Device Modeling Report

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

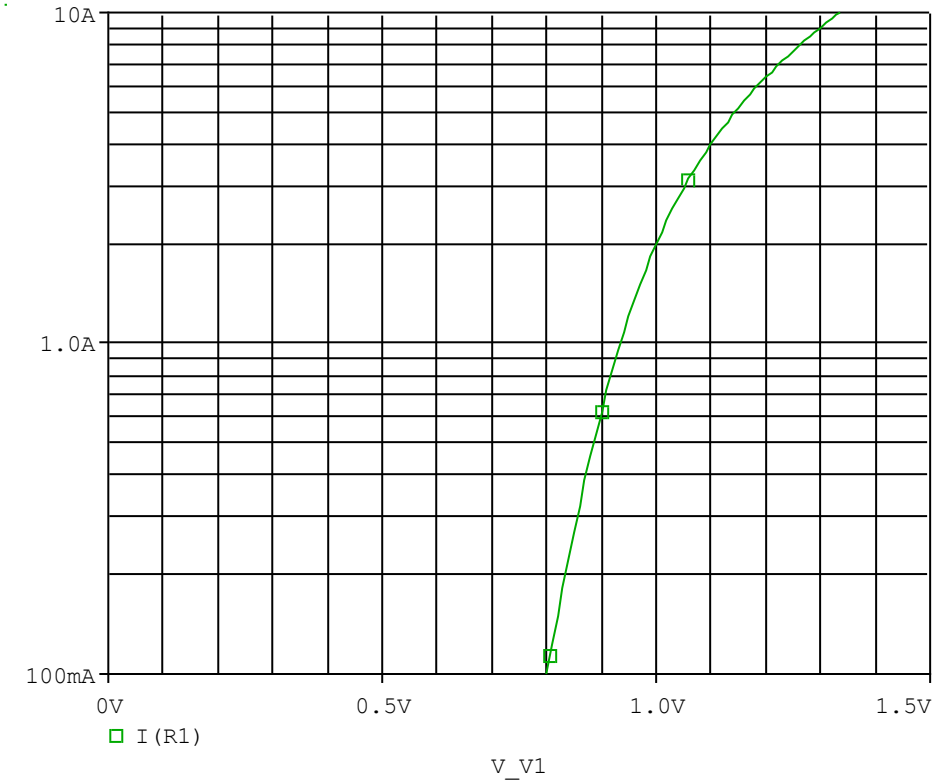
Bee Technologies Inc.

DIODE MODEL PARAMETERS

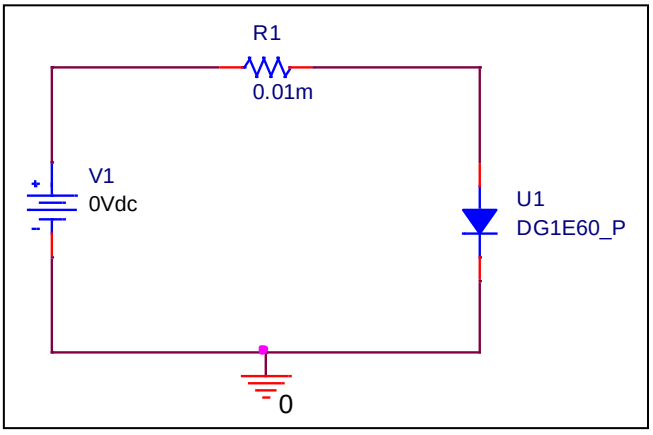
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

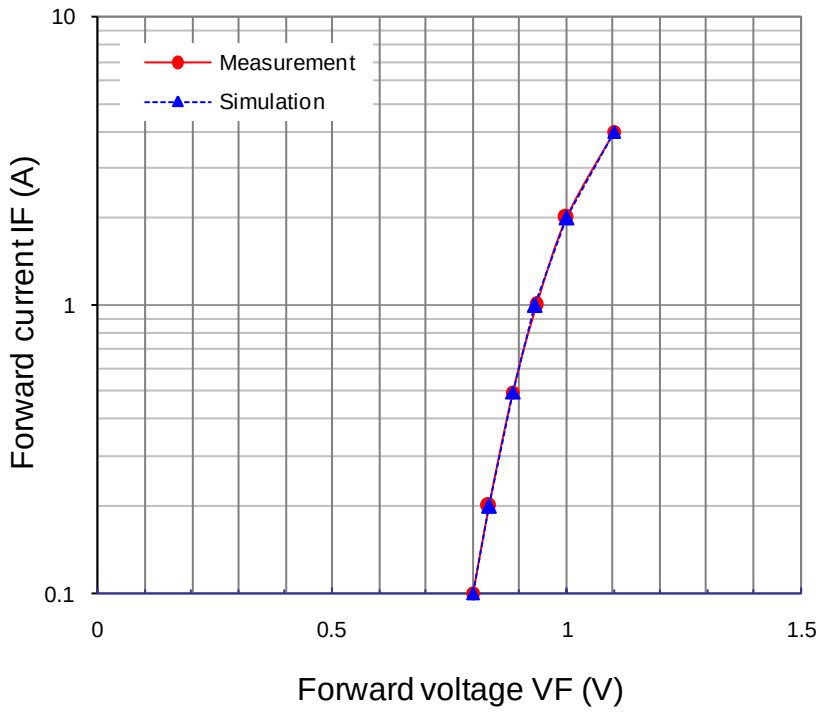


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

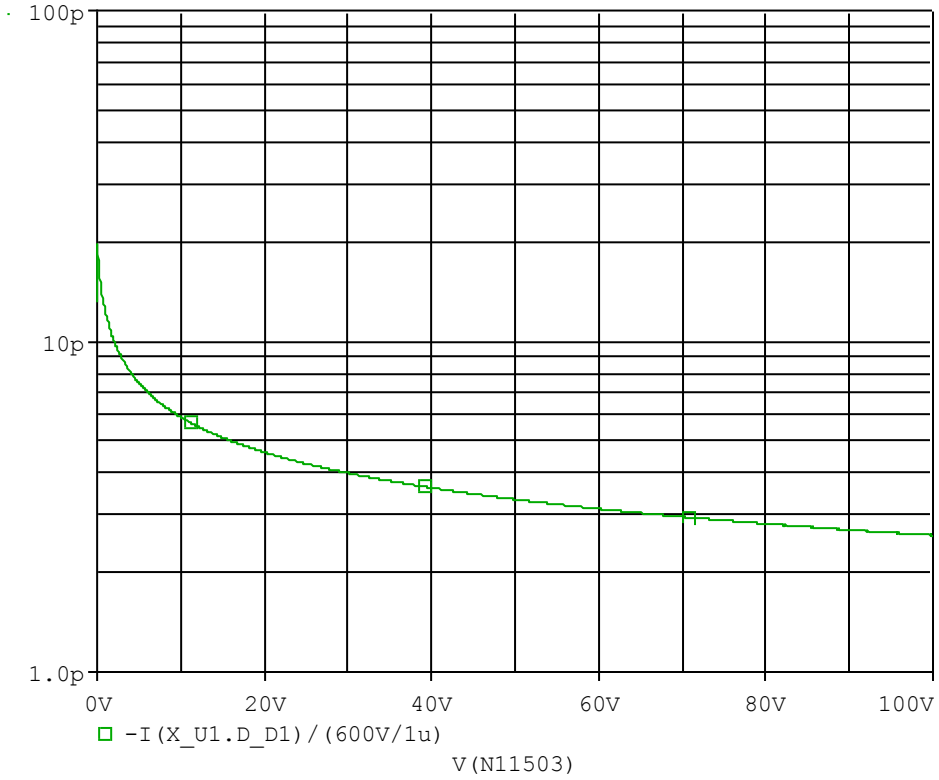


Simulation Result

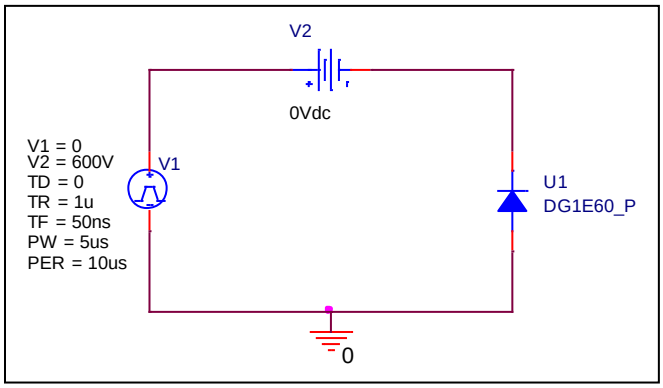
Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	0.800	0.800	0.02
0.2	0.835	0.834	-0.08
0.5	0.885	0.886	0.08
1	0.935	0.934	-0.08
2	1.000	1.000	0.03
4	1.100	1.100	0.00

Capacitance Characteristic

Circuit Simulation Result

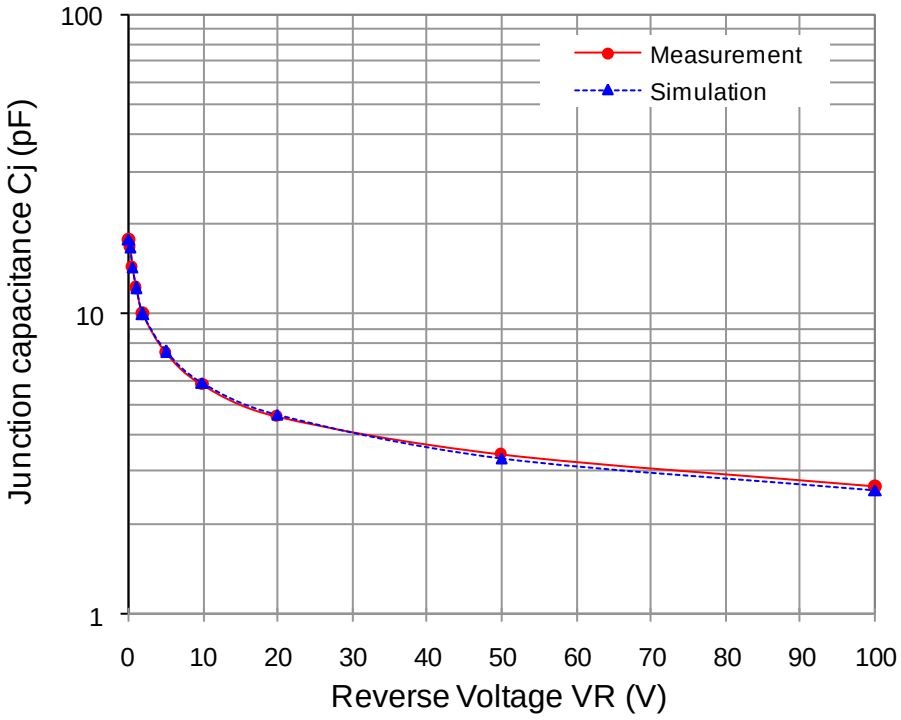


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

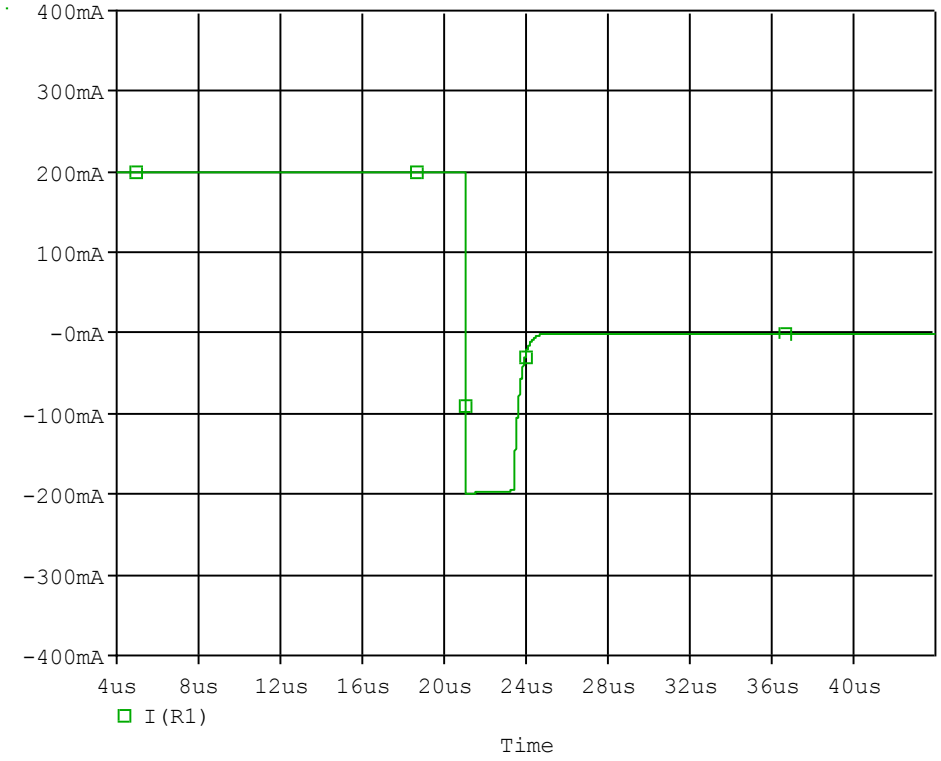


Simulation Result

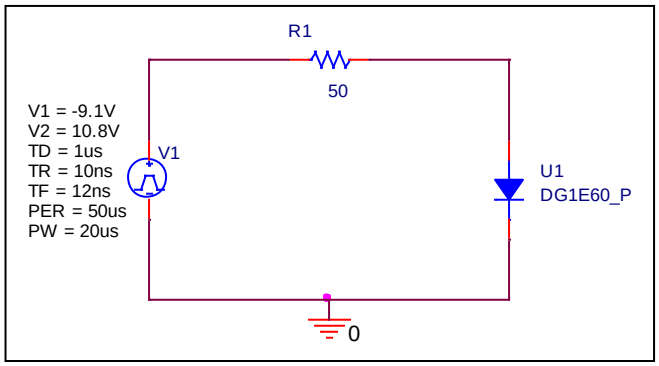
Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
0.1	17.639	17.875	1.34
0.2	16.736	16.676	-0.36
0.5	14.342	14.382	0.28
1	12.242	12.226	-0.13
2	10.027	10.045	0.18
5	7.451	7.4883	0.50
10	5.839	5.8937	0.94
20	4.567	4.6152	1.06
50	3.409	3.326	-2.43
100	2.652	2.591	-2.30

Reverse Recovery Characteristic

Circuit Simulation Result



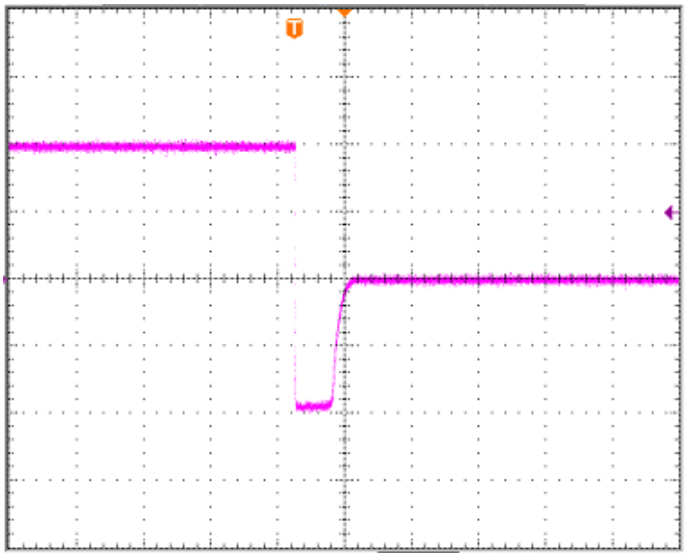
Evaluation Circuit



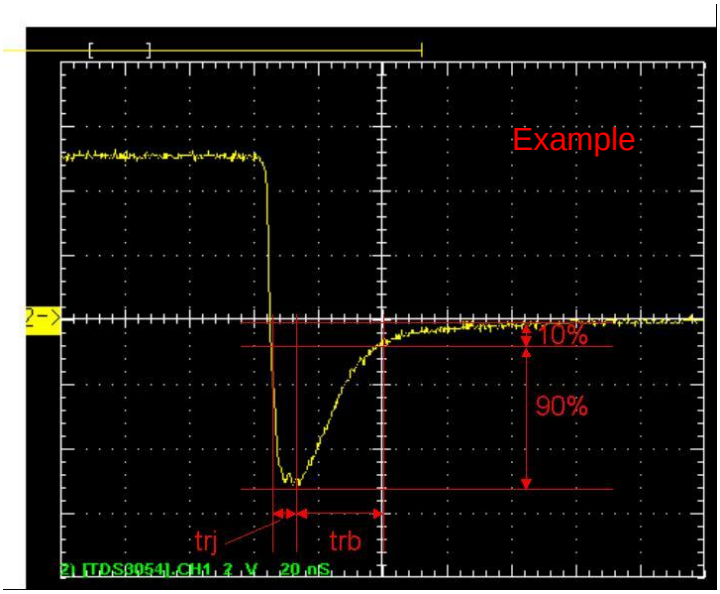
Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
trj	us	1.20	1.19	-0.46
trb	us	1.80	1.80	-0.22
trr	us	3.00	2.99	-0.32

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