

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL

PART NUMBER: RURD460S

MANUFACTURER: FAIRCHILD

REMARK: TC=150 degree

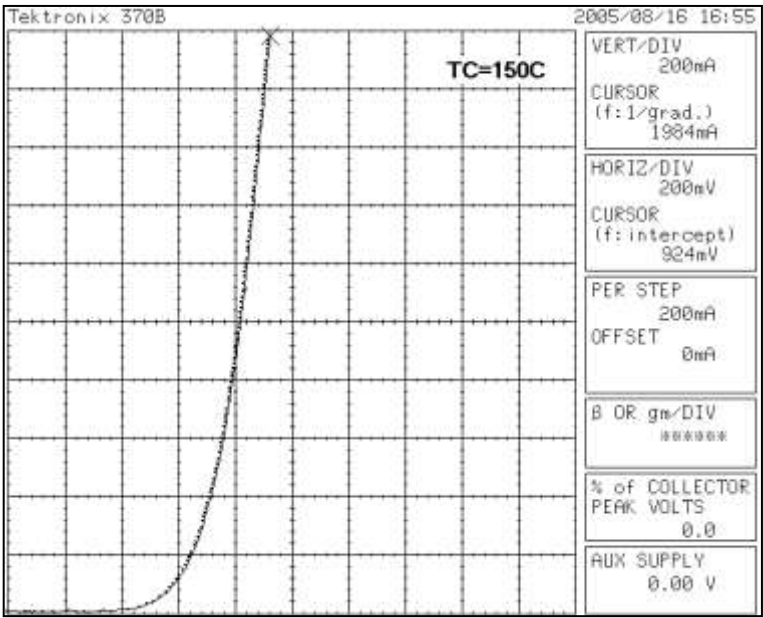


Bee Technologies Inc.

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

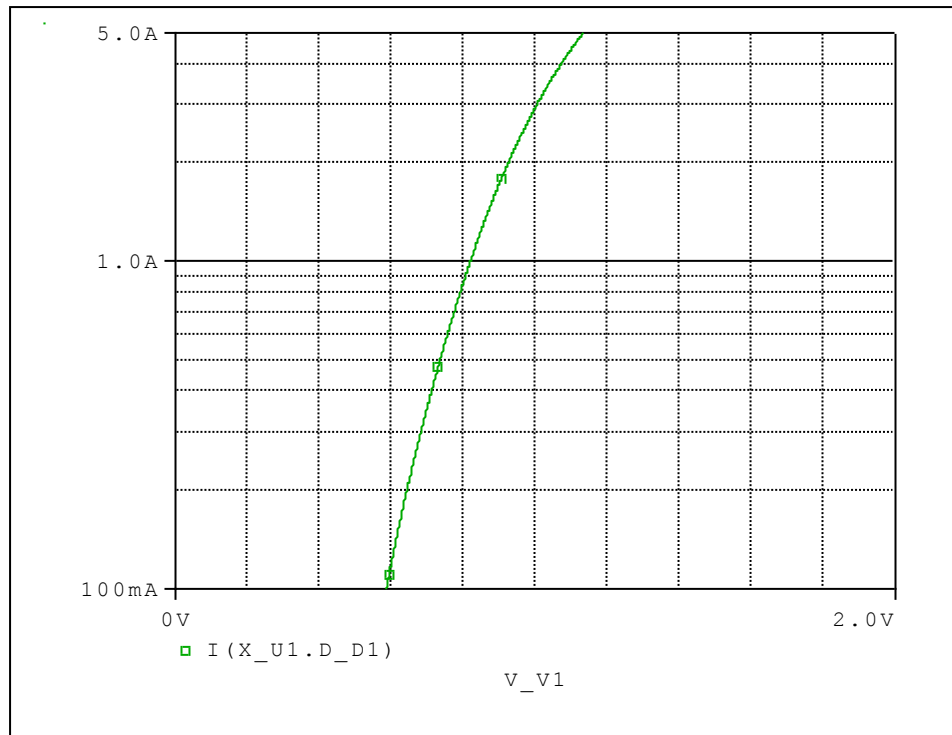
Forward Current Characteristic

Reference

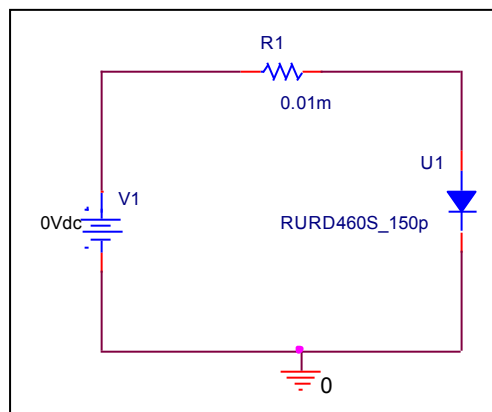


Forward Current Characteristic

Circuit Simulation Result

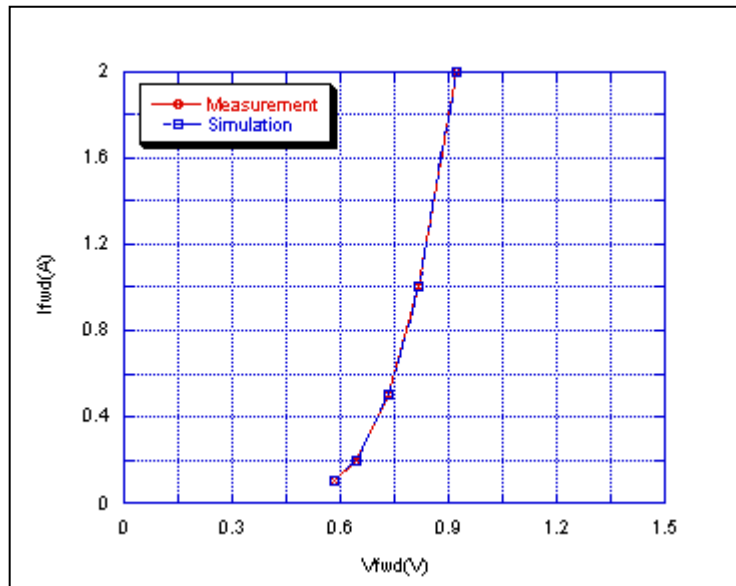


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

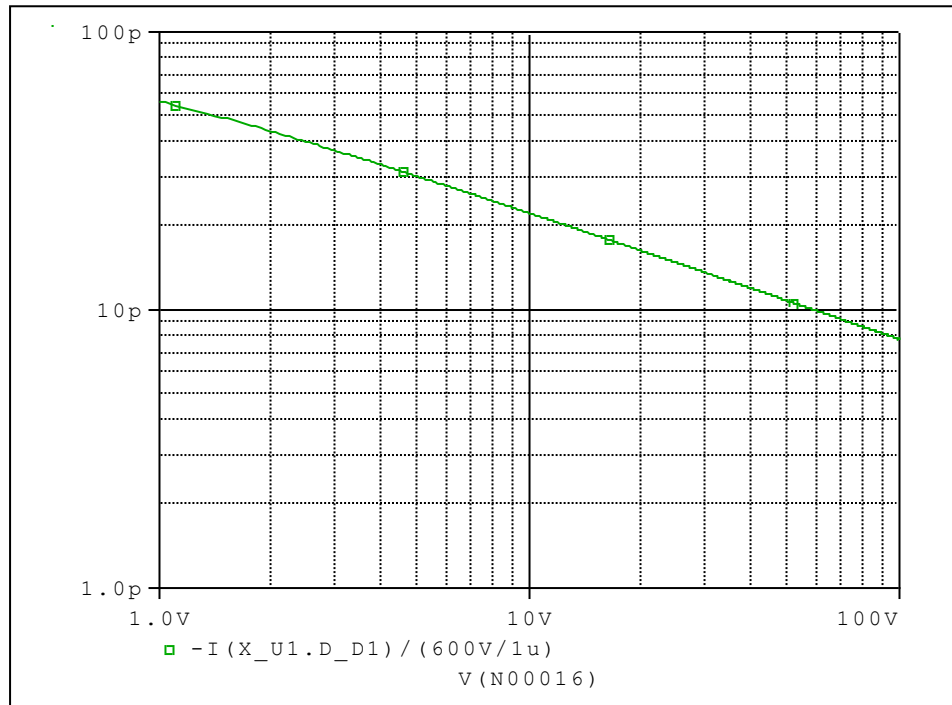


Simulation Result

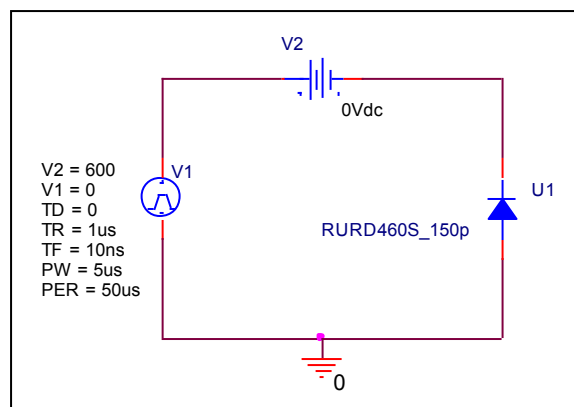
I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
0.1	0.586	0.585	0.171
0.2	0.642	0.644	-0.312
0.5	0.736	0.733	0.408
1	0.818	0.818	0.000
2	0.924	0.922	0.216

Capacitance Characteristic

Circuit Simulation Result

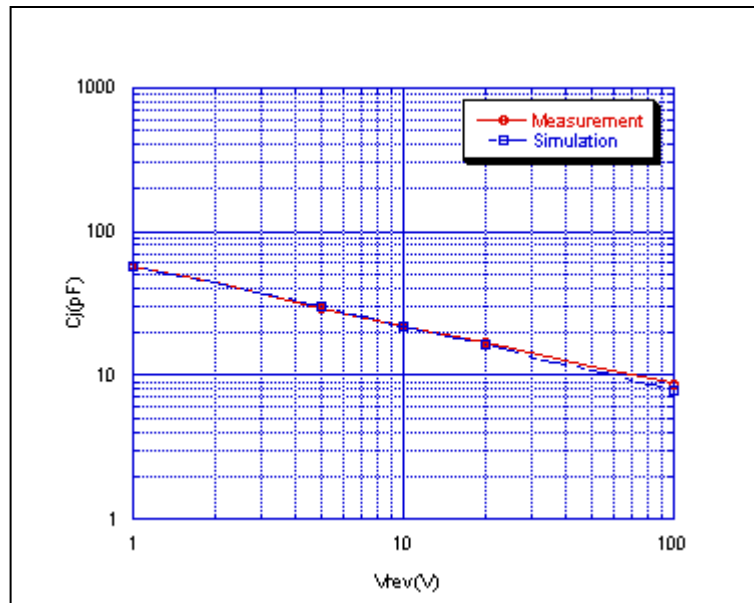


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

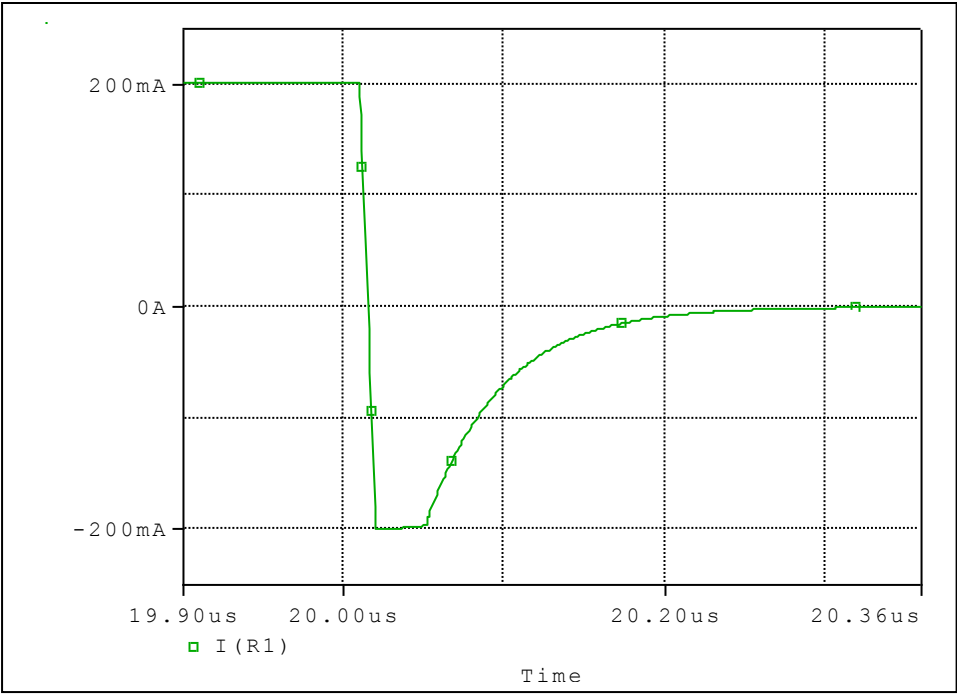


Simulation Result

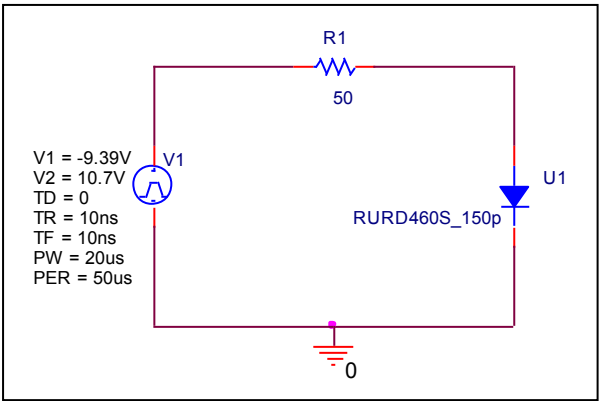
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	101.600	101.600	0.000
1	57.300	56.368	1.627
2	43.600	44.000	-0.917
5	29.200	30.200	-3.425
10	21.700	22.112	-1.899
20	16.650	16.365	1.712
50	11.450	10.800	5.677

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

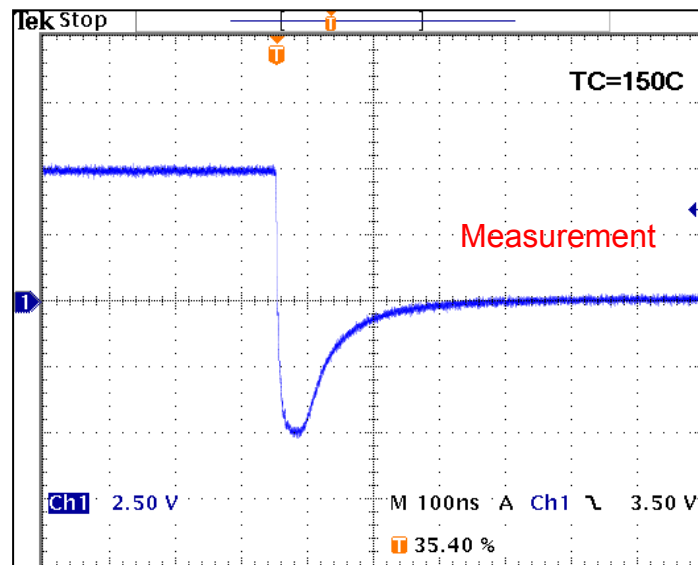


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	36.00	ns	35.79	ns	0.583
trb	108.00	ns	107.8	ns	0.185

Reverse Recovery Characteristic

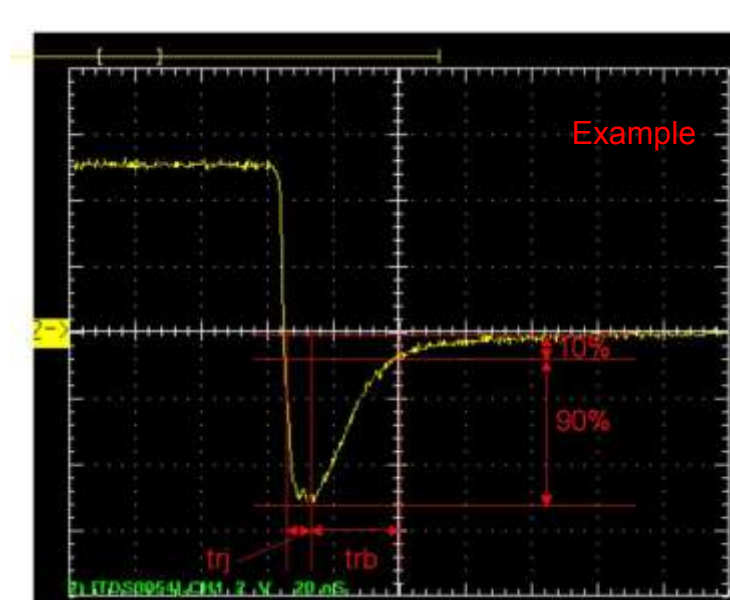
Reference



$T_{rj} = 36 \text{ (ns)}$

$T_{rb} = 108 \text{ (ns)}$

Conditions: $I_{fwd} = I_{rev} = 0.2 \text{ (A)}$, $R_I = 50$



Relation between t_{rj} and t_{rb}