

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD

PART NUMBER: RURG3060

MANUFACTURER: FAIRCHILD

REMARK: TC=80 degree

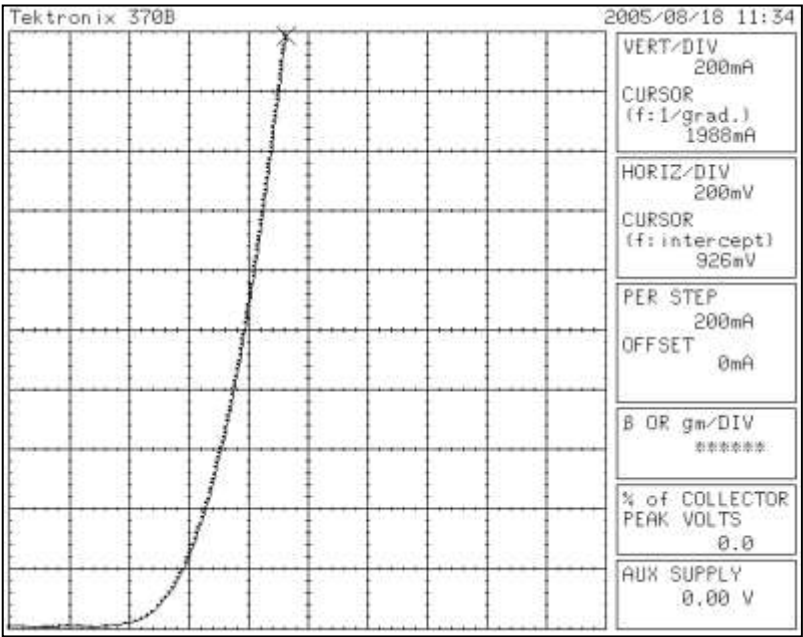


Bee Technologies Inc.

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

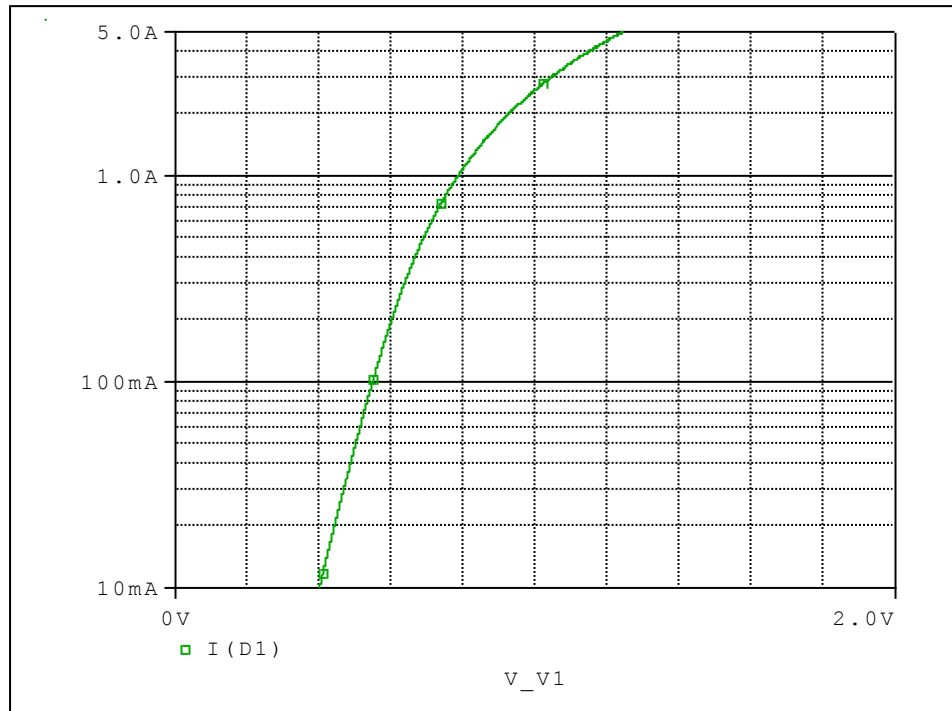
Forward Current Characteristic

Reference

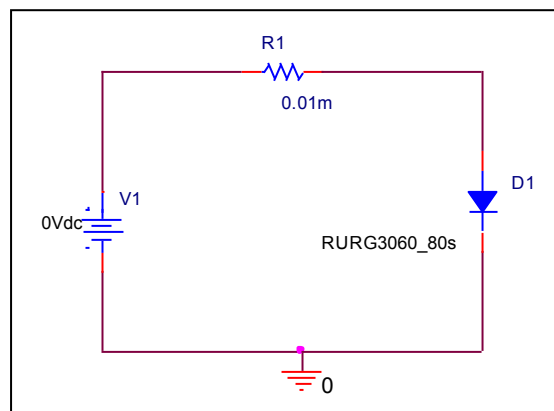


Forward Current Characteristic

Circuit Simulation Result

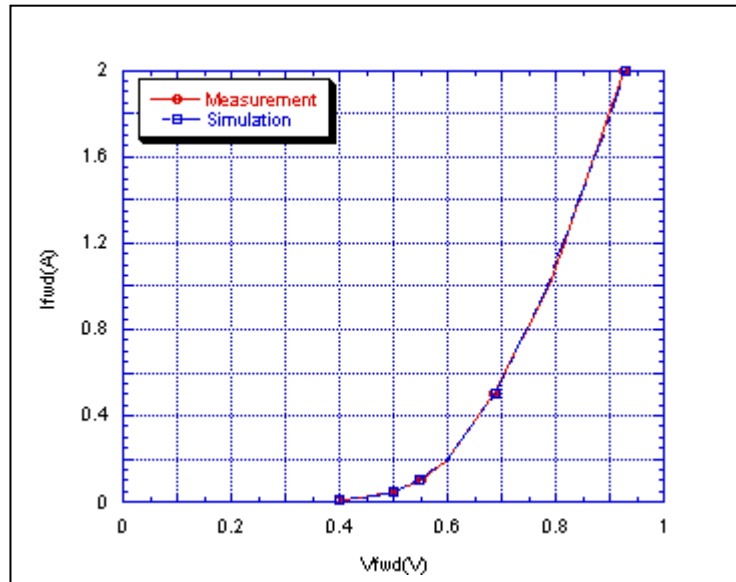


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

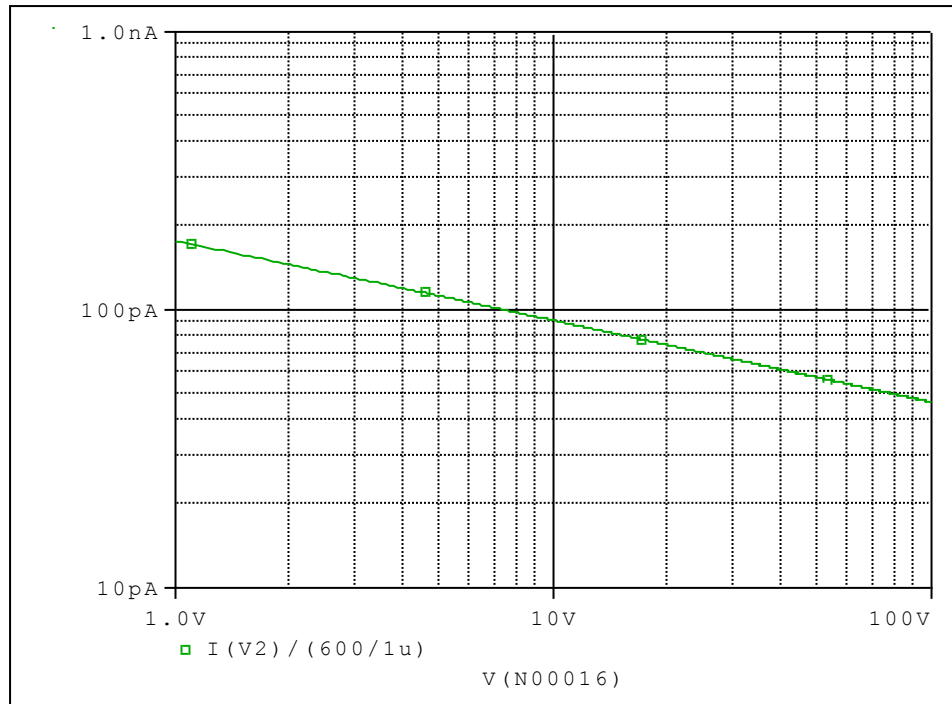


Simulation Result

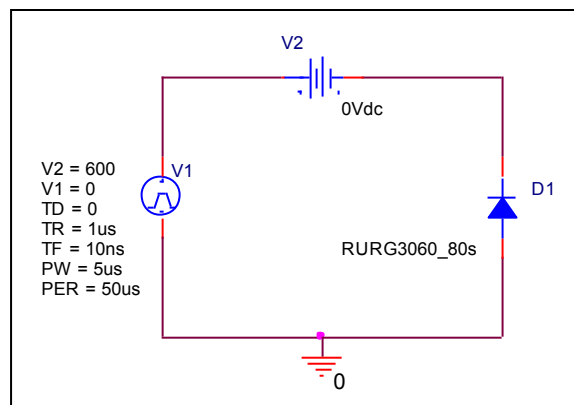
I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
0.01	0.400	0.399	0.250
0.02	0.440	0.442	-0.455
0.05	0.500	0.500	0.000
0.1	0.552	0.549	0.543
0.2	0.600	0.601	-0.167
0.5	0.684	0.688	-0.585
1	0.788	0.784	0.508
2	0.926	0.928	-0.216

Capacitance Characteristic

Circuit Simulation Result

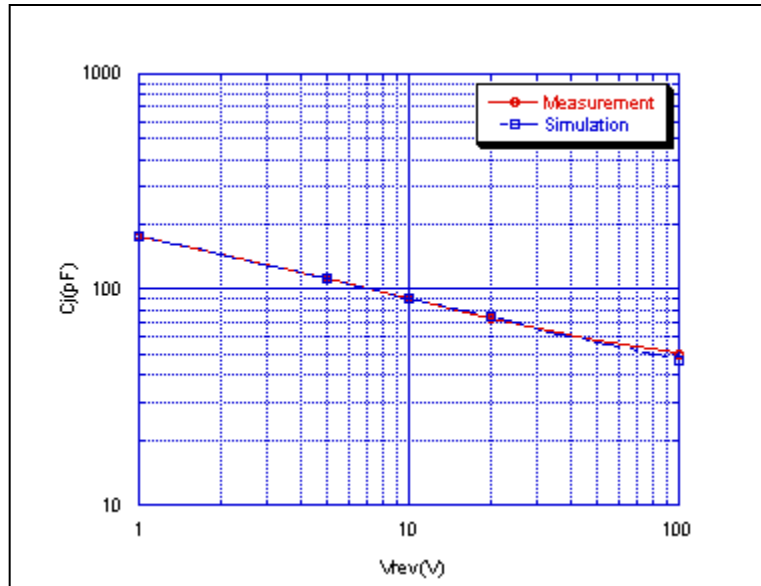


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

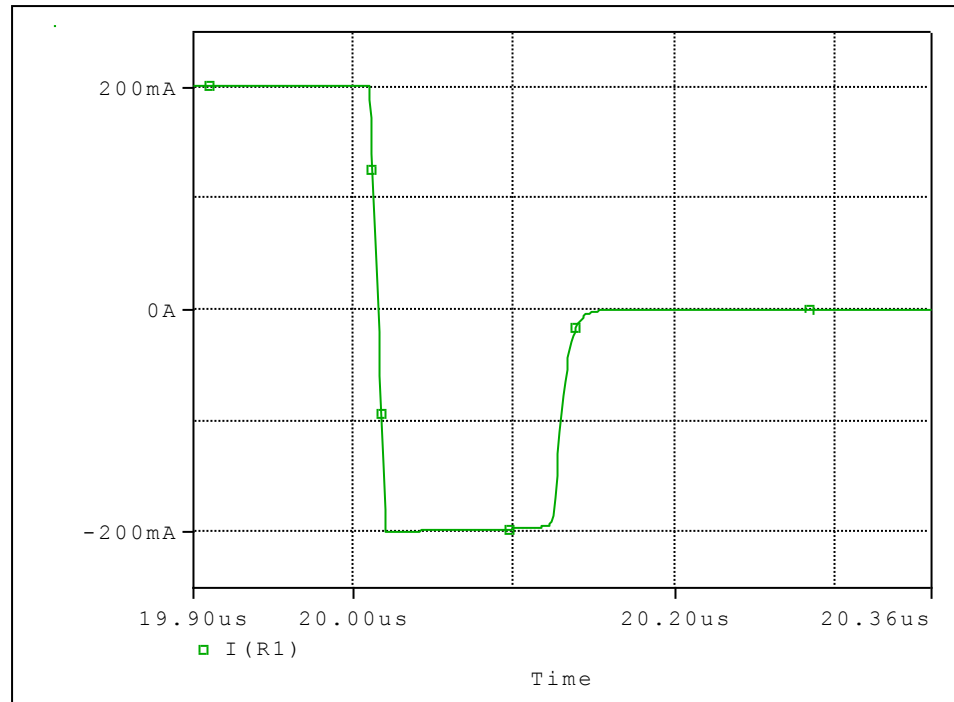


Simulation Result

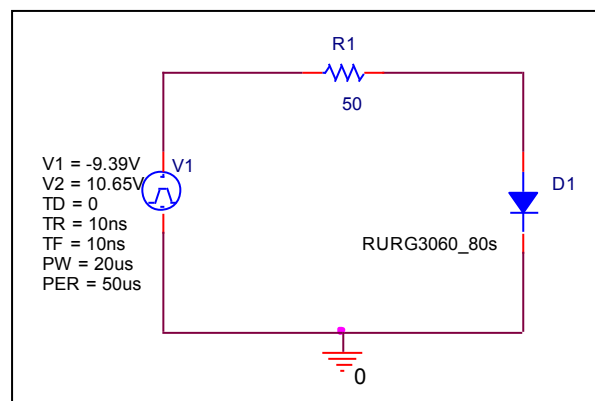
$V_{rev}(V)$	$C_j(pF)$ Measurement	$C_j(pF)$ Simulation	%Error
1	175.800	176.880	-0.614
2	145.500	145.730	-0.158
5	112.500	112.130	0.329
10	90.900	91.610	-0.781
20	73.700	74.890	-1.615
50	58.000	56.790	2.086

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

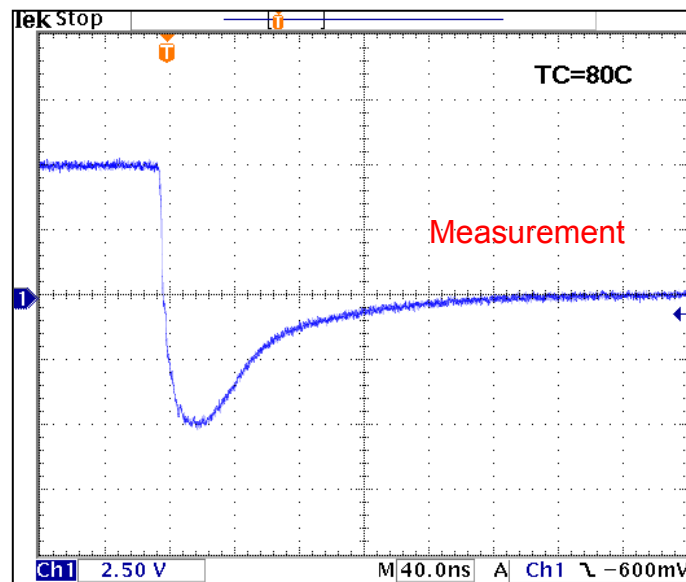


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	122.6	ns	121.7	ns	0.734

Reverse Recovery Characteristic

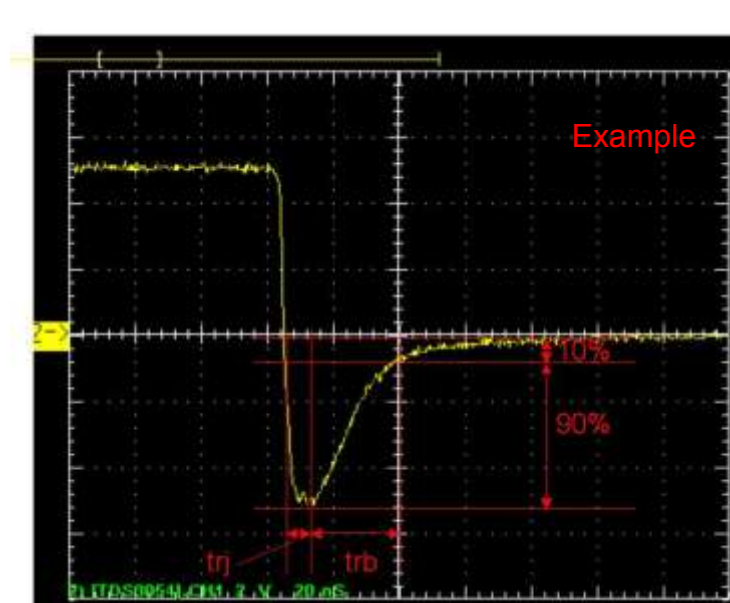
Reference



$T_{rj} = 21.6 \text{ (ns)}$

$T_{rb} = 101 \text{ (ns)}$

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



Relation between t_{rj} and t_{rb}