Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: S3L60
MANUFACTURER: SHINDENGEN

Bee Technologies Inc.

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SPICE MODEL

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*$
* PART NUMBER: S3L60
* MANUFACTURER: SHINDENGEN
* VRRM=600,I0=1.8A
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.MODEL DS3L60 D
+ IS=390.87E-6
+ N=4.9950
+ RS=37.378E-3
+ IKF=.99321
+ CJO=116.57E-12
+ M=.45565
+ VJ=.72461
+ ISR=0
+ BV=600
+ IBV=10.000E-6
+ TT=30.783E-9
*$
```

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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

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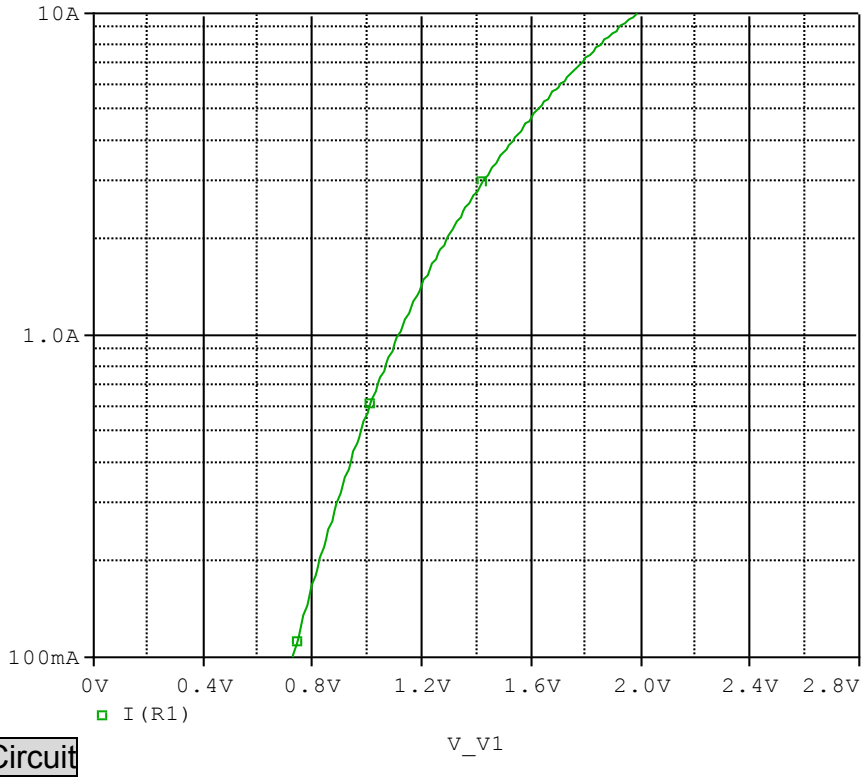
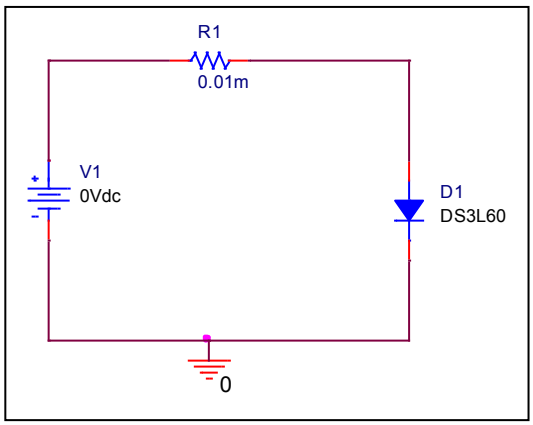
Forward Current Characteristic

Circuit Simulation Result



Evaluation Circuit



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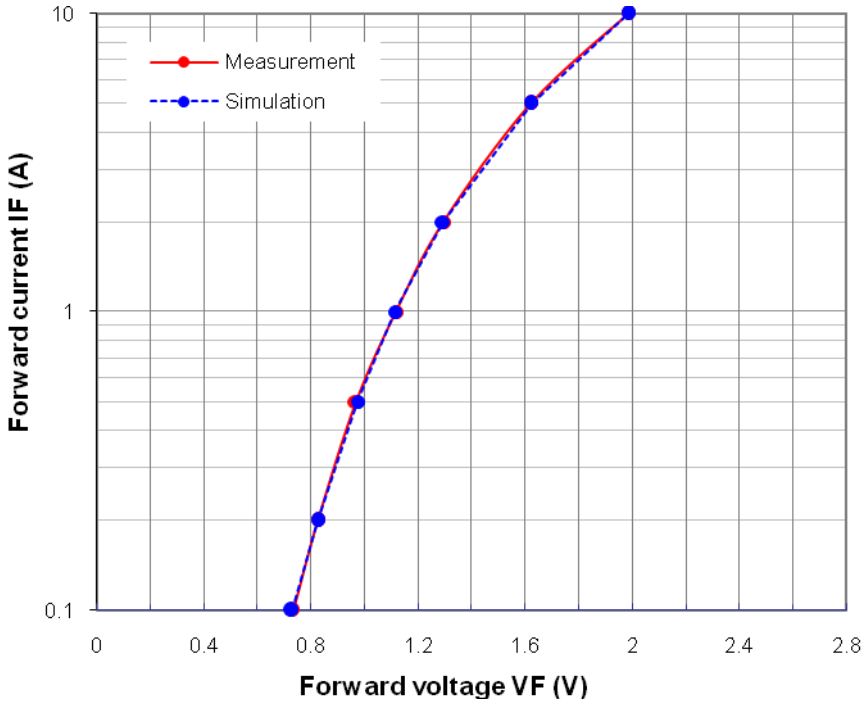
Comparison Graph

Circuit Simulation Result



Simulation Result

Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	0.732	0.727	-0.69
0.2	0.825	0.826	0.12
0.5	0.968	0.975	0.72
1	1.117	1.114	-0.30
2	1.294	1.293	-0.11
5	1.621	1.622	0.08
10	1.985	1.985	-0.02

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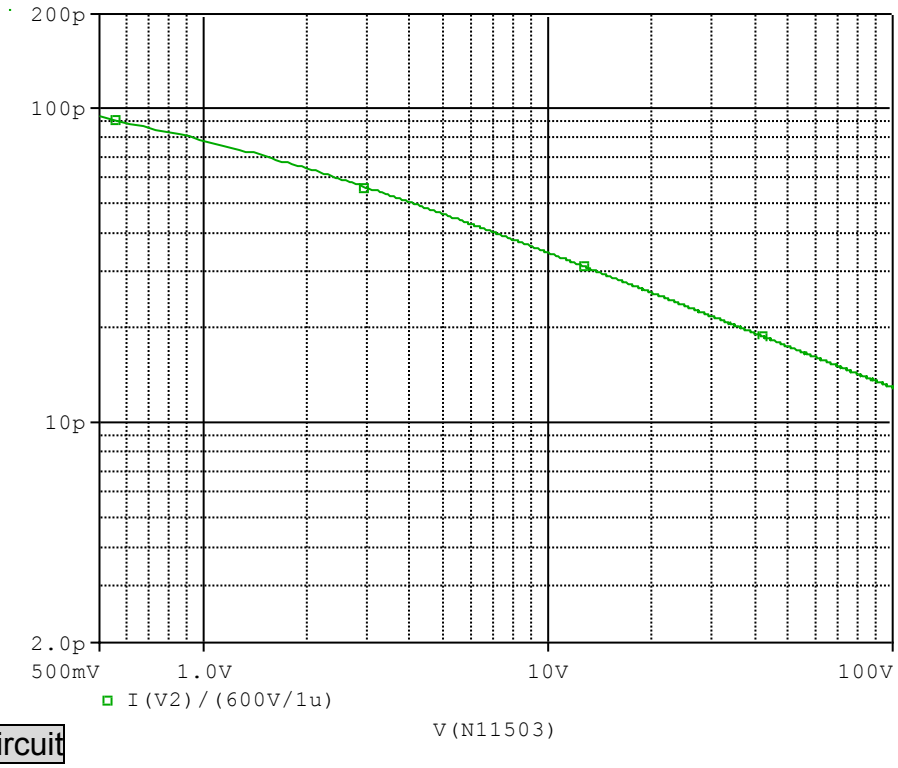
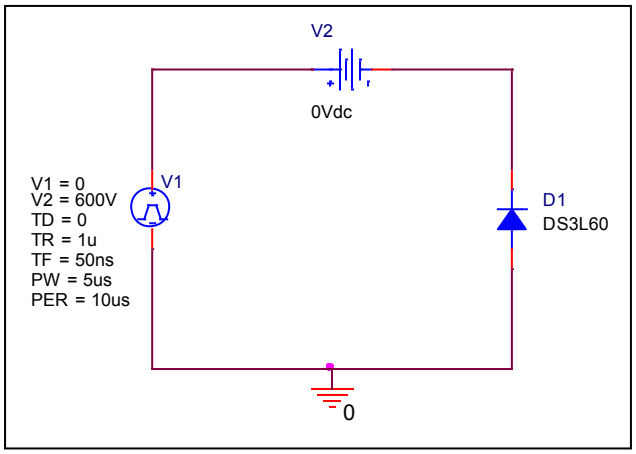
Capacitance Characteristic

Circuit Simulation Result



Evaluation Circuit



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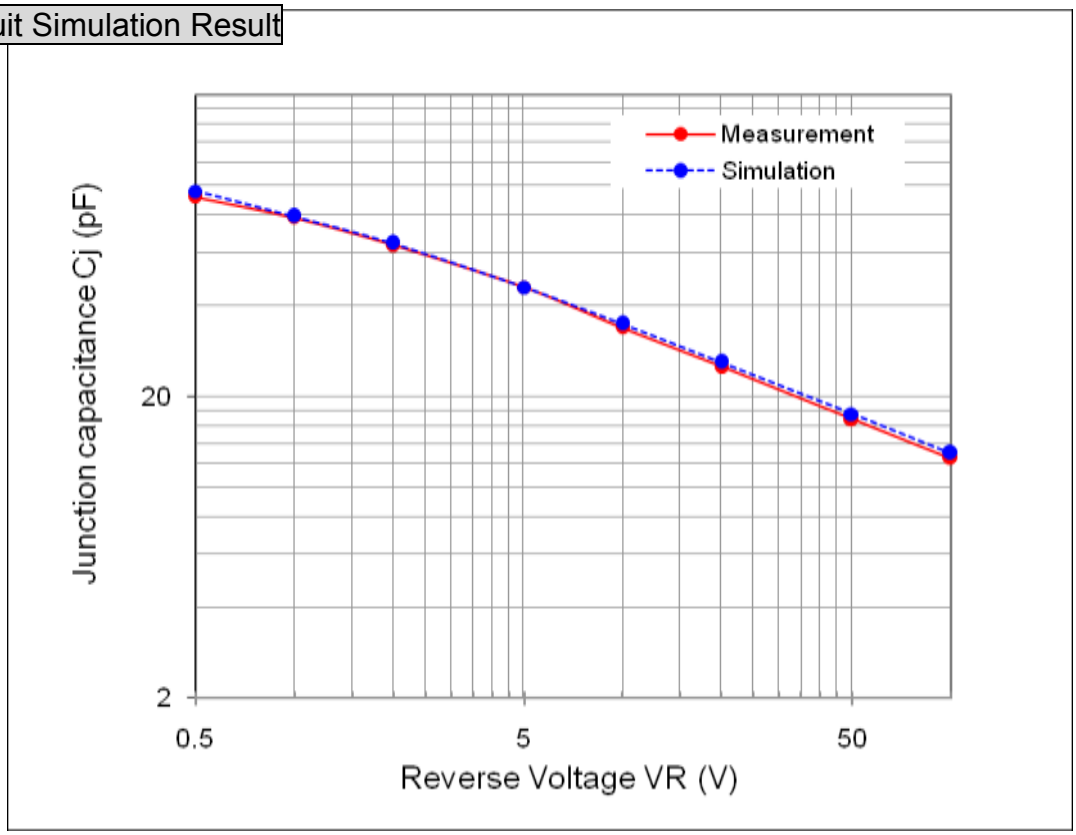
Comparison Graph

Circuit Simulation Result



Simulation Result

Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
0.5	91.820	94.506	2.93
1	78.510	79.309	1.02
2	63.500	64.459	1.51
5	46.100	46.117	0.04
10	33.900	34.803	2.66
20	25.140	25.931	3.15
50	16.800	17.485	4.08
100	12.500	12.958	3.66

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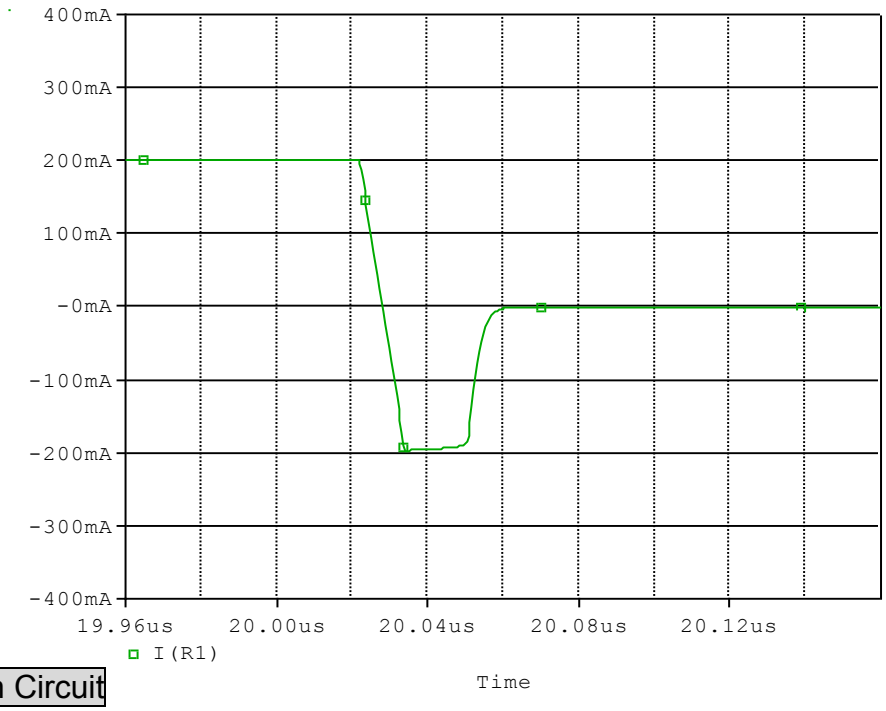
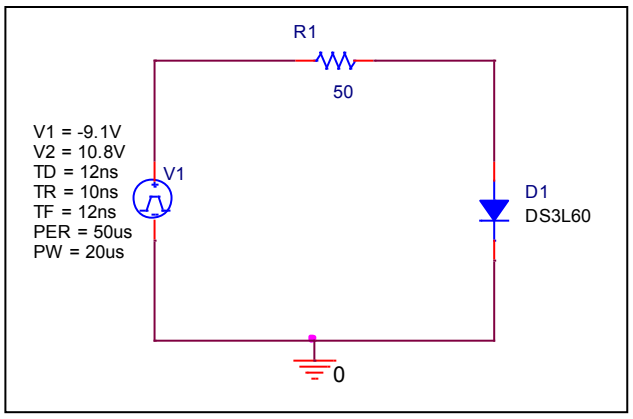
Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit



Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
trj	**ns**	**18.00**	**17.59**	**-2.29**

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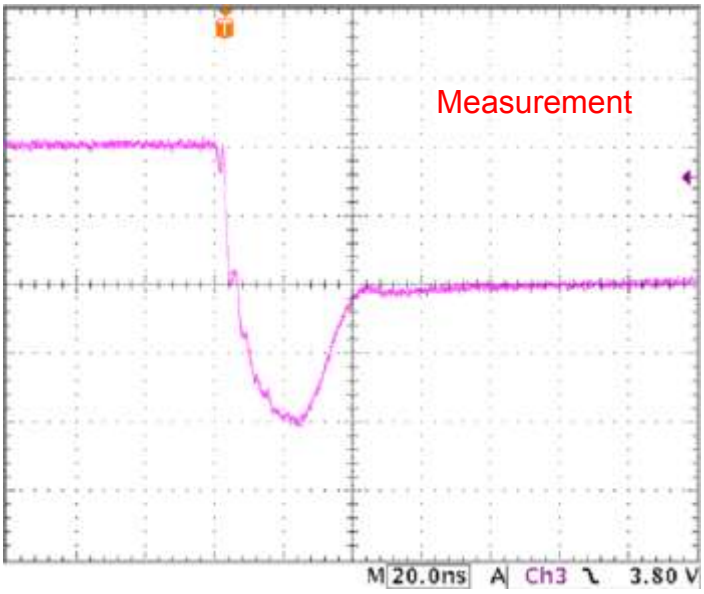
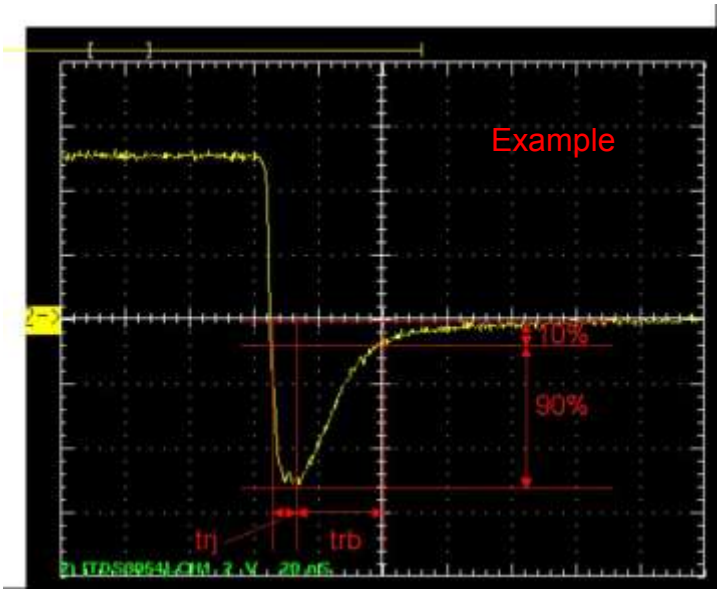
Reverse Recovery Characteristic Reference



Trj =18.00(ns)
Trb= 16.00(ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb

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