

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL

PART NUMBER: RURG3060

MANUFACTURER: FAIRCHILD

REMARK: Ta=25 degree

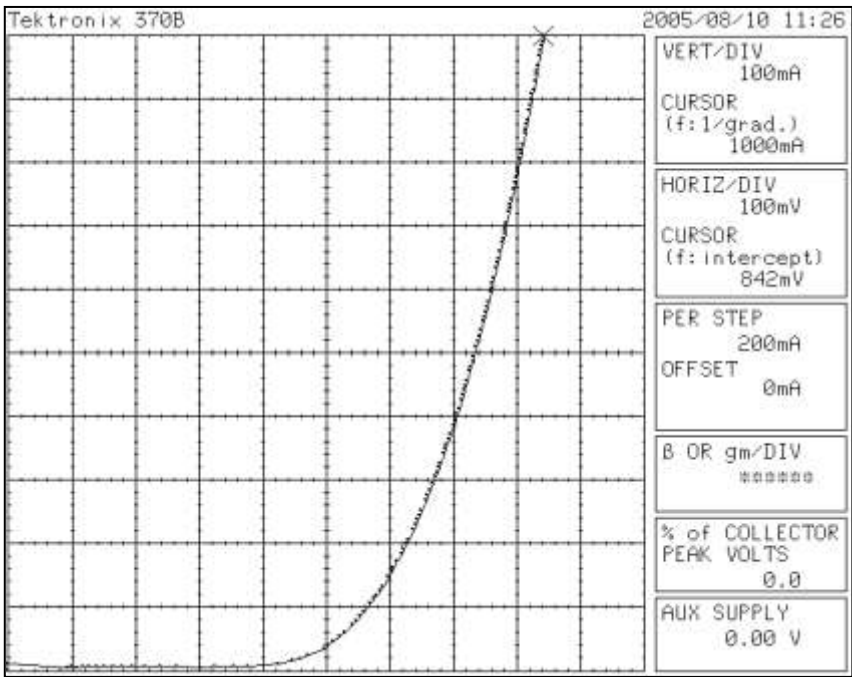


Bee Technologies Inc.

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

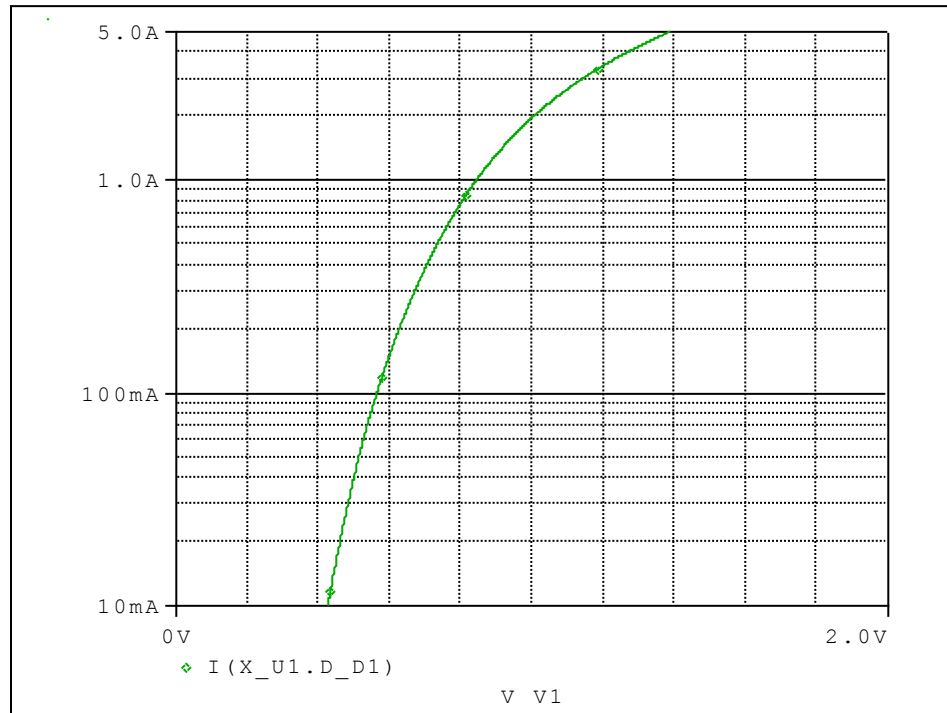
Forward Current Characteristic

Reference

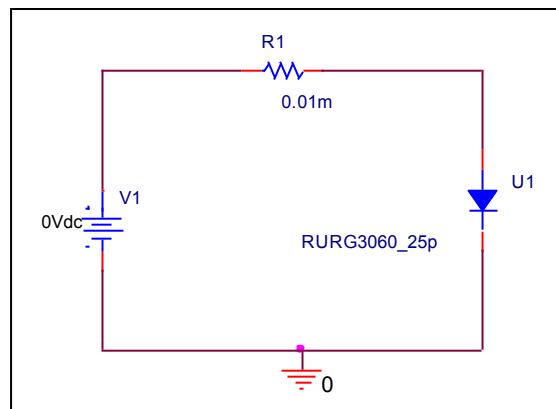


Forward Current Characteristic

Circuit Simulation Result

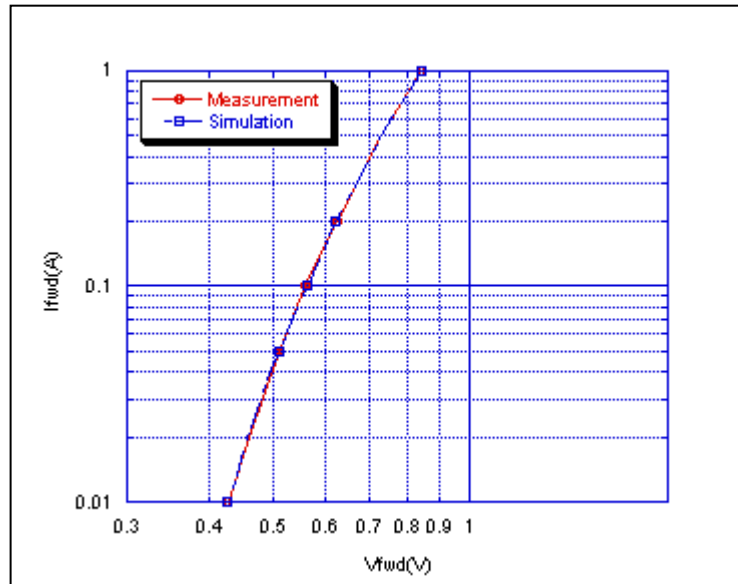


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

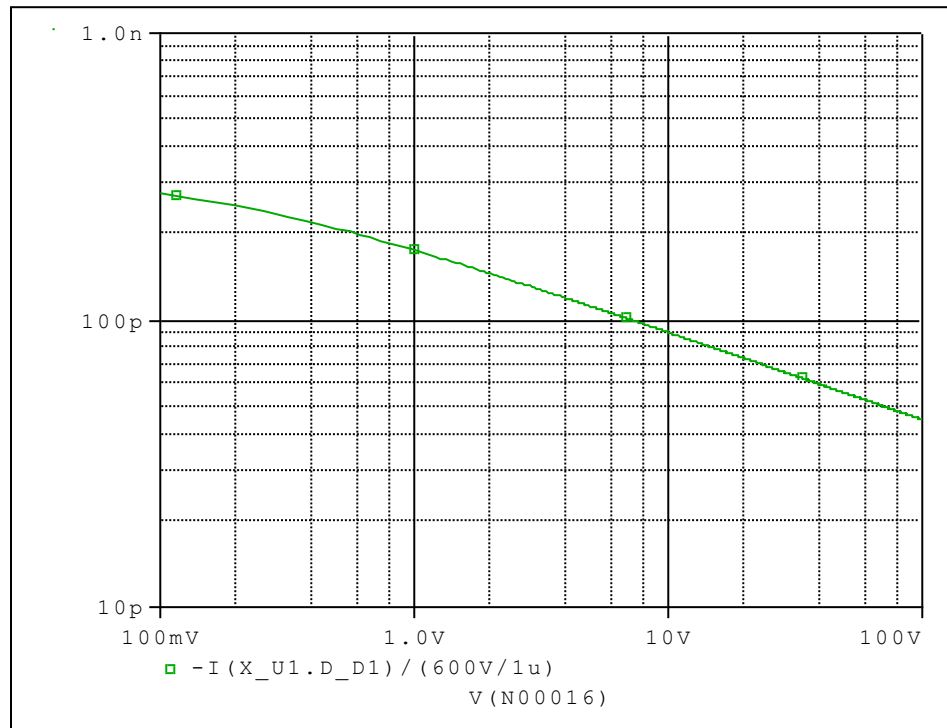


Simulation Result

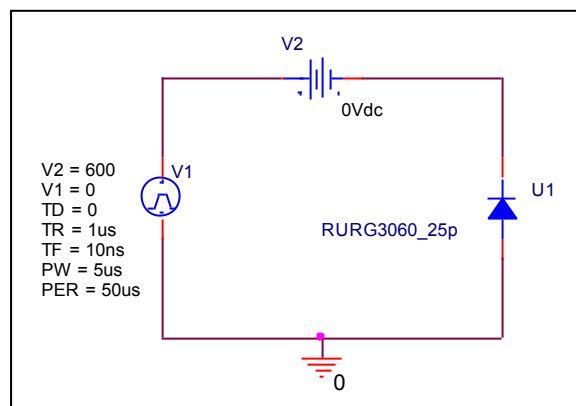
I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
0.01	0.426	0.425	0.235
0.02	0.460	0.459	0.217
0.05	0.513	0.512	0.195
0.1	0.560	0.563	-0.536
0.2	0.628	0.625	0.478
0.5	0.733	0.732	0.136
1	0.842	0.842	0.000

Capacitance Characteristic

Circuit Simulation Result

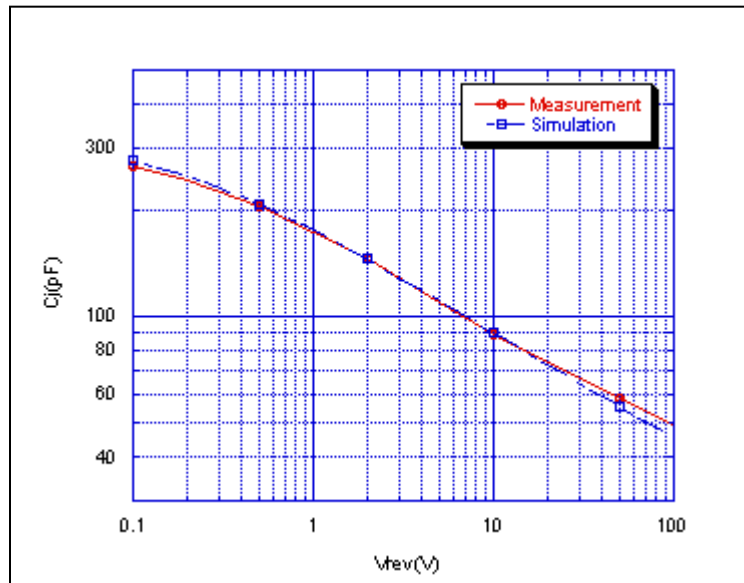


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

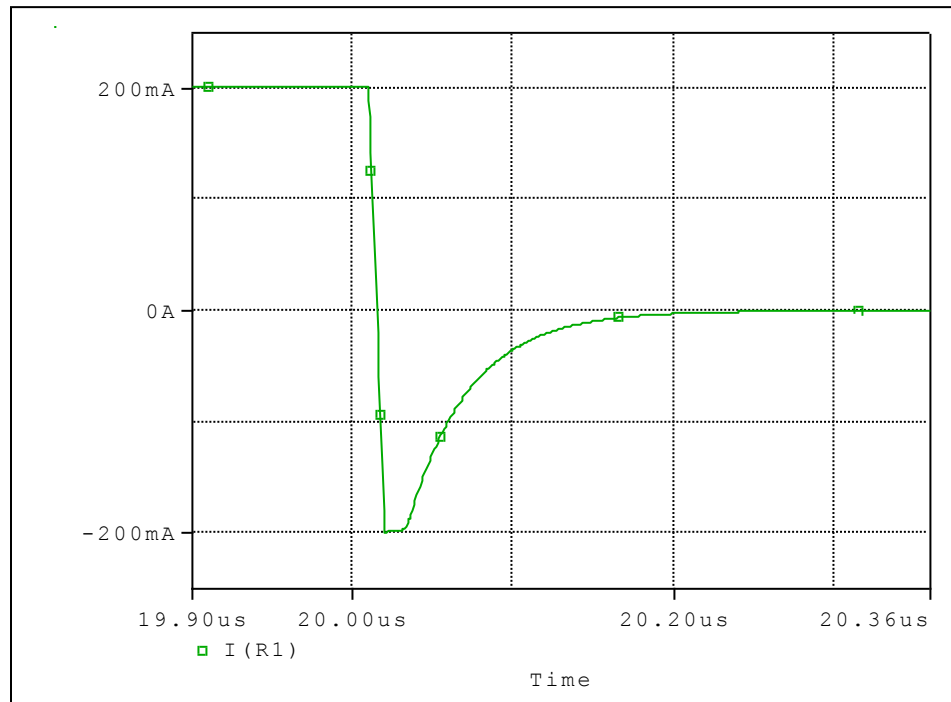


Simulation Result

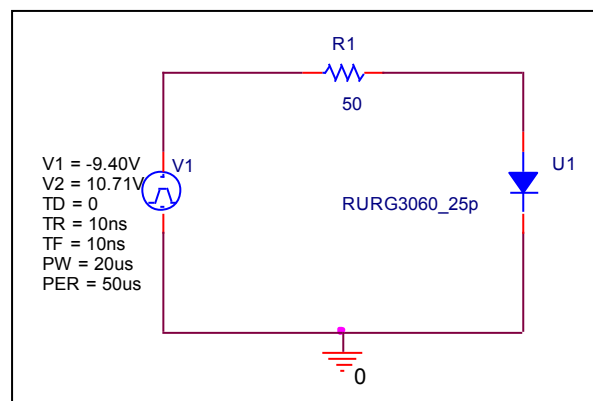
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	297.300	297.300	0.000
0.1	265.700	276.646	-4.120
0.2	242.700	249.602	-2.844
0.5	205.804	207.802	-0.971
1	173.265	175.150	-1.088
2	145.600	145.115	0.333
5	109.999	111.568	-1.426
10	88.530	90.502	-2.227
20	73.544	73.511	0.045
50	58.220	55.649	4.416

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

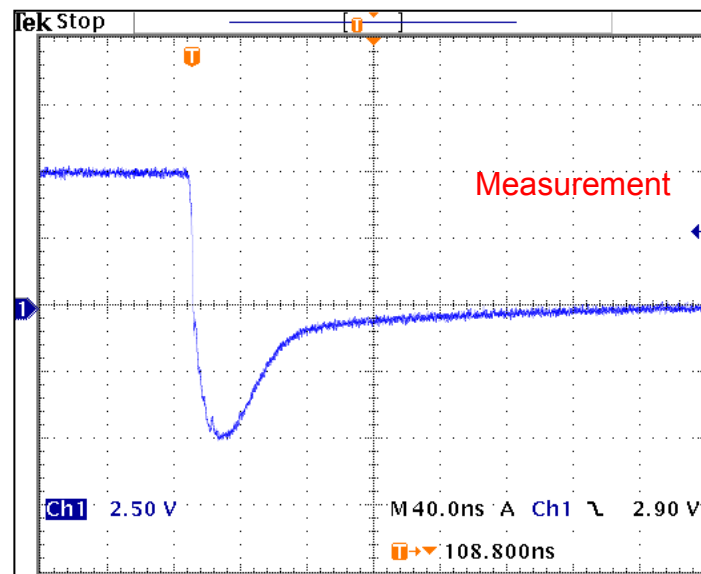


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	17.6	ns	17.40	ns	1.136
trb	89.6	ns	88.45	ns	1.283

Reverse Recovery Characteristic

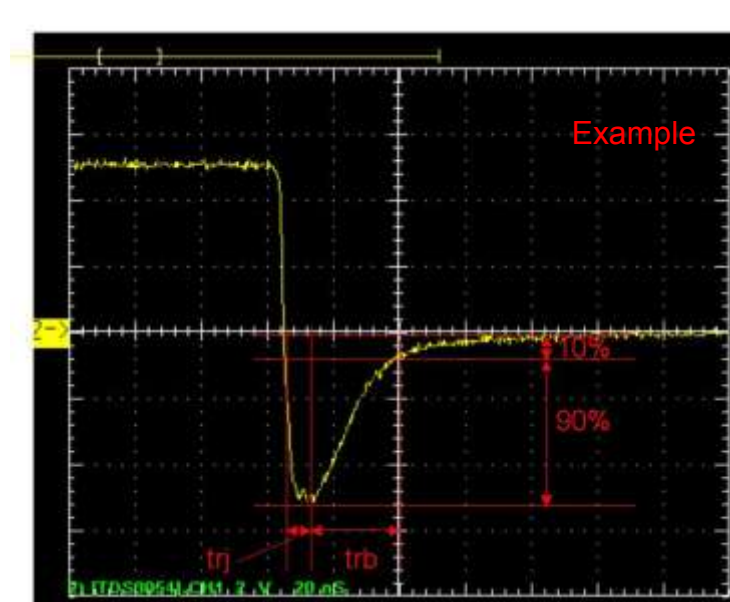
Reference



$T_{rj} = 17.6 \text{ (ns)}$

$T_{rb} = 89.6 \text{ (ns)}$

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



Relation between t_{rj} and t_{rb}