Device Modeling Report

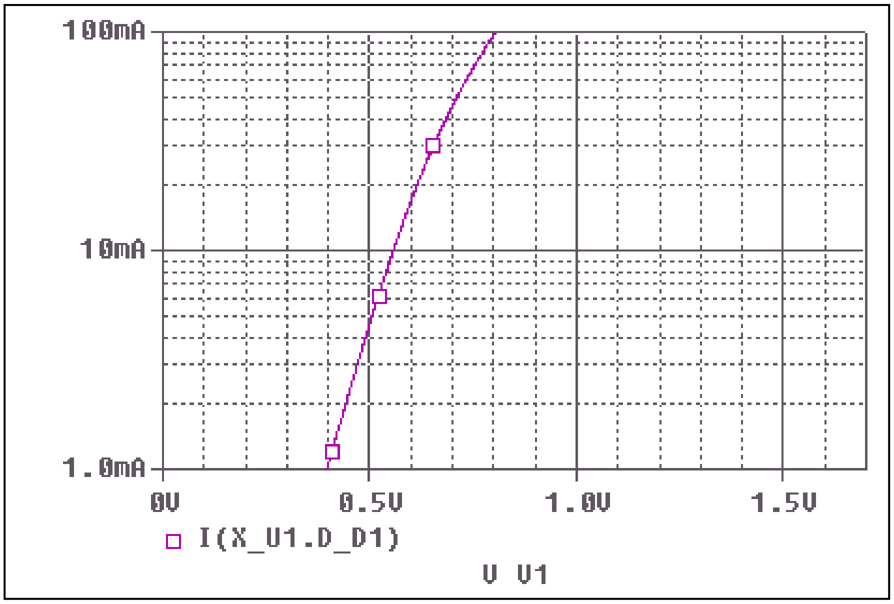
COMPONENTS:
DIODE/ ENHANCED POWER LED / Professional
PART NUMBER: EP204K-35G1R1B1-CA
MANUFACTURER: PARA Light
EMARK: 25 degree C
COLER: BLUE

Bee Technologies Inc.

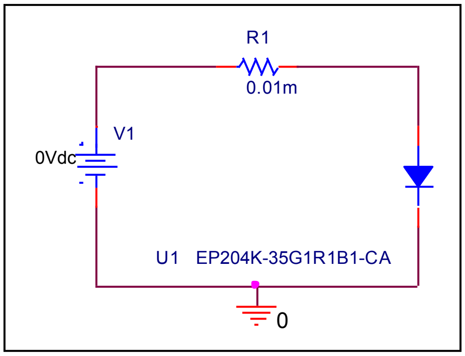
Spice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive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

Forward Current Characteristic

Circuit Simulation Result

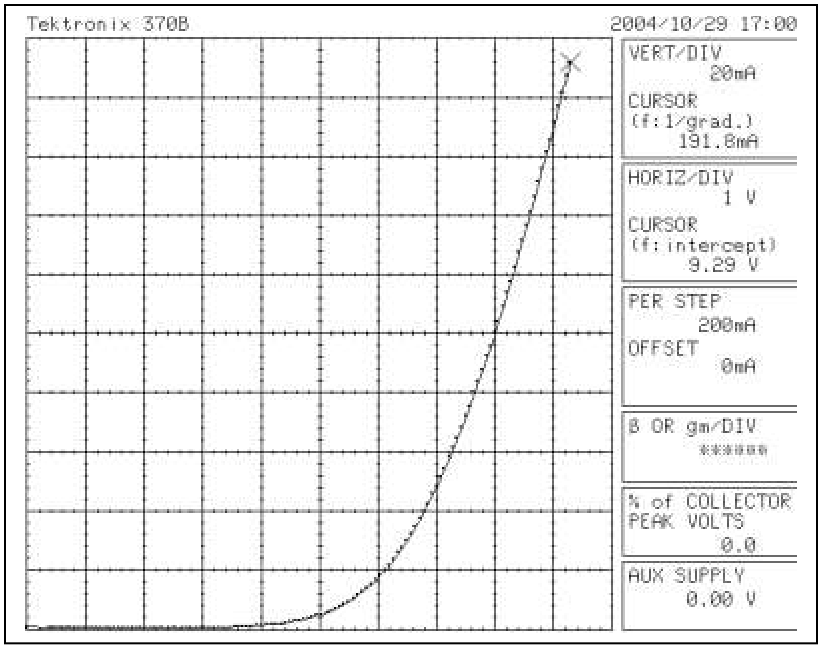


Evaluation Circuit



Forward Current Characteristic

Reference



Tektronix 370B

2004/10/29 17:00

VERT/DIV
20mA

CURSOR
(f:1/grad.)
191.8mA

HORIZ/DIV
1 V

CURSOR
(f:intercept)
9.29 V

PER STEP
200mA

OFFSET
0mA

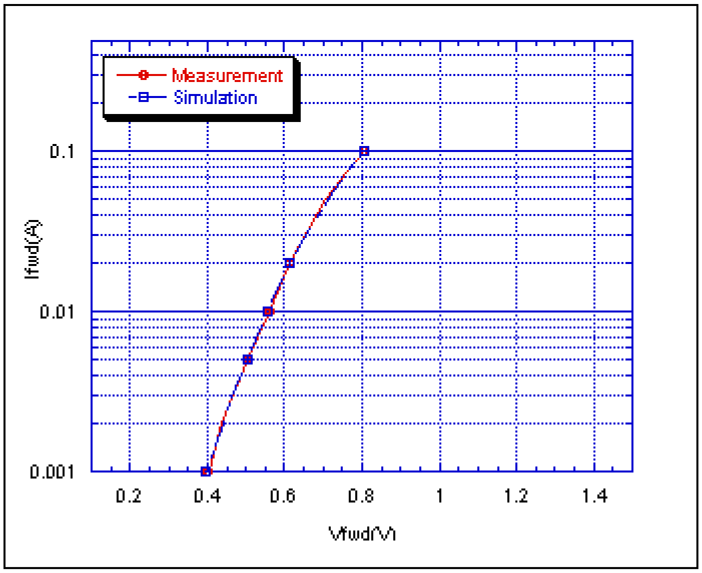
B OR gm/DIV
******

% of COLLECTOR
PEAK VOLTS
0.0

AUX SUPPLY
0.00 V

Comparison Graph

Circuit Simulation Result

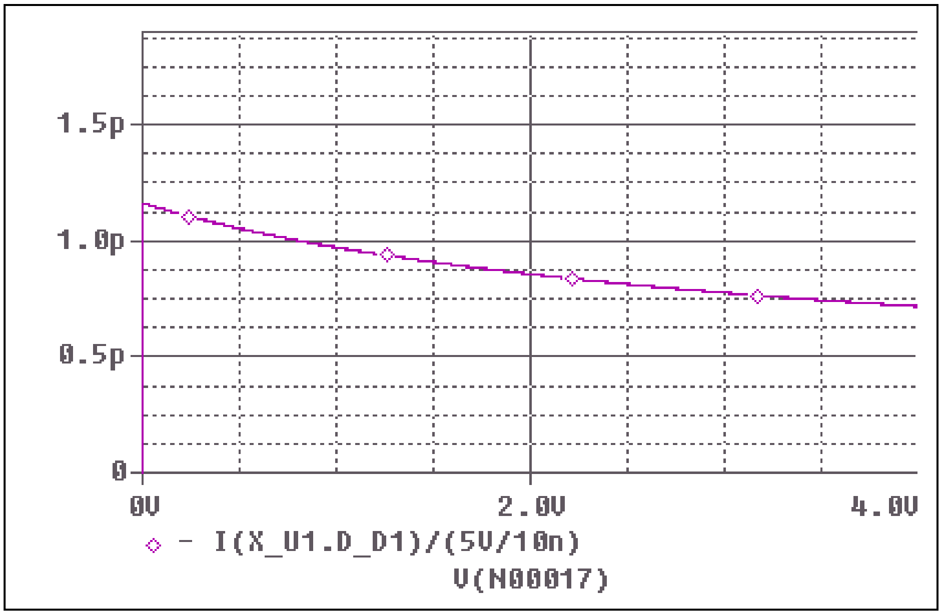


Simulation Result

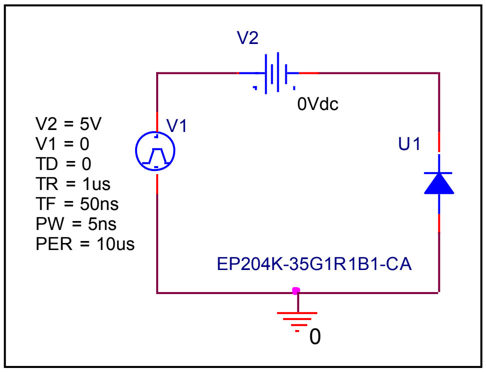
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.001	0.4	0.3963	0.925
0.002	0.437	0.444	1.601
0.005	0.505	0.505	0
0.01	0.559	0.554	0.894
0.02	0.616	0.6145	0.243
0.05	0.709	0.711	0.282
0.1	0.805	0.8044	0.074

Capacitance Characteristic

Circuit Simulation Result

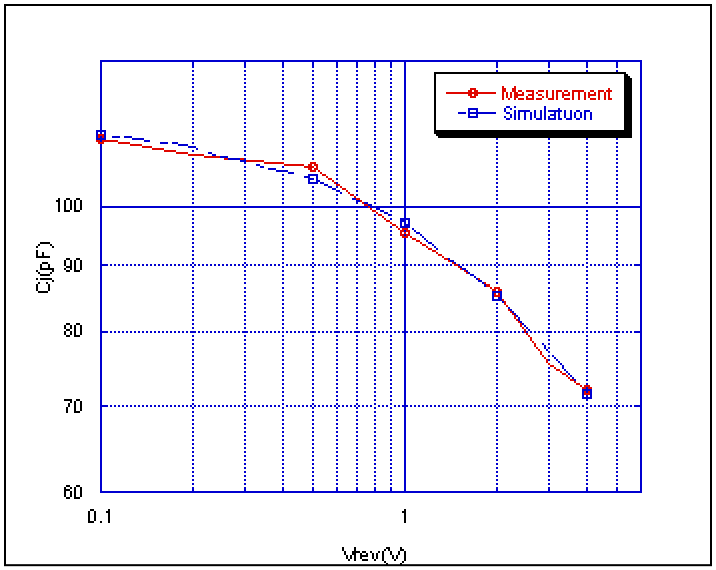


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

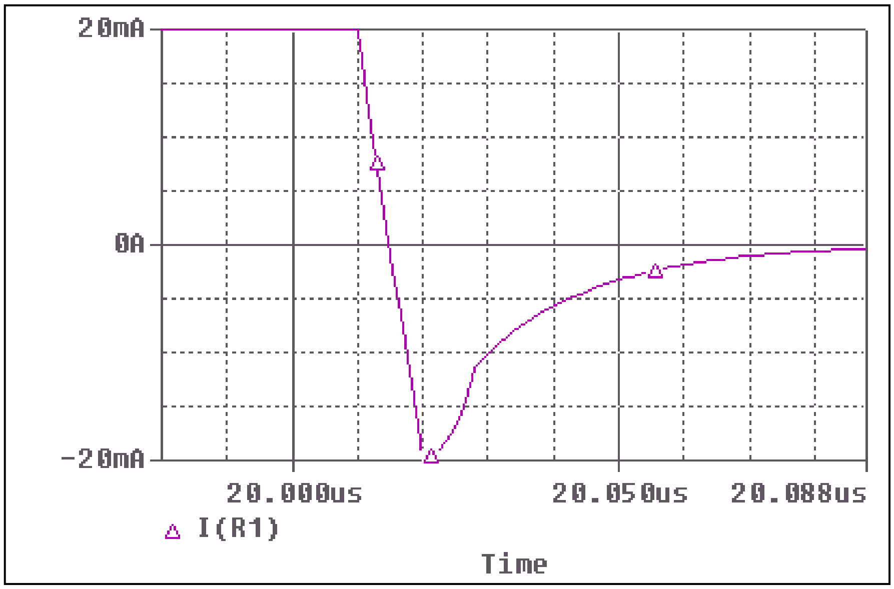


Simulation Result

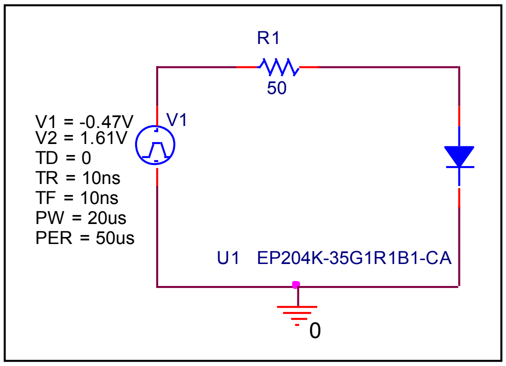
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	116.04	116.01	0.025
0.1	112.95	113.8	0.752
0.2	109.8	111.4	1.457
0.5	107.17	105.2	1.838
1	95.3	97.1	1.888
2	85.91	85.49	0.488
3	75.64	77.25	2.128
4	72.09	71.66	0.596

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

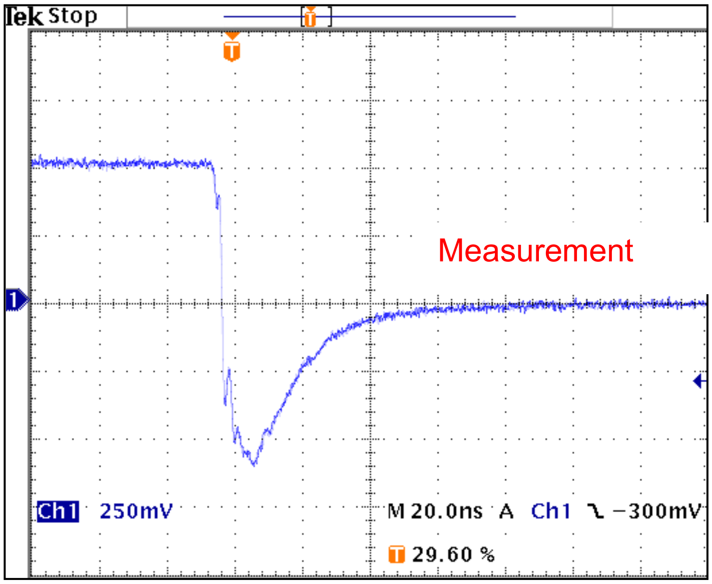


Compare Measurement vs. Simulation

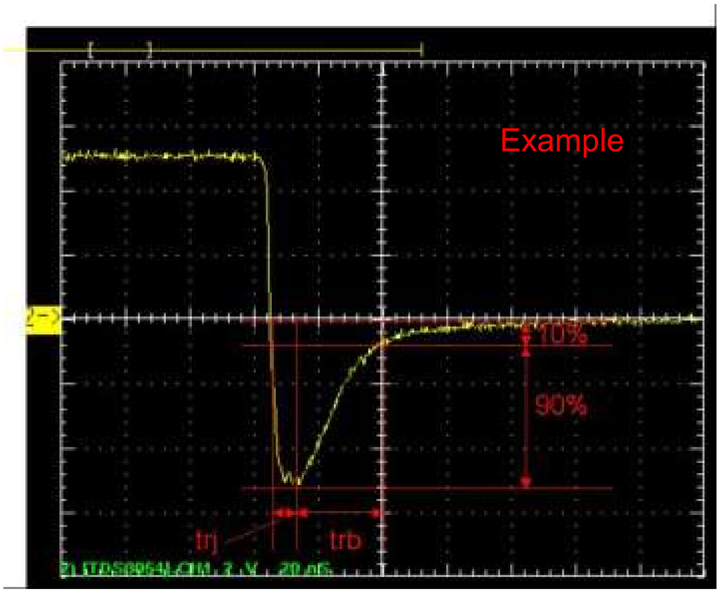
Symbol	Measurement	Unit	Simulation	Unit	%Error
trj	9.6	ns	9.65	ns	0.520
trb	33.6	ns	33.2	ns	1.190

Reverse Recovery Characteristic

Reference



Trj =9.60(ns)
Trb= 33.6(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb