Device Modeling Report

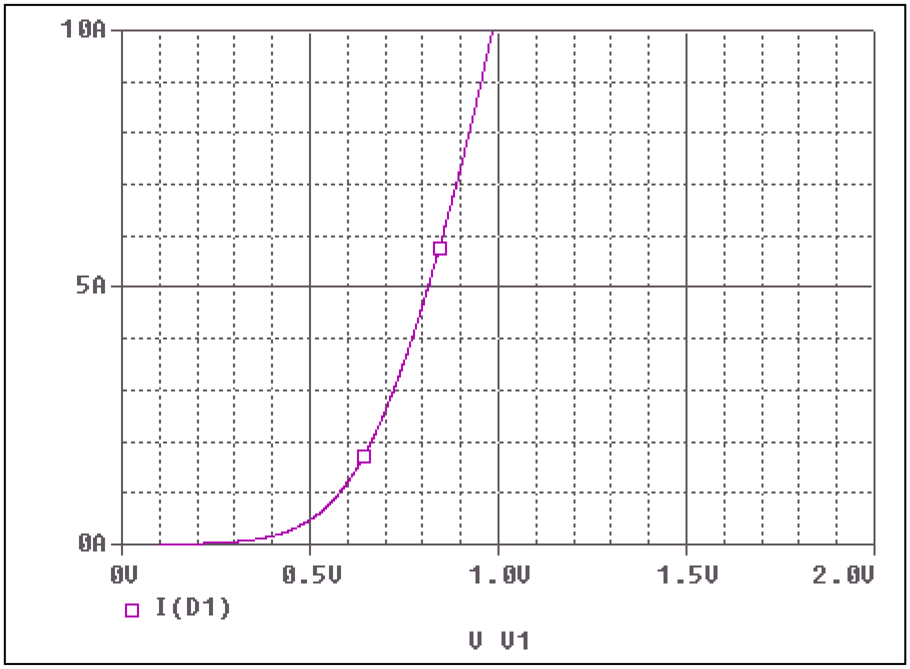
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: 20GL2C41A
MANUFACTURER: TOSHIBA
REMARK: TC= 150C

Bee Technologies Inc.

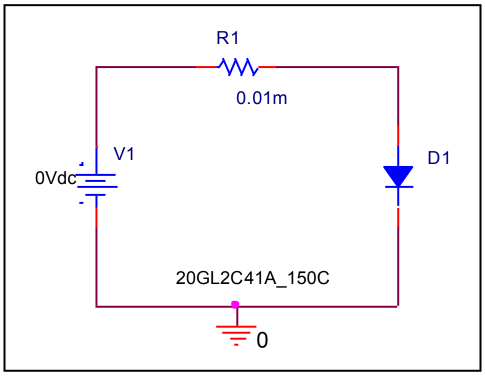
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

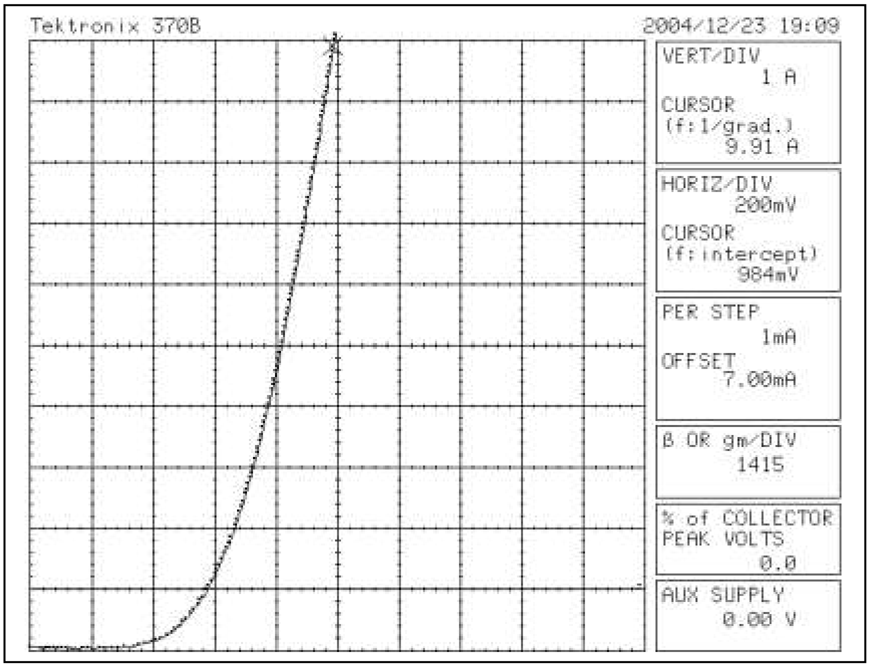
Circuit Simulation Result



Evaluation Circuit



Forward Current Characteristic Reference



Tektronix 370B

2004/12/23 19:09

VERT/DIV
1 A
CURSOR
(f:1/grad.)
9.91 A

HORIZ/DIV
200mV
CURSOR
(f:intercept)
984mV

PER STEP
1mA
OFFSET
7.00mA

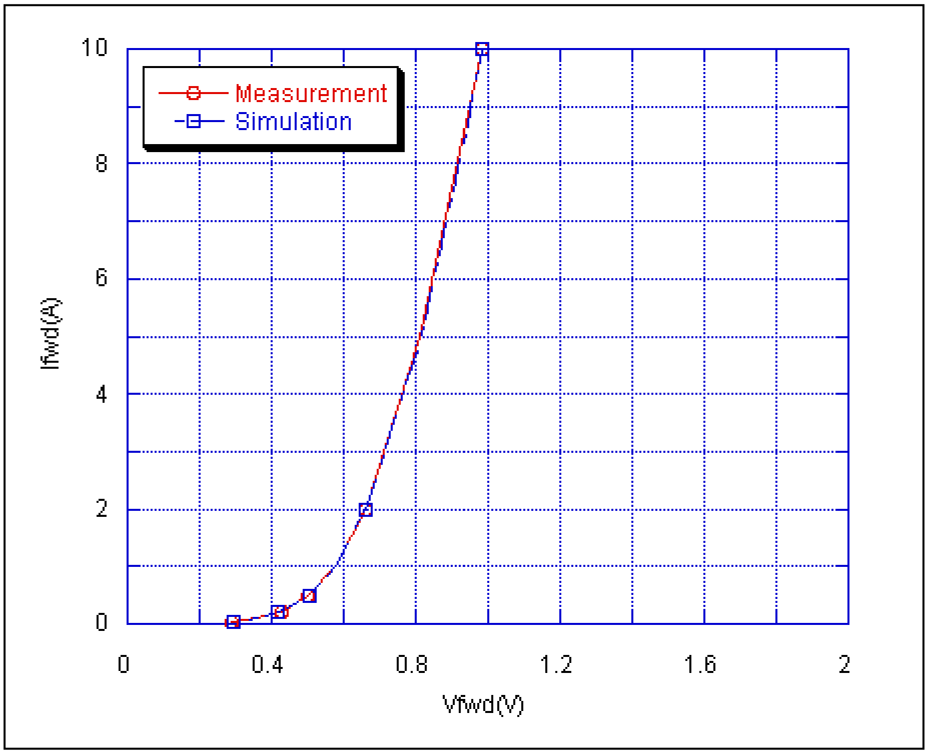
β OR gm/DIV
1415

% of COLLECTOR
PEAK VOLTS
0.0

AUX SUPPLY
0.00 V

Comparison Graph

Circuit Simulation Result

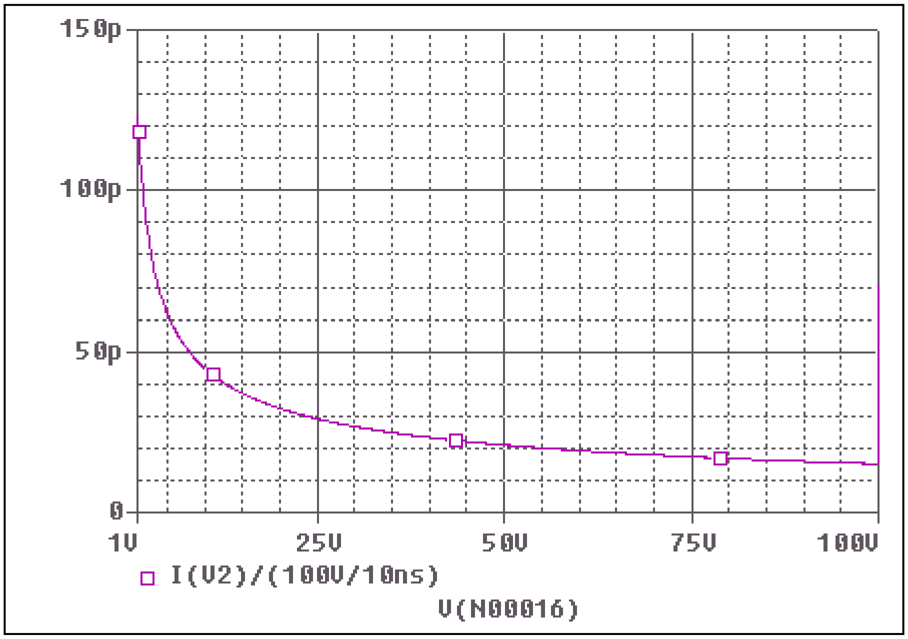


Simulation Result

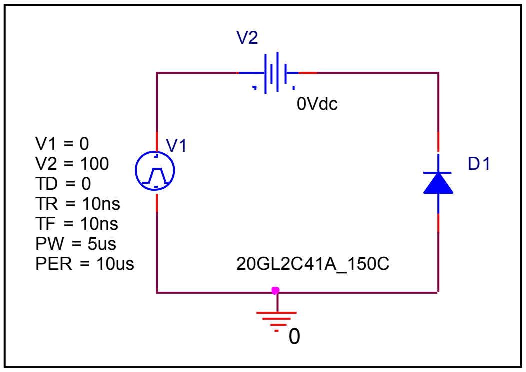
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.05	0.290	0.295	-1.724
0.1	0.358	0.356	0.559
0.2	0.428	0.418	2.290
0.5	0.498	0.505	-1.406
1	0.578	0.578	-0.052
2	0.664	0.663	0.151
5	0.814	0.814	-0.025
10	0.984	0.984	-0.010

Capacitance Characteristic

Circuit Simulation Result

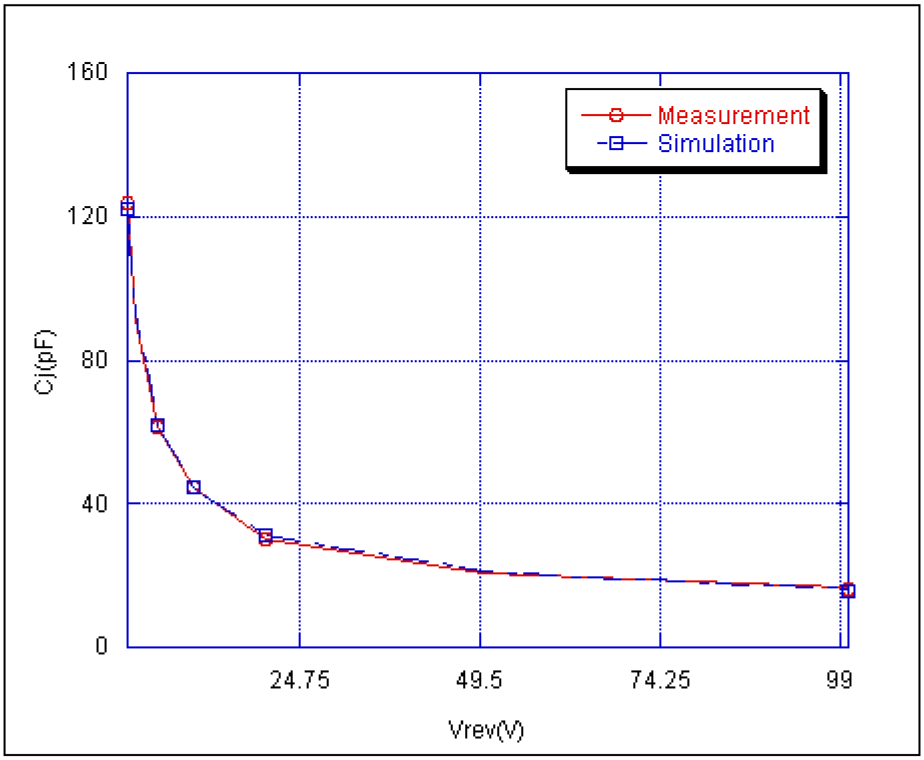


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

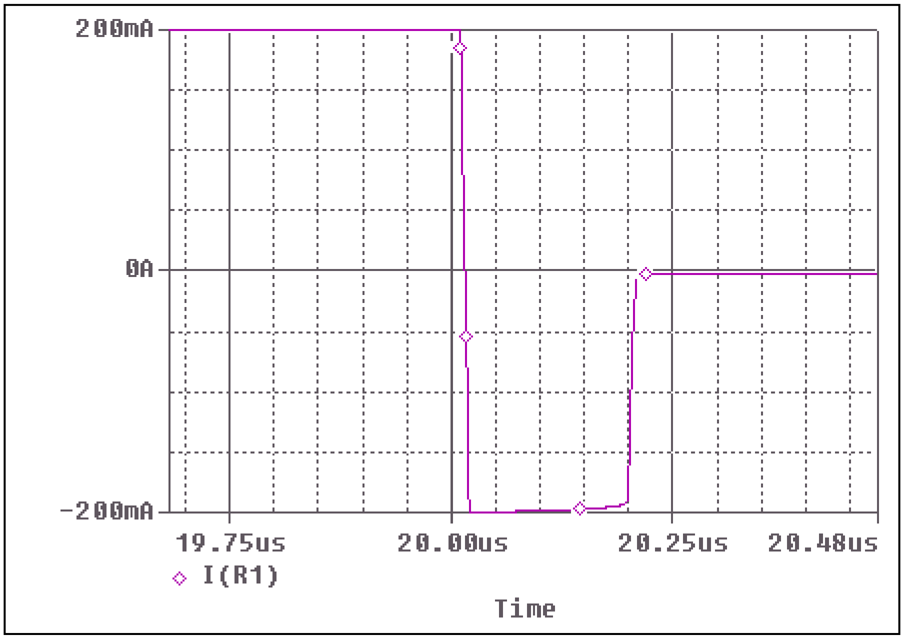


Simulation Result

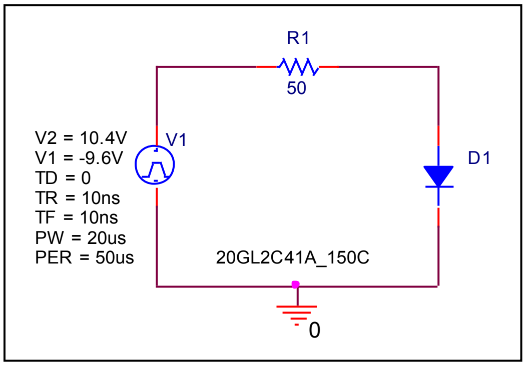
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	265.480	265.480	0.000
1	123.760	122.036	1.393
2	91.730	93.230	-1.635
5	61.220	61.890	-1.094
10	44.500	44.870	-0.831
20	30.050	31.350	-4.326
50	20.390	20.970	-2.845
100	16.300	15.570	4.479

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

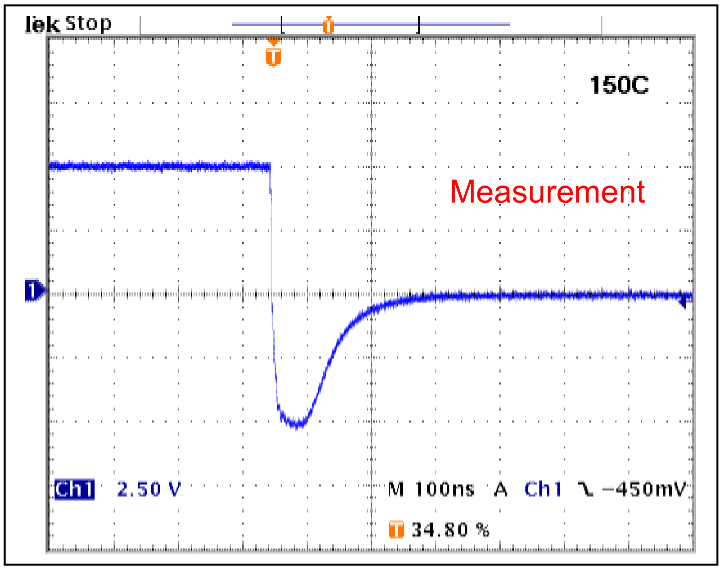


Compare Measurement vs. Simulation

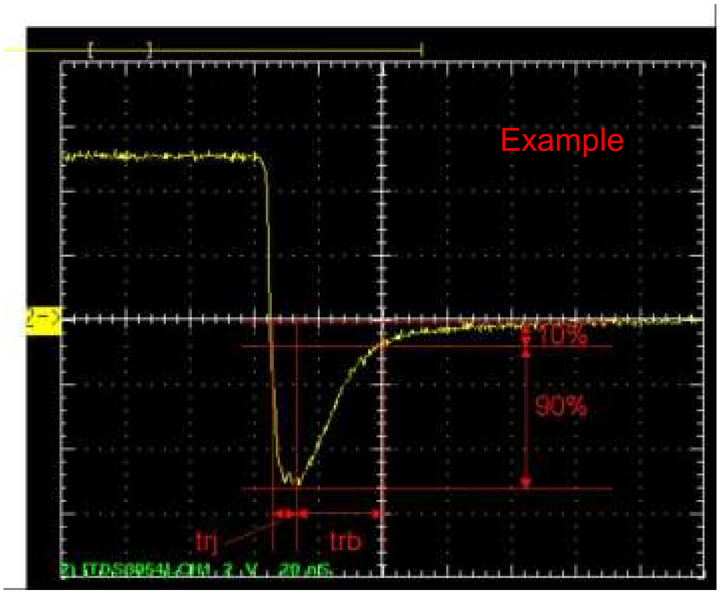
	Measurement		Simulation		%Error
trr	192.00	ns	191.89	ns	0.057

Reverse Recovery Characteristic

Reference



Trj =38(ns)
Trb=154(ns)
Conditions: Ifwd=Irev=0.02(A), Rl=50



Relation between trj and trb