Device Modeling Report

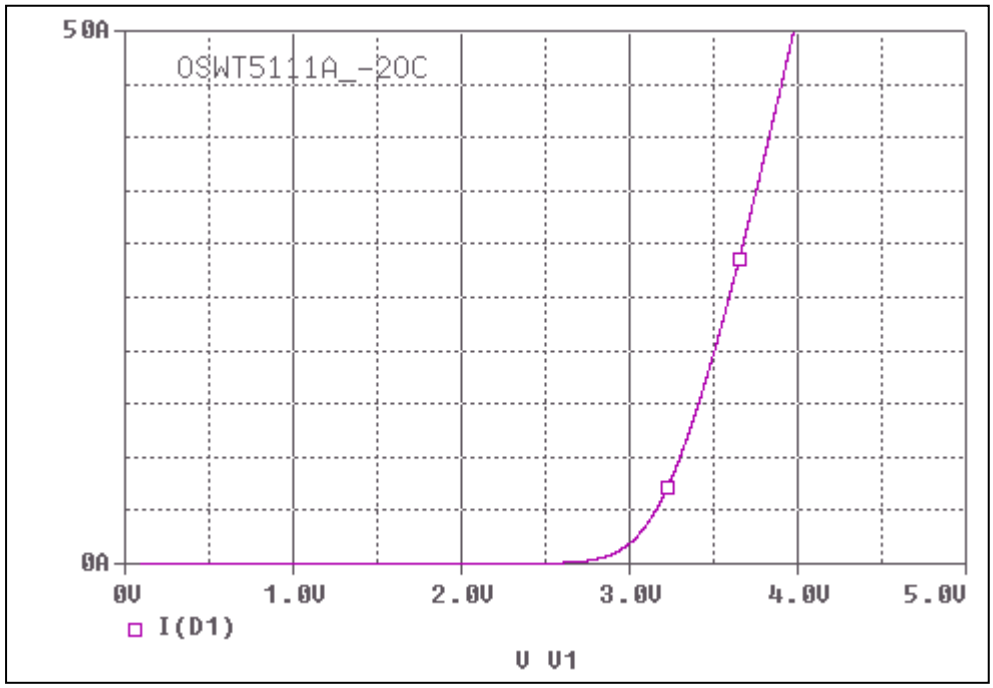
COMPONENTS: Light-Emitting Diode (LED) STANDARD
PART NUMBER: OSWT5111A
MANUFACTURER: OPTO SUPPLY
REMARK: -20 degree C

Bee Technologies Inc

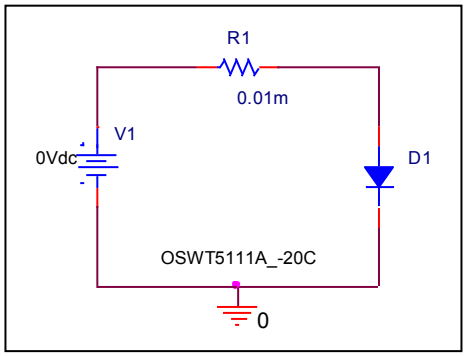
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

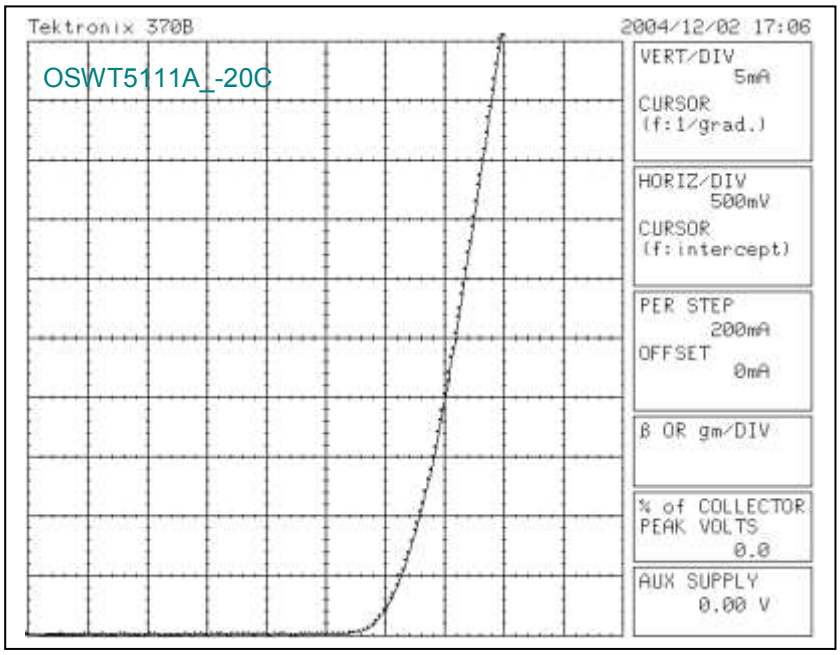
Circuit Simulation Result



Evaluation Circuit

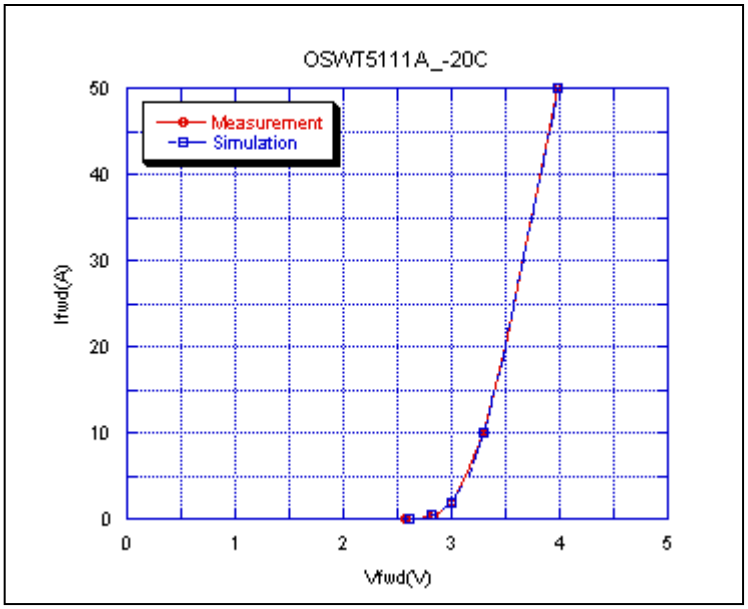


Forward Current Characteristic Reference



Comparison Graph

Circuit Simulation Result

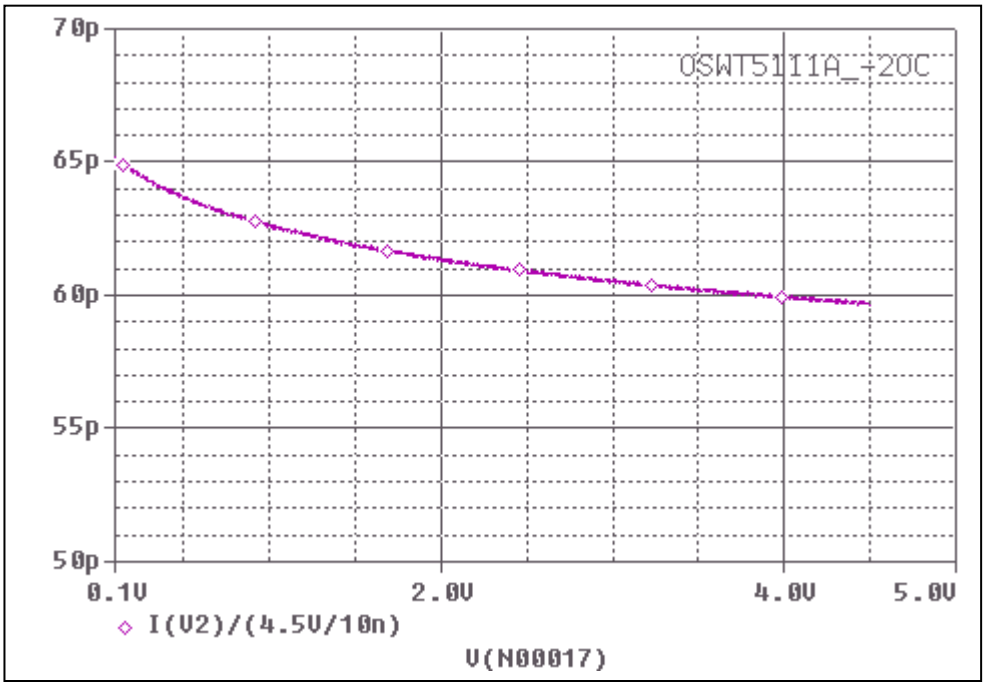


Simulation Result

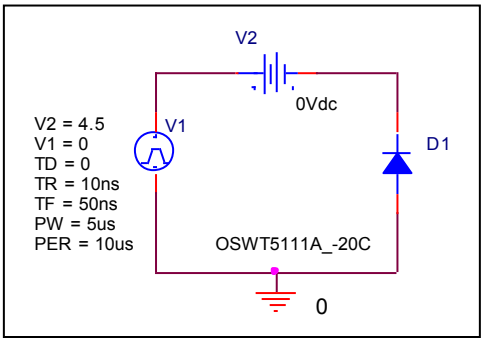
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.1	2.575	2.617	1.6310
0.2	2.745	2.702	1.5664
0.5	2.835	2.818	0.5996
1	2.91	2.909	0.0343
2	3.005	3.007	0.0665
5	3.135	3.155	0.6379
10	3.3	3.3	0
20	3.51	3.5	0.2849
50	3.975	3.974	0.0251

Capacitance Characteristic

Circuit Simulation Result

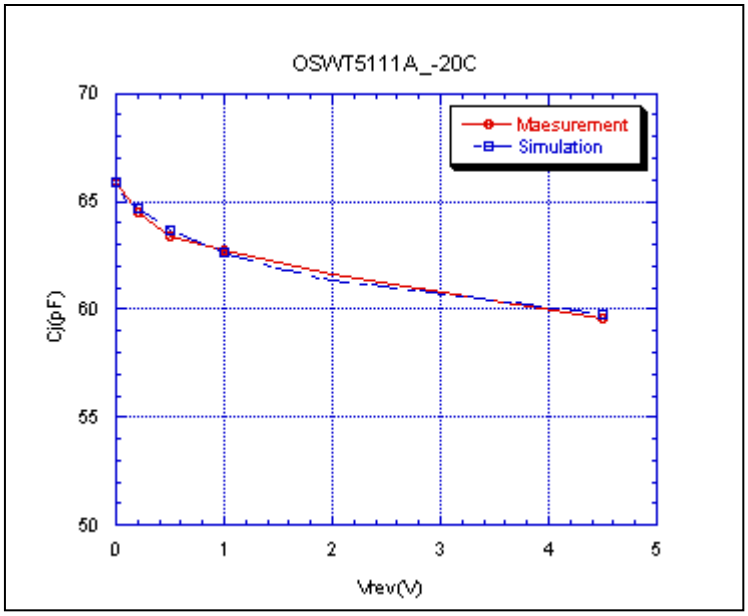


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

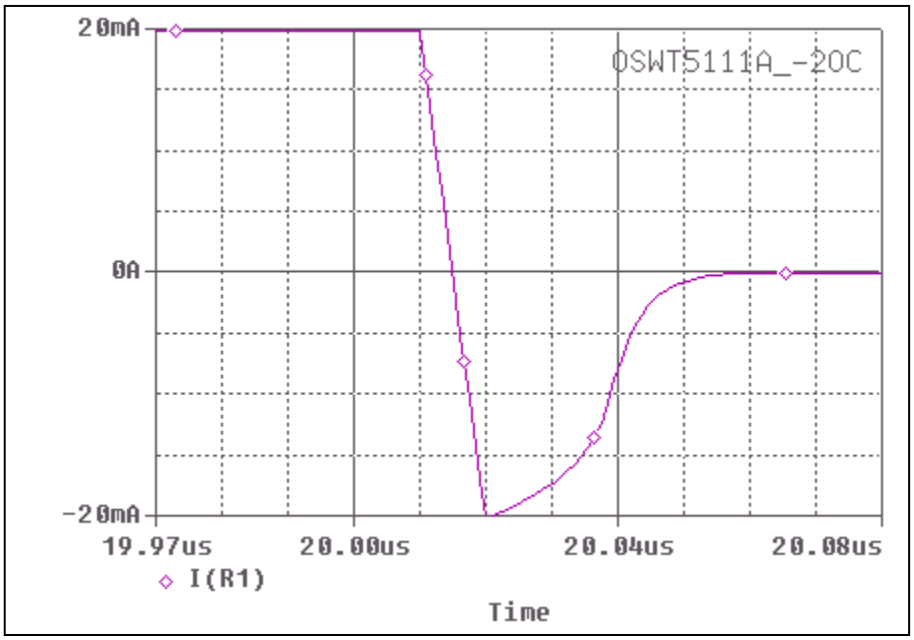


Simulation Result

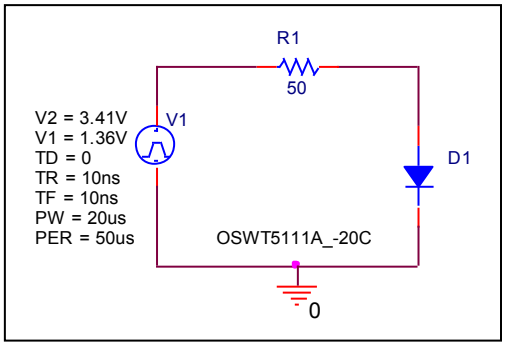
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	65.9	65.9	0
0.1	65.2	65.084	0.1779
0.2	64.5	64.722	0.3441
0.5	63.4	63.654	0.4006
1	62.71	62.642	0.1084
2	61.58	61.293	0.4660
4.5	59.59	59.726	0.2282

Reverse Recovery Characteristic

Circuit Simulation Result



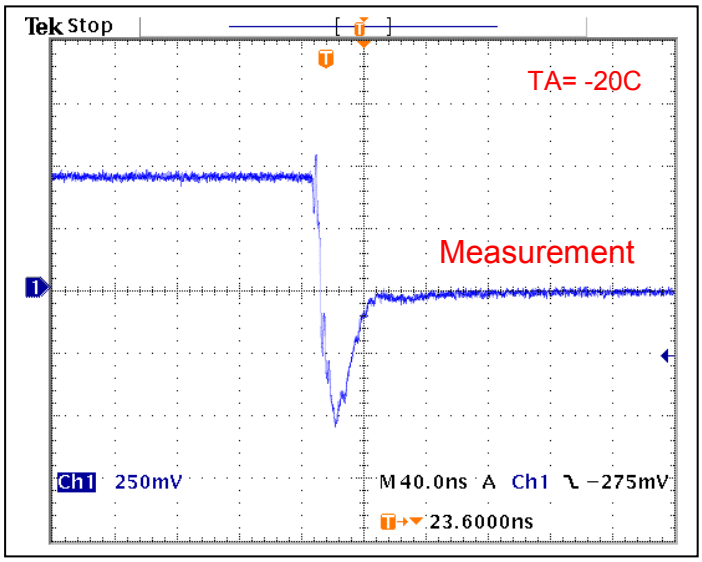
Evaluation Circuit



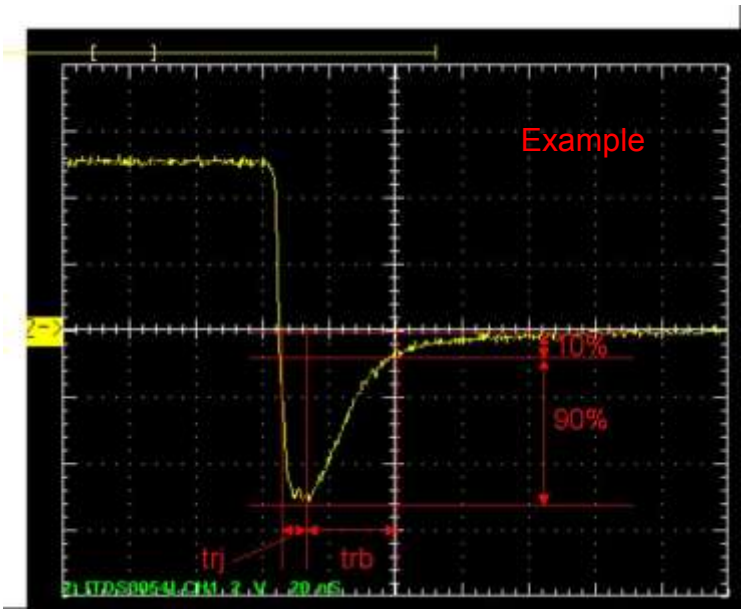
Compare Measurement vs. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
Trr=trj+trb	30.4	ns	30.5	ns	0.328

Reverse Recovery Characteristic Reference



Trj =8.8(ns)
Trb=21.6(ns)
Conditions: Ifwd=Irev=0.02(A), Rl=50



Relation between trj and trb