Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: DG1E60
MANUFACTURER: SHINDENGEN

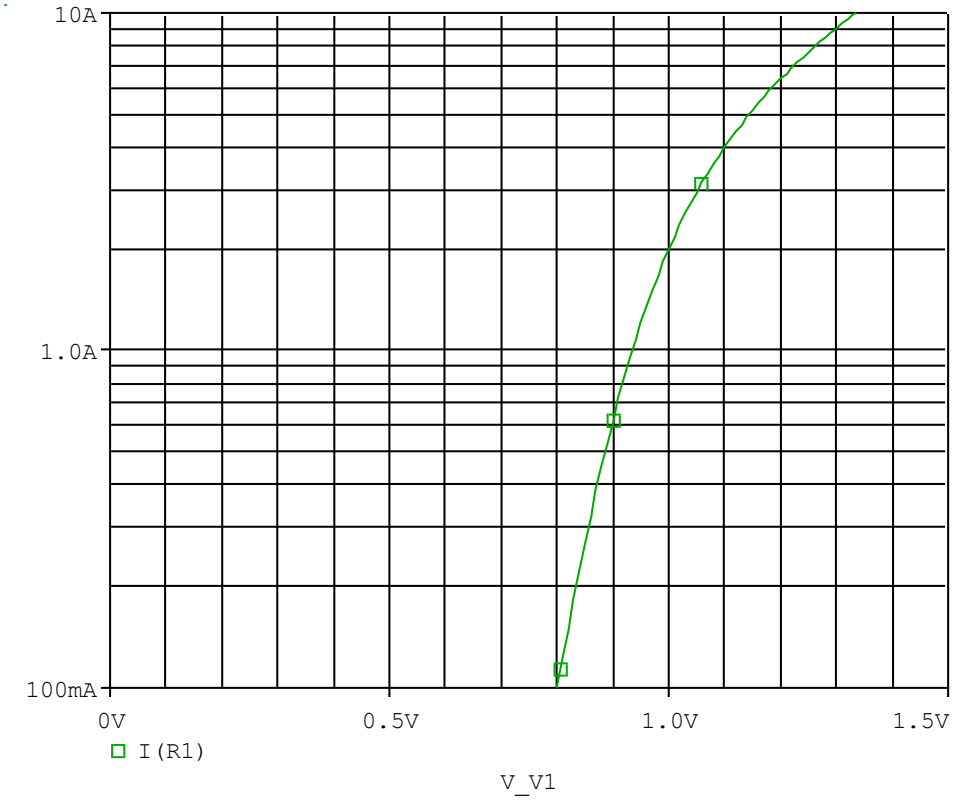
Bee Technologies Inc.

DIODE MODEL PARAMETERS

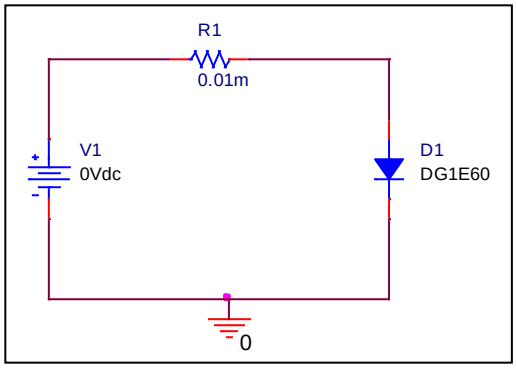
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

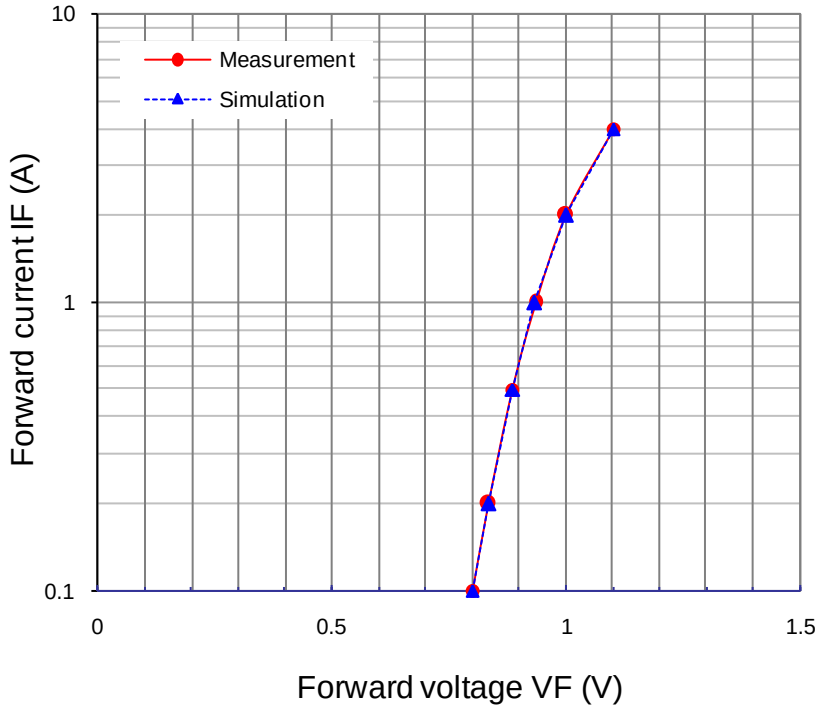


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

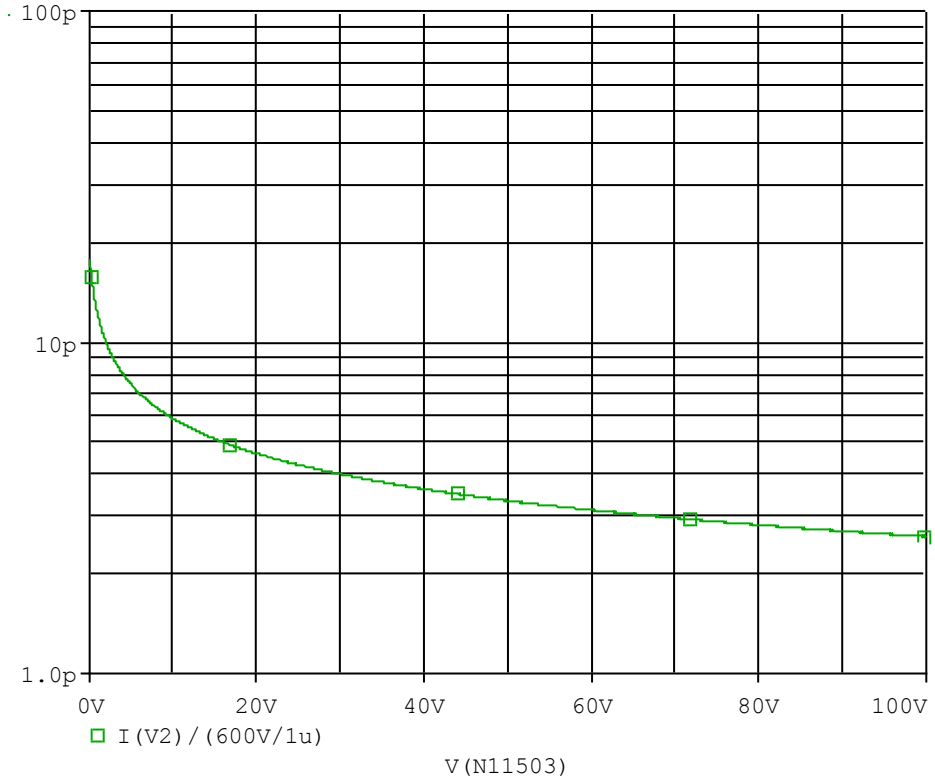


Simulation Result

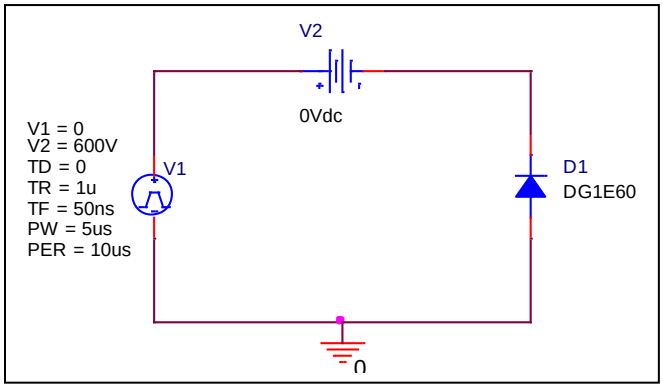
Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	0.800	0.800	0.02
0.2	0.835	0.834	-0.08
0.5	0.885	0.886	0.08
1	0.935	0.934	-0.08
2	1.000	1.000	0.00
4	1.100	1.100	0.00

Capacitance Characteristic

Circuit Simulation Result

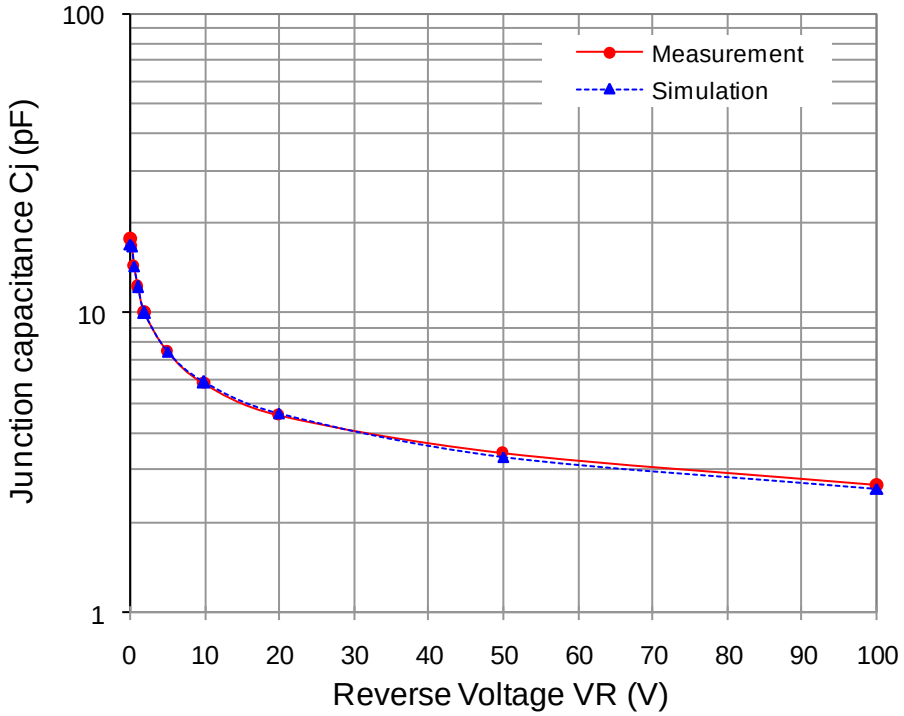


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

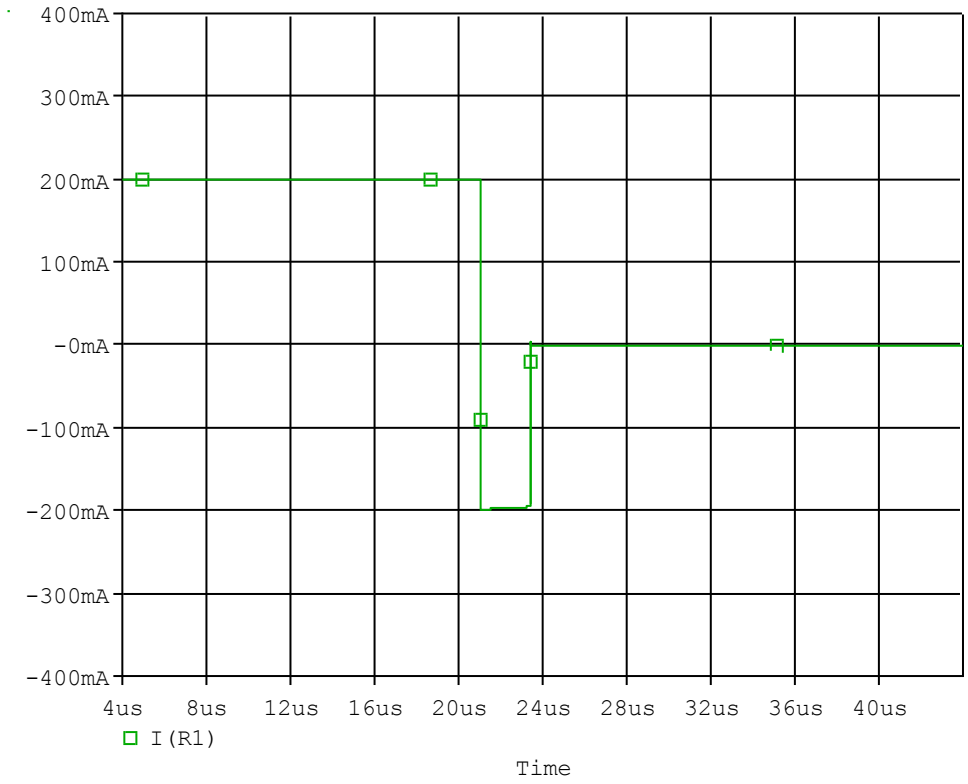


Simulation Result

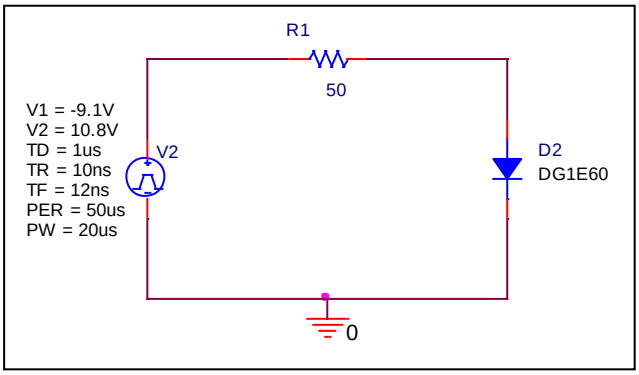
Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
0.1	17.639	16.993	-3.66
0.2	16.736	16.71	-0.16
0.5	14.342	14.379	0.26
1	12.242	12.211	-0.25
2	10.027	10.041	0.14
5	7.451	7.485	0.46
10	5.839	5.892	0.91
20	4.567	4.617	1.09
50	3.409	3.325	-2.46
100	2.652	2.587	-2.45

Reverse Recovery Characteristic

Circuit Simulation Result



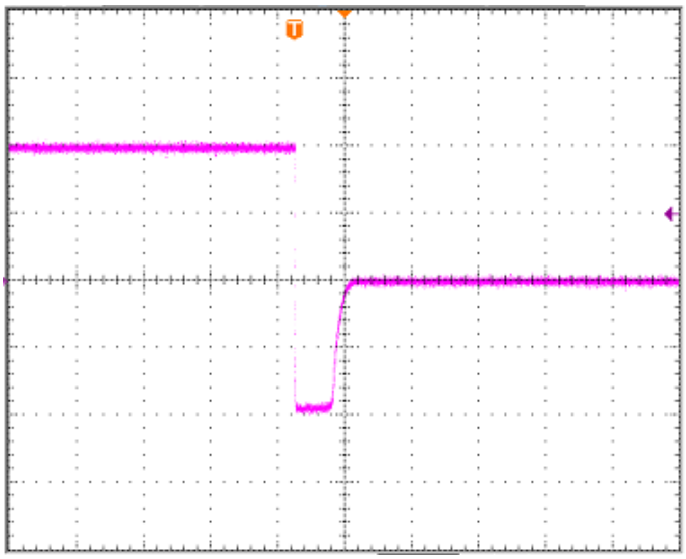
Evaluation Circuit



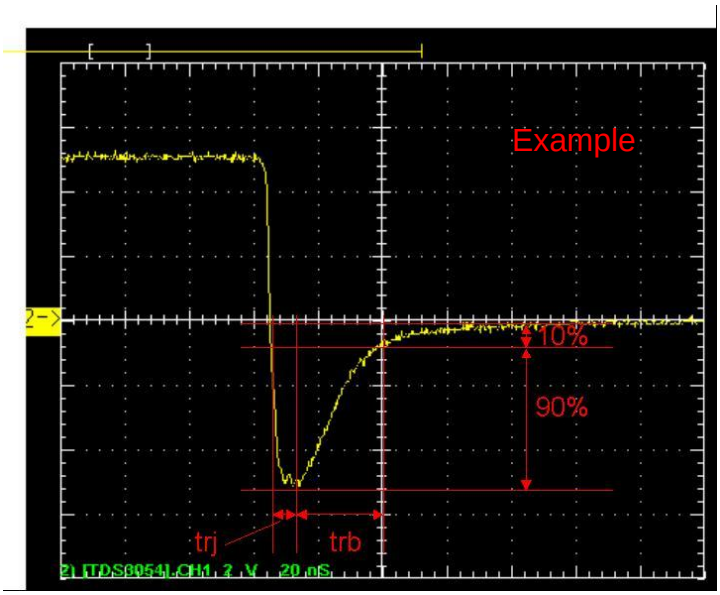
Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
trj	**us**	**1.20**	**1.19**	**-0.46**

Reverse Recovery Characteristic Reference



Trj = 1.20 (us)
Trb= 1.80 (us)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb