

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL

PART NUMBER: RHRG50120

MANUFACTURER: INTERSIL

REMARK: TC=80C

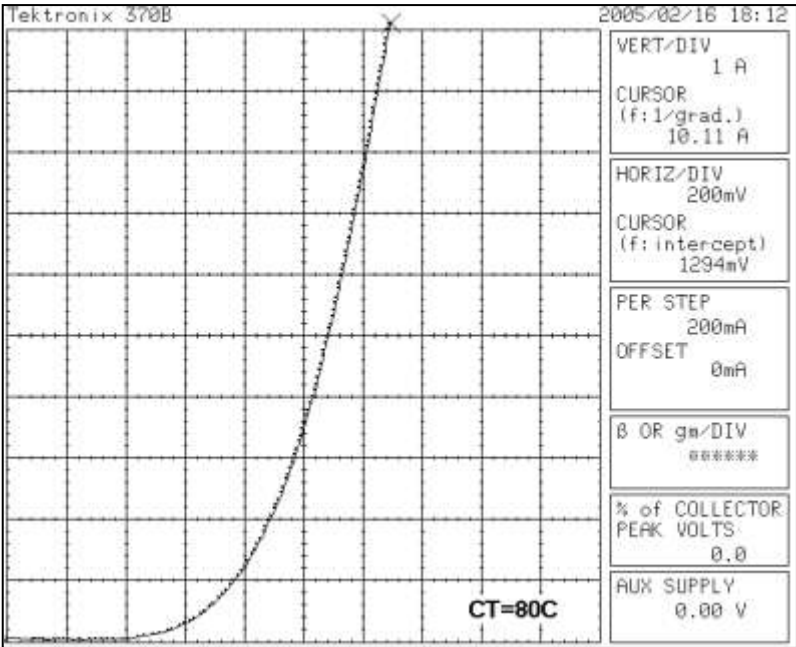


Bee Technologies

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

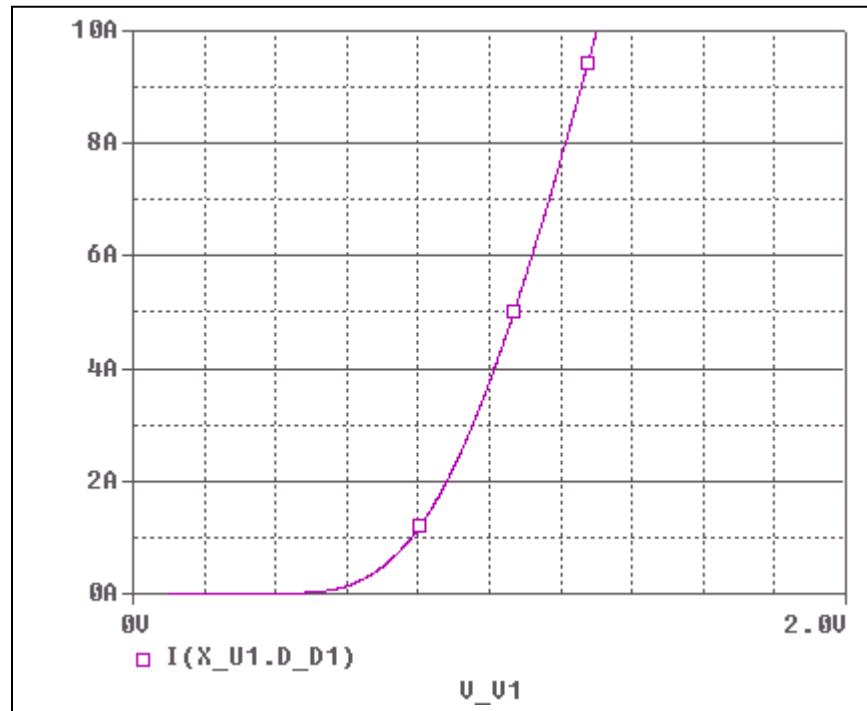
Forward Current Characteristic

Reference

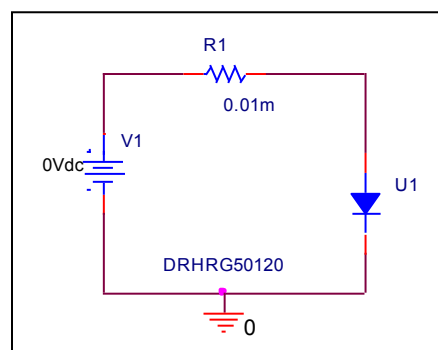


Forward Current Characteristic

Circuit Simulation Result

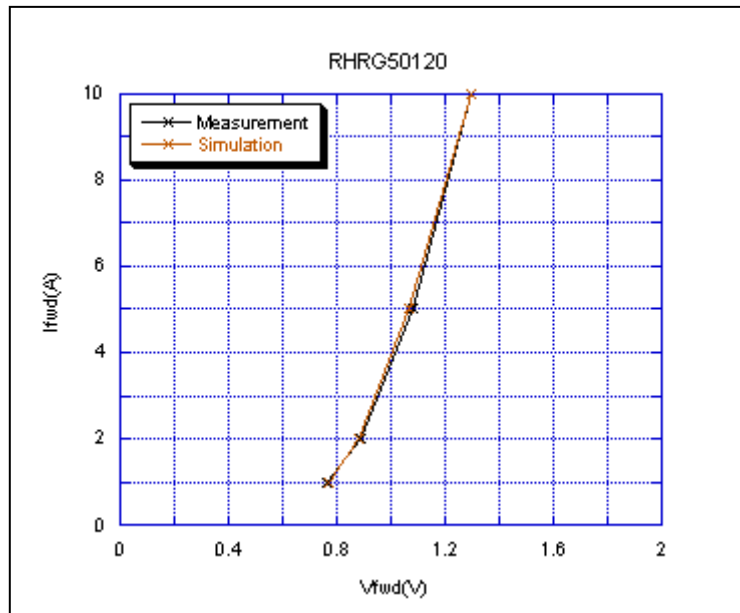


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

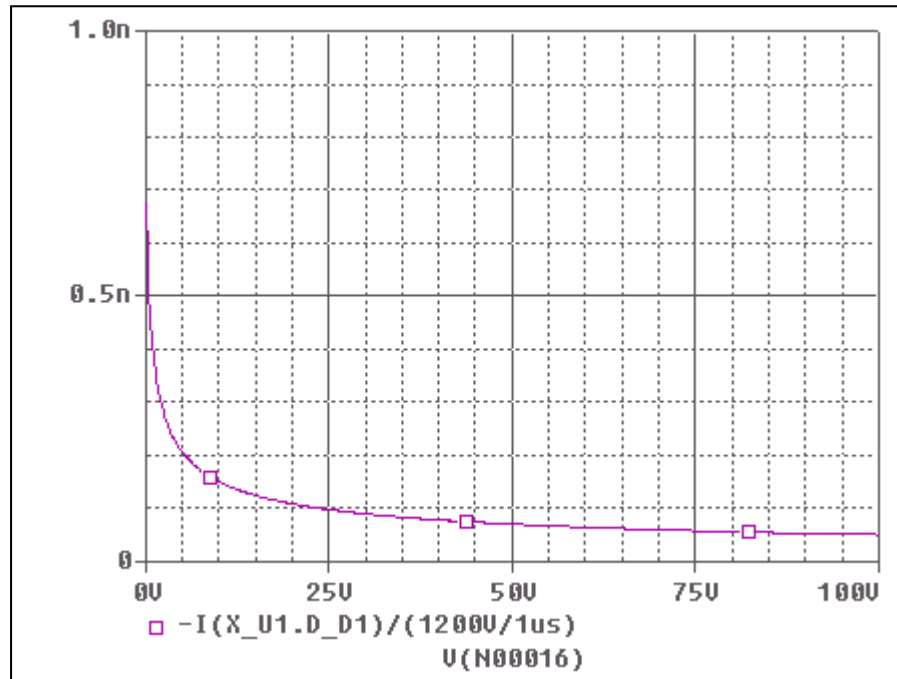


Simulation Result

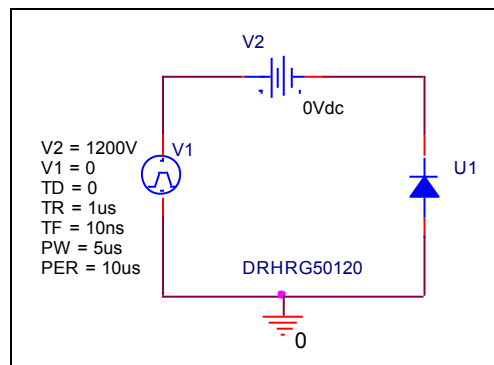
$I_{fwd}(A)$	$V_{fwd}(V)$ Measurement	$V_{fwd}(V)$ Simulation	%Error
1	0.766	0.772	-0.78
2	0.886	0.882	0.45
5	1.082	1.069	1.20
10	1.294	1.300	-0.46

Capacitance Characteristic

Circuit Simulation Result

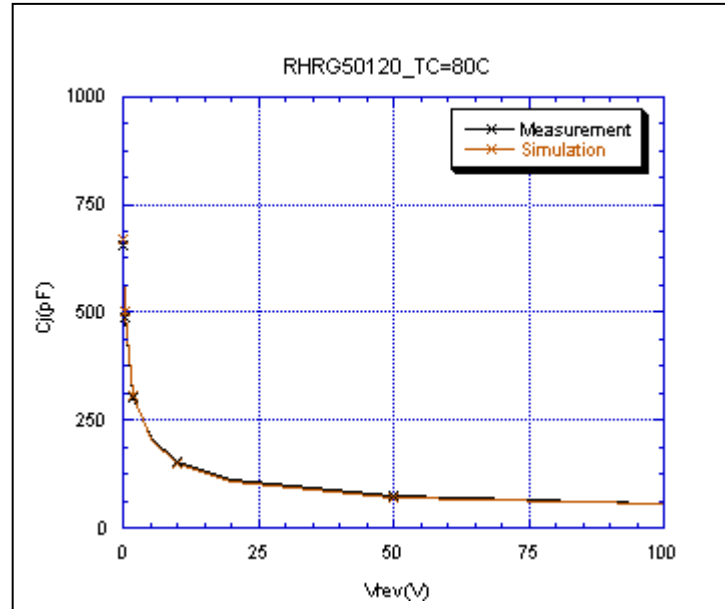


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

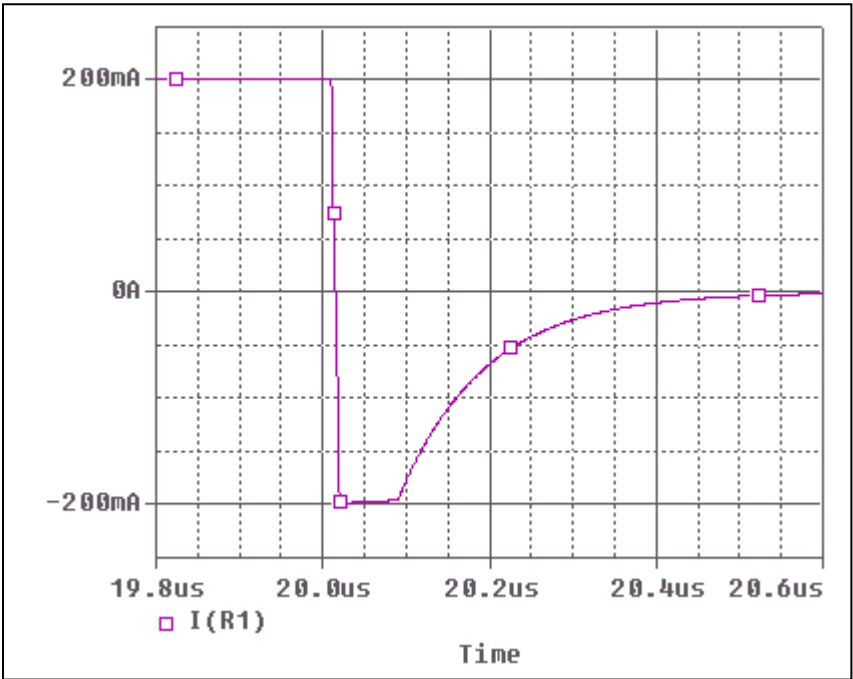


Simulation Result

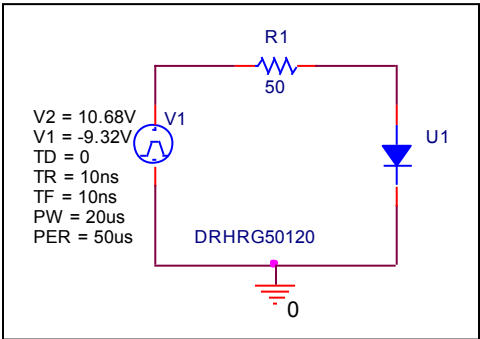
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	732.209	732.209	0.00
0.1	654.072	667.296	-2.02
0.2	598.740	627.343	-4.78
0.5	486.403	501.116	-3.02
1	394.179	400.786	-1.68
2	303.743	307.175	-1.13
5	207.782	207.148	0.31
10	152.859	150.957	1.24
20	111.575	109.263	2.07
50	73.062	70.822	3.07
100	52.970	50.869	3.97

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

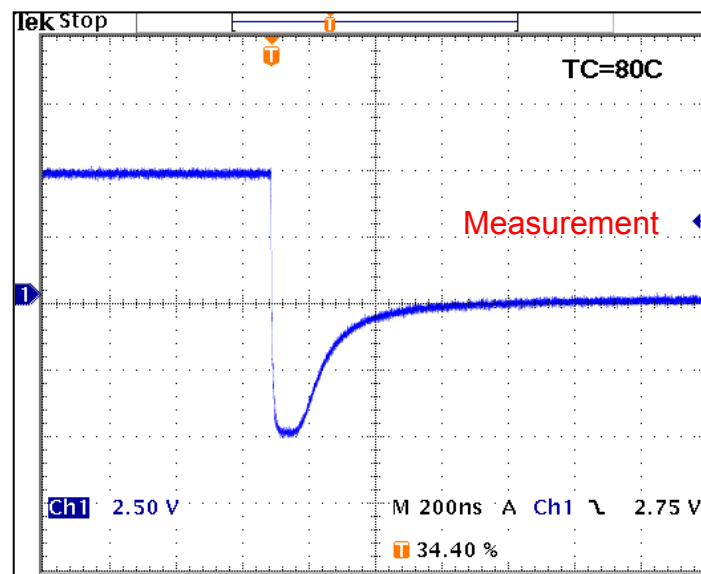


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	76	ns	75.463	ns	0.70
trb	236	ns	236	ns	0.00

Reverse Recovery Characteristic

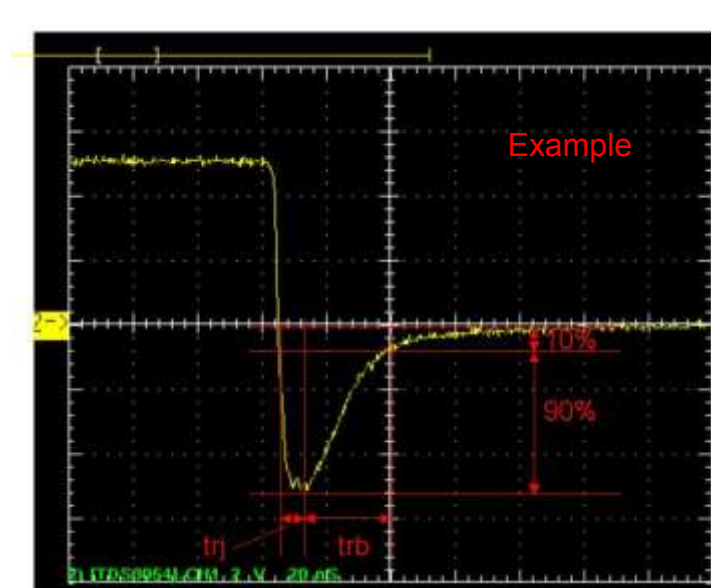
Reference



$T_{rj} = 76(\text{ns})$

$T_{rb} = 236(\text{ns})$

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



Relation between t_{rj} and t_{rb}