Device Modeling Report

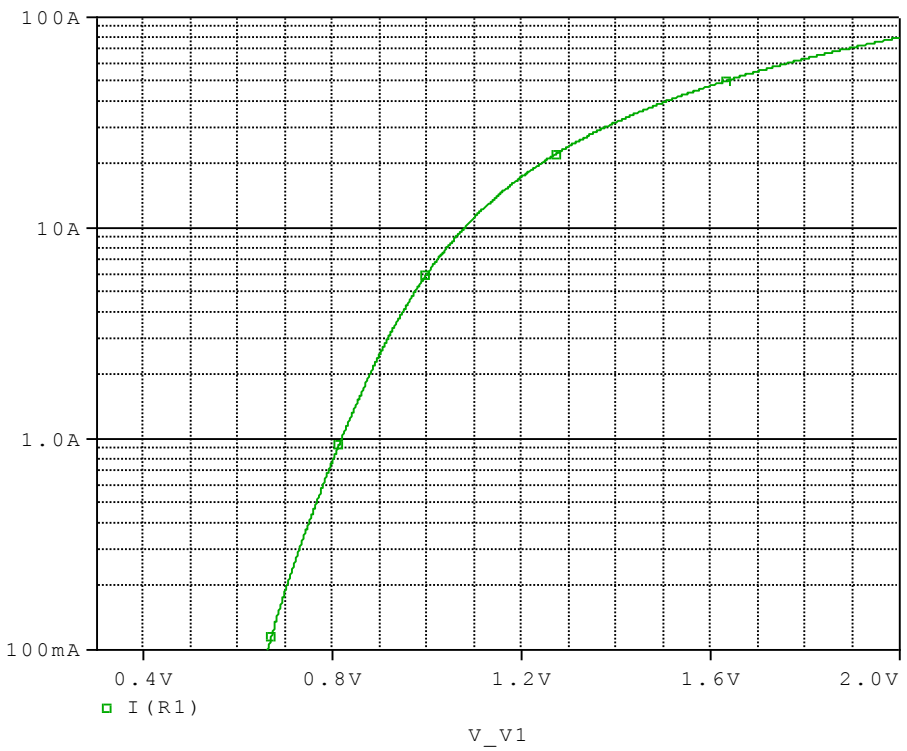
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: 10DL2C48A
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

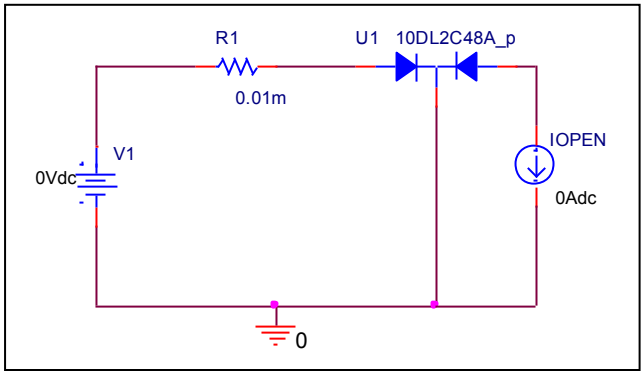
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

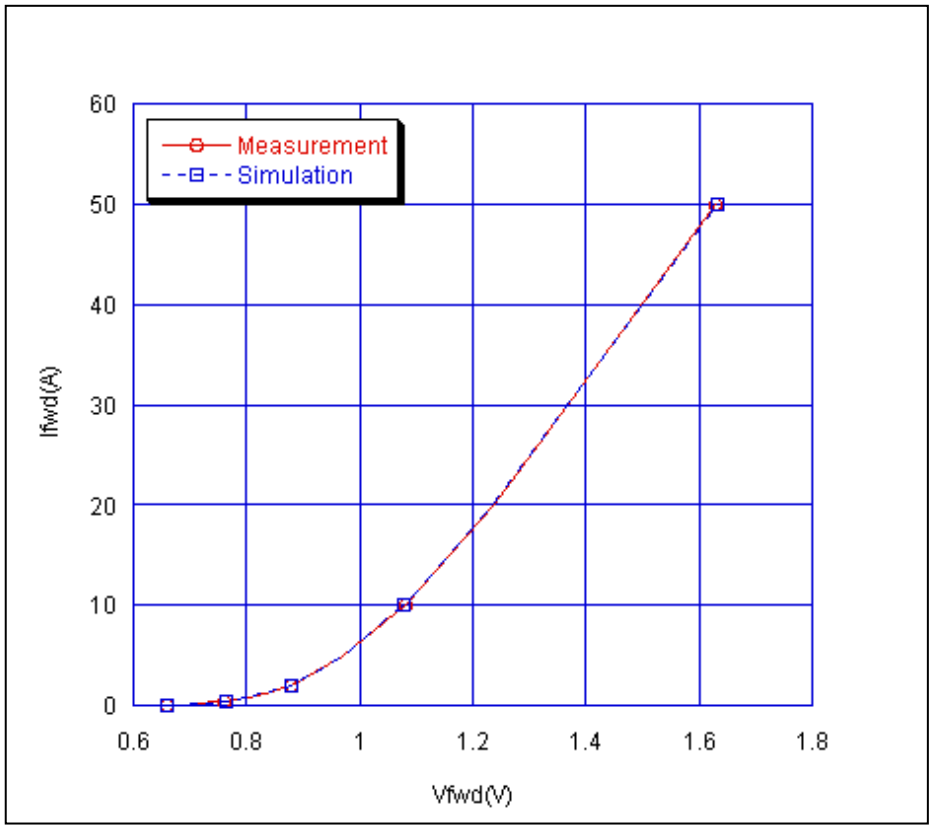


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

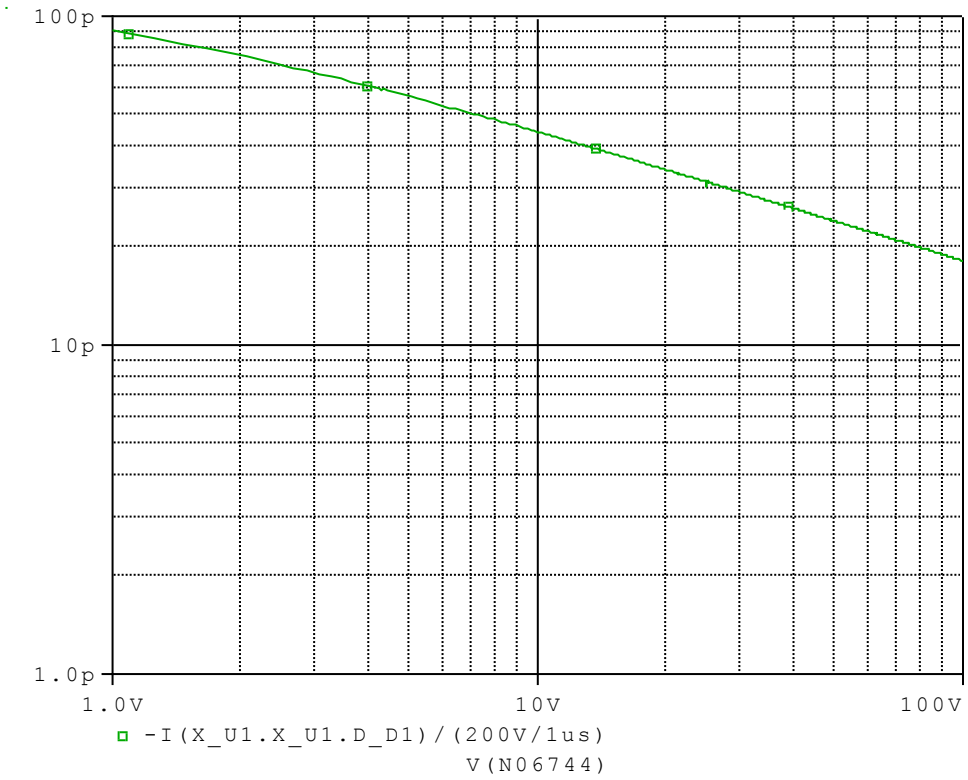


Simulation Result

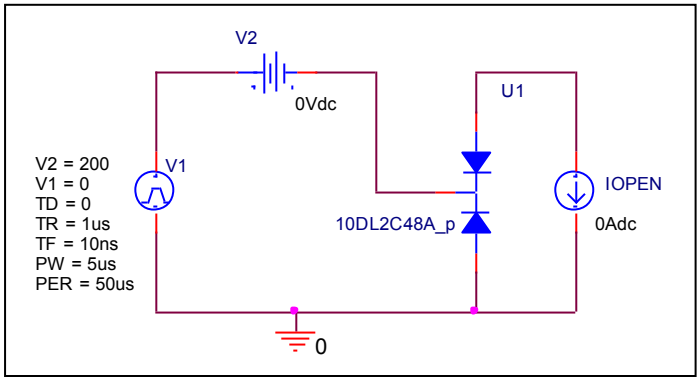
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.1	0.660	0.661	-0.152
0.2	0.700	0.701	-0.143
0.5	0.760	0.764	-0.526
1	0.820	0.818	0.244
2	0.880	0.878	0.227
5	0.970	0.973	-0.309
10	1.080	1.077	0.278
20	1.240	1.236	0.323
50	1.630	1.631	-0.061

Capacitance Characteristic

Circuit Simulation Result

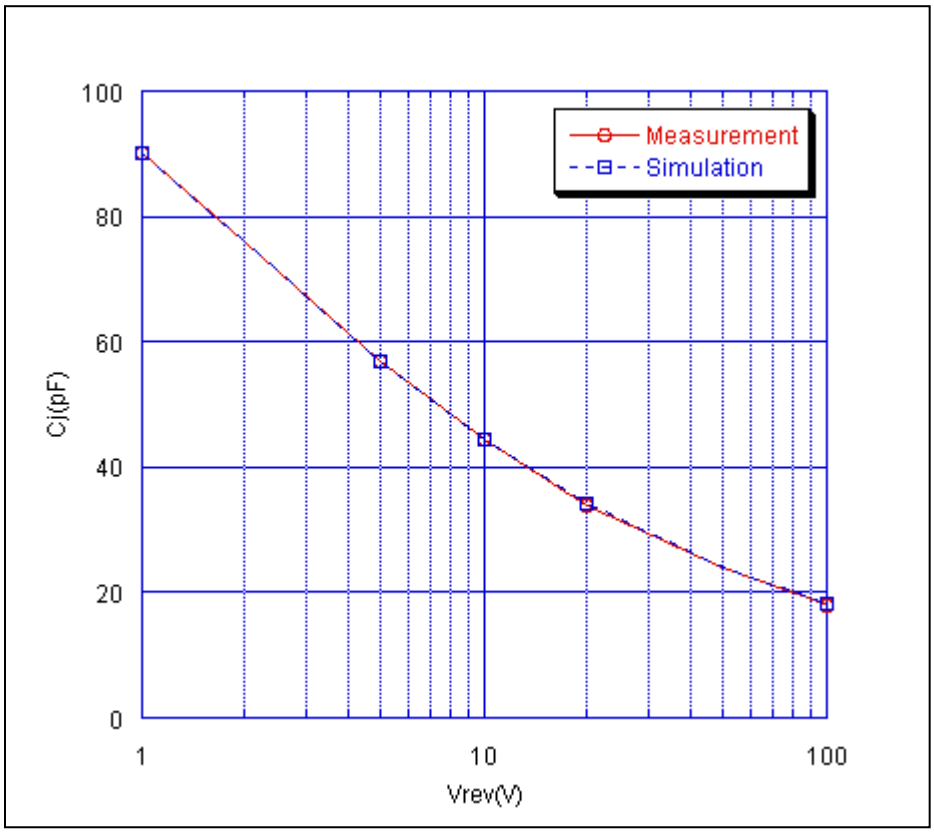


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

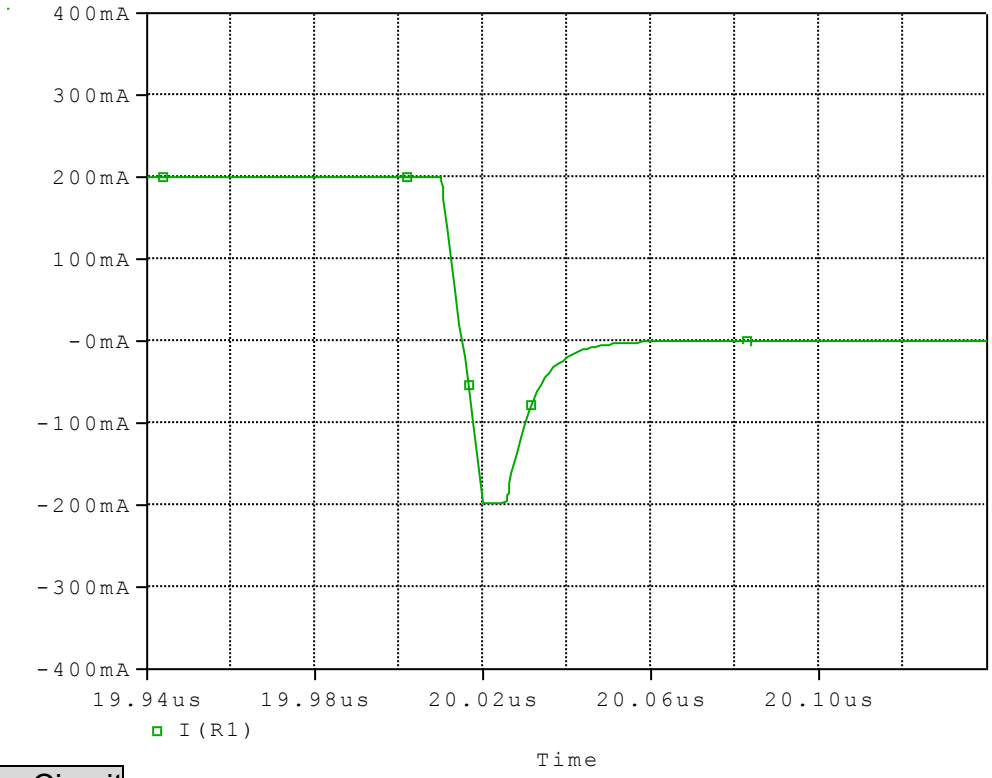


Simulation Result

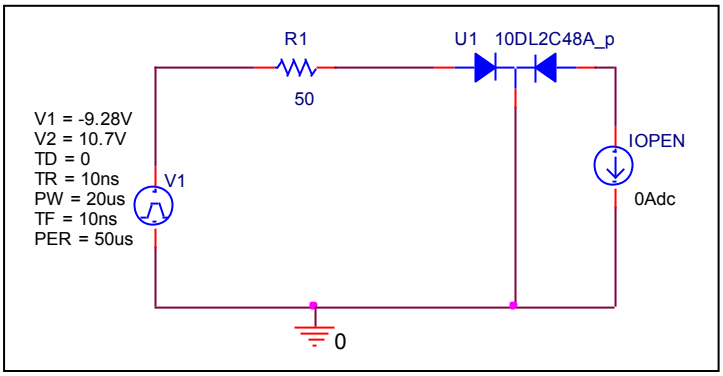
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
1	90.000	90.086	-0.096
2	76.000	75.957	0.057
5	57.000	57.041	-0.072
10	44.500	44.429	0.160
20	34.000	34.185	-0.544
50	24.000	23.831	0.704
100	18.000	18.078	-0.433

Reverse Recovery Characteristic

Circuit Simulation Result



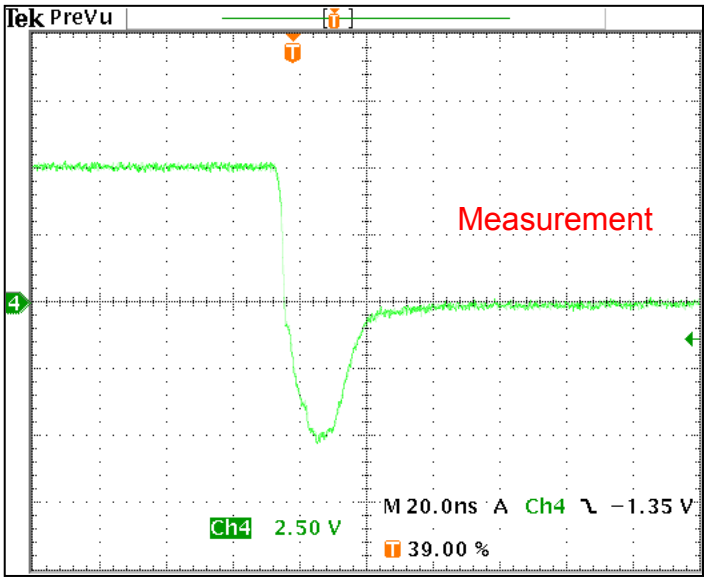
Evaluation Circuit



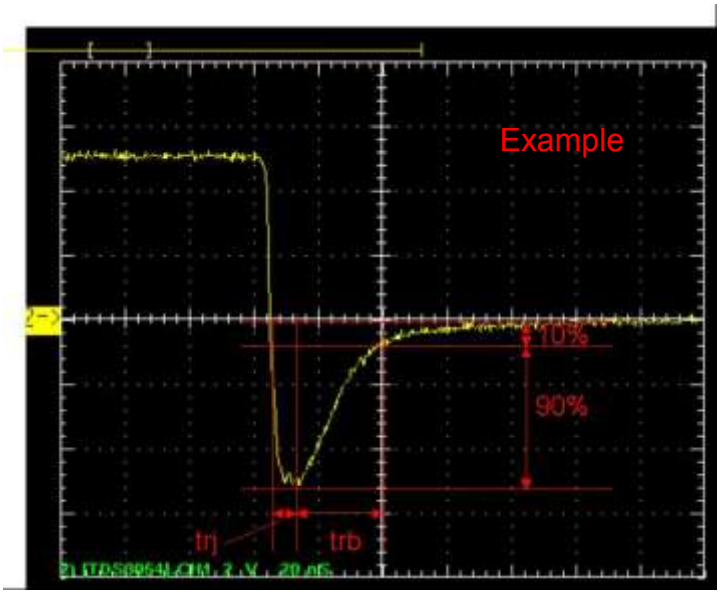
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**10.000**	**ns**	**9.980**	**ns**	**0.200**
trb	**14.400**	**ns**	**14.440**	**ns**	**-0.278**

Reverse Recovery Characteristic Reference



Trj =10.0(ns)
Trb=14.4(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb