Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL
PART NUMBER: 20GL2C41A
MANUFACTURER: TOSHIBA
REMARK: TC=80C

Bee Technologies Inc.

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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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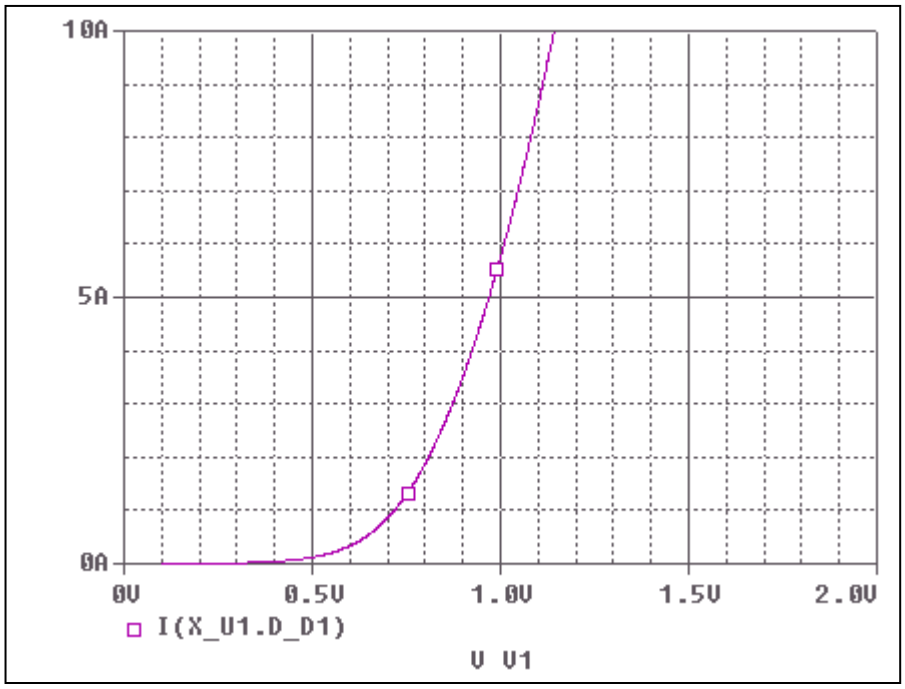
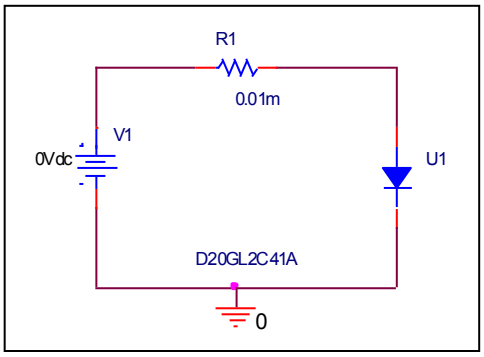
Forward Current Characteristic

Circuit Simulation Result



Evaluation Circuit



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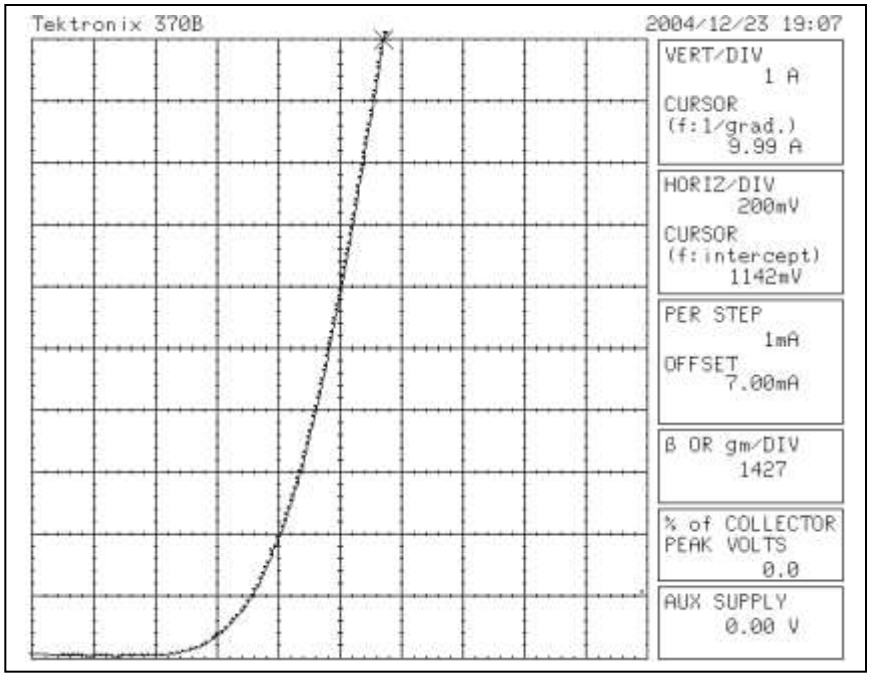
Forward Current Characteristic Reference



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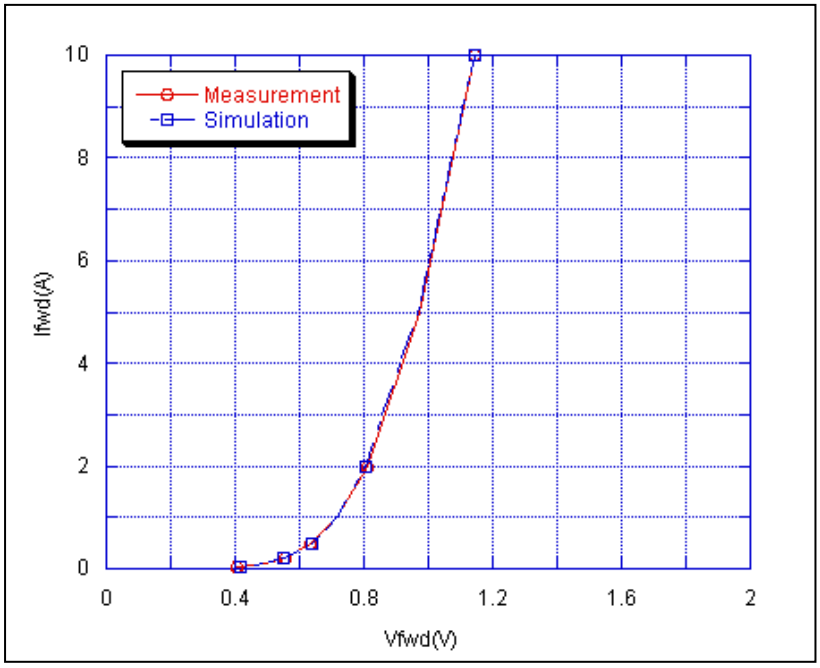
Comparison Graph

Circuit Simulation Result



Simulation Result

Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.05	0.406	0.417	-2.709
0.1	0.494	0.481	2.632
0.2	0.556	0.548	1.439
0.5	0.632	0.640	-1.266
1	0.716	0.718	-0.279
2	0.810	0.808	0.247
5	0.970	0.969	0.103
10	1.142	1.140	0.175

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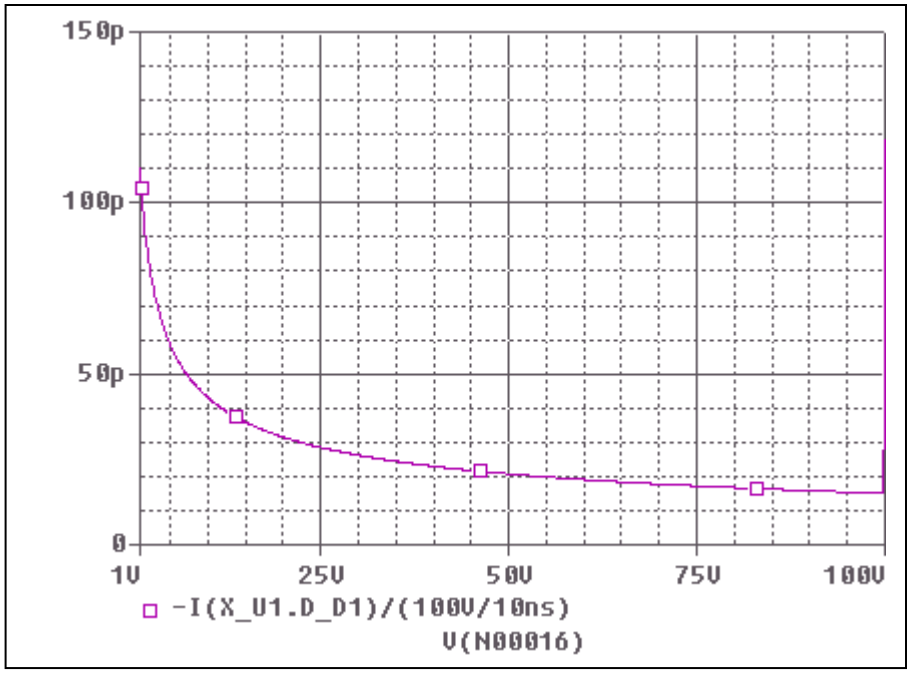
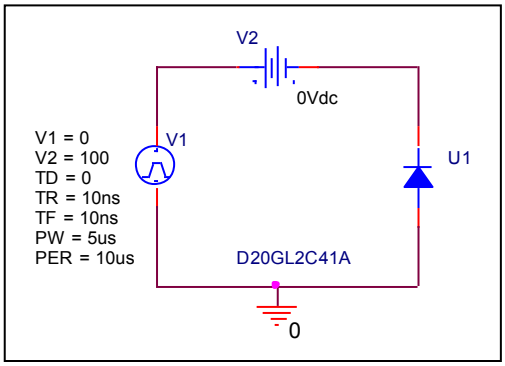
Capacitance Characteristic\

Circuit Simulation Result



Evaluation Circuit



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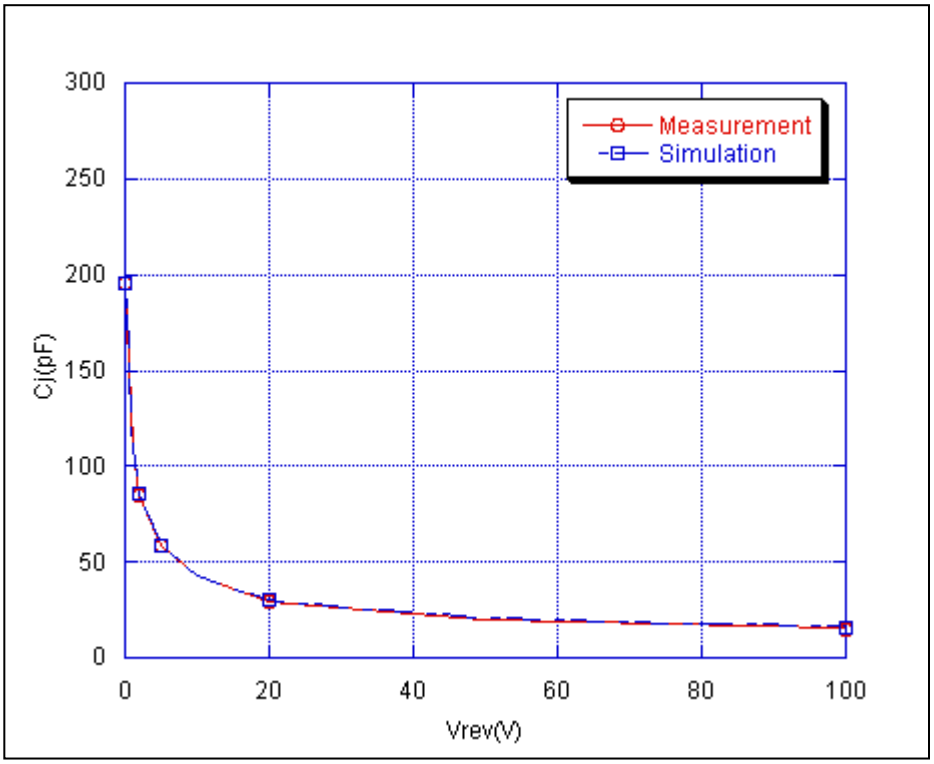
Comparison Graph

Circuit Simulation Result



Simulation Result

Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	195.790	195.790	0.000
1	109.310	109.970	-0.604
2	85.050	85.350	-0.353
5	58.590	58.420	0.290
10	42.780	43.030	-0.584
20	29.490	30.490	-3.391
50	20.070	20.730	-3.288
100	15.110	15.580	-3.111

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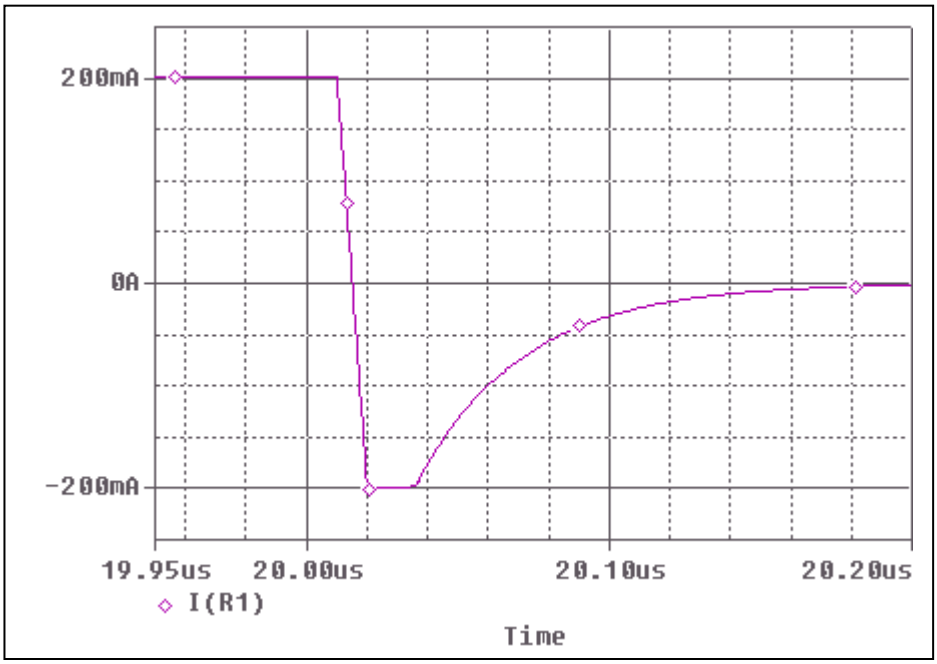
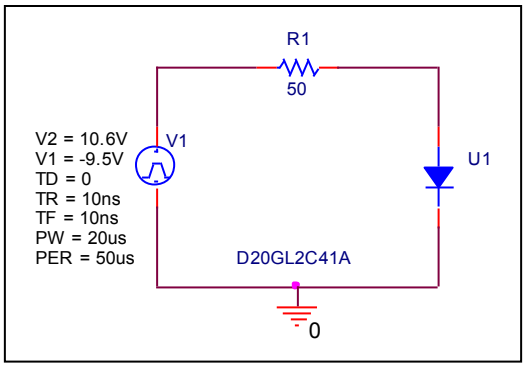
Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit



Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	20.80	ns	20.63	ns	0.82
trb	80.00	ns	79.90	ns	0.12

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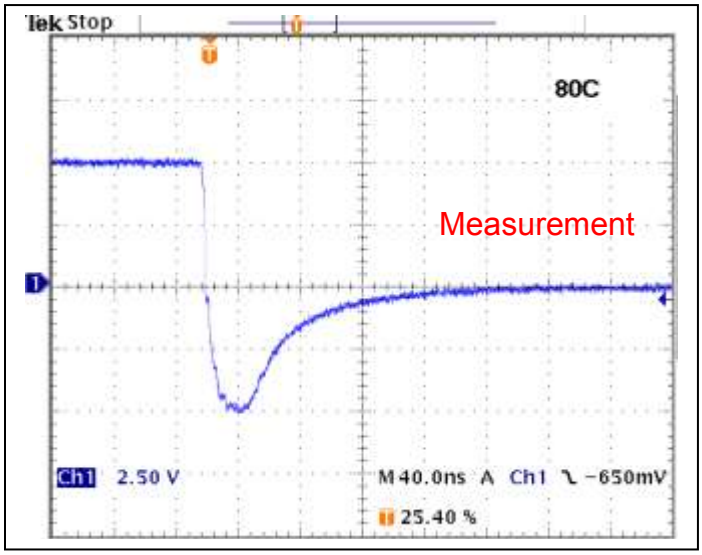
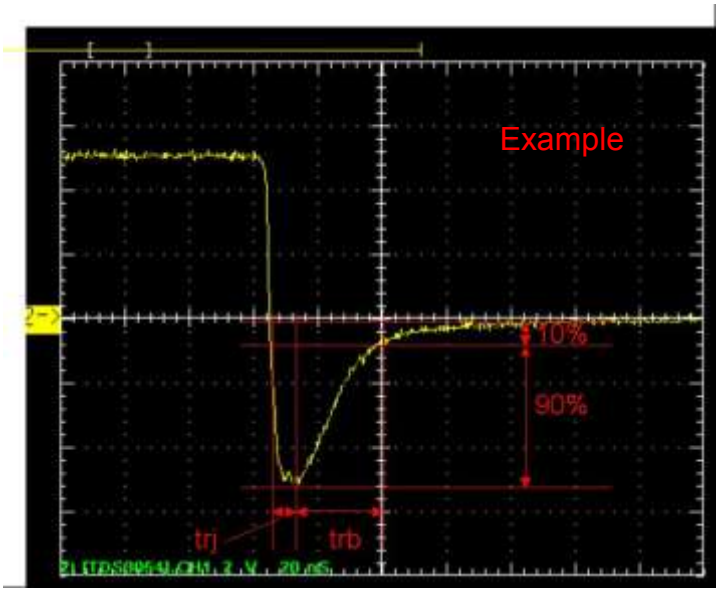
Reverse Recovery Characteristic Reference



Trj =20.8(ns)
Trb=80(ns)
Conditions: Ifwd=Irev=0.02(A), Rl=50



Relation between trj and trb

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