

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: RHRG75120
MANUFACTURER: INTERSIL
REMARK: TC=25C

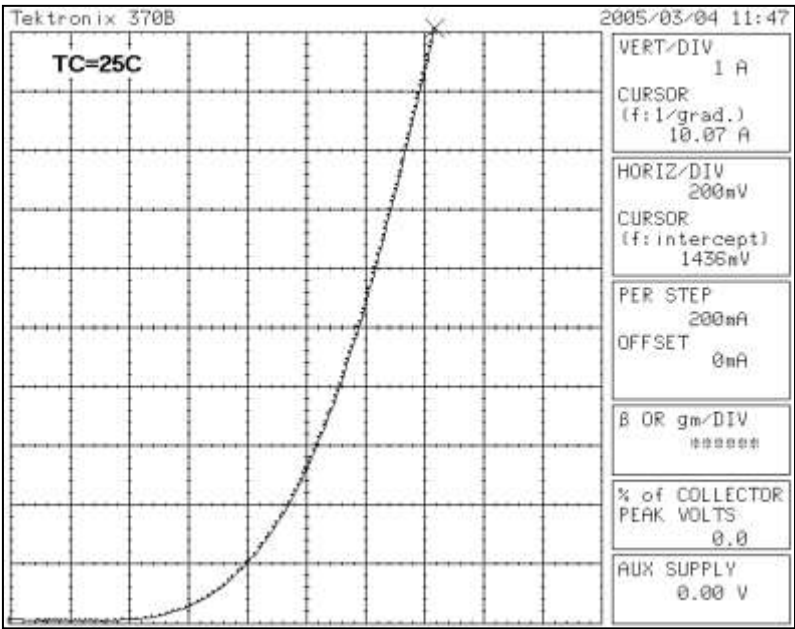


Bee Technologies Inc.

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

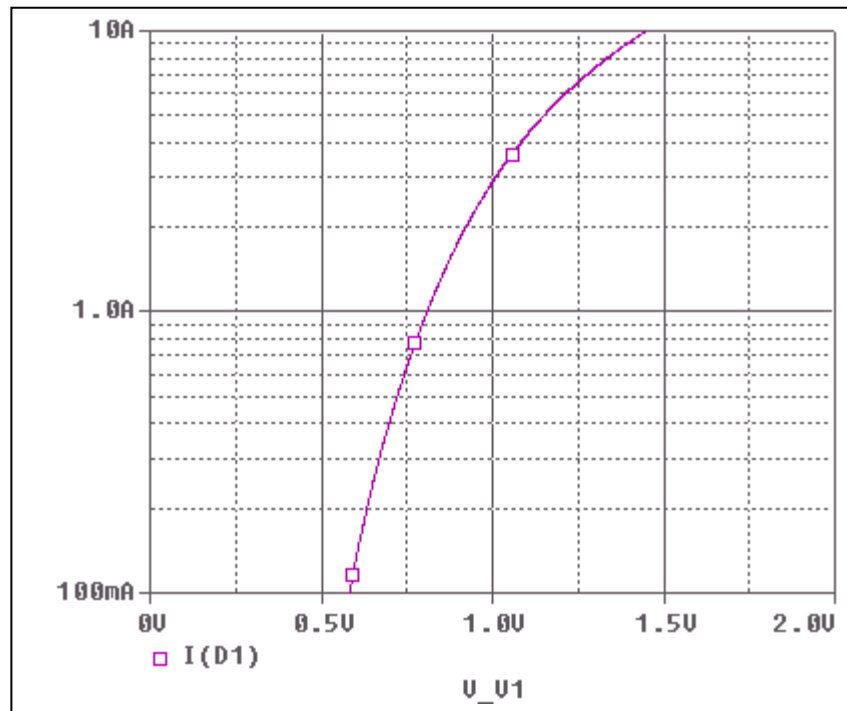
Forward Current Characteristic

Reference

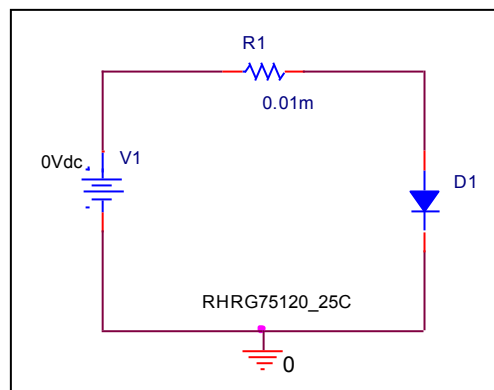


Forward Current Characteristic

Circuit Simulation Result

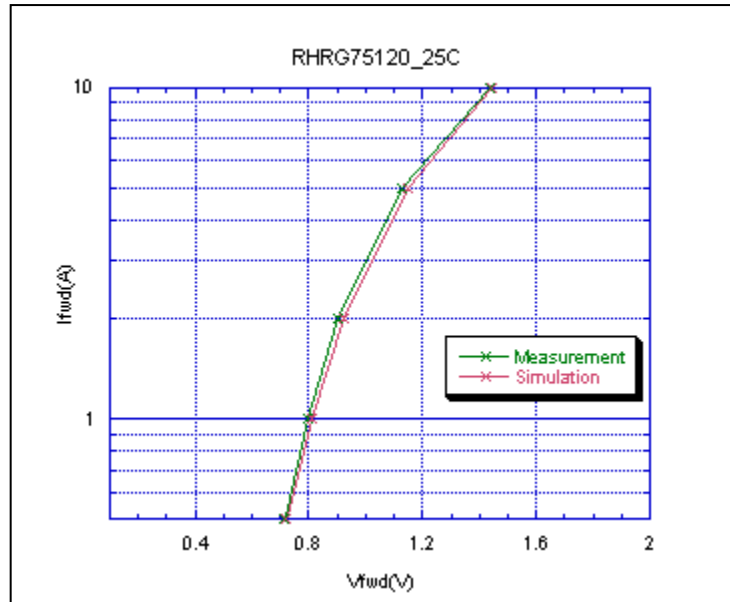


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

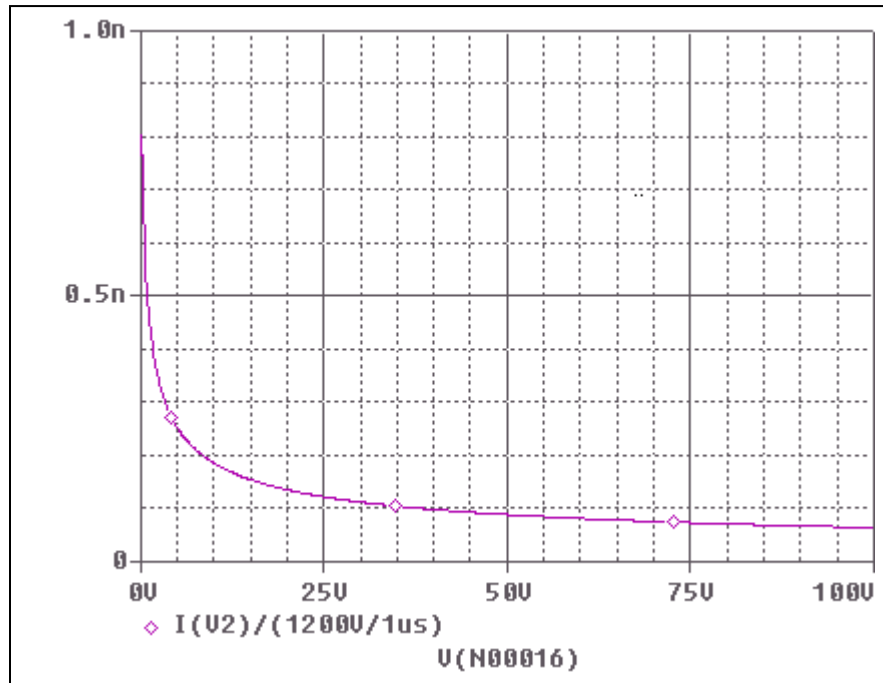


Simulation Result

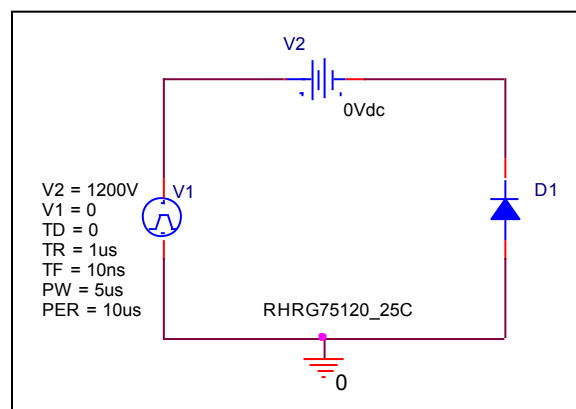
$I_{fwd}(A)$	$V_{fwd}(V)$ Measurement	$V_{fwd}(V)$ Simulation	%Error
0.5	0.710	0.720	-1.41
1	0.800	0.808	-1.00
2	0.906	0.920	-1.55
5	1.126	1.147	-1.87
10	1.436	1.447	-0.77

Capacitance Characteristic

Circuit Simulation Result

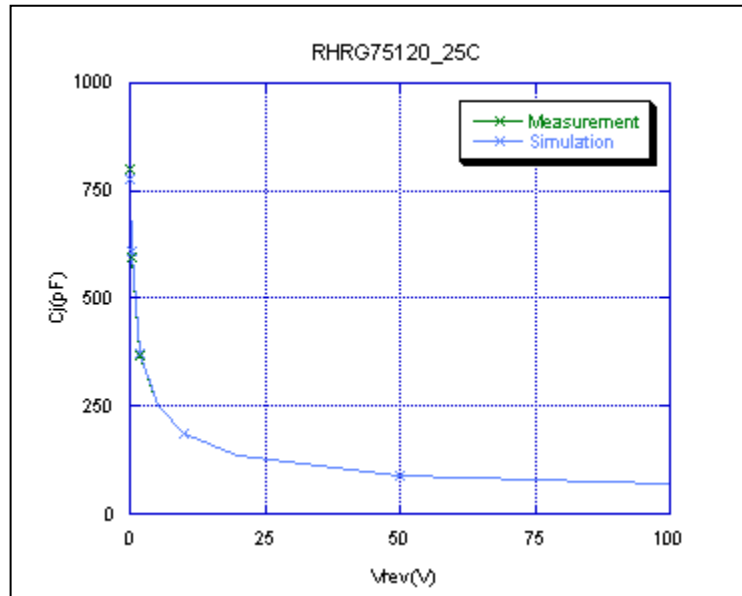


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

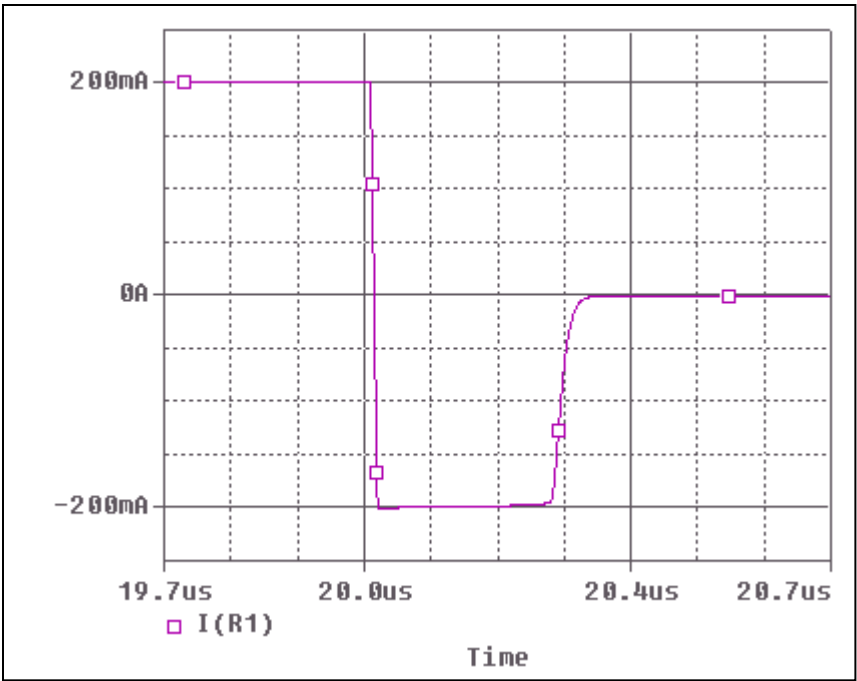


Simulation Result

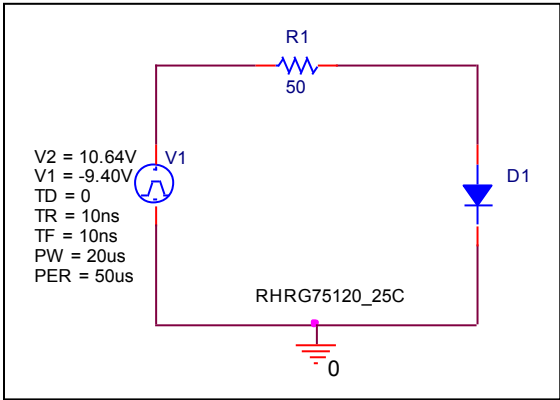
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	897.340	897.345	0.00
0.1	800.330	775.918	3.05
0.2	732.380	754.776	-3.06
0.5	593.380	610.450	-2.88
1	482.720	489.742	-1.45
2	367.520	374.006	-1.76
5	253.620	253.473	0.06
10	186.040	186.112	-0.04
20	135.910	135.625	0.21
50	89.263	88.760	0.56
100	64.908	64.326	0.90

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

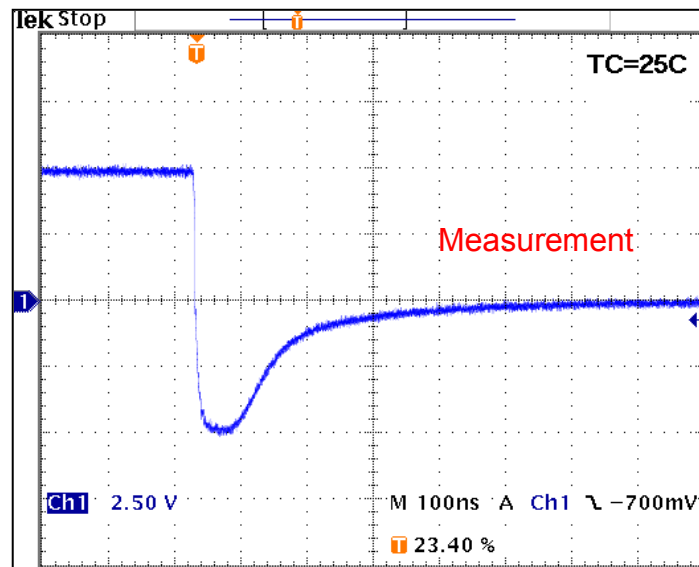


Compare Measurement vs. Simulation

trr	Measurement		Simulation		%Error
	294.0	ns	297.3	ns	

Reverse Recovery Characteristic

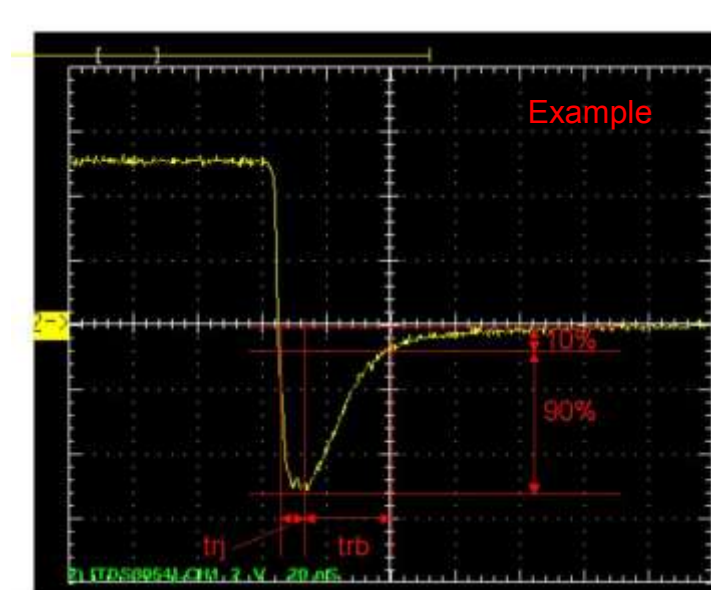
Reference



$T_{rj} = 56 \text{ (ns)}$

$T_{rb} = 238 \text{ (ns)}$

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



Relation between t_{rj} and t_{rb}