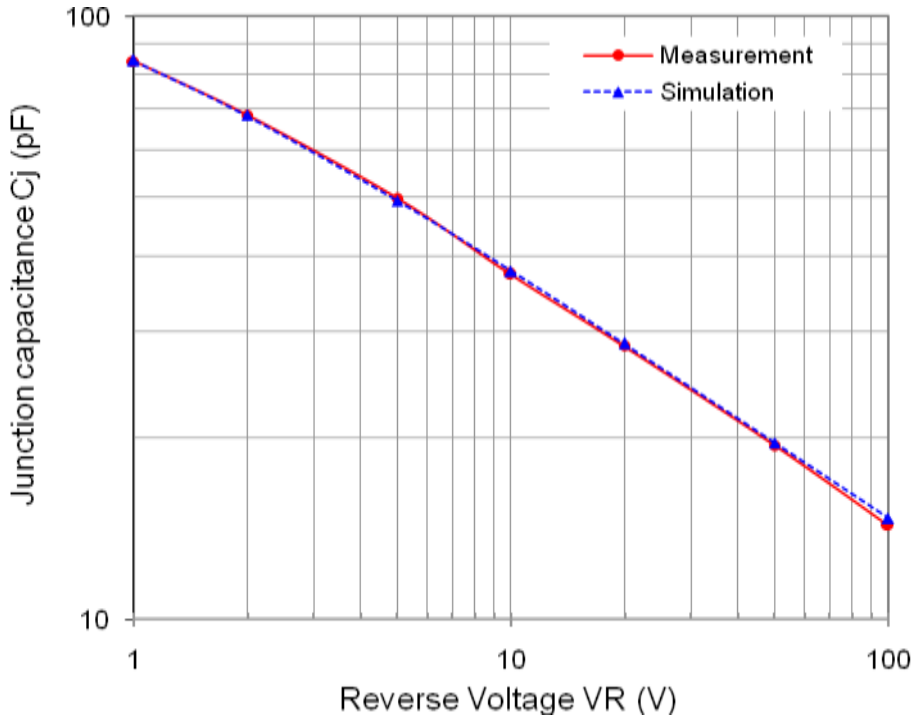


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

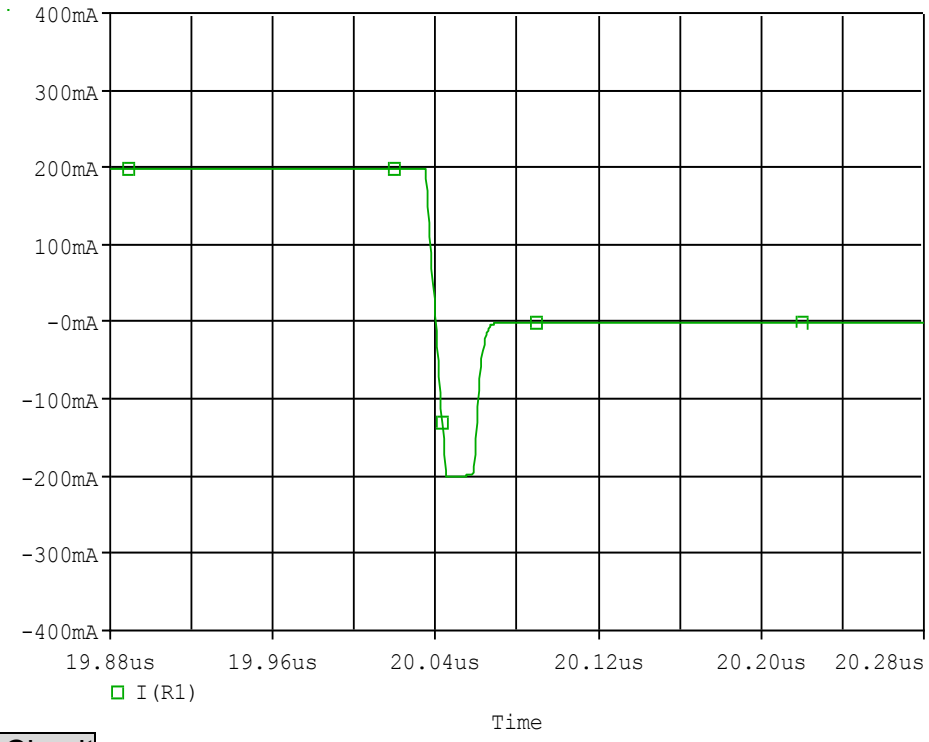


Simulation Result

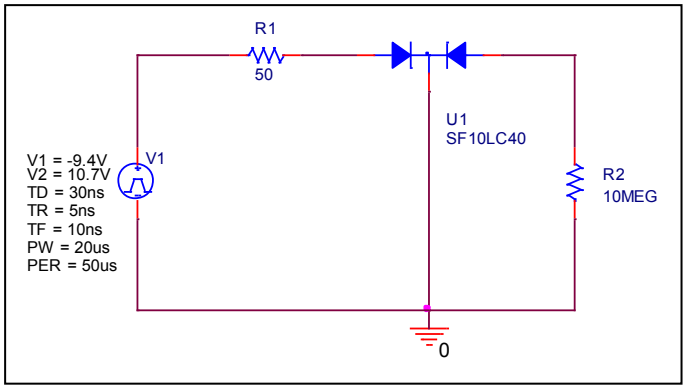
Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
1	84.231	84.367	0.16
2	68.537	68.482	-0.08
5	49.954	49.494	-0.92
10	37.314	37.81	1.33
20	28.411	28.633	0.78
50	19.421	19.614	0.99
100	14.327	14.706	2.65

Reverse Recovery Characteristic

Circuit Simulation Result



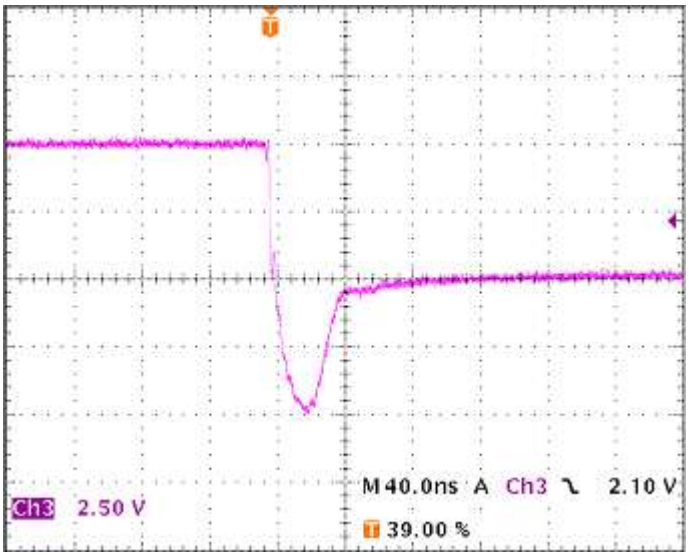
Evaluation Circuit



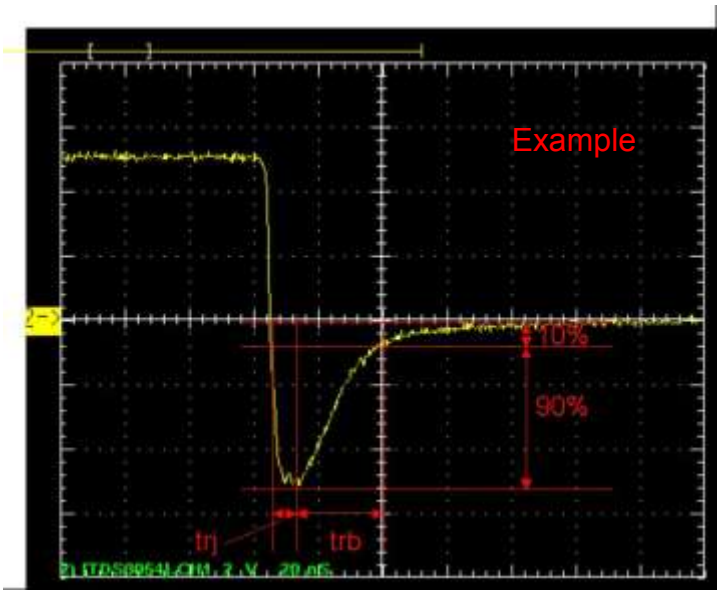
Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
trj	**ns**	**18.00**	**17.94**	**-0.33**

Reverse Recovery Characteristic Reference



Trj =18.00(ns)
Trb= 22.4(ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb