Device Modeling Report

COMPONENTS: Light-Emitting Diode (LED) Professional
PART NUMBER: OSWT5161A
MANUFACTURER: OPTO SUPPLY
REMARK: TA= -20 degree C

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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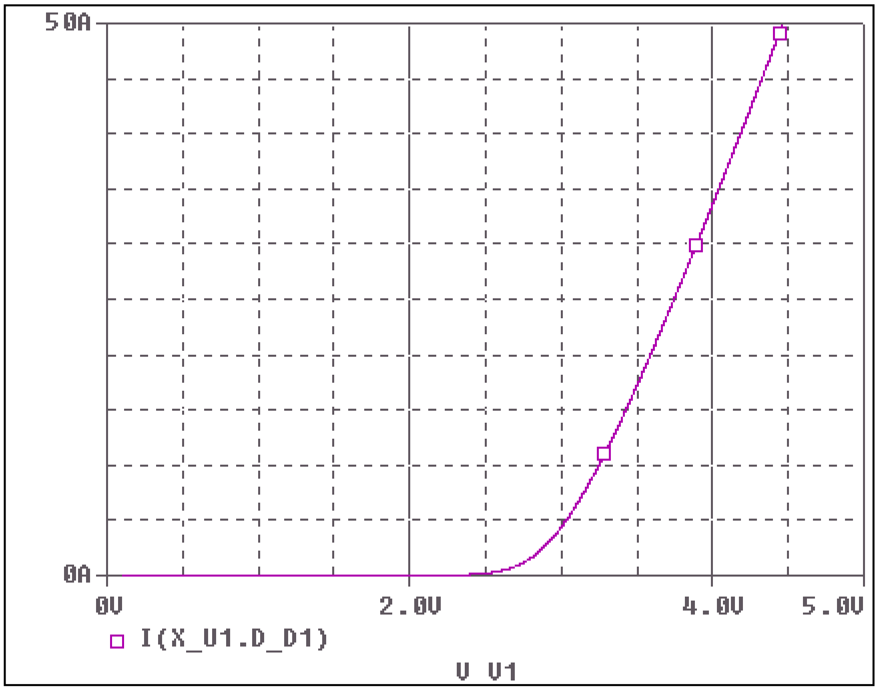
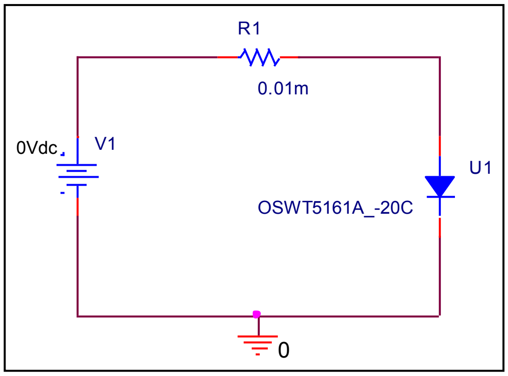
Forward Current Characteristic

Circuit Simulation Result



Evaluation Circuit



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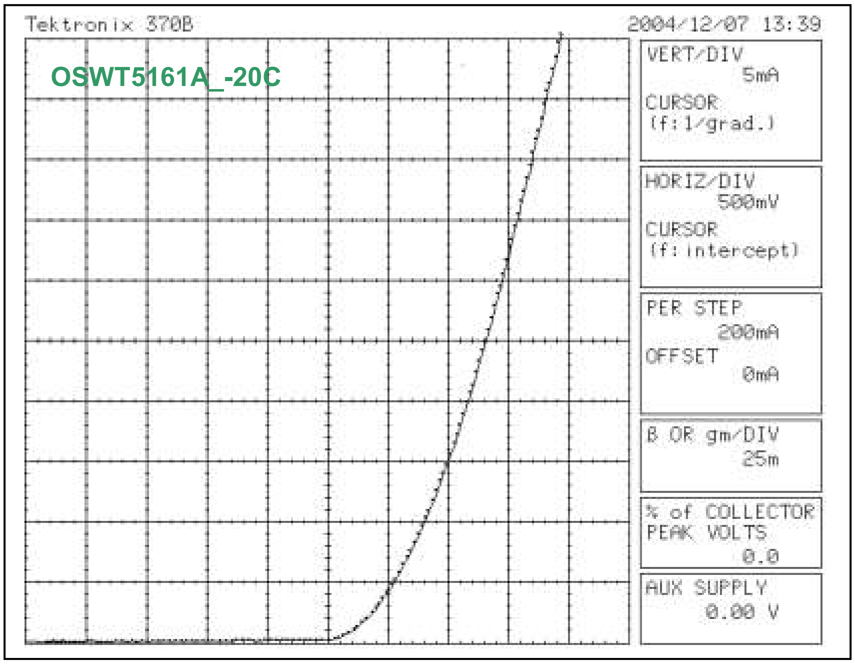
Forward Current Characteristic Reference



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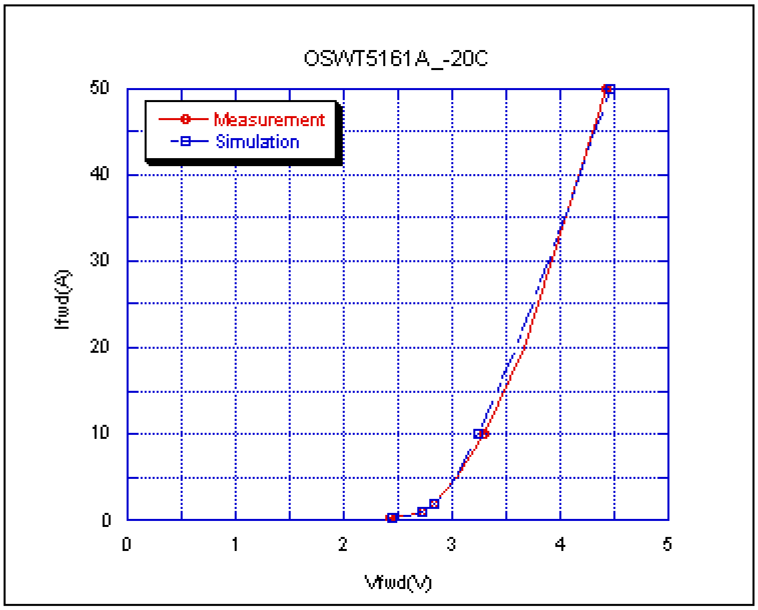
Comparison Graph

Circuit Simulation Result



Simulation Result

Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.2	2.42	2.454	1.4049
0.5	2.6	2.62	0.7692
1	2.73	2.722	0.2930
2	2.835	2.837	0.0705
5	3.04	3.031	0.2960
10	3.295	3.246	1.4871
20	3.665	3.59	2.0463
50	4.425	4.465	0.9039

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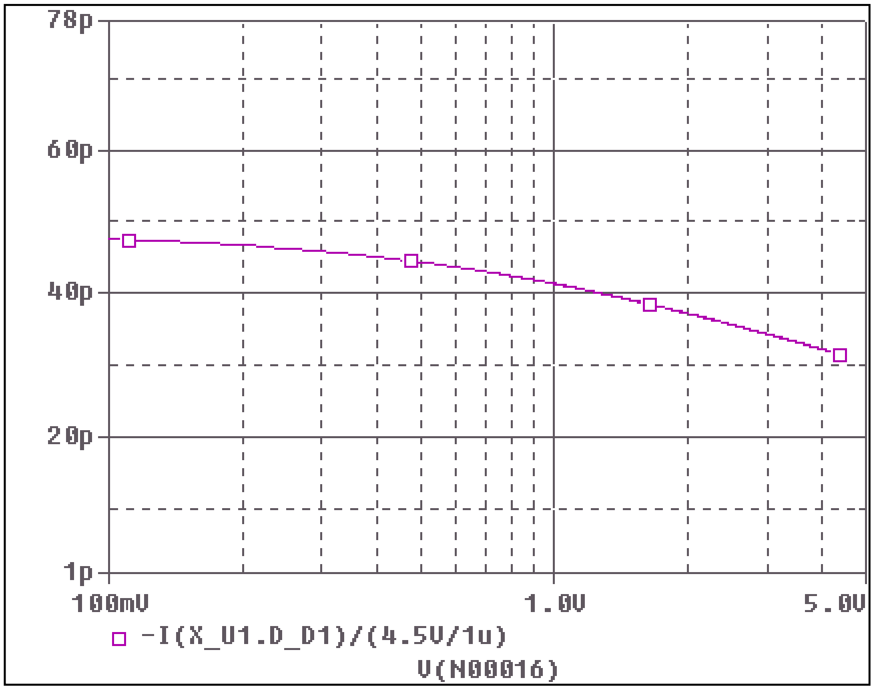
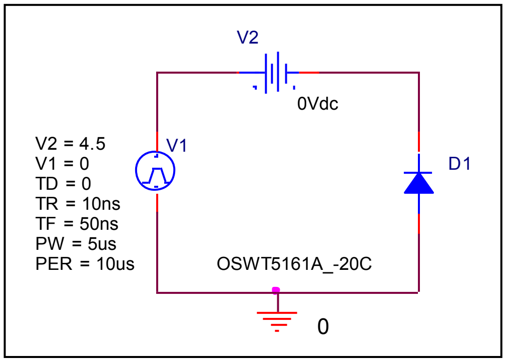
Capacitance Characteristic

Circuit Simulation Result



Evaluation Circuit



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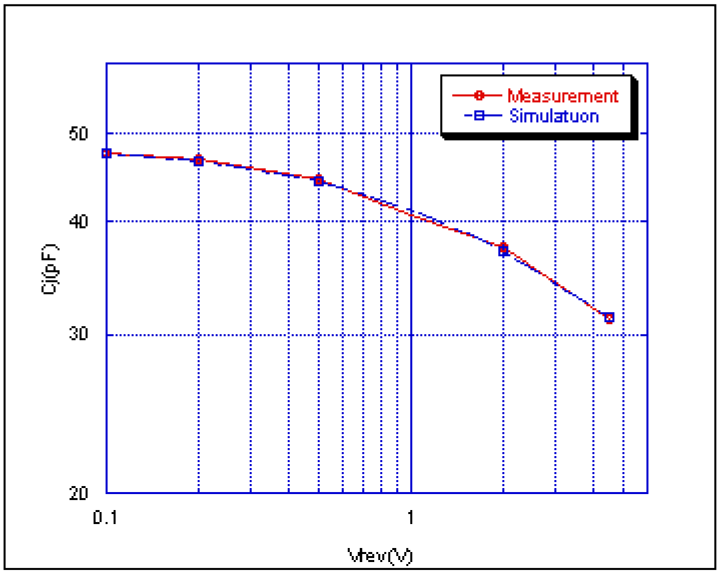
Comparison Graph

Circuit Simulation Result



Simulation Result

Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	48.35	48.35	0
0.1	47.65	47.61	0.08394
0.2	46.9	46.69	0.44776
0.5	44.57	44.34	0.51604
1	40.68	41.283	1.48230
2	37.5	37.126	0.99733
4.5	31.24	31.338	0.31370

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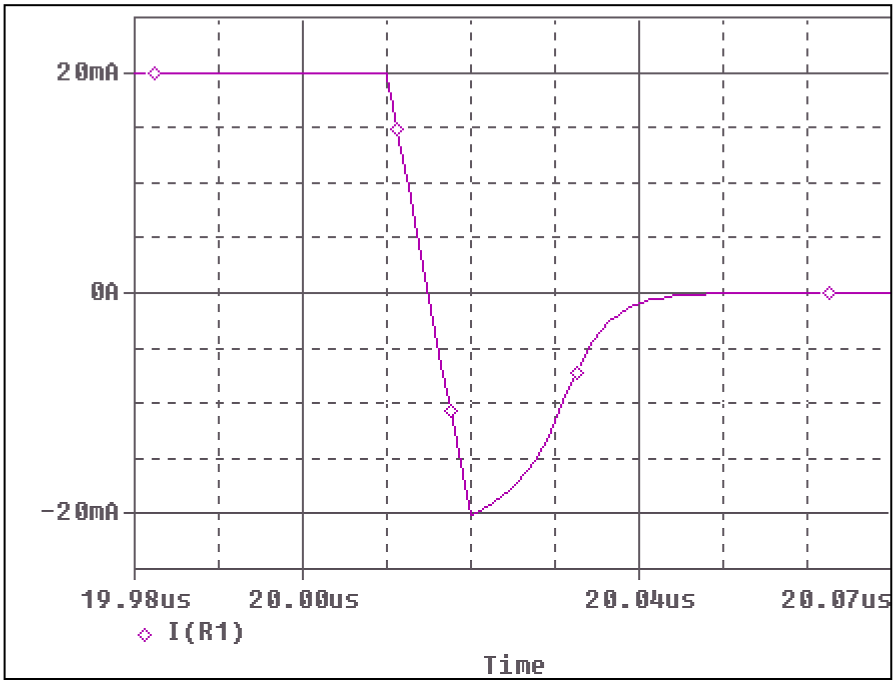
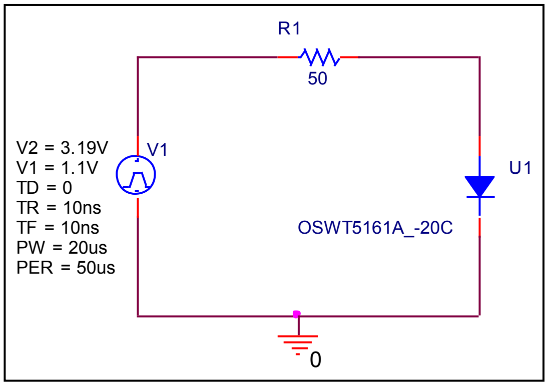
Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit



Compare Measurement vs. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
trj	8.8	ns	8.69	ns	- 0.11
Trb	13.2	ns	13.3	ns	0.1

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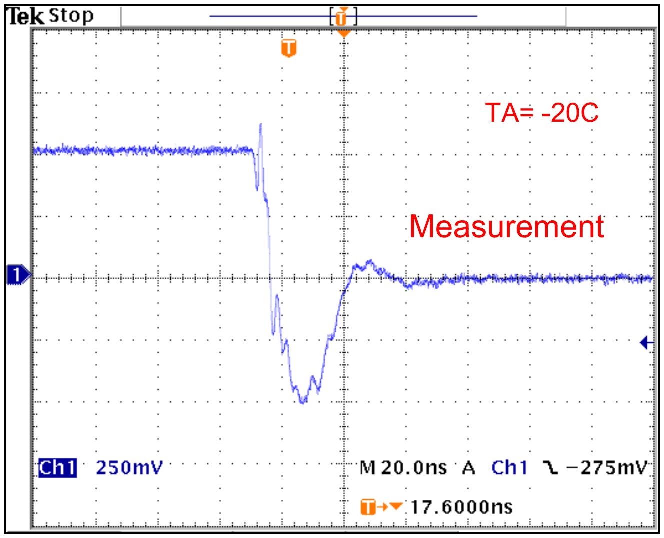
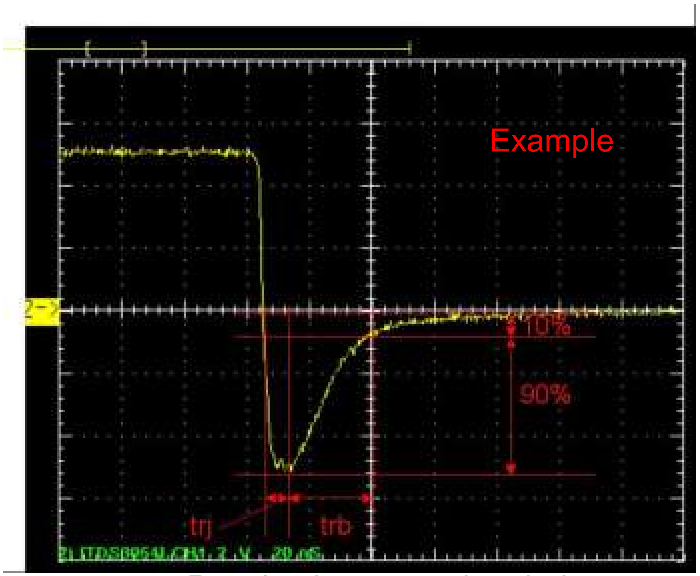
Reverse Recovery Characteristic

Reference



Trj =8.8(ns)
Trb=13.2(ns)
Conditions: Ifwd=Irev=0.02(A), Rl=50



Relation between trj and trb

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