Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: CLH02
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

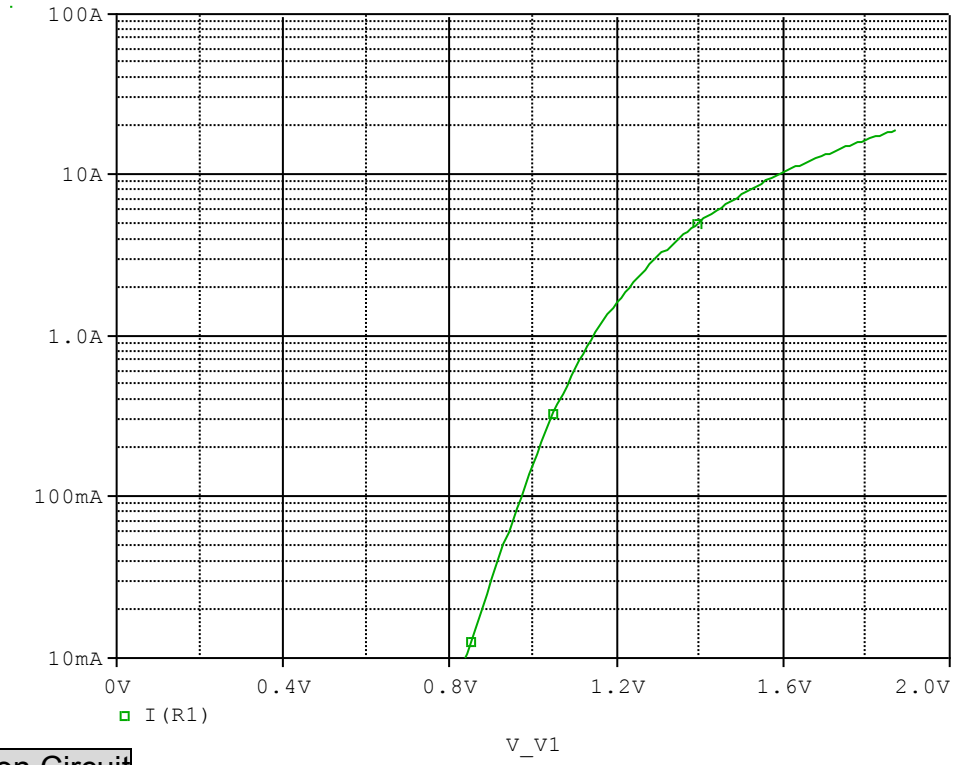
DIODE MODEL PARAMETERS

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

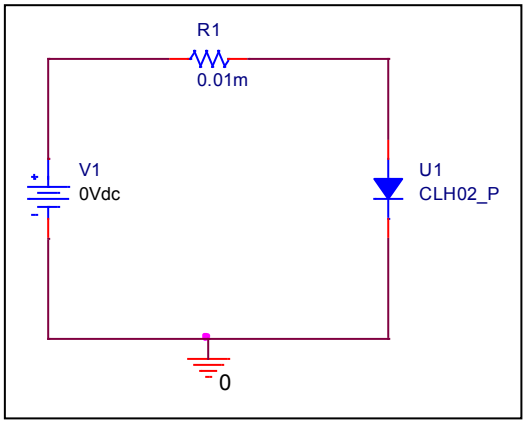
All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Forward Current Characteristic

Circuit Simulation Result



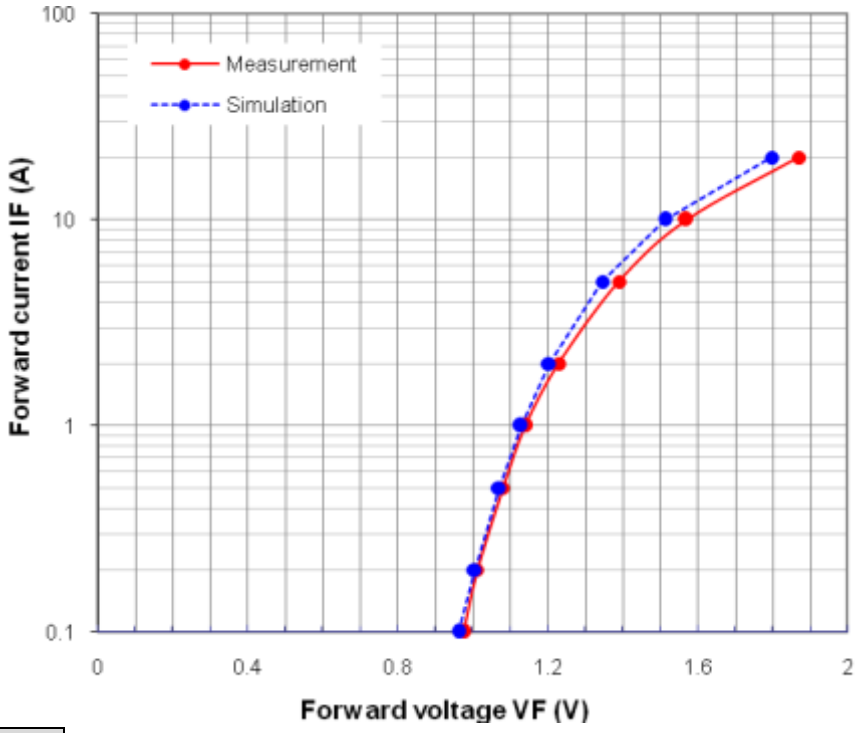
Evaluation Circuit



All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Comparison Graph

Circuit Simulation Result



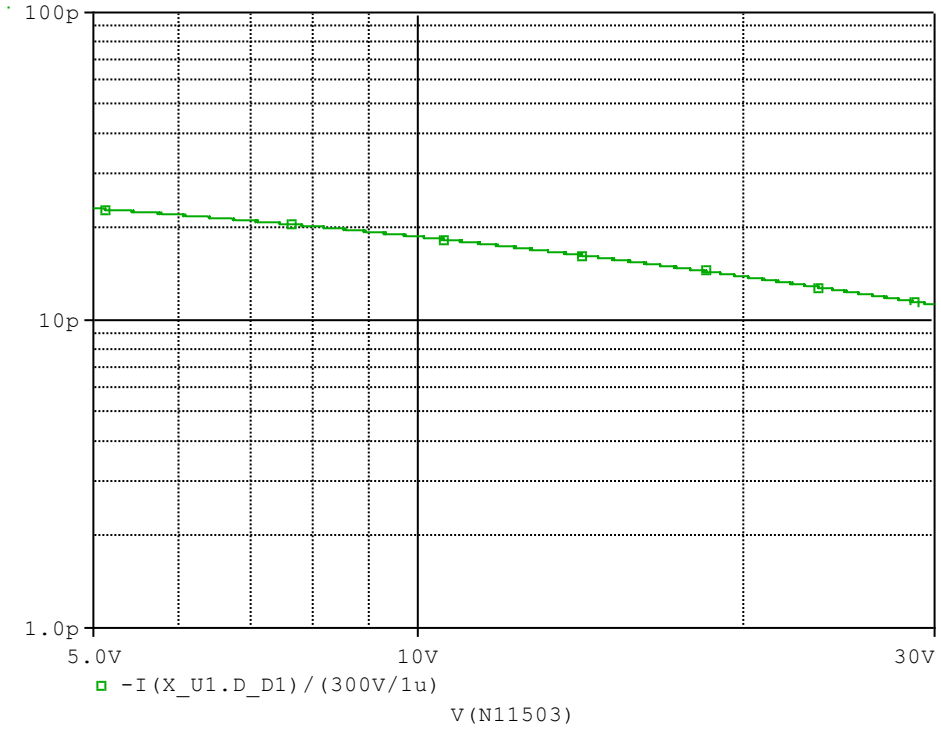
Simulation Result

Ifwd (A)	Vfwd (V)		%Error
	Measurement	Simulation	
0.1	0.976	0.963	-1.29
0.2	1.012	1.006	-0.56
0.5	1.080	1.070	-0.90
1	1.140	1.129	-0.93
2	1.230	1.205	-2.07
5	1.390	1.346	-3.17
10	1.570	1.515	-3.53
20	1.87	1.7976	-3.87

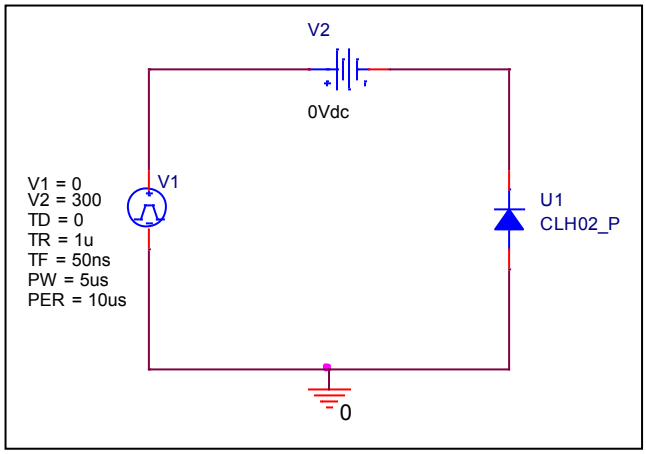
All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Capacitance Characteristic

Circuit Simulation Result



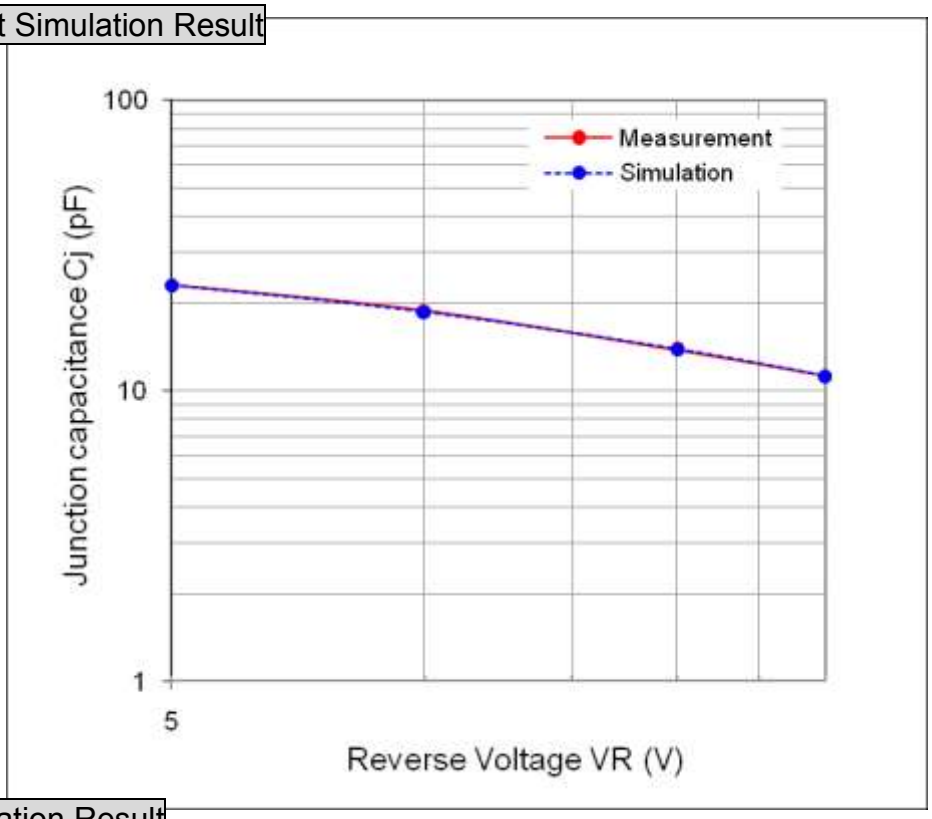
Evaluation Circuit



All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Comparison Graph

Circuit Simulation Result



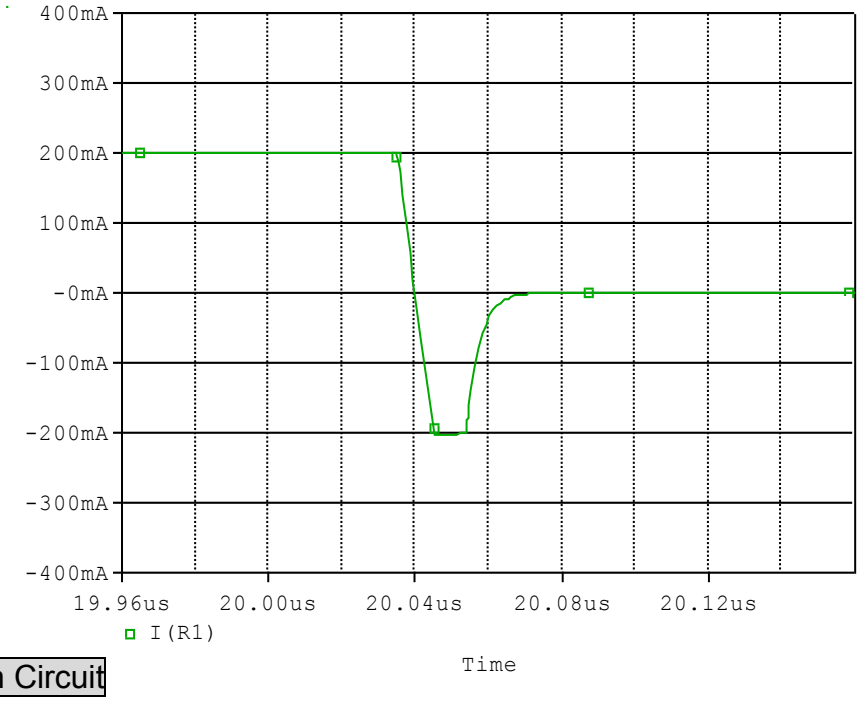
Simulation Result

Vrev (V)	Cj (pF)		%Error
	Measurement	Simulation	
5	23.000	23.083	0.36
10	18.800	18.662	-0.73
20	13.800	13.856	0.41
30	11.200	11.213	0.12

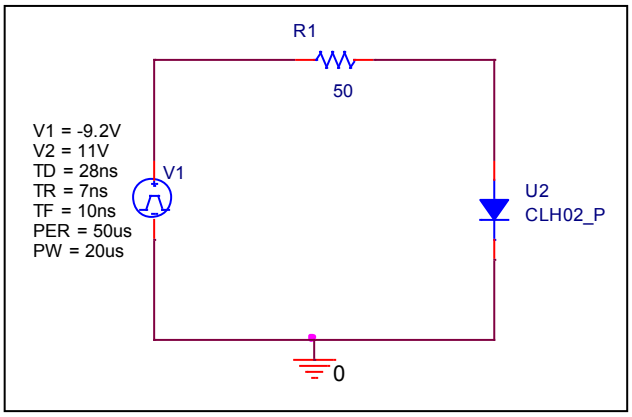
All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

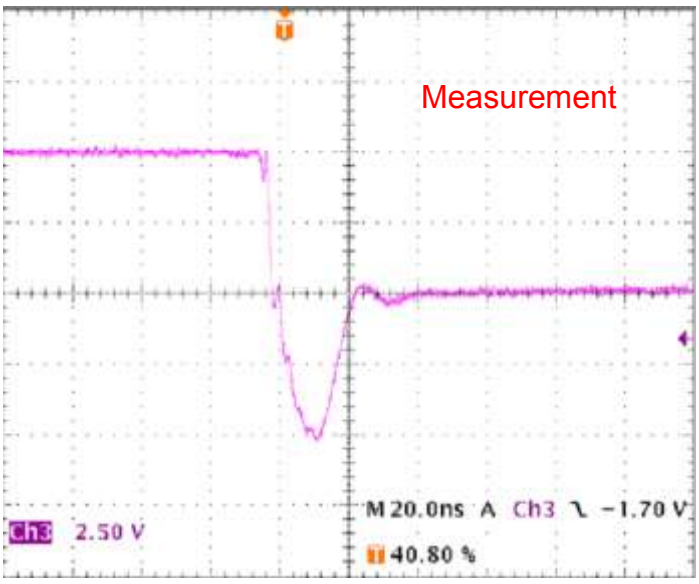


Compare Measurement vs. Simulation

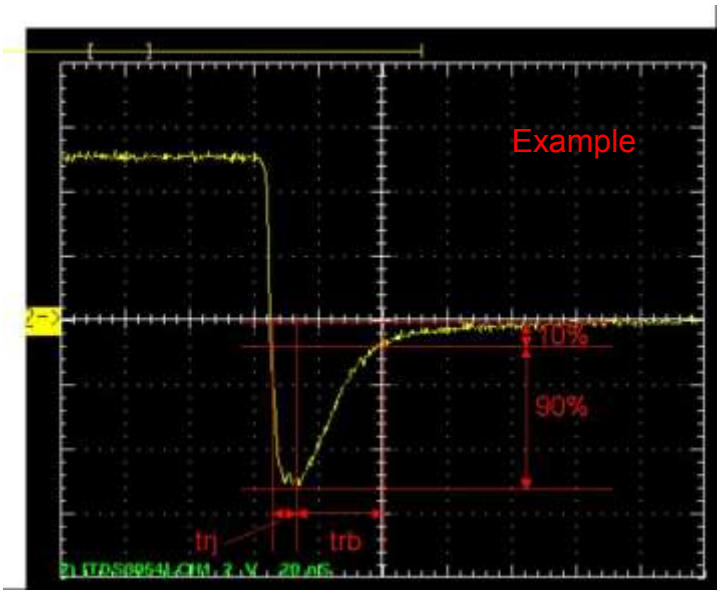
		Measurement	Simulation	%Error
Trj	ns	12.00	11.85	-1.29
Trb	ns	9.60	9.65	0.47
Trr	ns	21.60	21.49	-0.51

All Rights Reserved Copyright (C) Bee Technologies Inc. 2008

Reverse Recovery Characteristic Reference



Trj =12.00(ns)
Trb= 9.60(ns)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb

All Rights Reserved Copyright (C) Bee Technologies Inc. 2008