

Device Modeling Report

COMPONENTS: Lamp/ Bluish-Blue Diode / Professional
PART NUMBER: SLP-0H118A-51
MANUFACTURER: SANYO
REMARK: 25 degree C

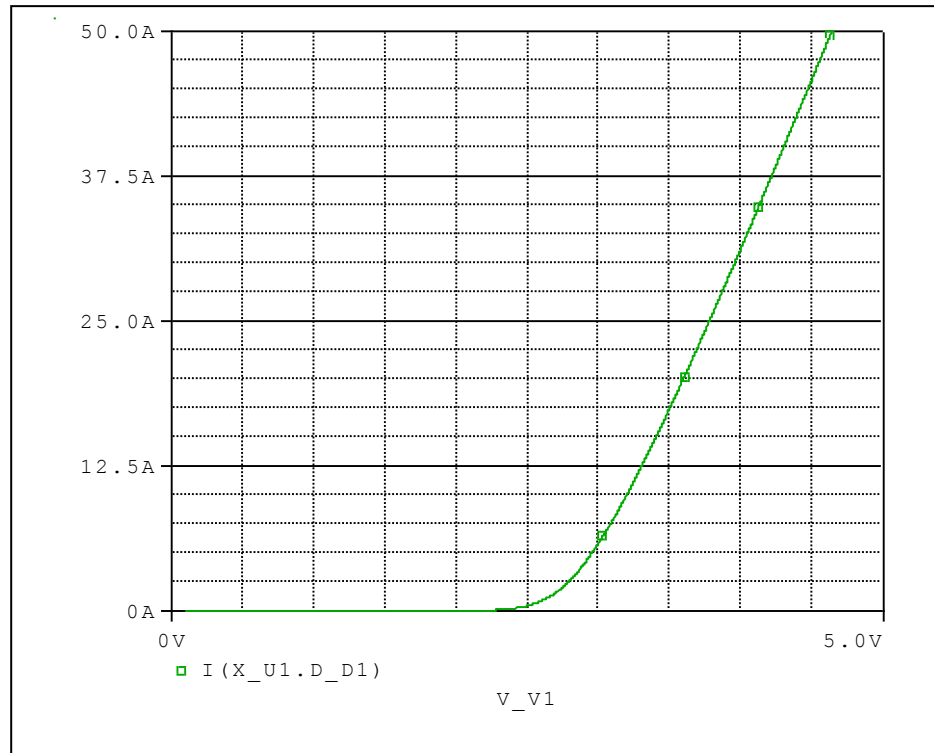


Bee Technologies Inc.

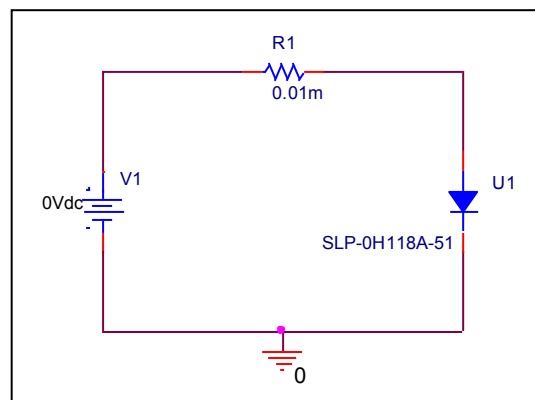
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

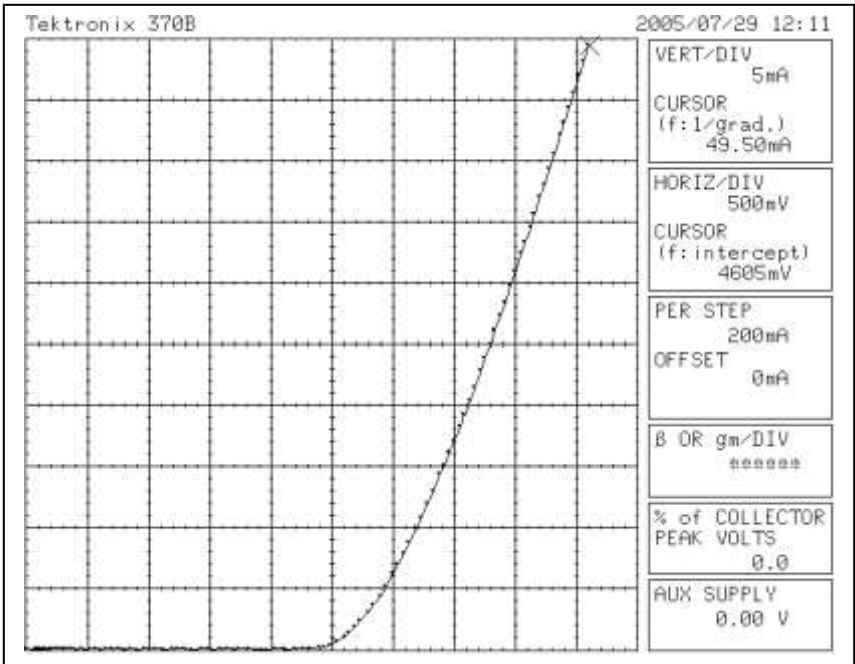


Evaluation Circuit



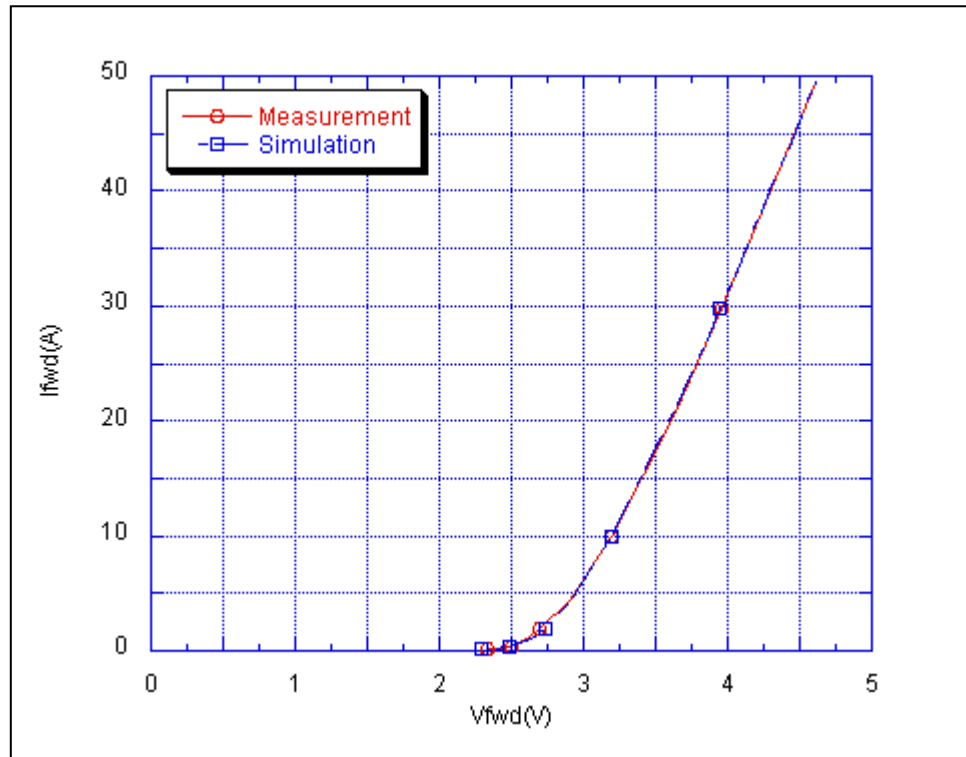
Forward Current Characteristic

Reference



Comparison Graph

Circuit Simulation Result

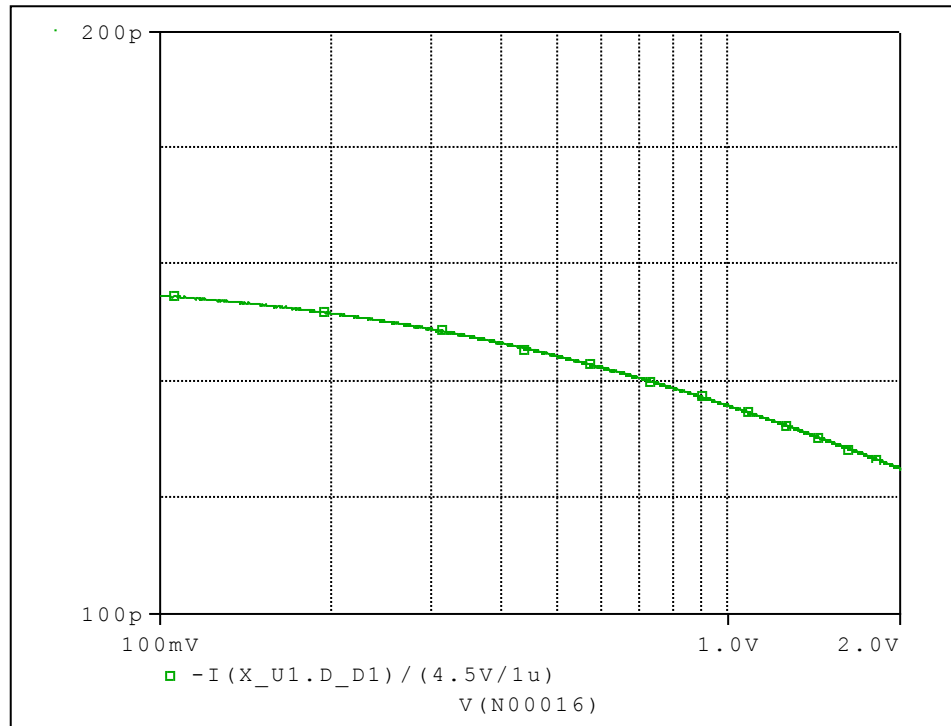


Simulation Result

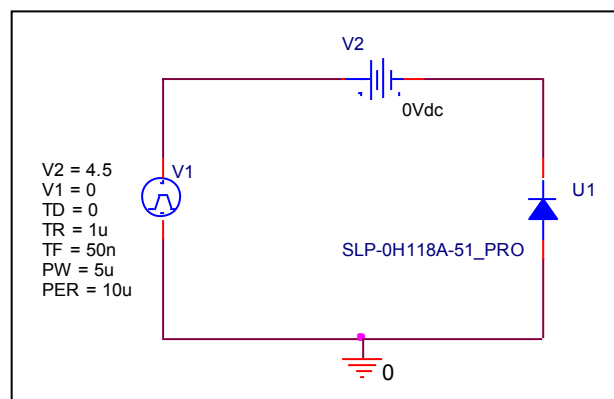
Ifwd(A)	Vfwd(V)		%Error
	Measurement	Simulation	
0.1	2.335	2.295	-1.71306
0.2	2.400	2.388	- 0.5
0.4	2.495	2.484	-0.44088
1.1	2.610	2.636	0.99616
1.9	2.695	2.731	1.33580
4.45	2.900	2.919	0.65517
10	3.195	3.192	-0.09389
20.45	3.630	3.609	-0.57851
29.85	3.960	3.948	-0.30303
49.50	4.605	4.617	0.26058

Capacitance Characteristic

Circuit Simulation Result

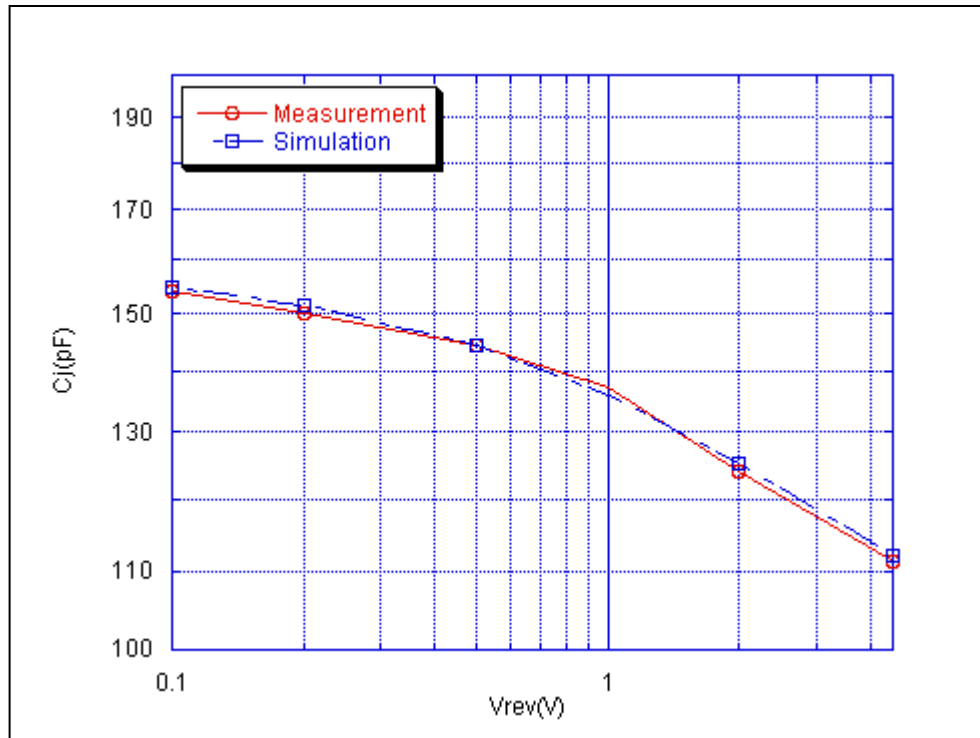


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

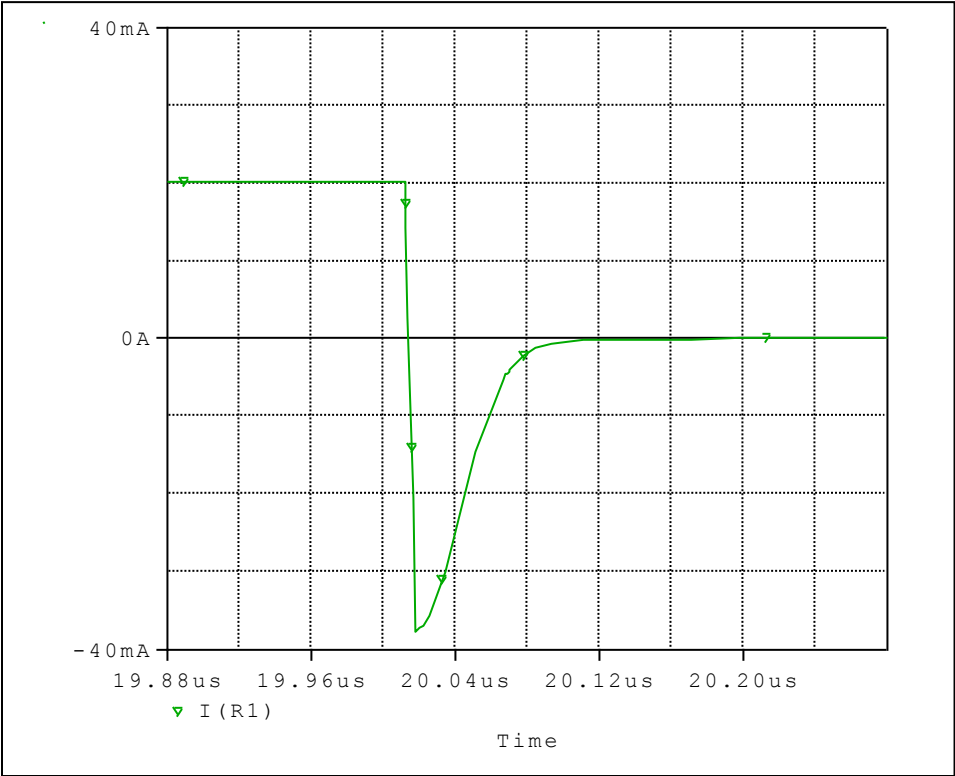


Simulation Result

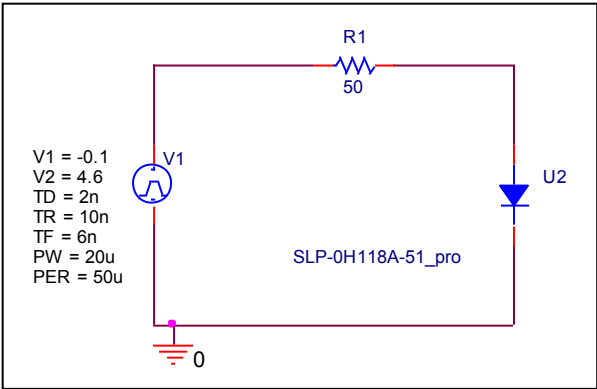
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0	159.269	159.269	0
0.1	154.200	154.952	0.48767
0.2	150.222	151.695	0.98054
0.5	144.499	144.234	-0.18339
1	137.249	135.906	-0.97851
2	124.037	125.143	0.89166
4.5	111.155	112.022	0.77999

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

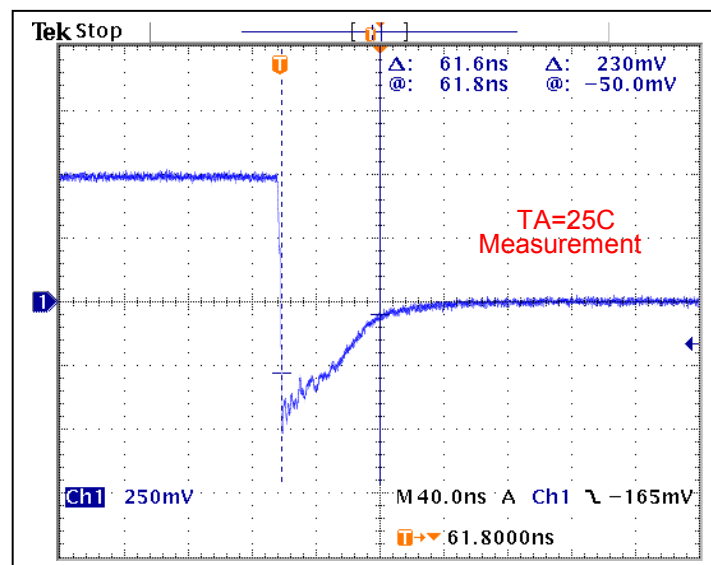


Compare Measurement vs. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
trj	3.8	ns	3.85	ns	1.315789
trb	61.6	ns	61.3	ns	-0.487012

Reverse Recovery Characteristic

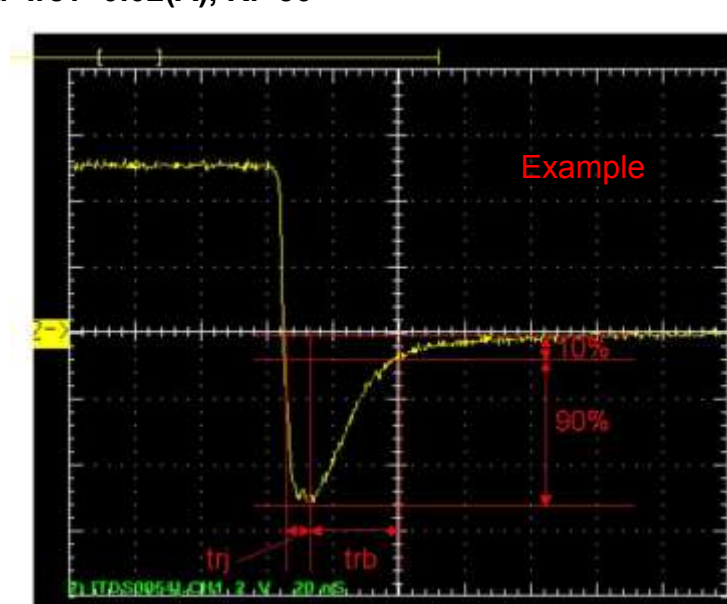
Reference



$T_{rj} = 3.8(\text{ns})$

$T_{rb} = 61.6(\text{ns})$

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



Relation between t_{rj} and t_{rb}