

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: RURD660S
MANUFACTURER: FAIRCHILD
REMARK: TC=80 degree

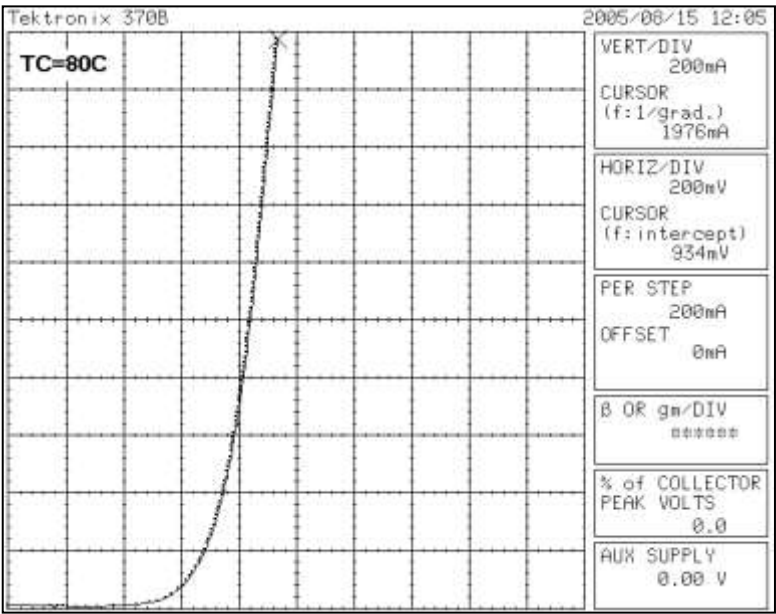


Bee Technologies Inc.

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

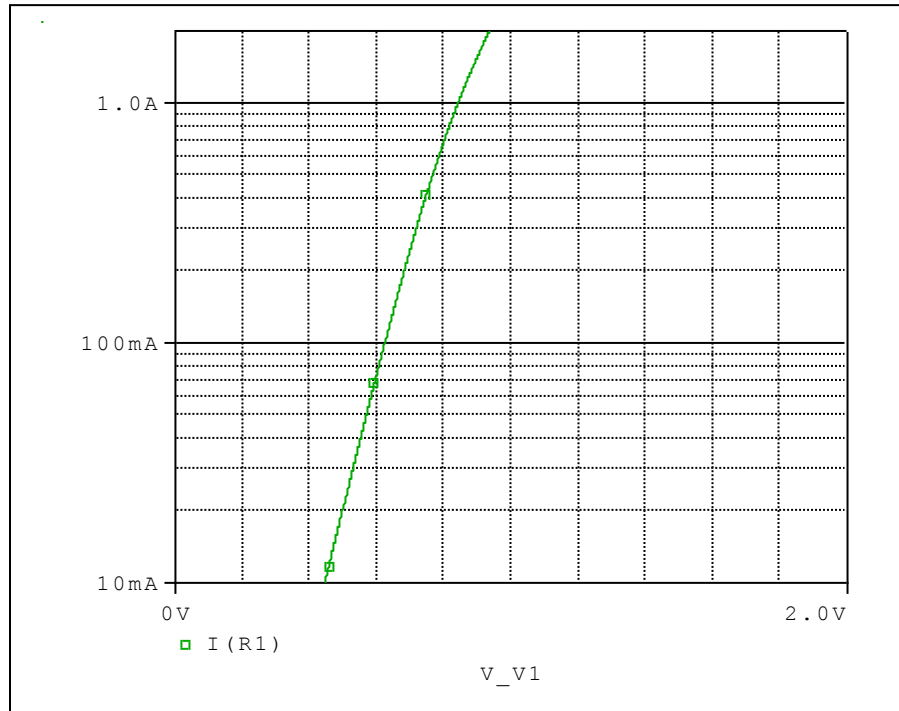
Forward Current Characteristic

Reference

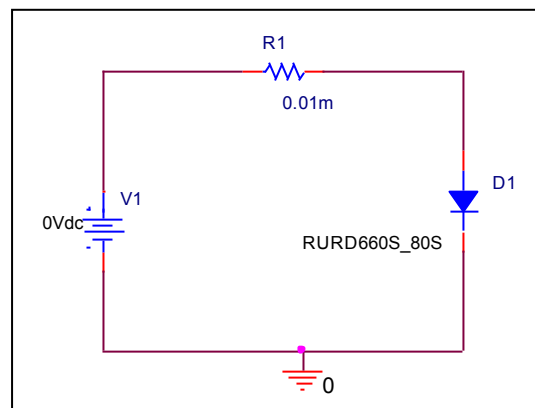


Forward Current Characteristic

Circuit Simulation Result

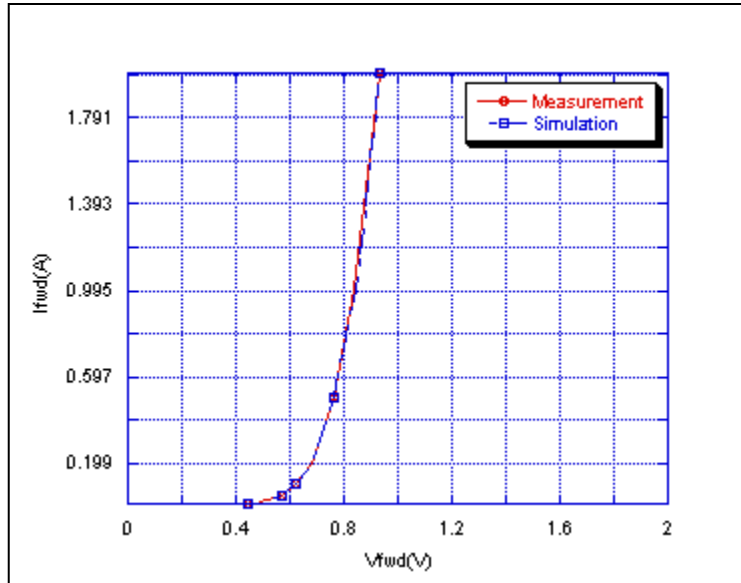


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

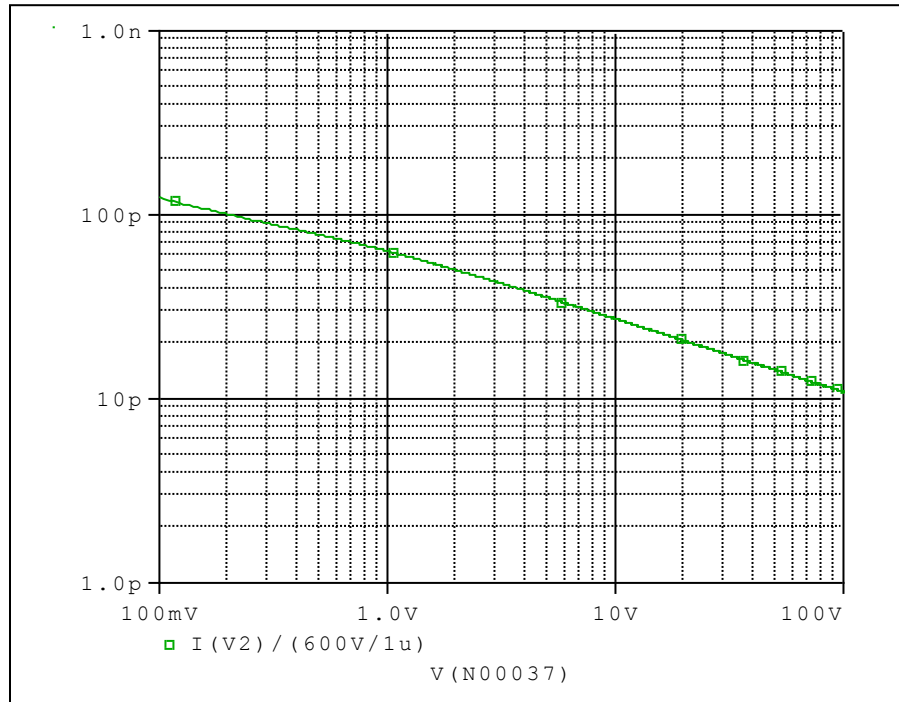


Simulation Result

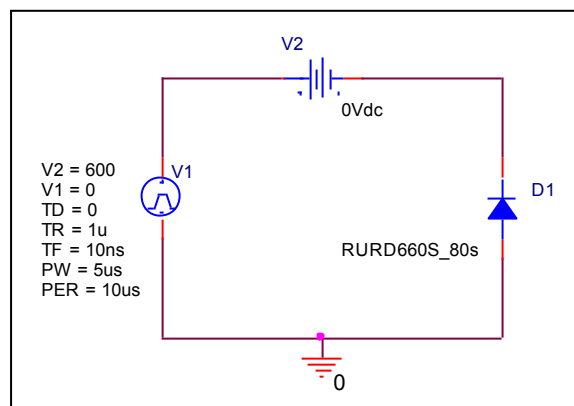
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.448	0.444	0.893
0.02	0.492	0.497	-1.016
0.05	0.570	0.568	0.351
0.1	0.620	0.623	-0.484
0.2	0.684	0.680	0.585
0.5	0.766	0.765	0.131
1	0.840	0.841	-0.119
2	0.934	0.933	0.107

Capacitance Characteristic

Circuit Simulation Result

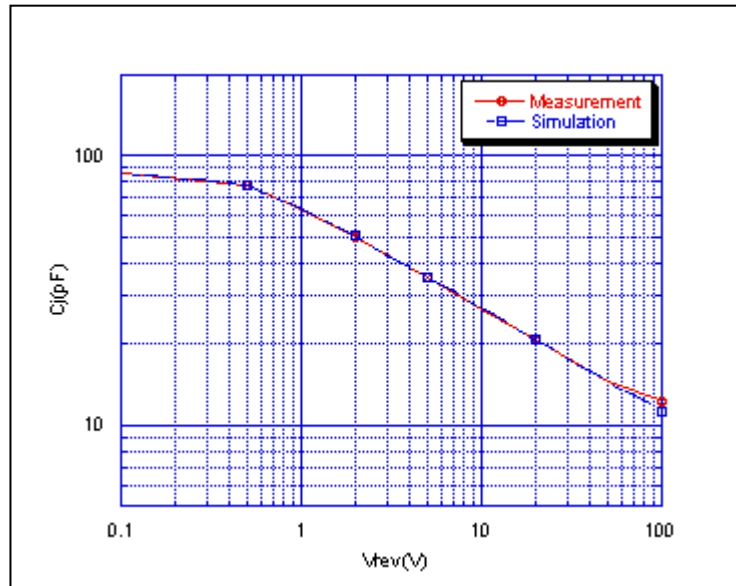


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

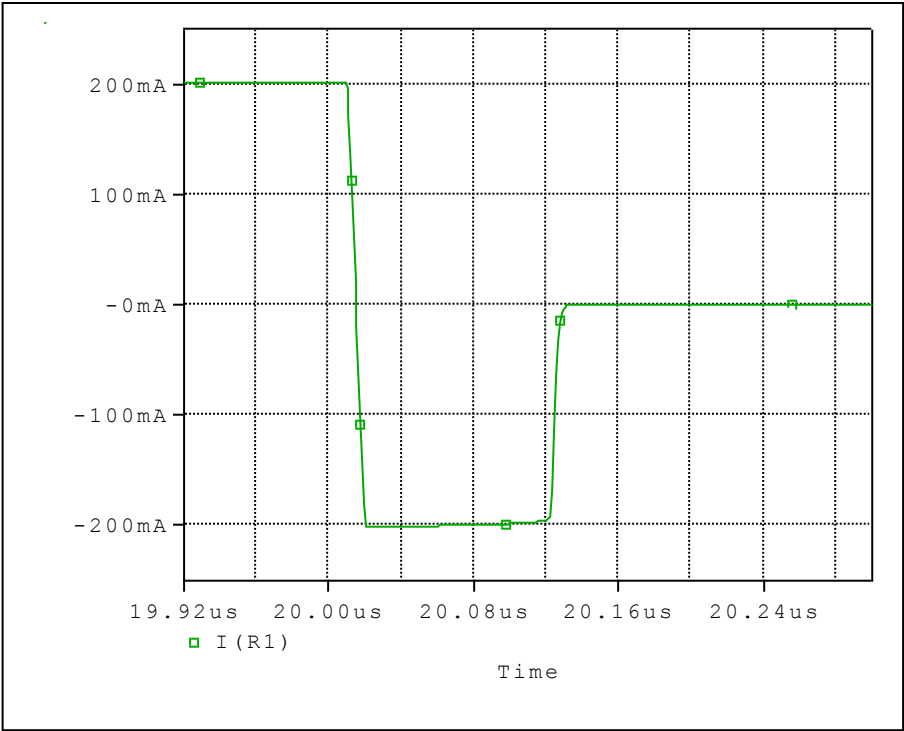


Simulation Result

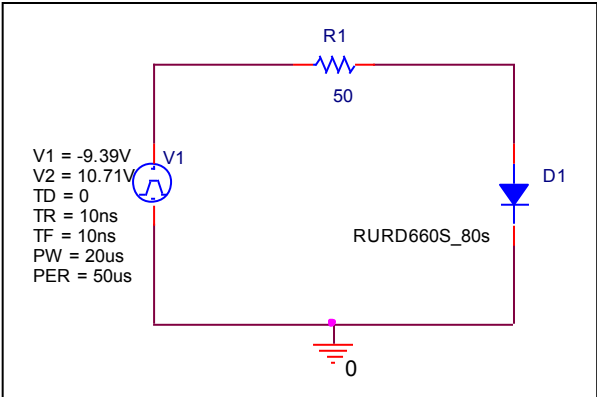
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	120.800	120.800	0.000
0.5	77.800	78.159	-0.461
1	62.800	63.576	-1.236
2	50.000	50.173	-0.346
5	35.000	35.500	-1.429
10	27.000	27.200	-0.741
20	20.800	20.893	-0.447
50	14.500	14.454	0.317

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

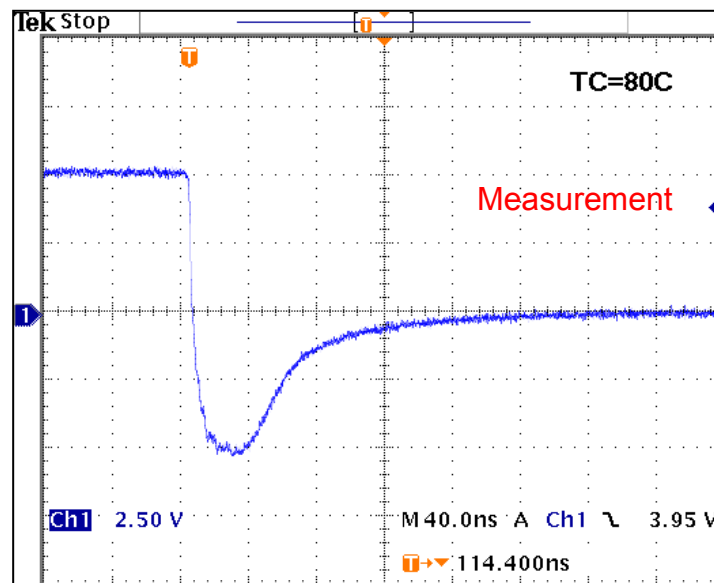


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	112.80	ns	111.80	ns	0.886

Reverse Recovery Characteristic

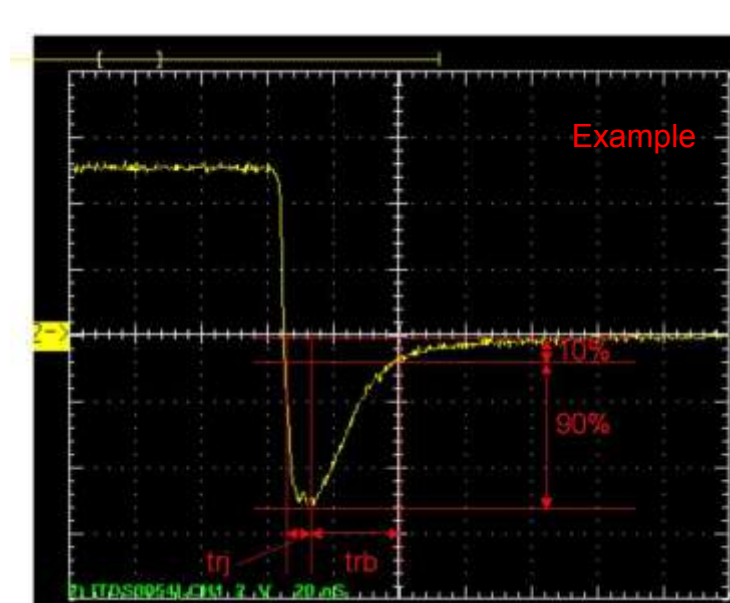
Reference



$T_{rj} = 28.8 \text{ (ns)}$

$T_{rb} = 84.0 \text{ (ns)}$

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



Relation between t_{rj} and t_{rb}