Device Modeling Report

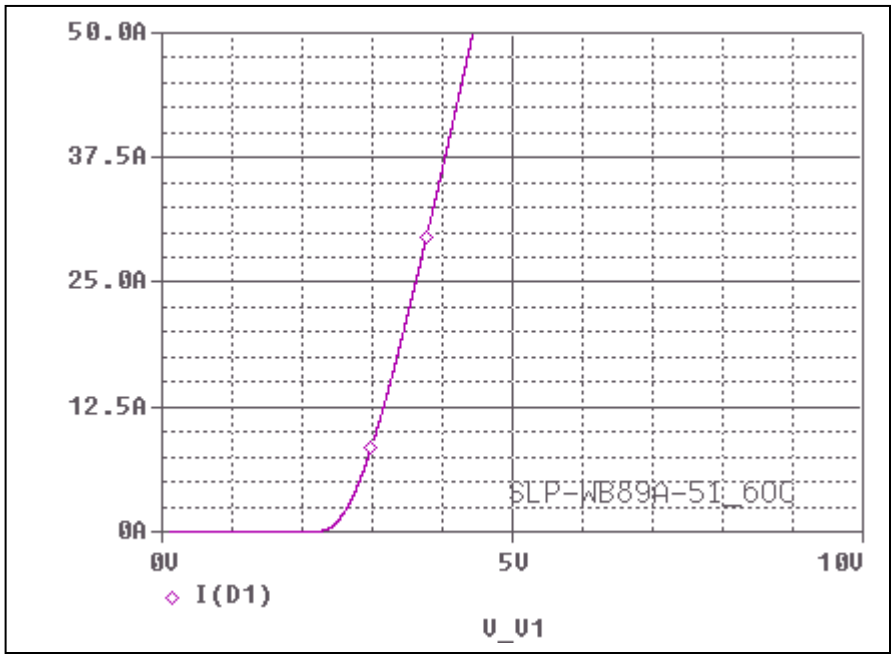
COMPONENTS: Light-Emitting Diode (LED) STANDARD
PART NUMBER: SLP-WB89A-51
MANUFACTURER: SANYO
REMARK: TA=60 degree C

Bee Technologies Inc.

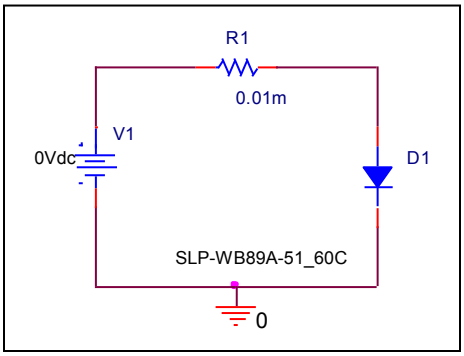
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

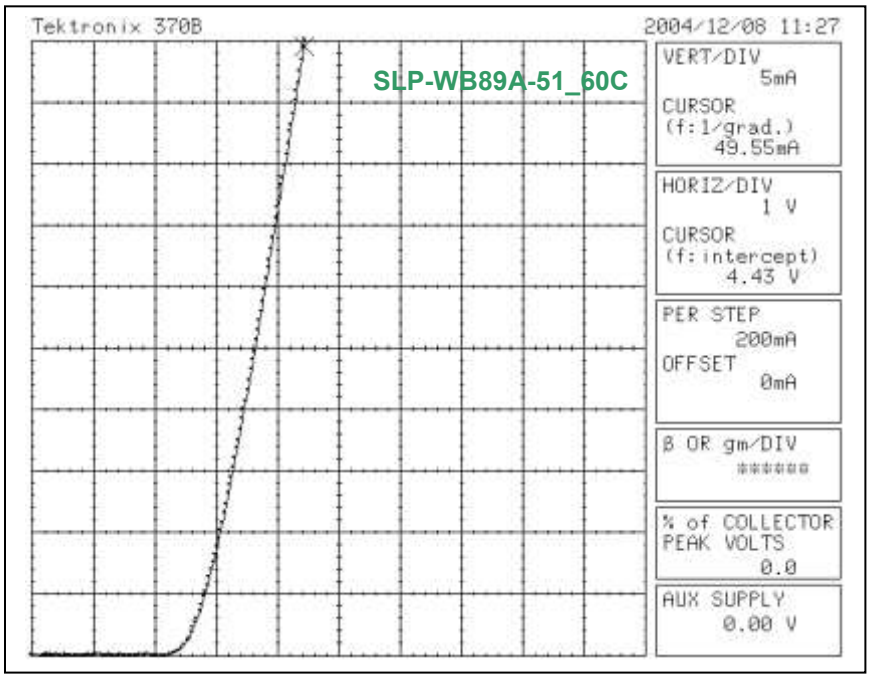
Circuit Simulation Result



Evaluation Circuit

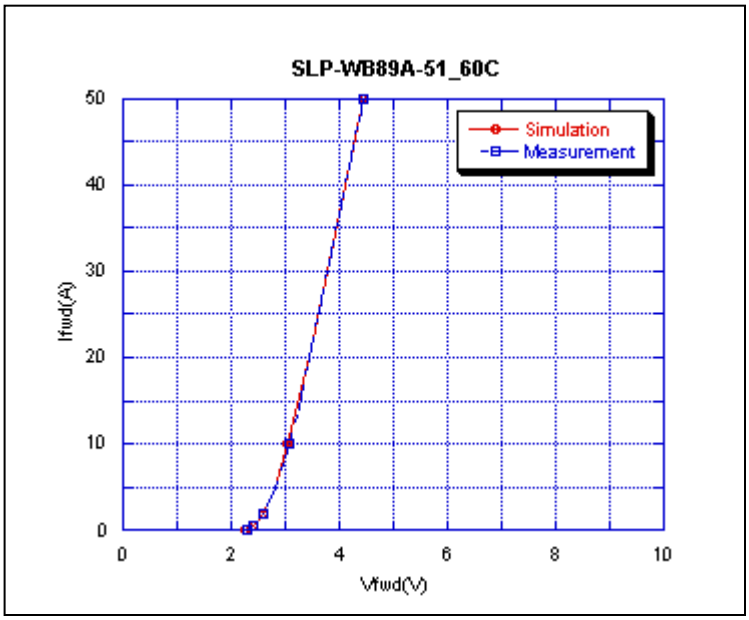


Forward Current Characteristic Reference



Comparison Graph

Circuit Simulation Result

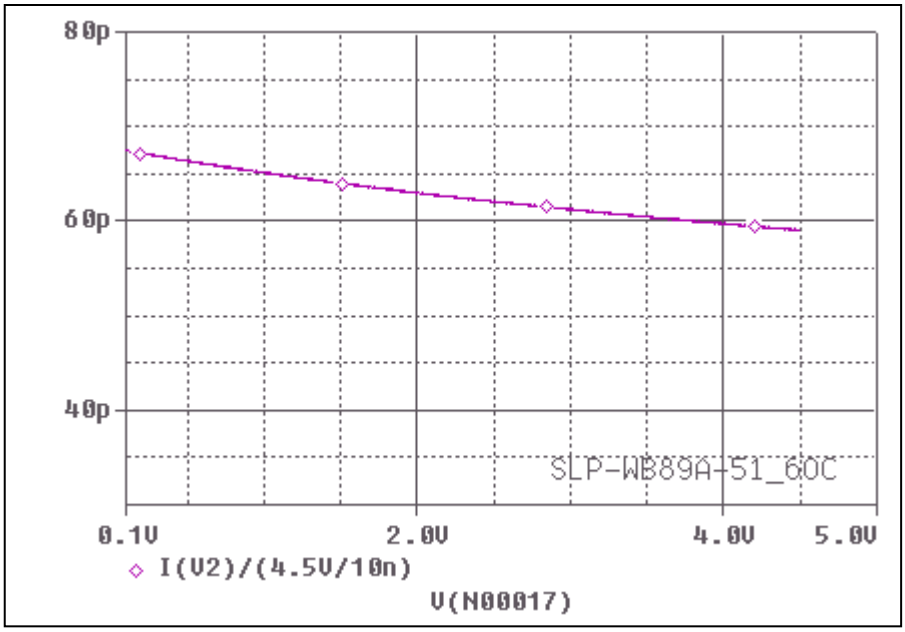


Simulation Result

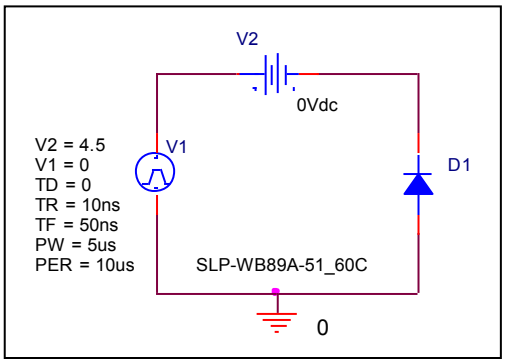
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.1	2.29	2.27	0.8733
0.2	2.33	2.33	0
0.5	2.41	2.417	0.2904
1	2.49	2.497	0.2811
2	2.6	2.604	0.1538
5	2.8	2.811	0.3928
10	3.07	3.055	0.4885
20	3.45	3.443	0.2028
50	4.43	4.437	0.1580

Capacitance Characteristic

Circuit Simulation Result

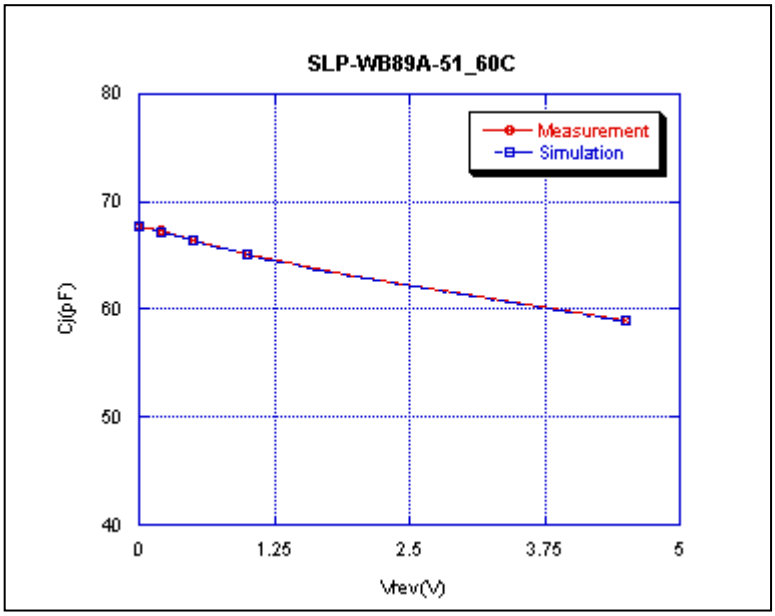


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

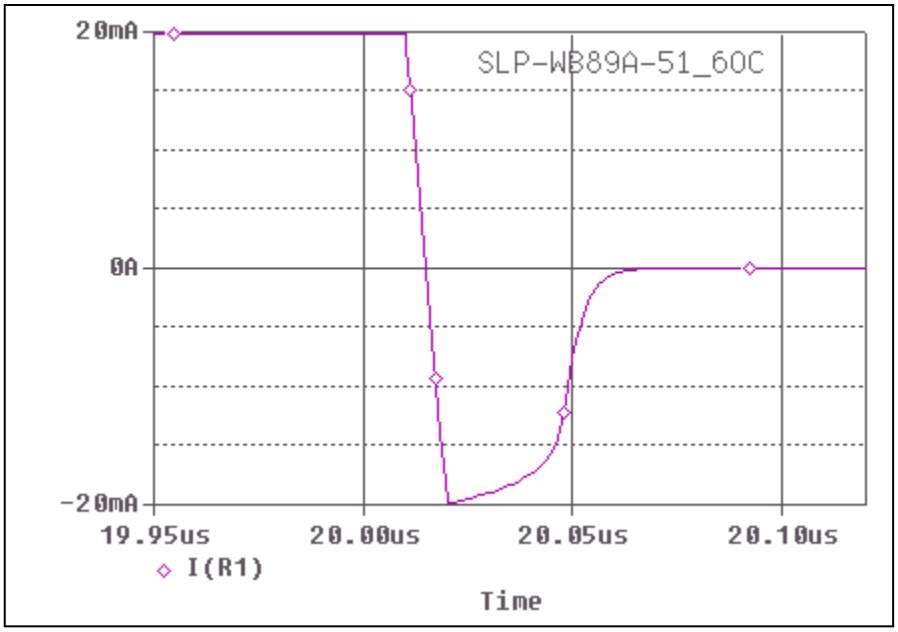


Simulation Result

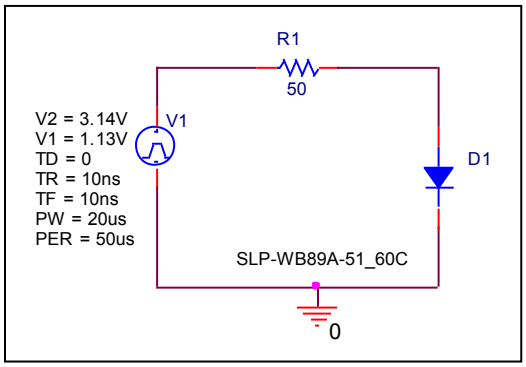
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	67.72	67.72	0
0.1	67.49	67.49	0
0.2	67.24	67.18	0.0892
0.5	66.36	66.34	0.0301
1	65.105	65.13	0.0383
2	63.02	63.05	0.0476
4.5	59.05	59.03	0.0338

Reverse Recovery Characteristic

Circuit Simulation Result



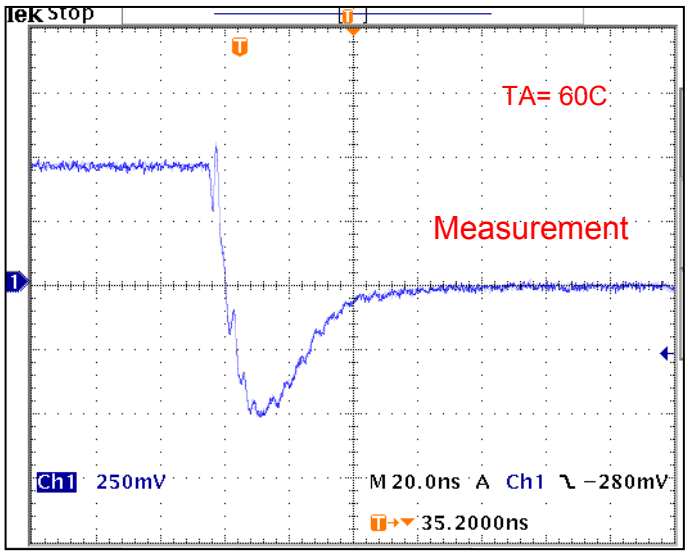
Evaluation Circuit



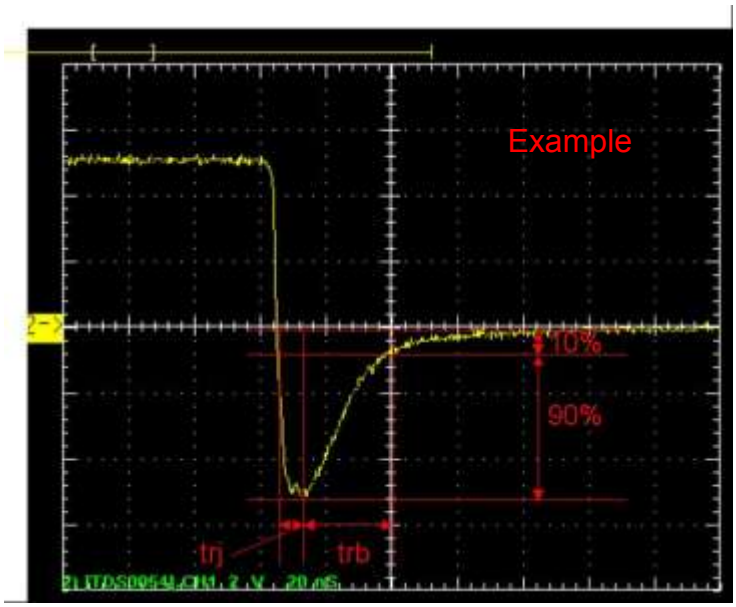
Compare Measurement vs. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
Trr=trj+trb	39.2	ns	39.4	ns	0.510

Reverse Recovery Characteristic Reference



Trj =10(ns)
Trb=29.2(ns)
Conditions: Ifwd=Irev=0.02(A), Rl=50



Relation between trj and trb