Device Modeling Report

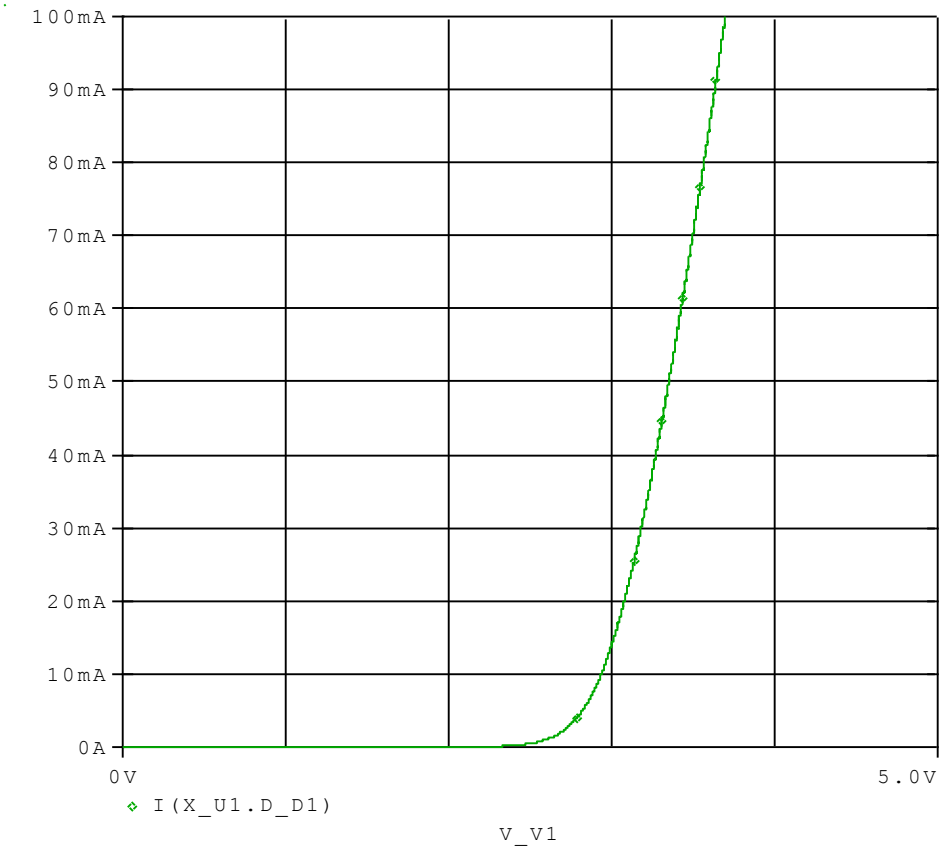
COMPONENTS: Light-Emitting Diode LED / PROFESSIONAL
PART NUMBER: OSUB3131P
MANUFACTURER: Opto Supply

Bee Technologies Inc.

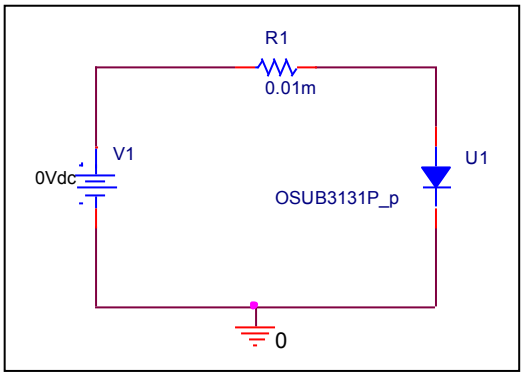
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

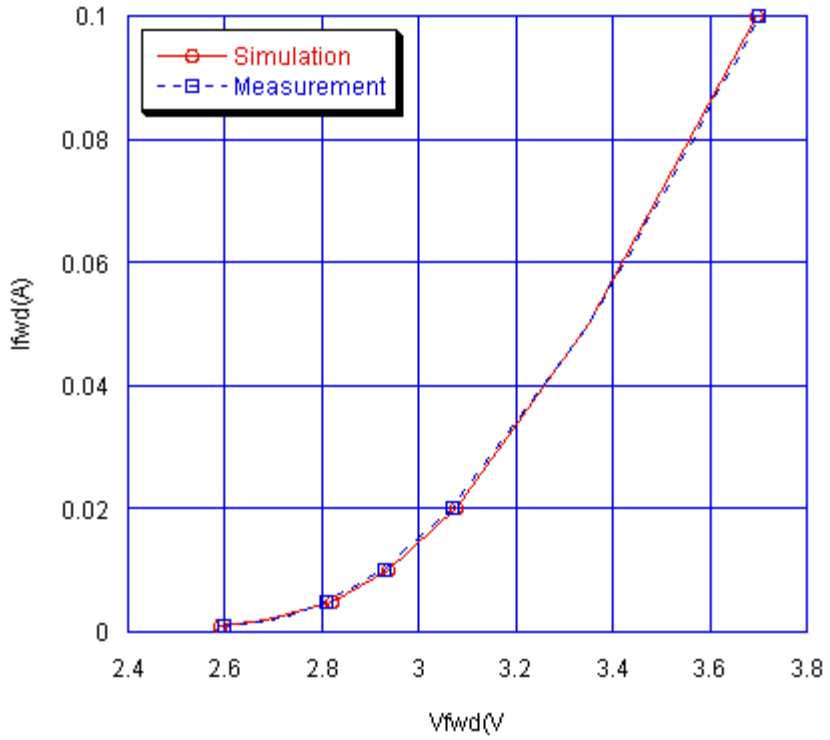


Evaluation Circuit



Comparison Graph

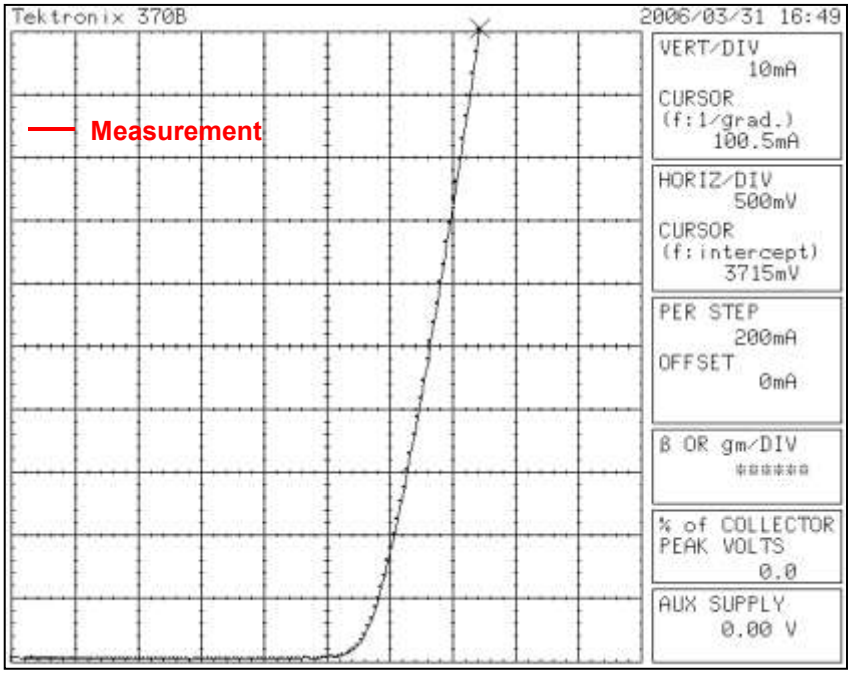
Circuit Simulation Result



Simulation Result

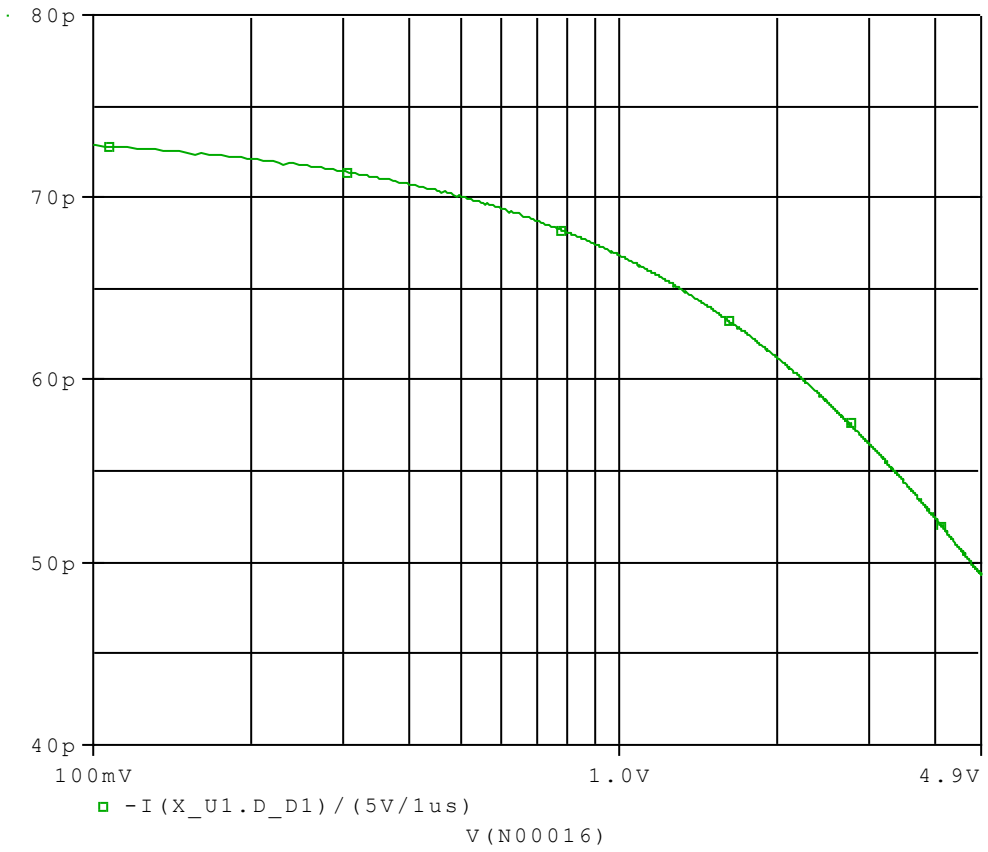
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.001	2.600	2.592	- 0.308
0.002	2.700	2.687	- 0.481
0.005	2.810	2.821	0.391
0.010	2.930	2.936	0.205
0.020	3.070	3.077	0.228
0.050	3.350	3.351	0.015
0.100	3.700	3.697	- 0.081

Forward Current Characteristic Reference

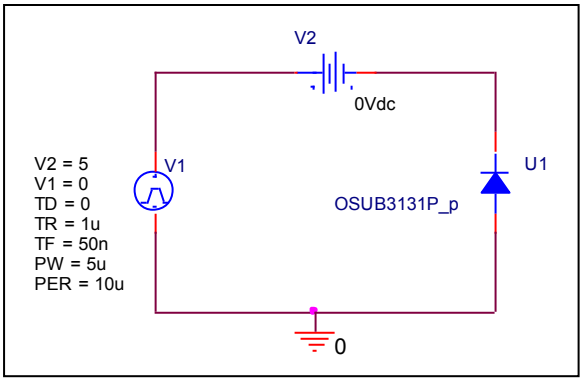


Capacitance Characteristic

Circuit Simulation Result

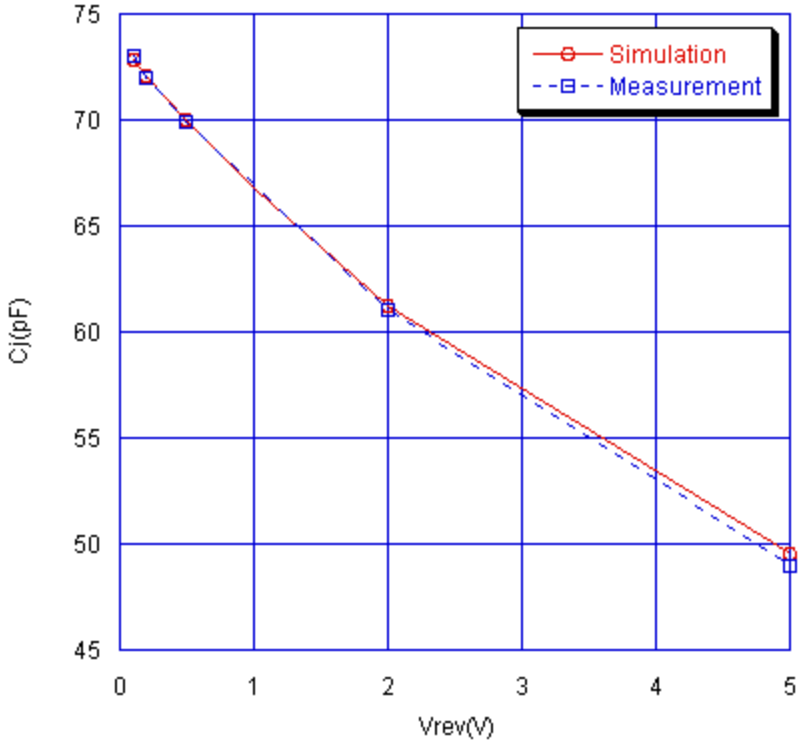


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

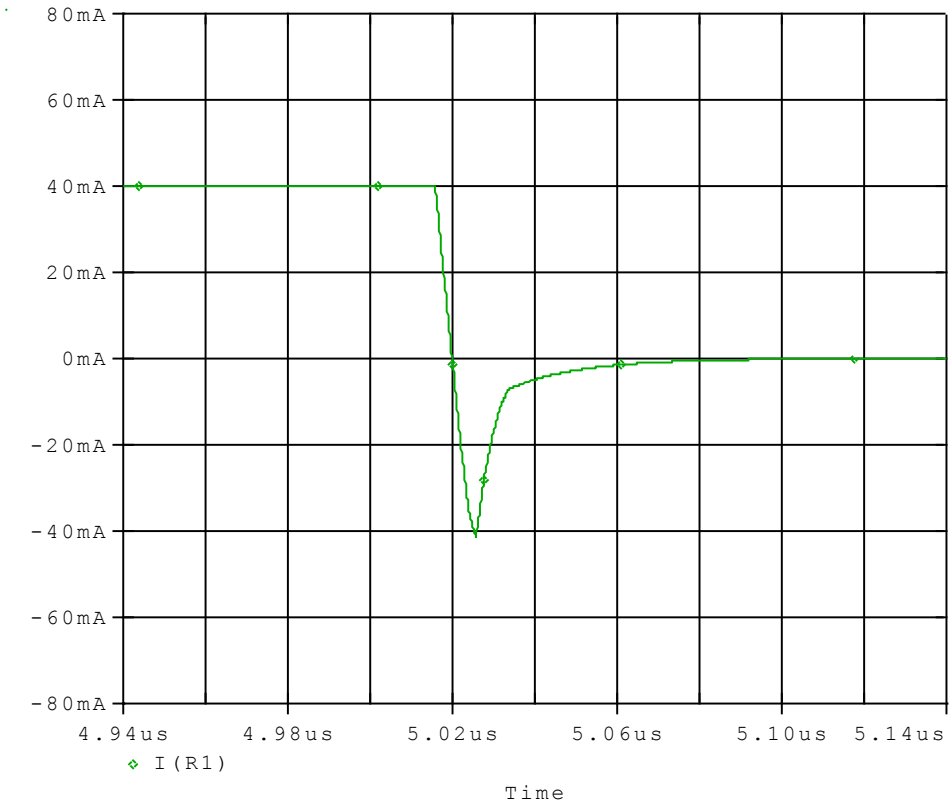


Simulation Result

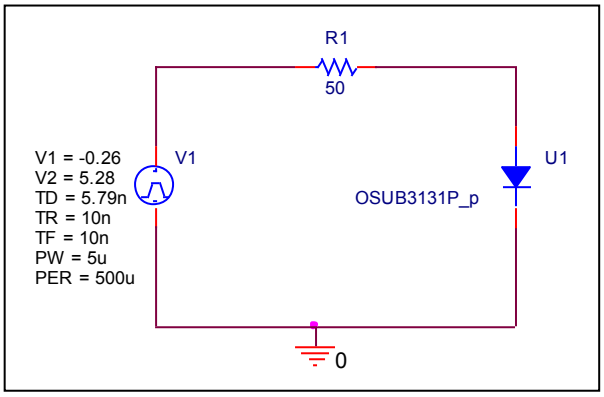
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0.100	73.000	72.838	- 0.222
0.200	71.966	72.087	0.168
0.500	69.904	70.042	0.197
1.000	67.025	66.819	- 0.307
2.000	61.000	61.249	0.408
5.000	49.000	49.500	1.020

Reverse Recovery Characteristic

Circuit Simulation Result



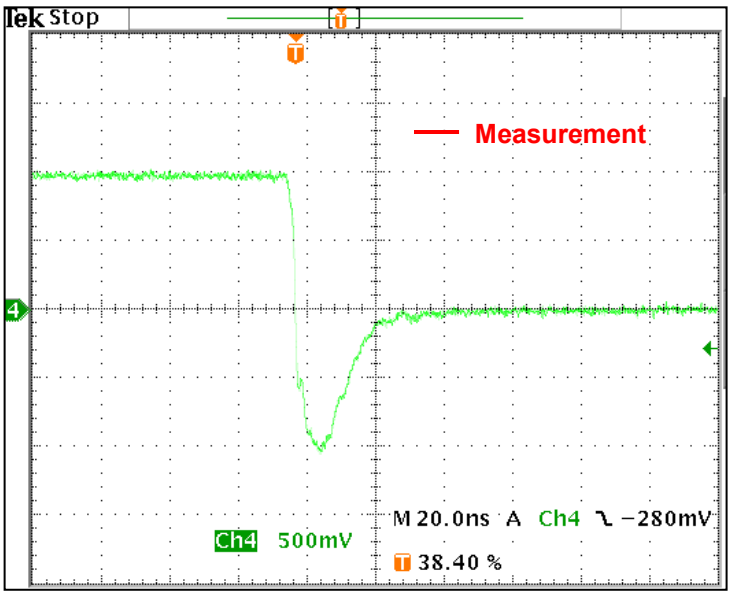
Evaluation Circuit



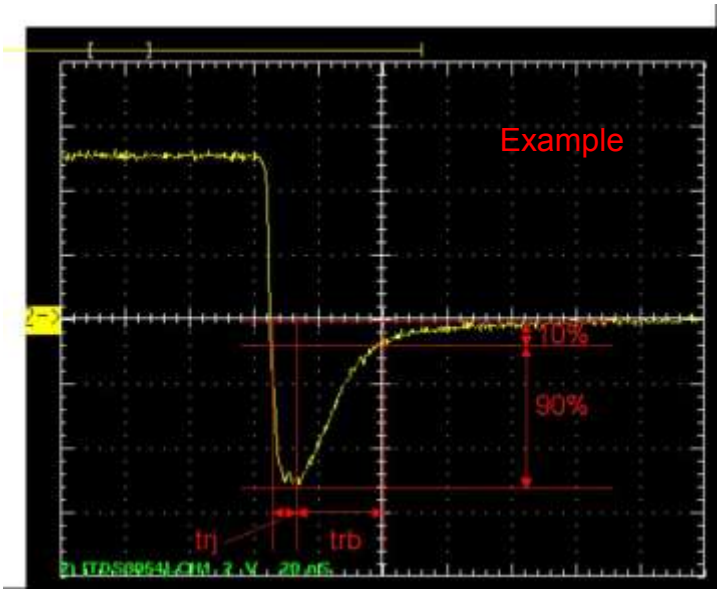
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	5.6	ns	5.527	ns	- 1.304
trb	17.6	ns	17.56	ns	- 0.227

Reverse Recovery Characteristic Reference



Trj =7.2(ns)
Trb=16.0(ns)
Conditions: Ifwd=Irev=0.04(A), Rl=25



Relation between trj and trb