

Device Modeling Report

COMPONENTS: Light-Emitting Diode (LED) Professional
PART NUMBER: SLP-WB89A-51
MANUFACTURER: SANYO
REMARK: TA= - 20 degree C

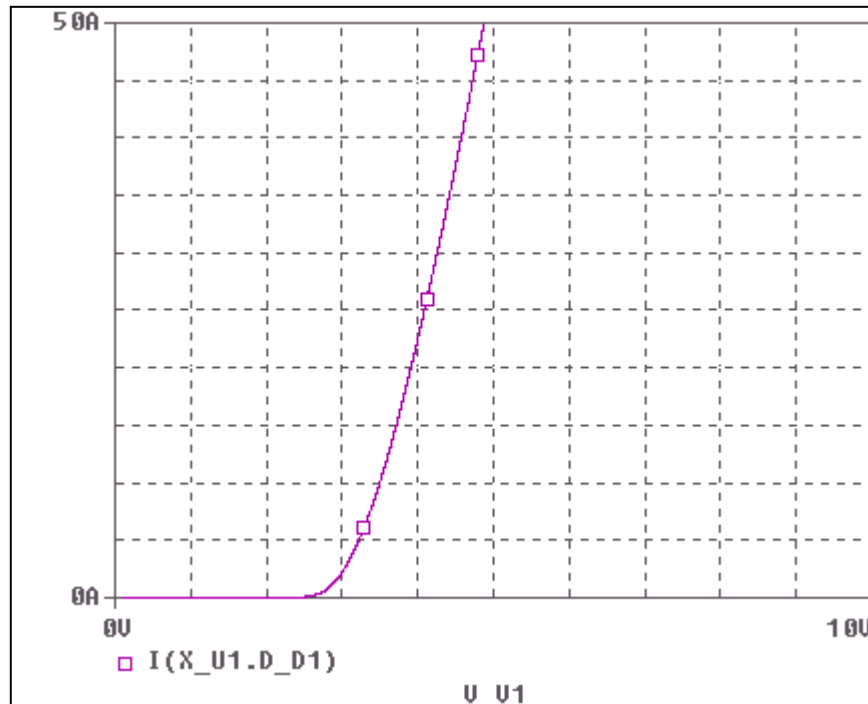


Bee Technologies Inc.

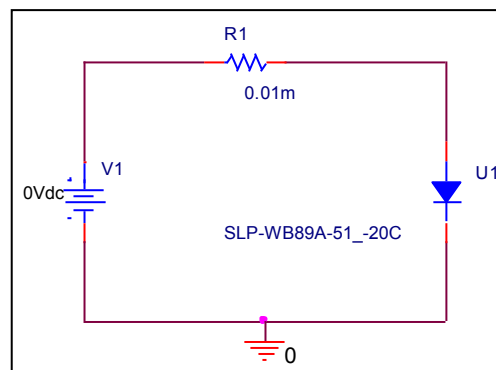
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

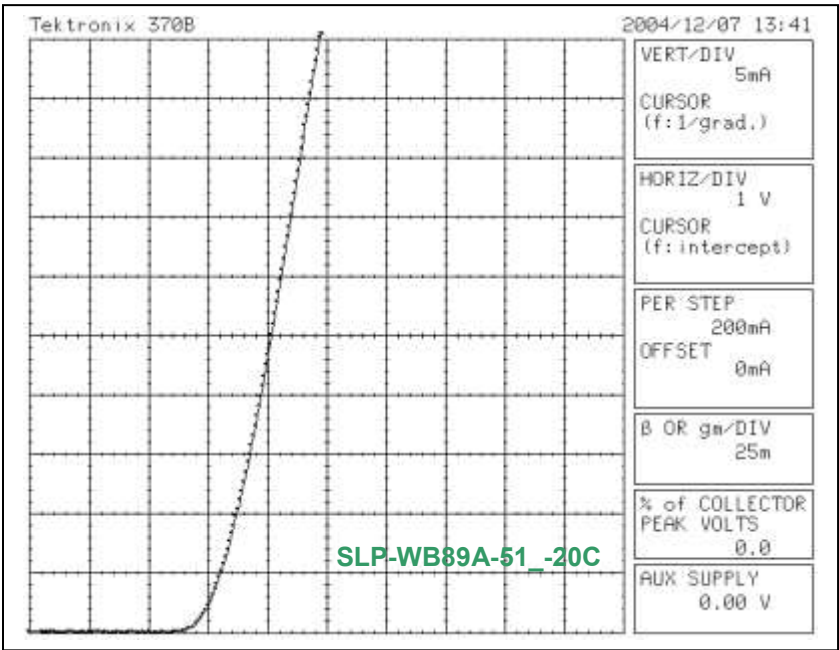


Evaluation Circuit



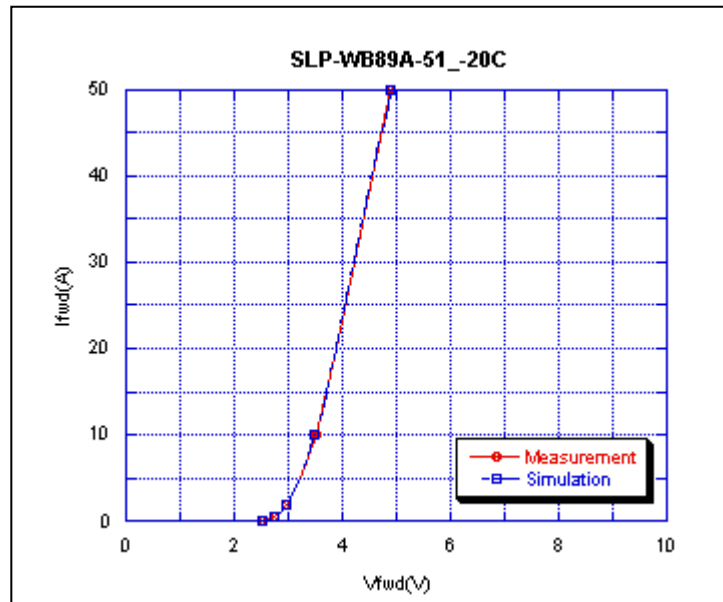
Forward Current Characteristic

Reference



Comparison Graph

Circuit Simulation Result

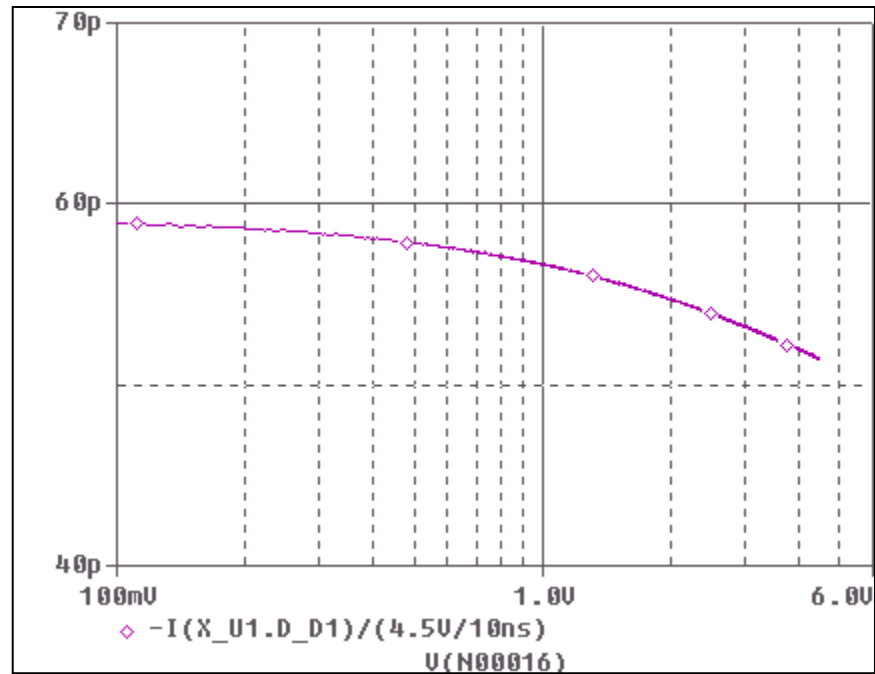


Simulation Result

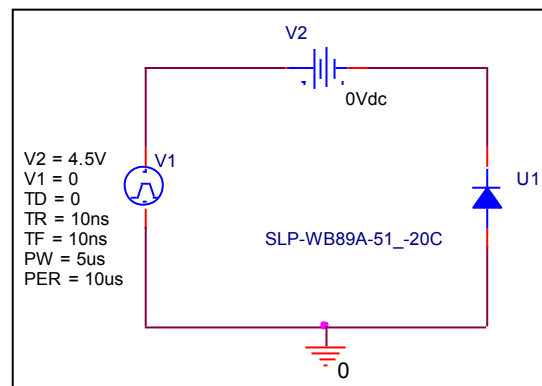
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.1	2.51	2.52	0.39840
0.2	2.61	2.609	0.03831
0.5	2.76	2.736	0.86956
1	2.84	2.845	0.17605
2	2.96	2.976	0.54054
5	3.23	3.22	0.30959
10	3.51	3.497	0.37037
20	3.89	3.908	0.46272
50	4.88	4.875	0.10245

Capacitance Characteristic

Circuit Simulation Result

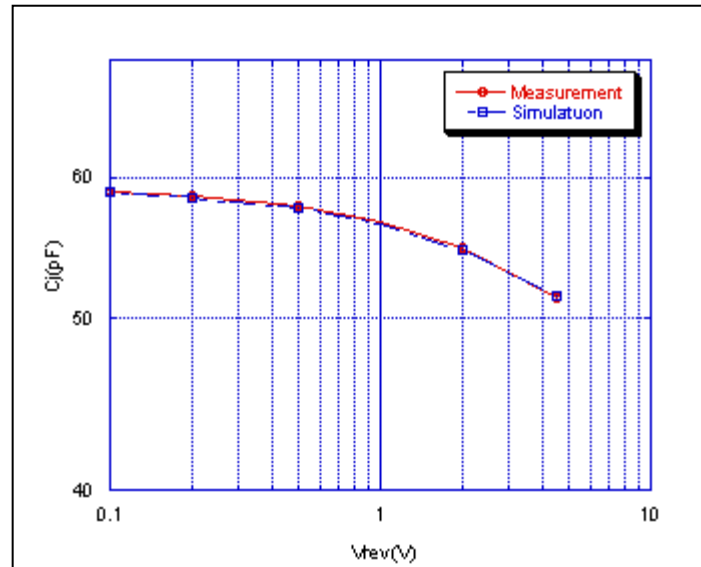


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

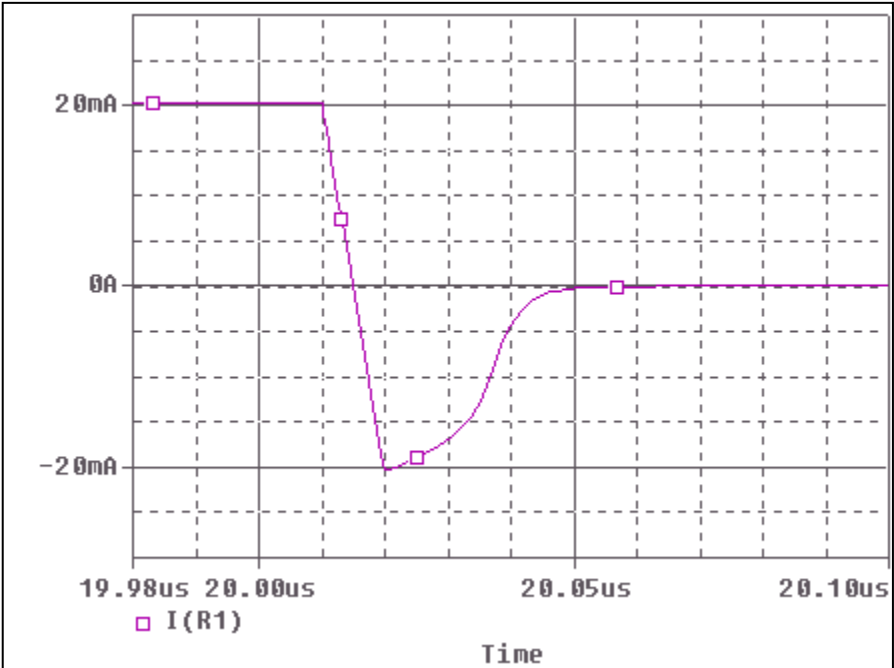


Simulation Result

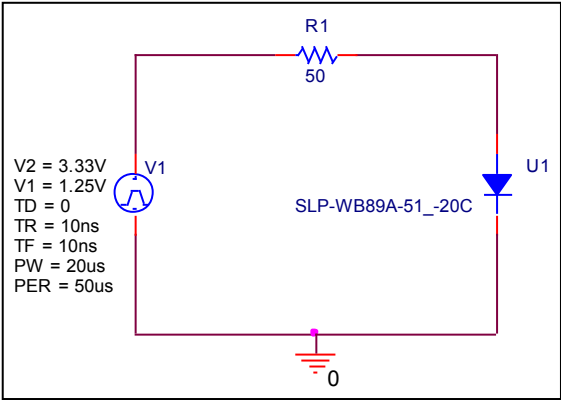
$V_{rev}(V)$	$C_j(pF)$ Measurement	$C_j(pF)$ Simulation	%Error
0	59.3	59.3	0
0.1	58.9	58.9	0
0.2	58.6	58.51	0.15358
0.5	57.8	57.75	0.08650
1	56.6	56.56	0.07067
2	54.82	54.67	0.27362
4.5	51.4	51.43	0.05836

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

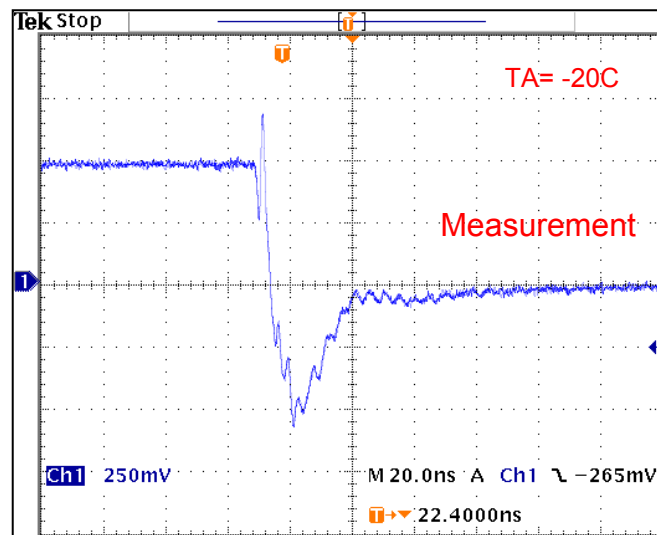


Compare Measurement vs. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
trj	7.2	ns	7.21	ns	0.138
trb	19.6	ns	19.8	ns	1.020

Reverse Recovery Characteristic

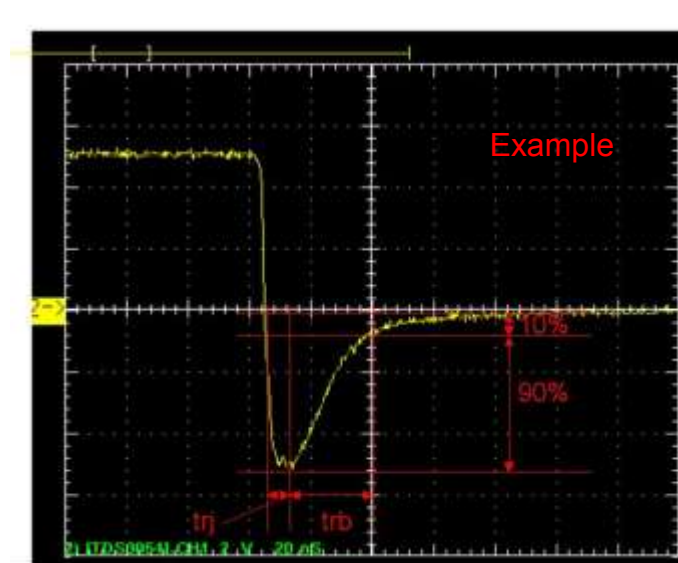
Reference



$Trj = 7.2(ns)$

$Trb = 19.6(ns)$

Conditions: $I_{fwd} = I_{rev} = 0.02(A)$, $R_I = 50$



Relation between trj and trb