

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL

PART NUMBER: RHRG50120

MANUFACTURER: INTERSIL

REMARK: TC=150C

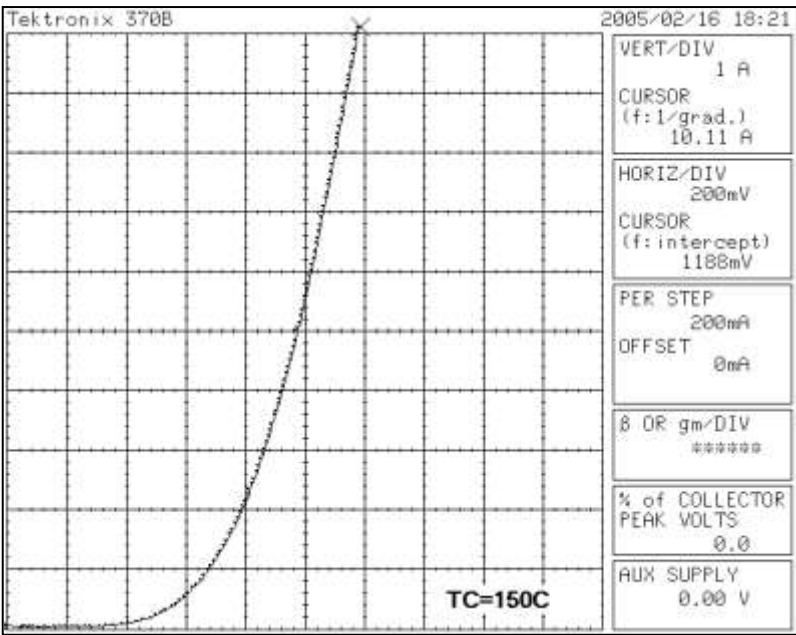


Bee Technologies Inc.

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

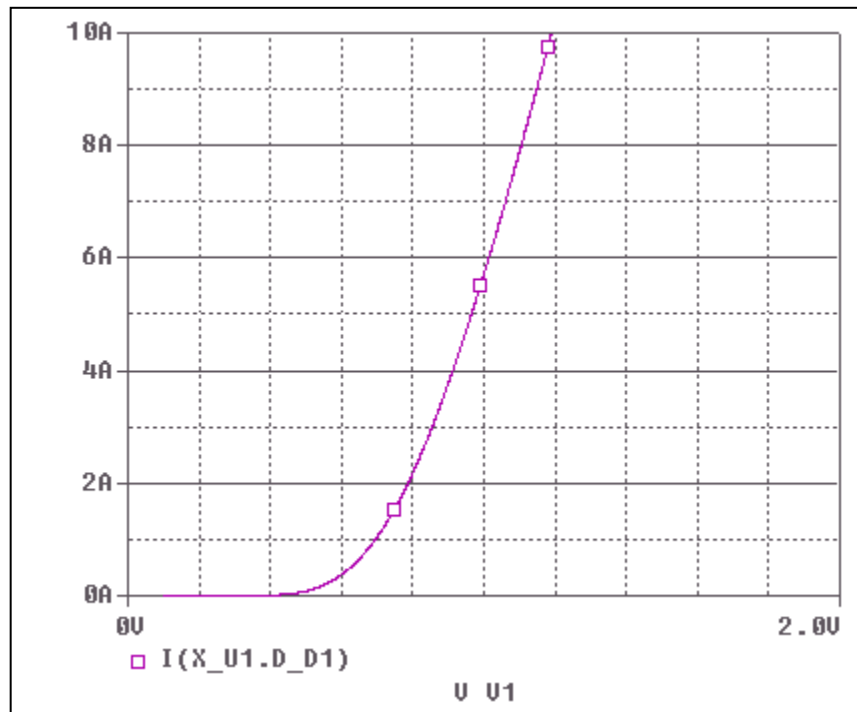
Forward Current Characteristic

Reference

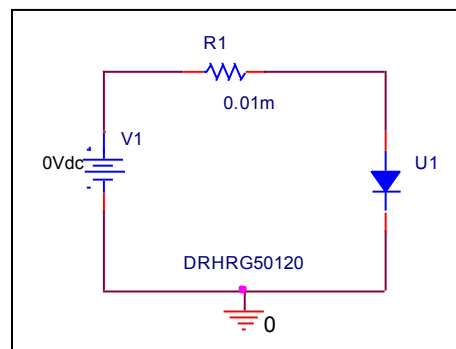


Forward Current Characteristic

Circuit Simulation Result

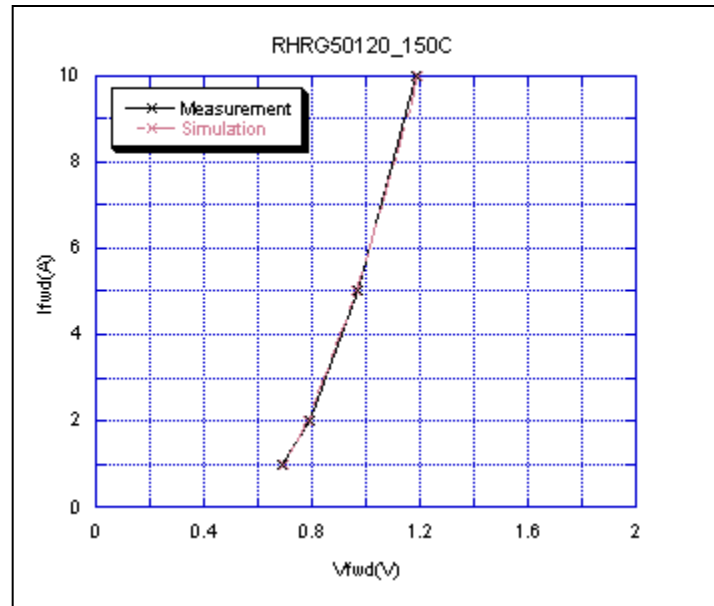


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

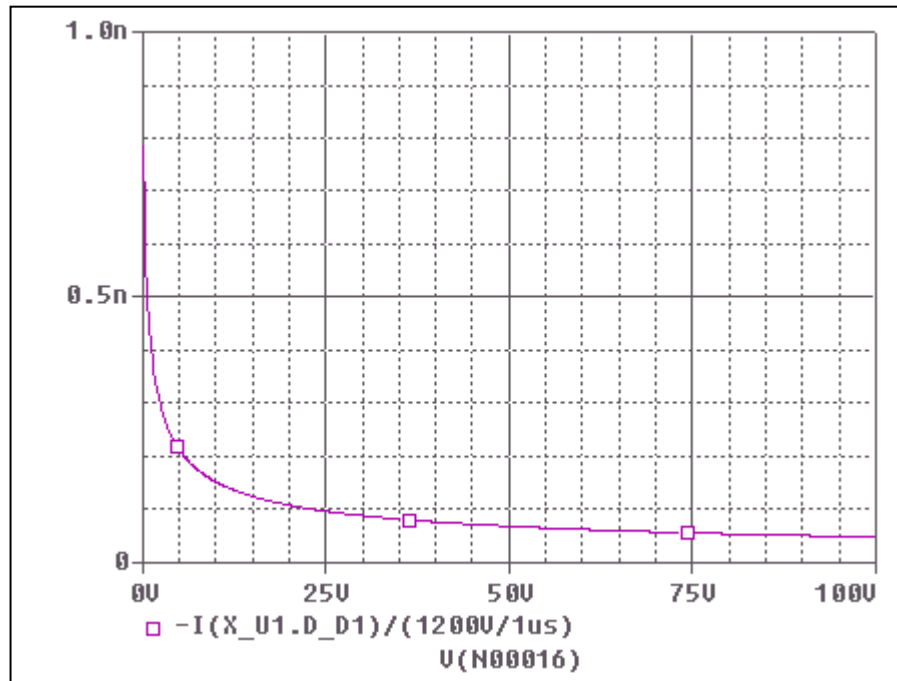


Simulation Result

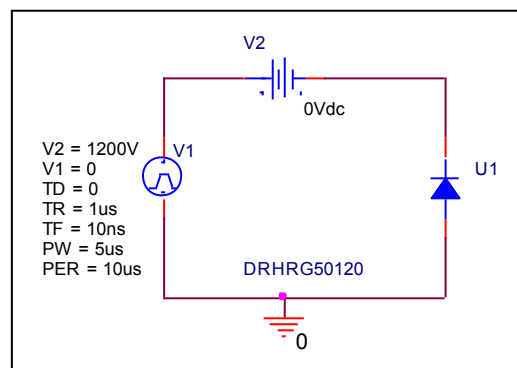
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
1	0.688	0.695	-1.02
2	0.792	0.786	0.76
5	0.968	0.964	0.41
10	1.188	1.190	-0.17

Capacitance Characteristic

Circuit Simulation Result

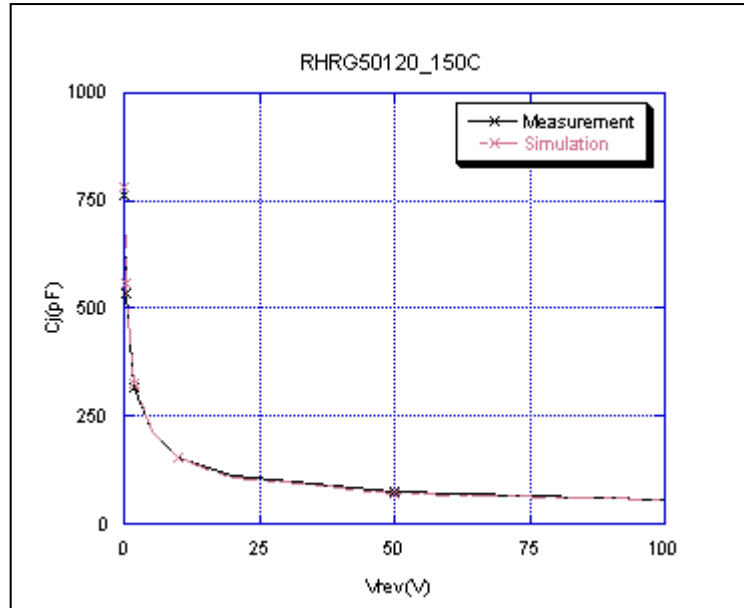


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

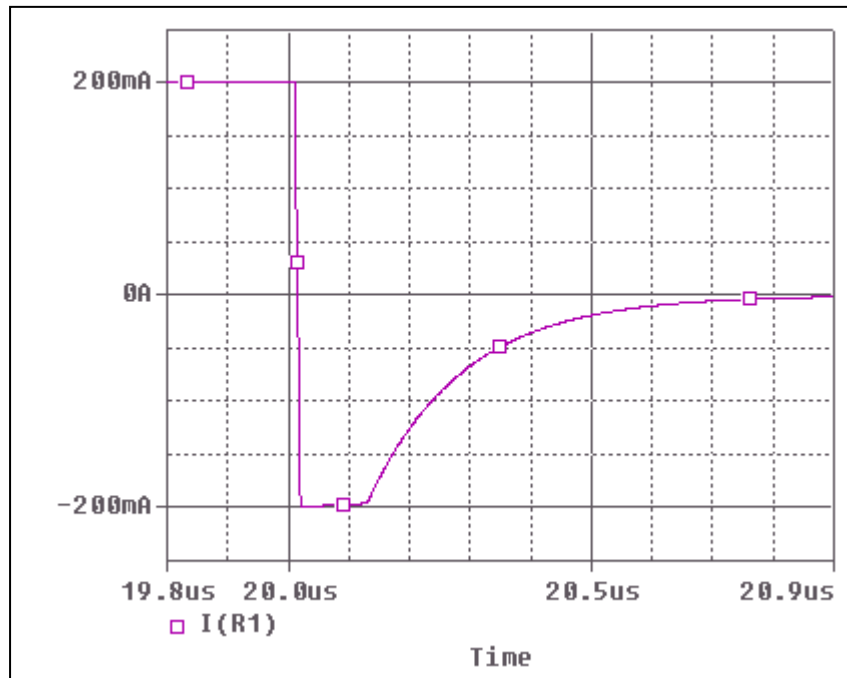


Simulation Result

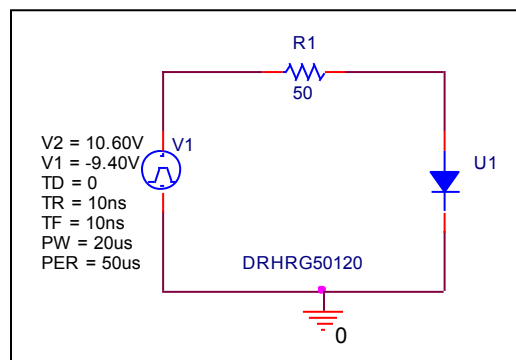
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	862.610	862.610	0.00
0.1	762.730	778.171	-2.02
0.2	704.490	731.026	-3.77
0.5	535.900	559.355	-4.38
1	422.080	434.496	-2.94
2	315.420	324.630	-2.92
5	212.620	213.269	-0.31
10	155.180	152.712	1.59
20	112.660	108.559	3.64
50	73.555	70.730	3.84
100	53.197	50.579	4.92

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

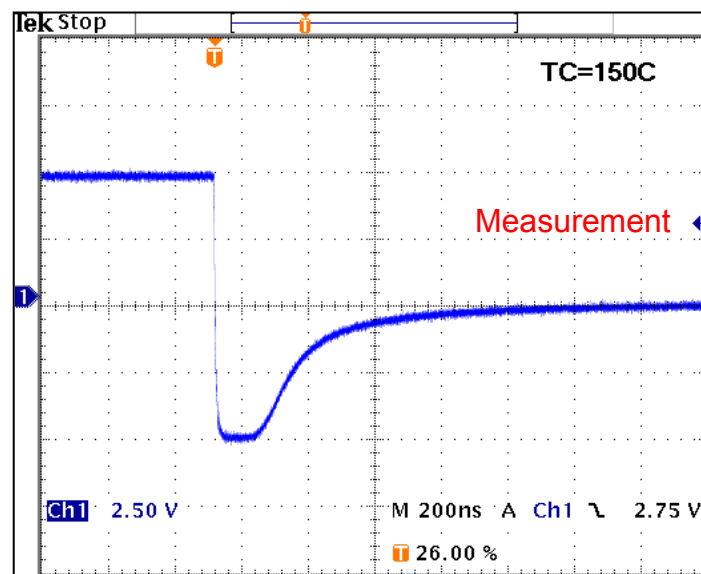


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	116.0	ns	115.7	ns	0.258
trb	360.0	ns	358.5	ns	0.416

Reverse Recovery Characteristic

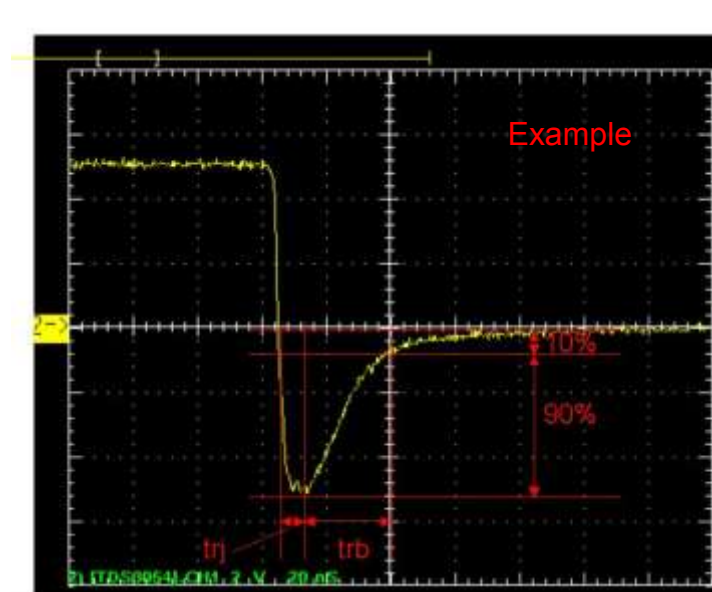
Reference



$T_{rr} = 116(\text{ns})$

$T_{rb} = 360(\text{ns})$

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



Relation between t_{rr} and t_{rb}