Device Modeling Report

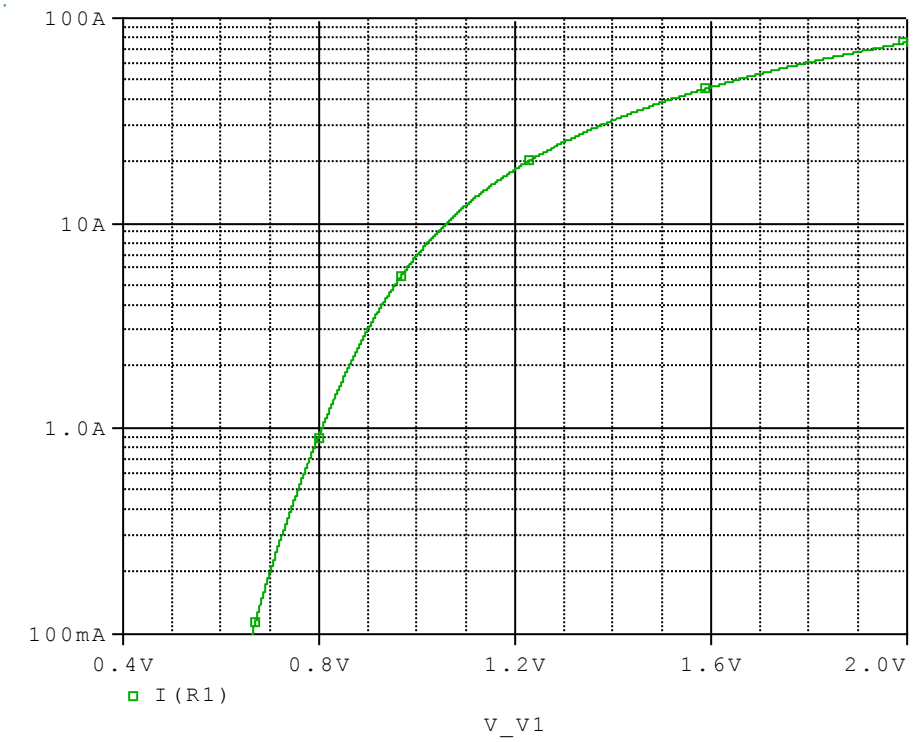
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: 10DL2CZ47A
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

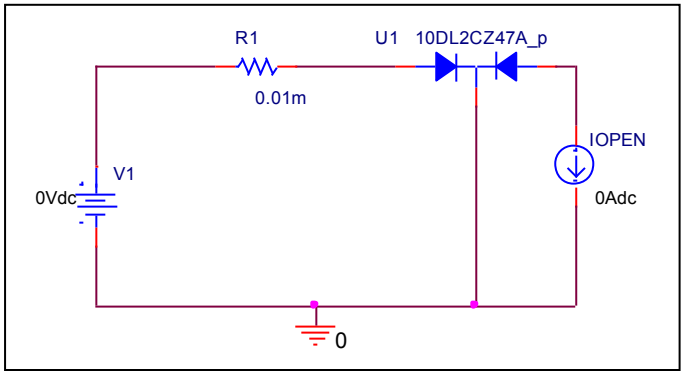
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

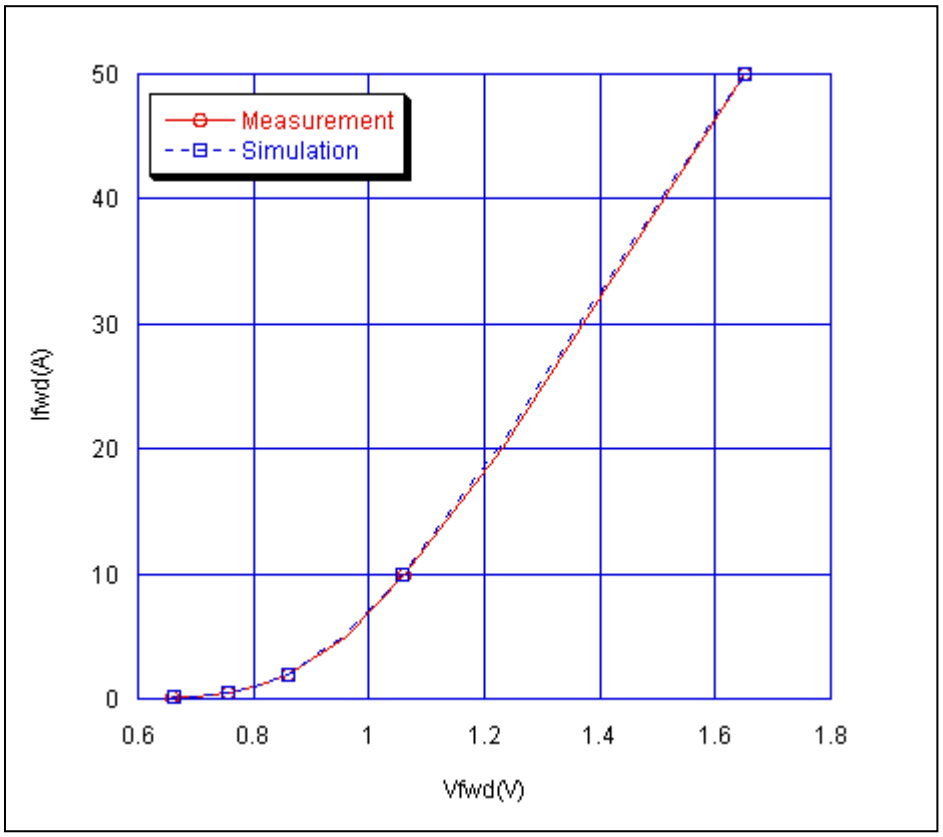


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

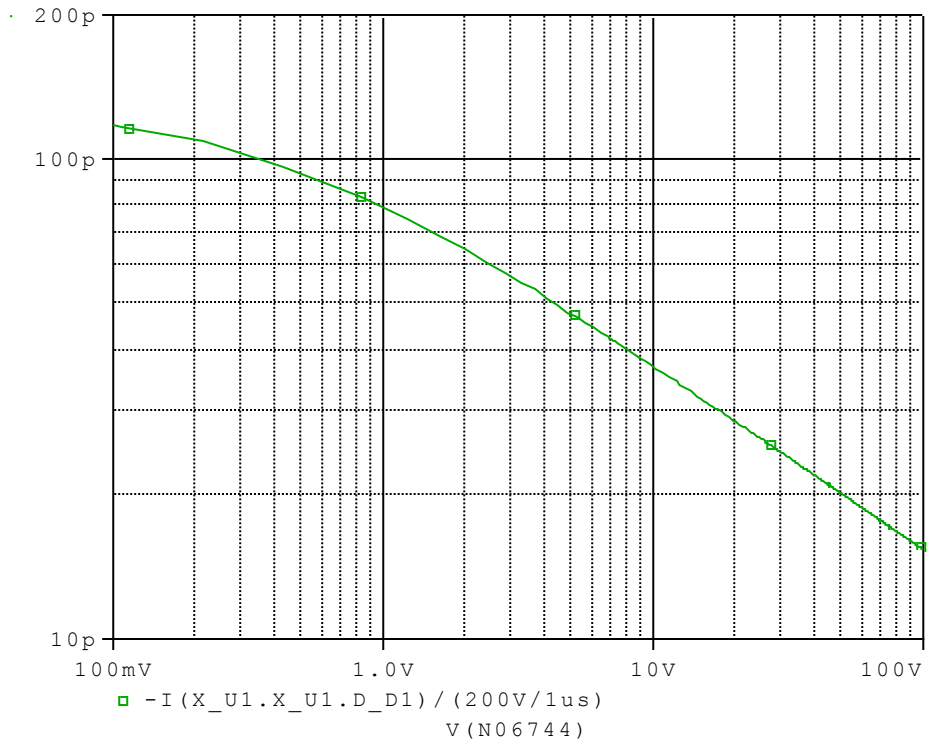


Simulation Result

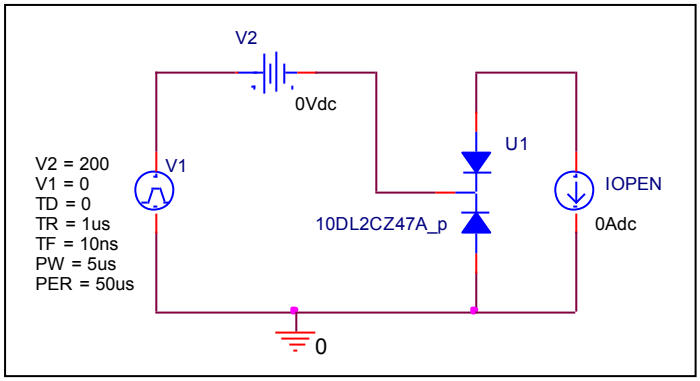
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.1	0.660	0.663	-0.455
0.2	0.700	0.699	0.143
0.5	0.755	0.756	-0.132
1	0.800	0.805	-0.625
2	0.860	0.858	0.233
5	0.960	0.954	0.625
10	1.060	1.059	0.094
20	1.230	1.226	0.325
50	1.650	1.652	-0.121

Capacitance Characteristic

Circuit Simulation Result

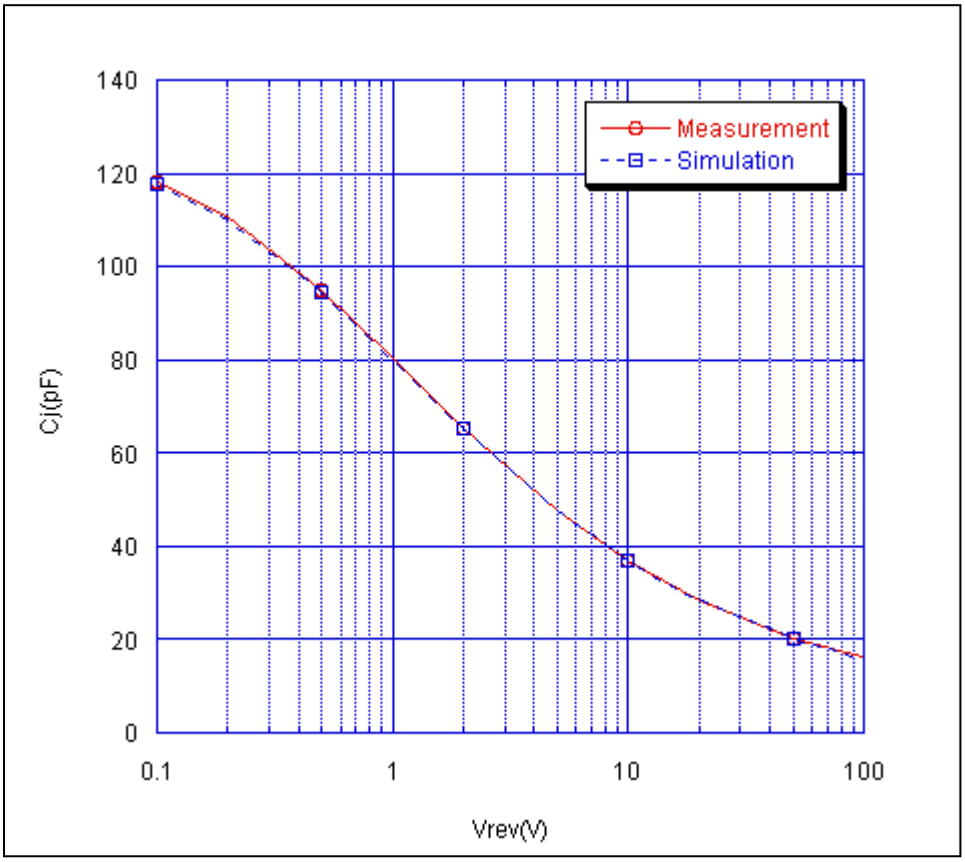


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

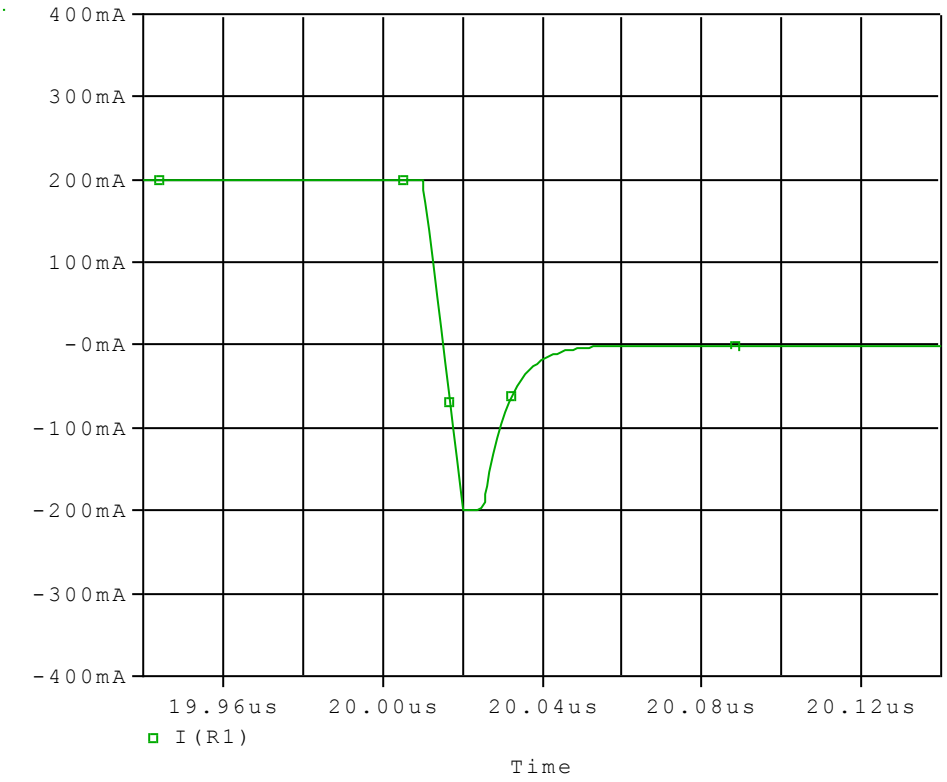


Simulation Result

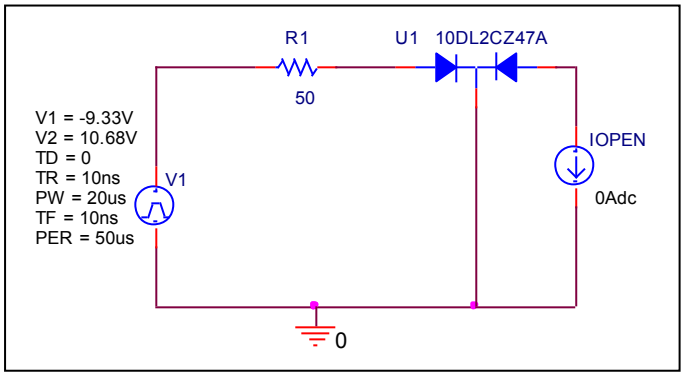
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0	127.130	127.130	0.000
0.1	118.000	117.549	0.382
0.2	110.800	109.957	0.761
0.5	94.950	94.709	0.254
1	80.530	80.026	0.626
2	65.250	65.360	-0.169
5	47.620	47.568	0.109
10	36.910	36.958	-0.130
20	28.567	28.437	0.455
50	20.055	20.000	0.274
100	16.081	15.356	4.508

Reverse Recovery Characteristic

Circuit Simulation Result



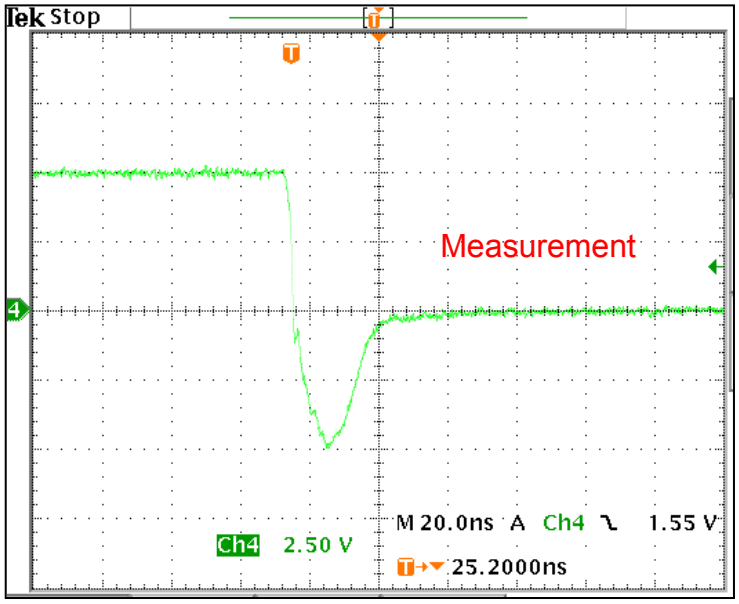
Evaluation Circuit



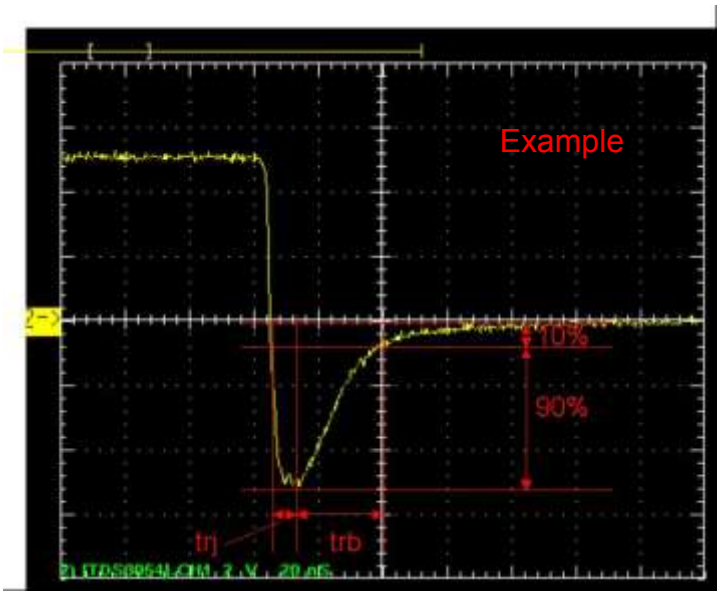
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**9.60**	**ns**	**9.56**	**ns**	**- 0.41**
trb	**14.40**	**ns**	**14.44**	**ns**	**0.27**

Reverse Recovery Characteristic Reference



Trj =9.6(ns)
Trb=14.4(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb