Device Modeling Report

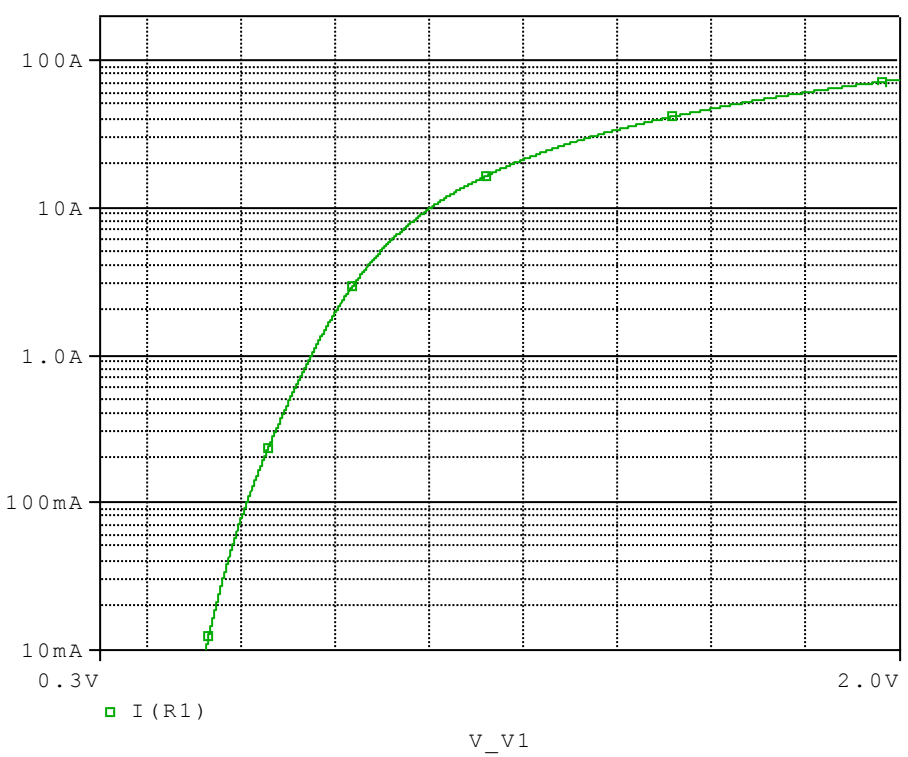
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: 20DL2CZ47A
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

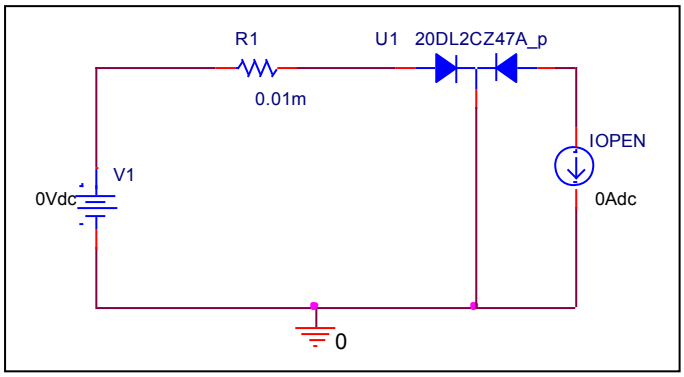
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

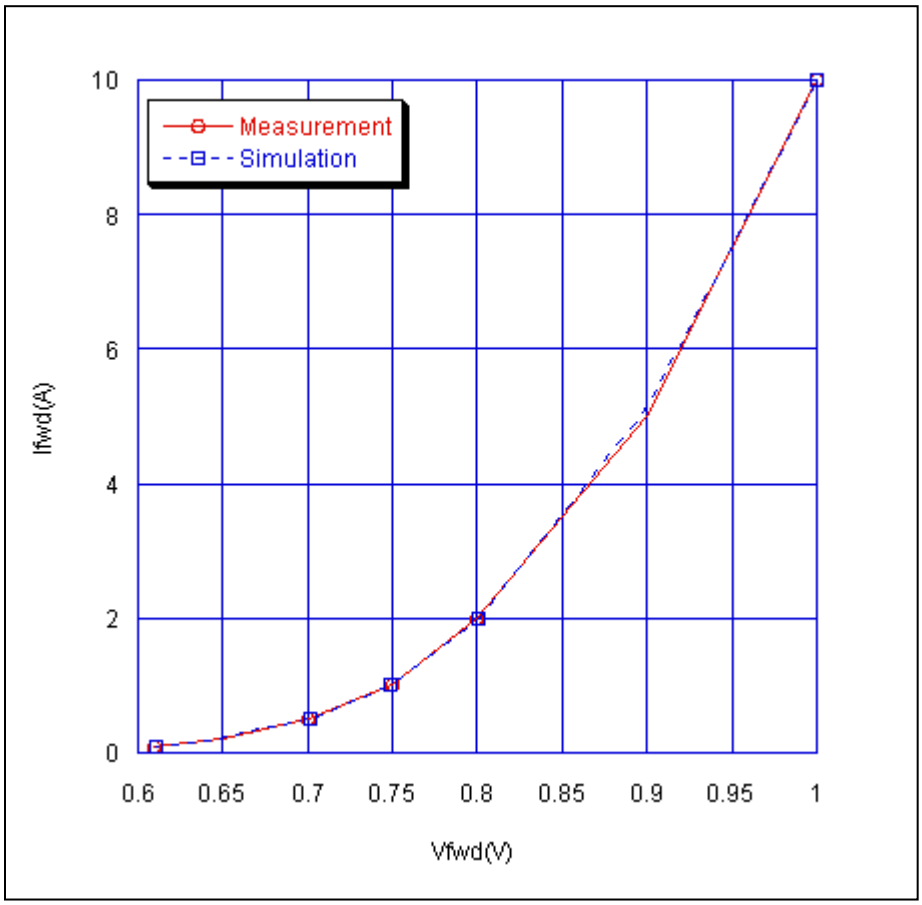


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

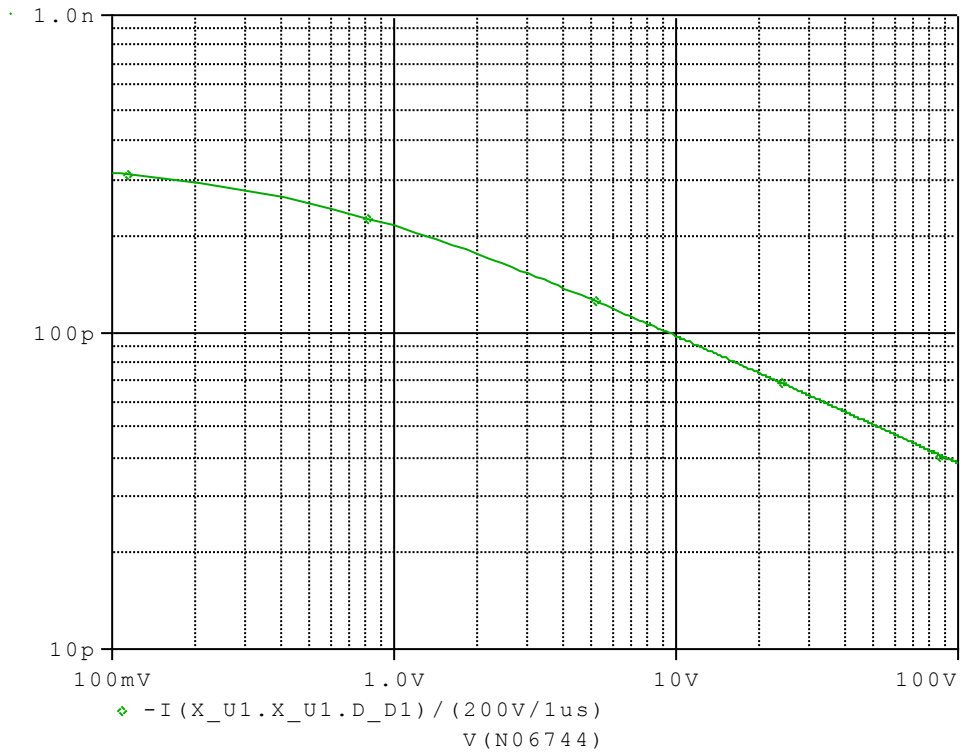


Simulation Result

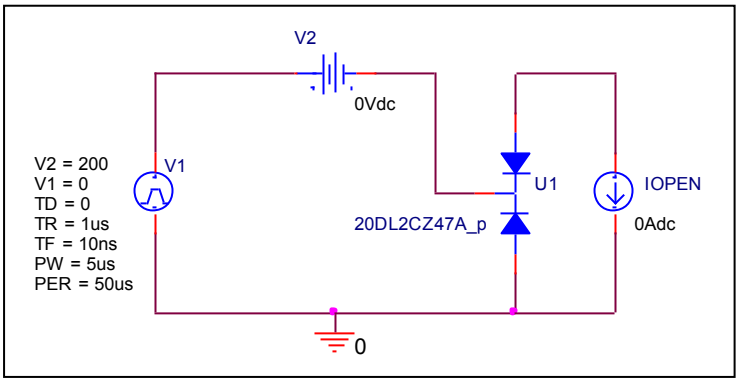
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.1	0.610	0.611	-0.164
0.2	0.650	0.648	0.308
0.5	0.700	0.702	-0.286
1	0.750	0.749	0.133
2	0.800	0.801	-0.125
5	0.900	0.890	1.111
10	1.000	0.980	2.000

Capacitance Characteristic

Circuit Simulation Result

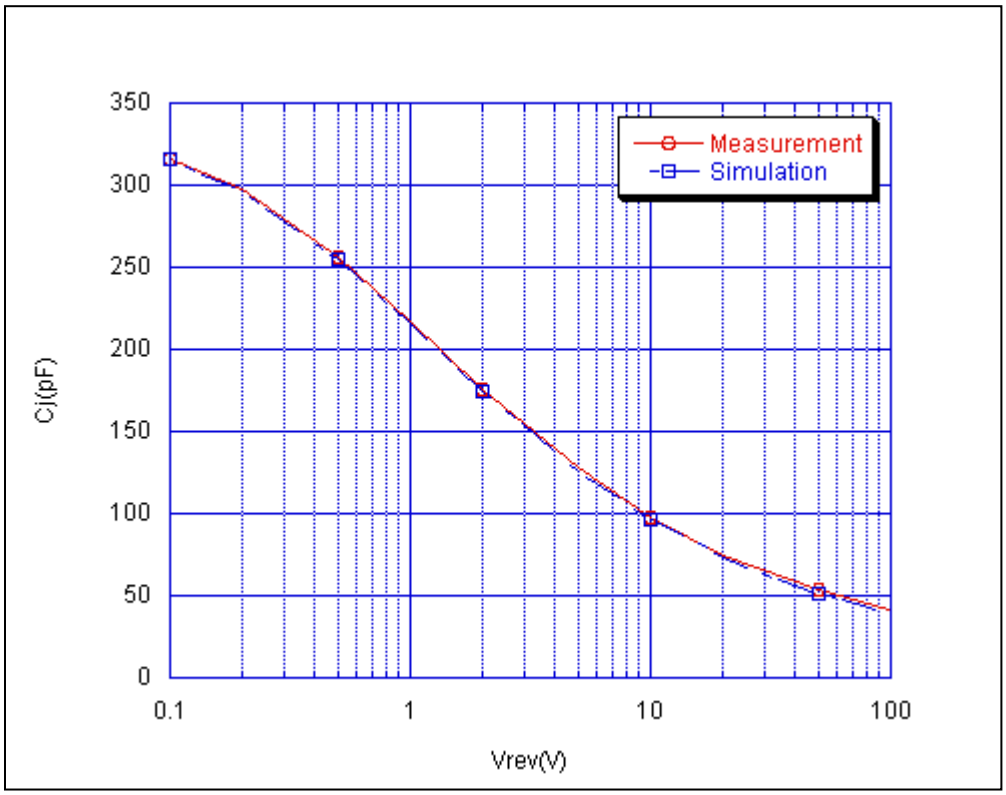


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

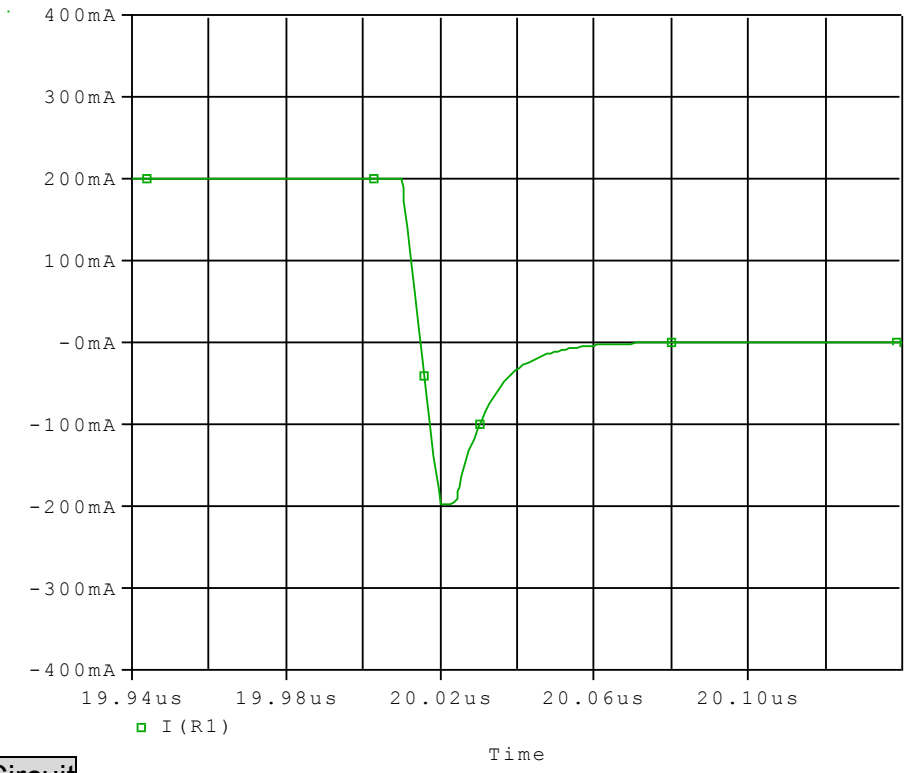


Simulation Result

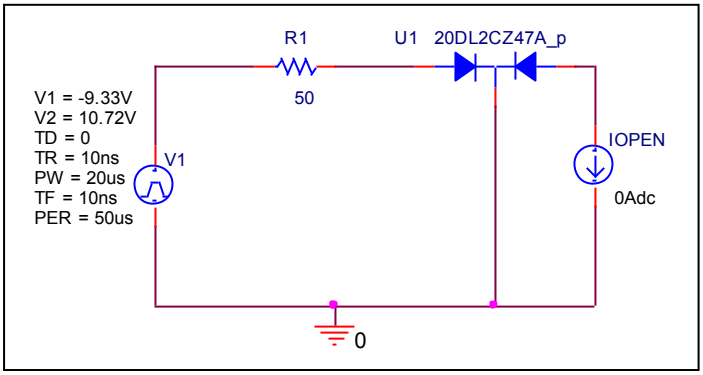
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0	339.500	339.500	0.000
0.1	316.500	315.969	0.168
0.2	298.100	296.100	0.671
0.5	256.200	254.820	0.539
1	217.500	215.856	0.756
2	175.700	174.388	0.747
5	127.500	126.169	1.044
10	97.900	96.977	0.943
20	74.039	73.608	0.582
50	53.930	51.500	4.506
100	40.770	38.755	4.942

Reverse Recovery Characteristic

Circuit Simulation Result



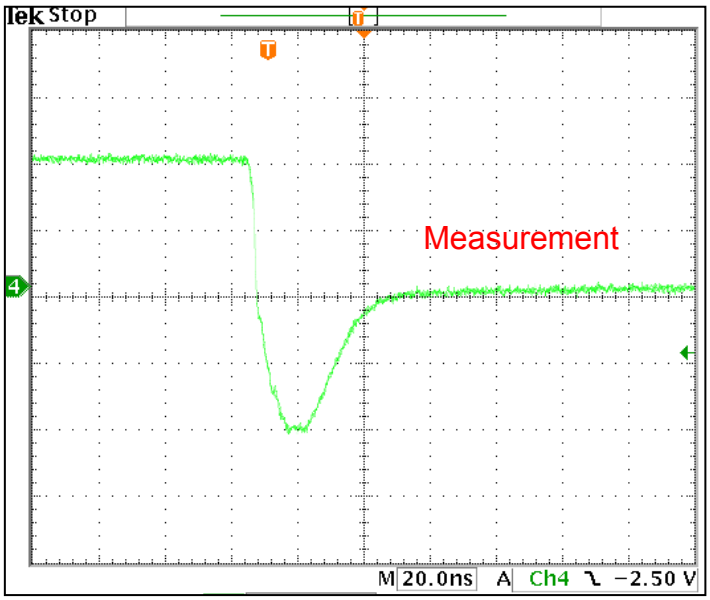
Evaluation Circuit



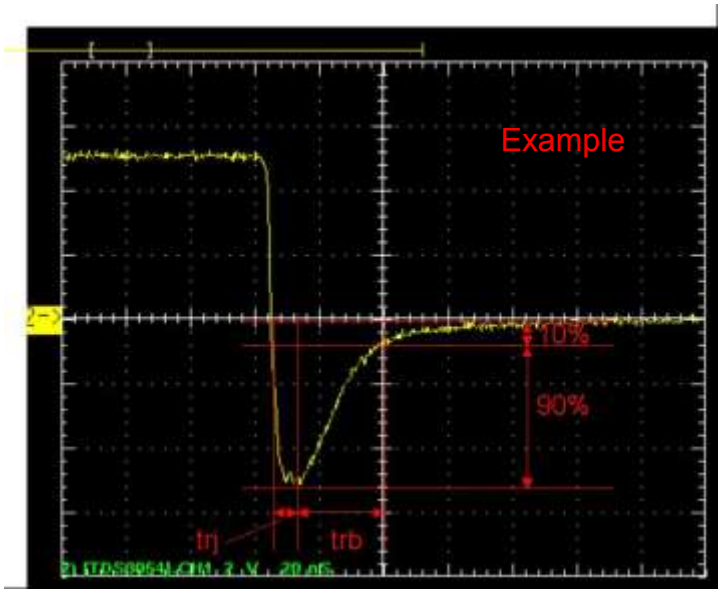
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**8.400**	**ns**	**8.390**	**ns**	**- 0.119**
trb	**20.800**	**ns**	**20.820**	**ns**	**0.096**

Reverse Recovery Characteristic Reference



Trj =8.4(ns)
Trb=20.8(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb