Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: CMH05A
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

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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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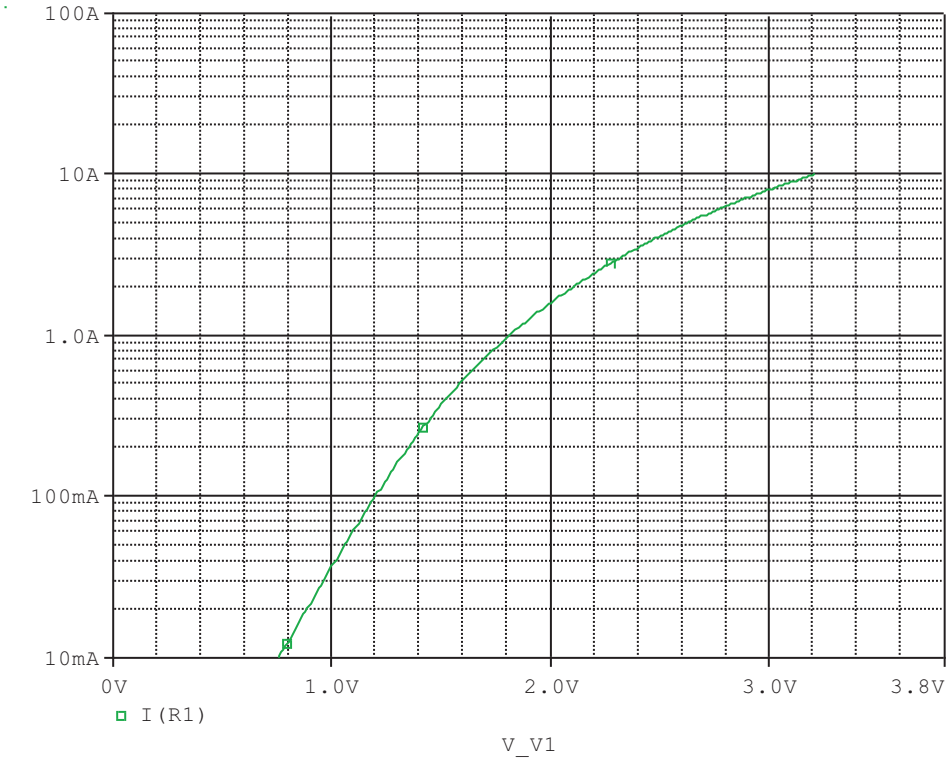
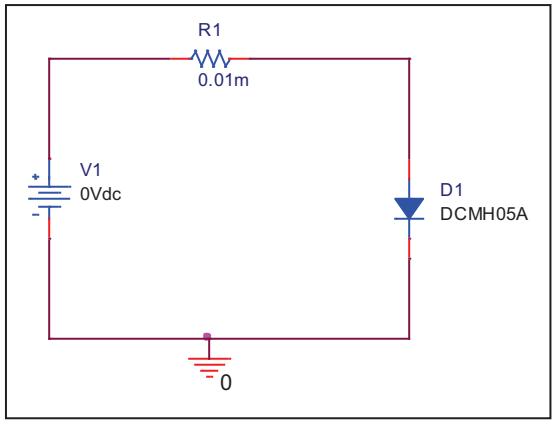
Forward Current Characteristic

Circuit Simulation Result



Evaluation Circuit



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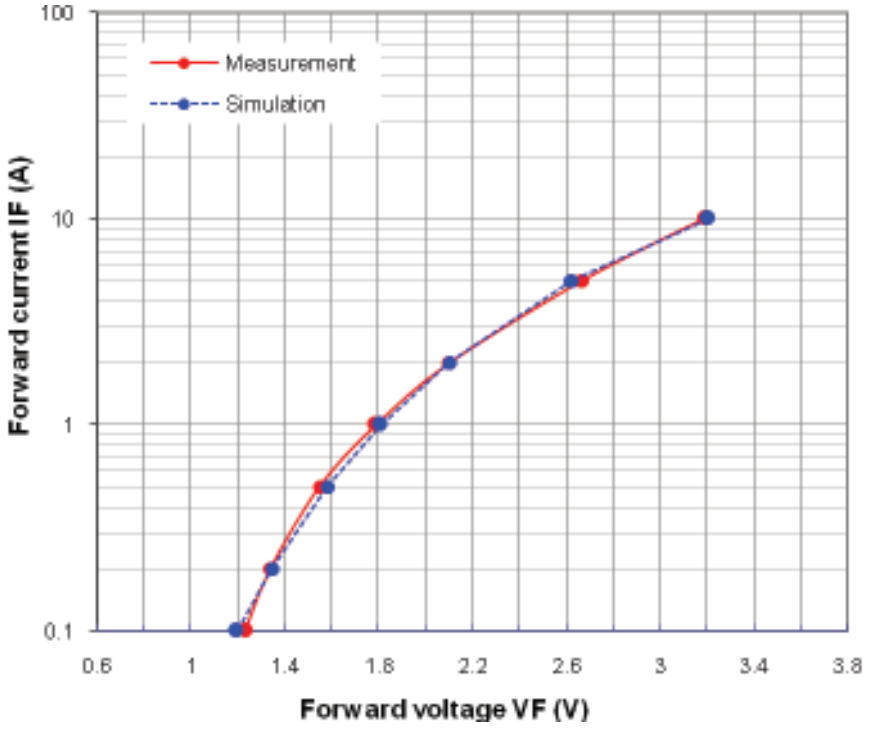
Comparison Graph

Circuit Simulation Result



Simulation Result

Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	1.232	1.196	-2.90
0.2	1.337	1.346	0.68
0.5	1.549	1.581	2.06
1	1.787	1.809	1.24
2	2.104	2.101	-0.13
5	2.668	2.624	-1.64
10	3.187	3.206	0.59

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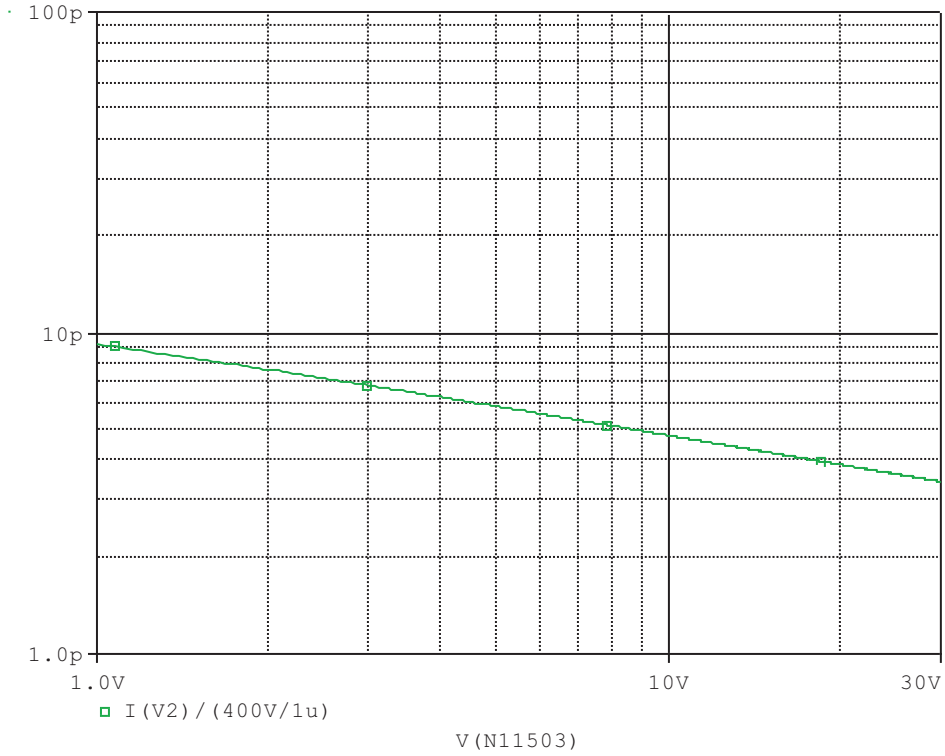
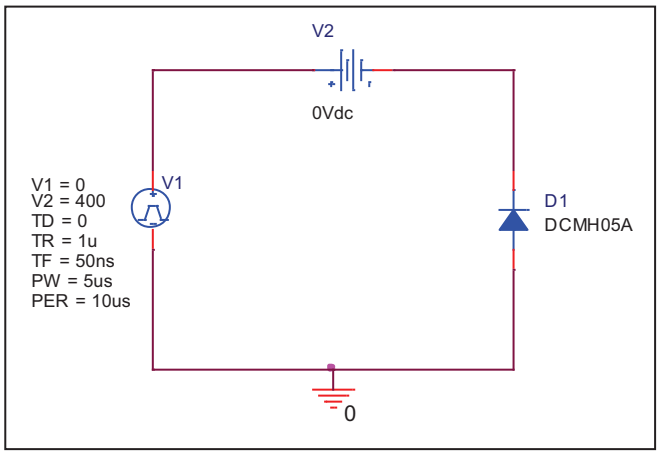
Capacitance Characteristic

Circuit Simulation Result



Evaluation Circuit



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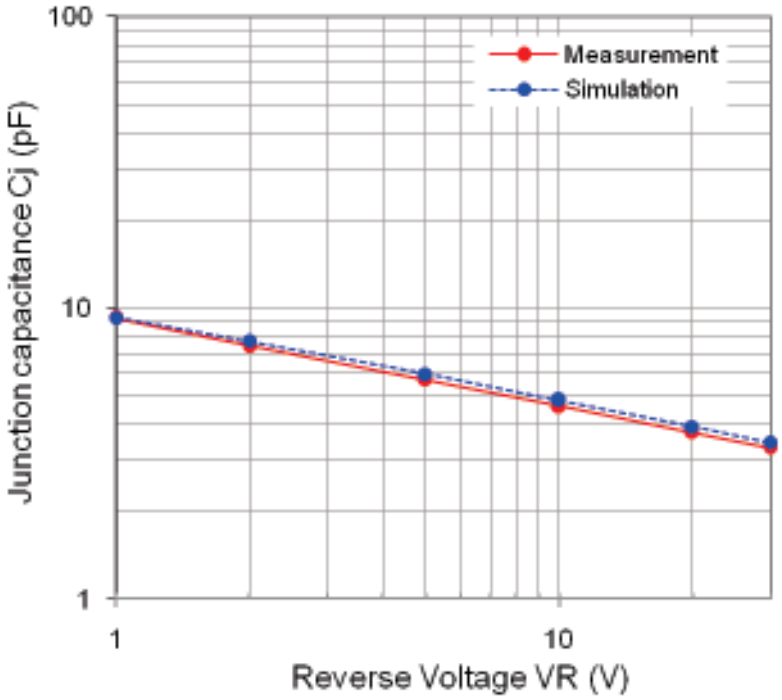
Comparison Graph

Circuit Simulation Result



Simulation Result

Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
1	9.200	9.219	0.21
2	7.400	7.679	3.77
5	5.650	5.910	4.61
10	4.580	4.799	4.77
20	3.720	3.892	4.63
30	3.300	3.442	4.30

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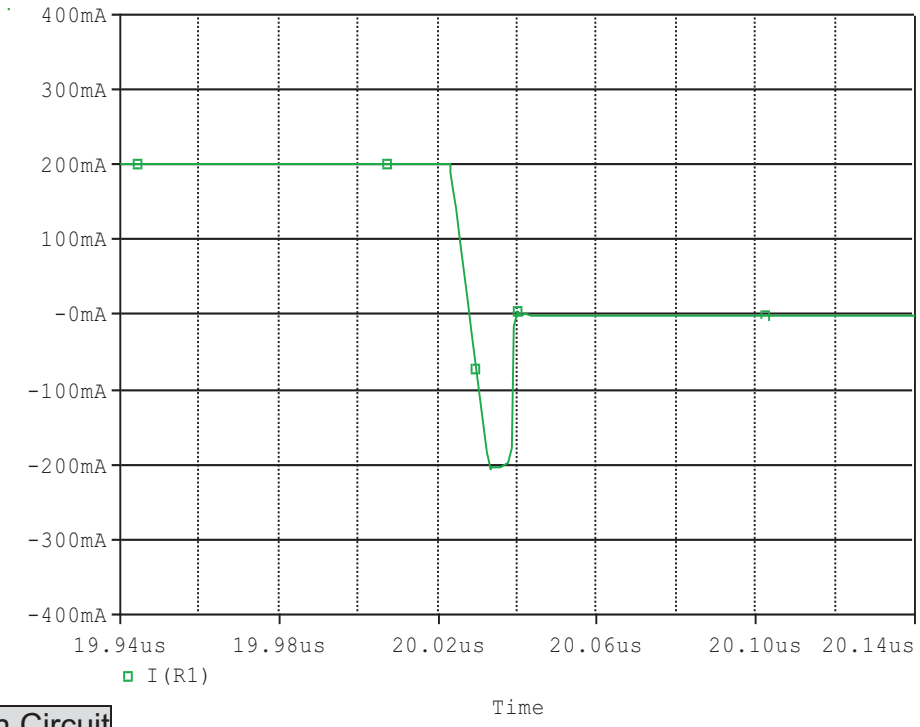
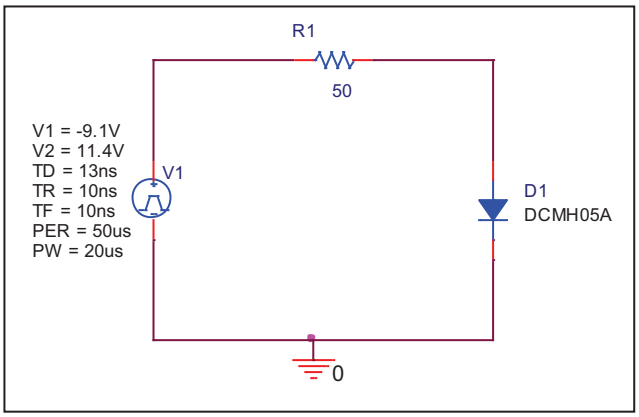
Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit



Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
trj	**ns**	**9.20**	**8.7667**	**-4.71**

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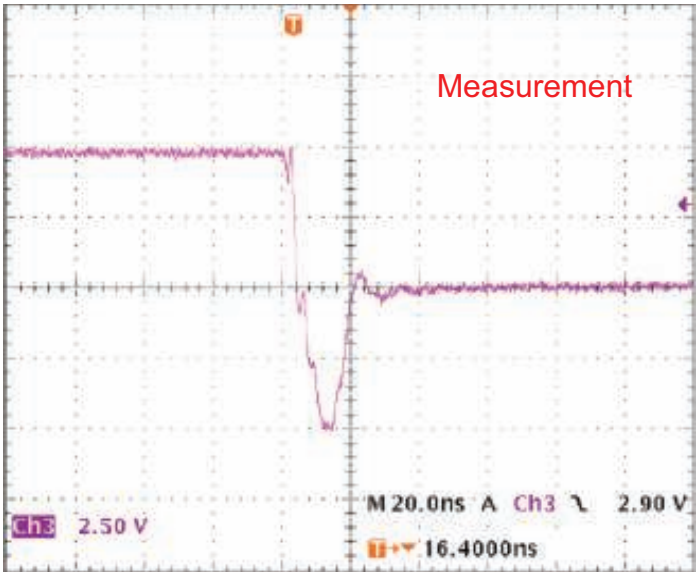
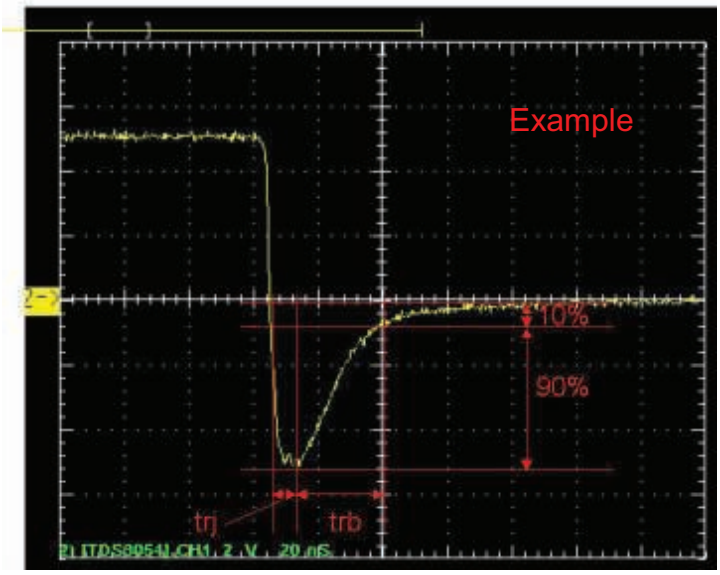
Reverse Recovery Characteristic Reference



Trj =9.20(ns)
Trb= 6.40(ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb

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