Device Modeling Report

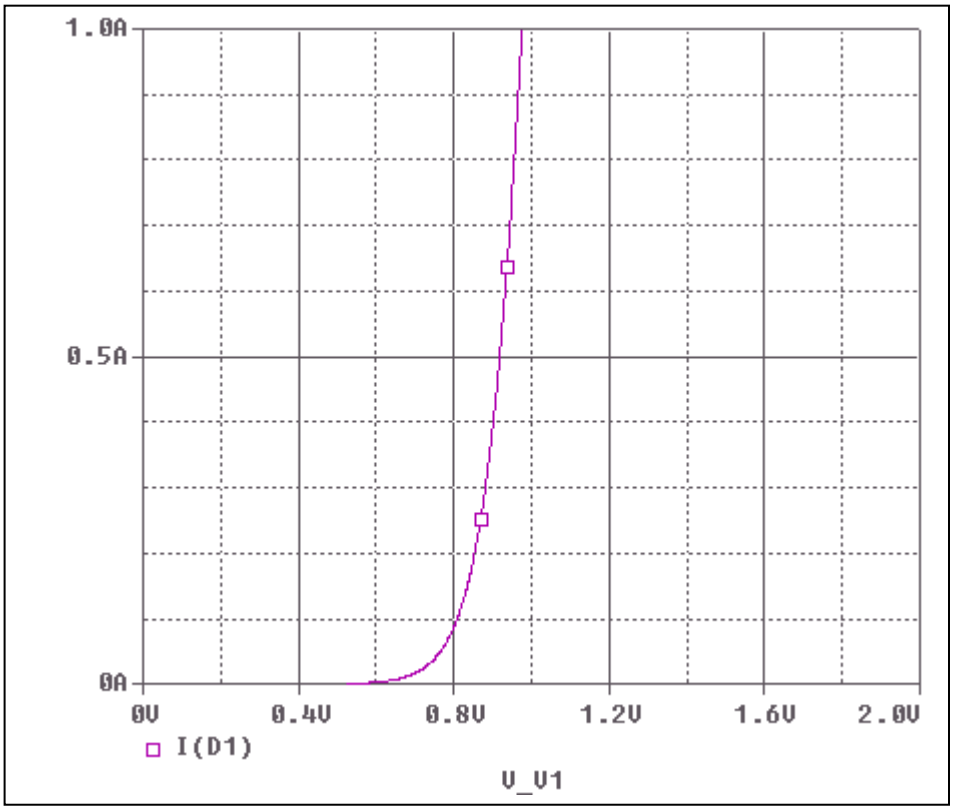
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: CRG02
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

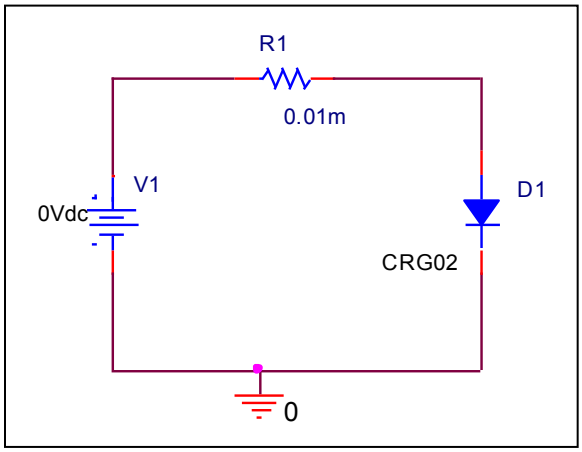
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

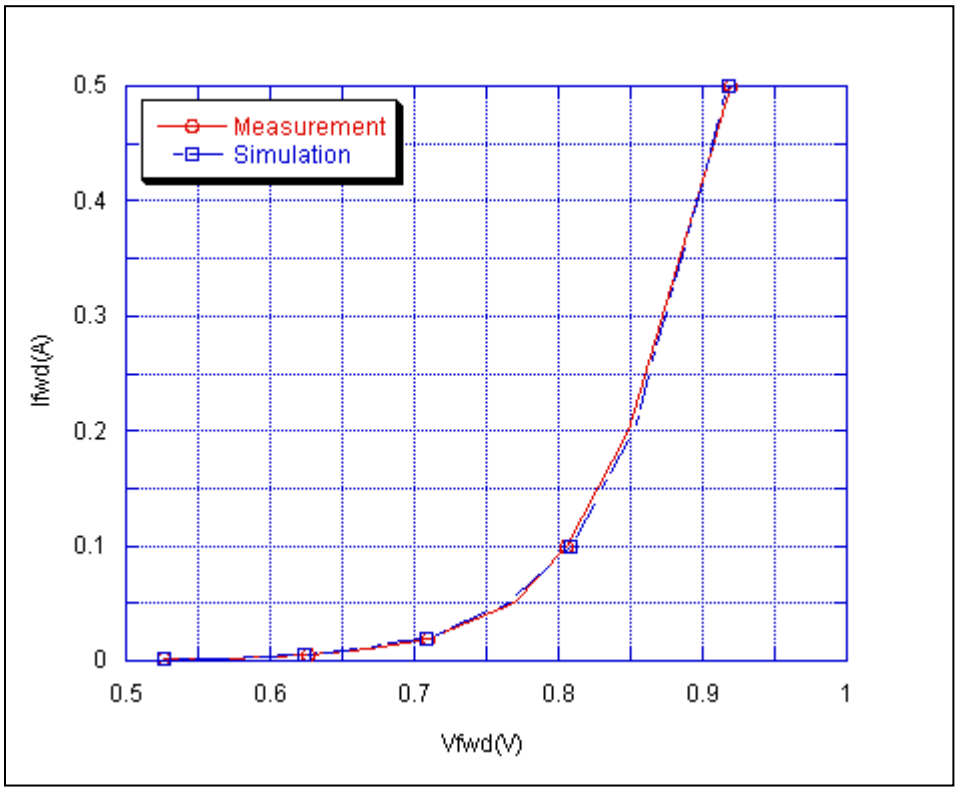


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

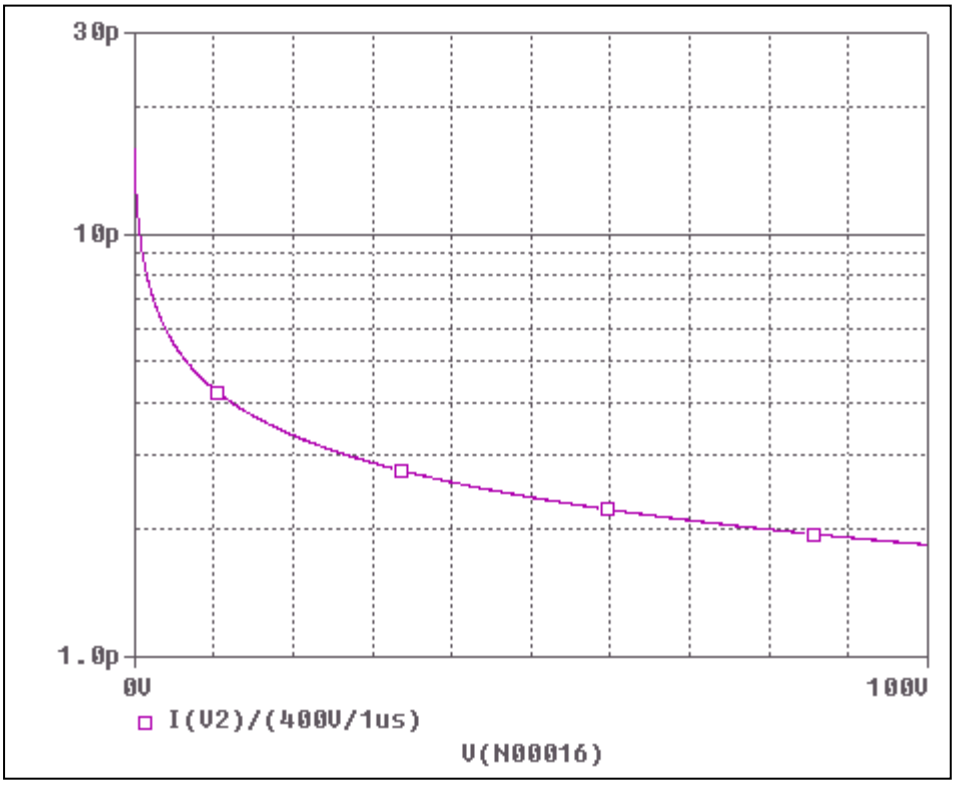


Simulation Result

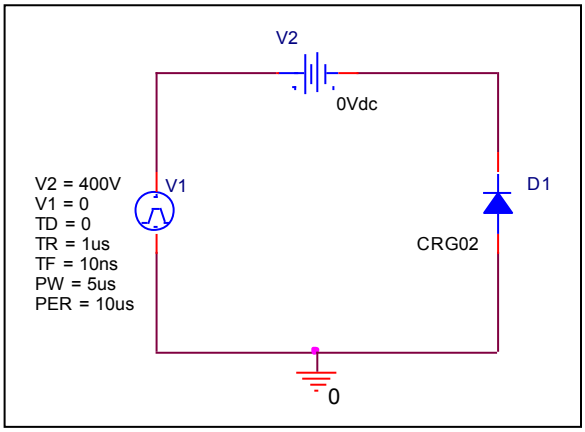
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.001	0.526	0.527	-0.190
0.002	0.568	0.571	-0.528
0.005	0.627	0.624	0.478
0.01	0.668	0.667	0.150
0.02	0.710	0.709	0.141
0.05	0.770	0.765	0.649
0.1	0.806	0.806	0.000
0.2	0.849	0.853	-0.471
0.5	0.920	0.918	0.217

Junction Capacitance Characteristic

Circuit Simulation Result

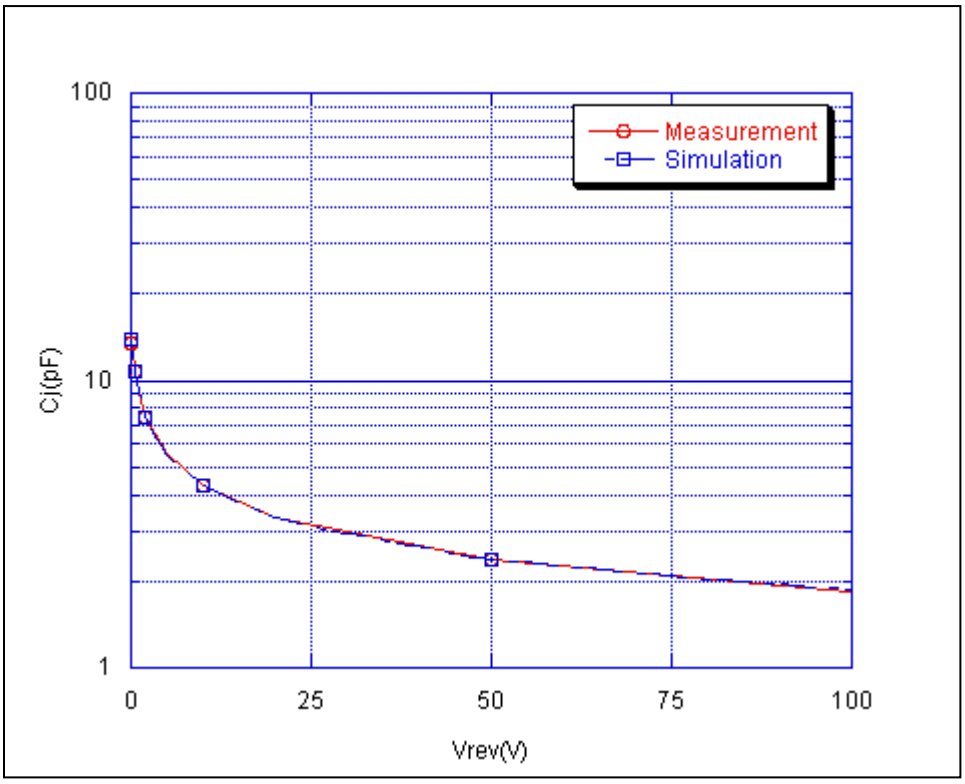


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

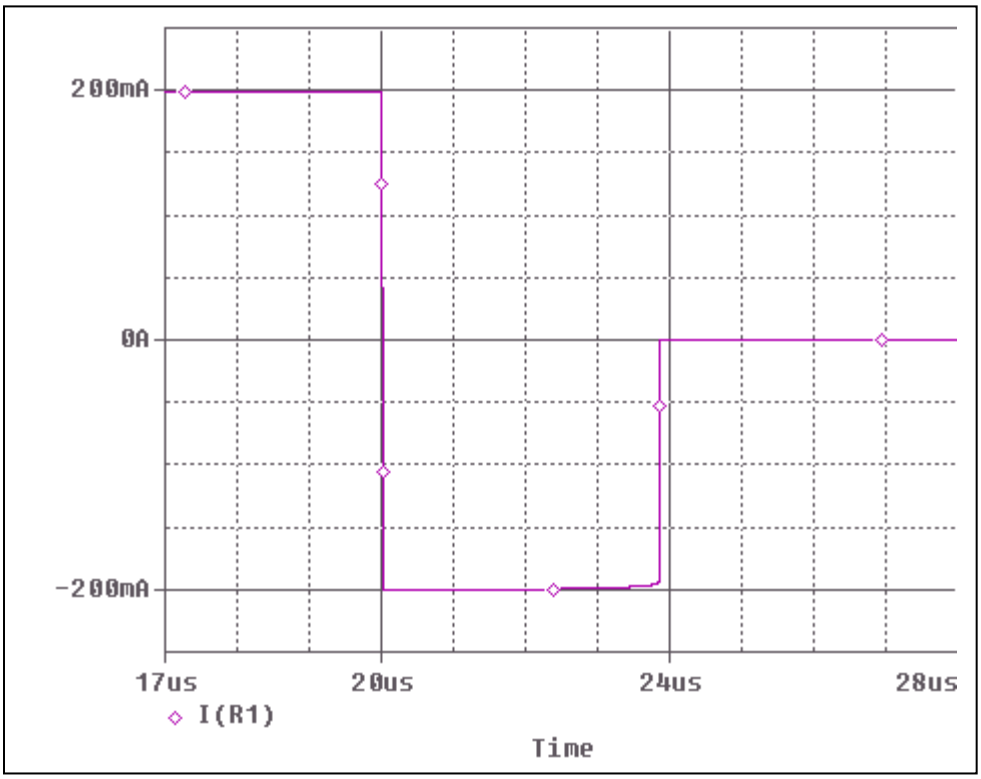


Simulation Result

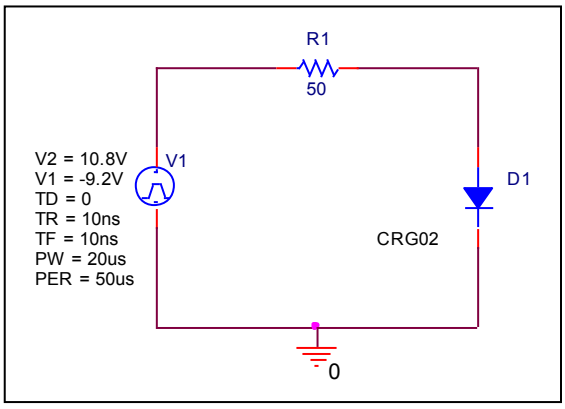
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0	14.551	14.551	0.000
0.1	13.417	14.000	-4.345
0.2	12.560	12.856	-2.357
0.5	10.721	10.837	-1.082
1	9.117	9.127	-0.110
2	7.466	7.462	0.054
5	5.537	5.496	0.740
10	4.334	4.283	1.177
20	3.345	3.337	0.239
50	2.382	2.380	0.084
100	1.808	1.835	-1.493

Reverse Recovery Characteristic

Circuit Simulation Result



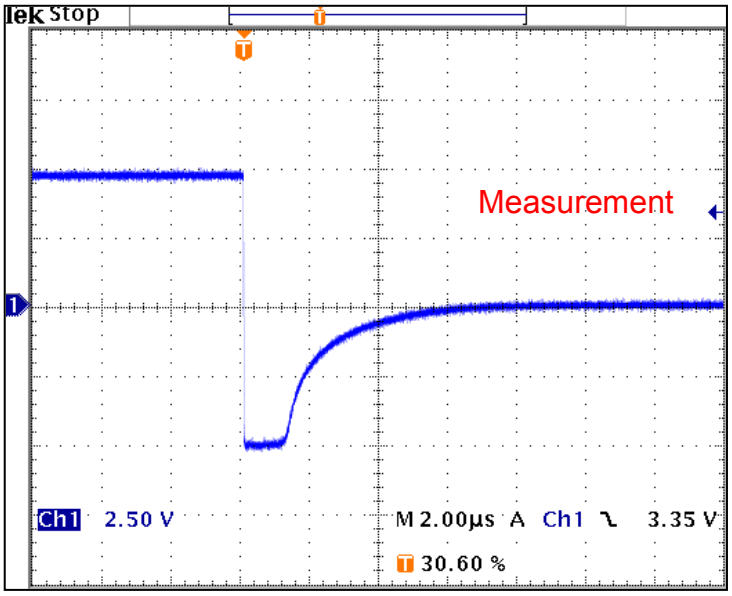
Evaluation Circuit



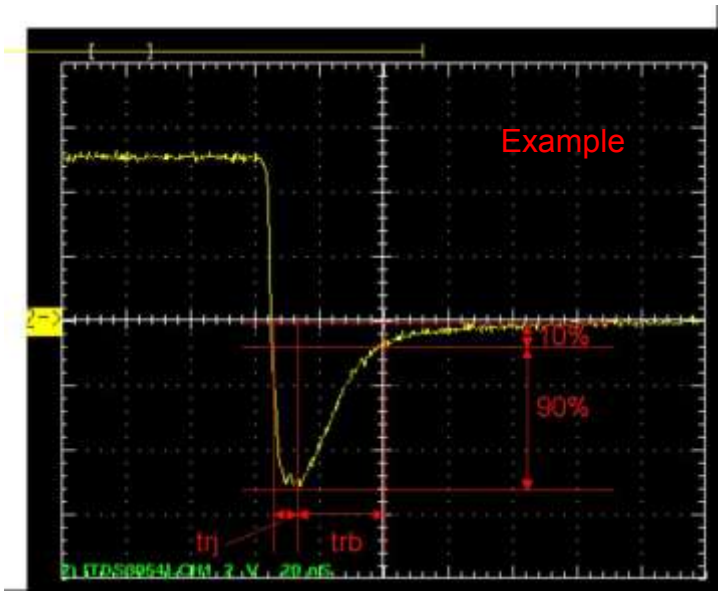
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	3.88	us	3.85	us	- 0.77

Reverse Recovery Characteristic Reference



Trj =1.04 (us)
Trb=2.84 (us)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb