

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL
PART NUMBER: RHRP30120
MANUFACTURER: INTERSIL
REMARK: TC=110C

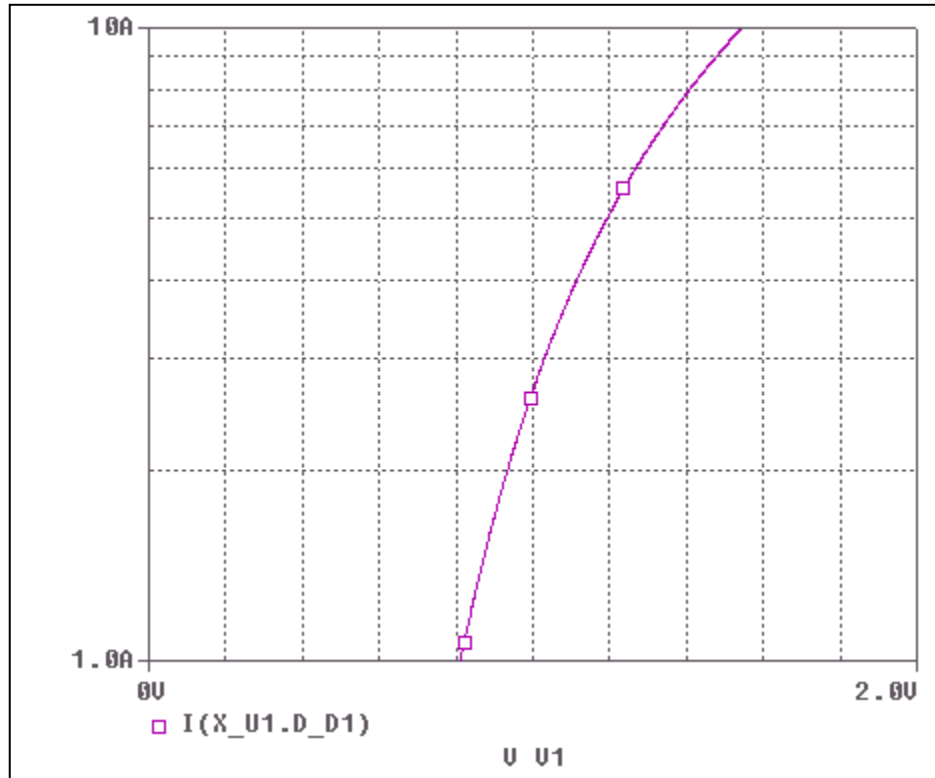


Bee Technologies Inc.

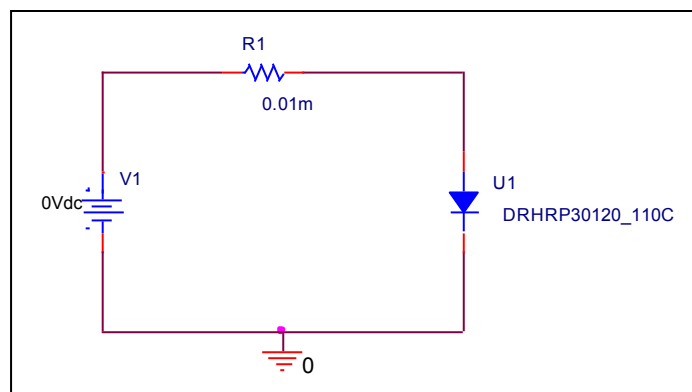
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive value)
IBV	Reverse Breakdown Current(a positive value)
TT	Transit Time
EG	Energy-band Gap

Forward Current Characteristic

Circuit Simulation Result

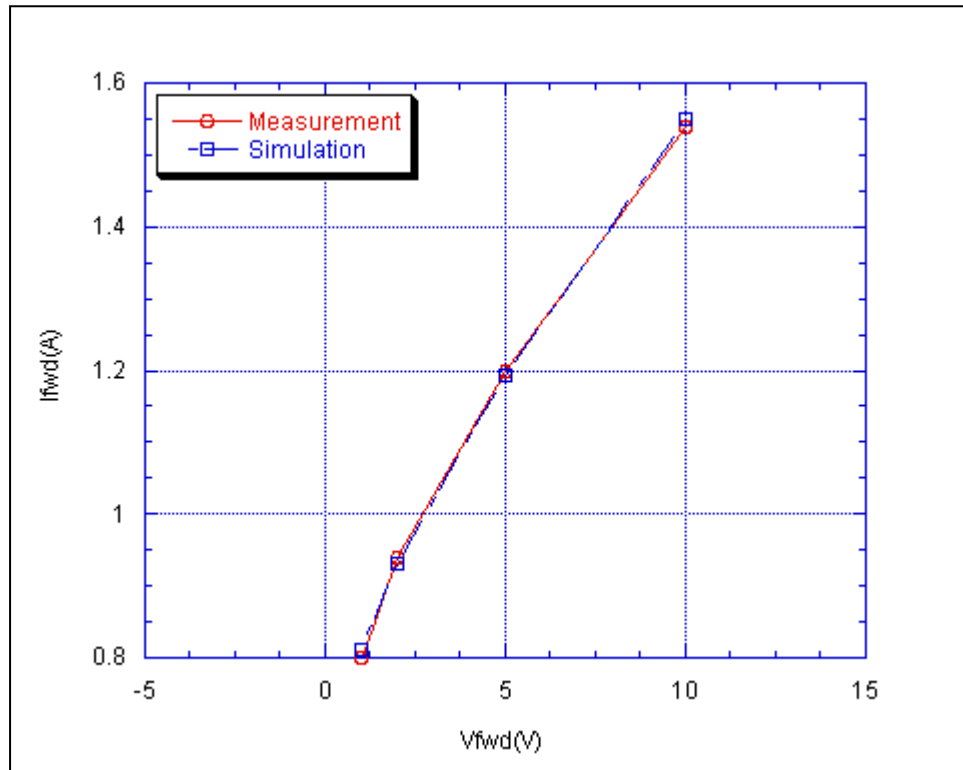


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

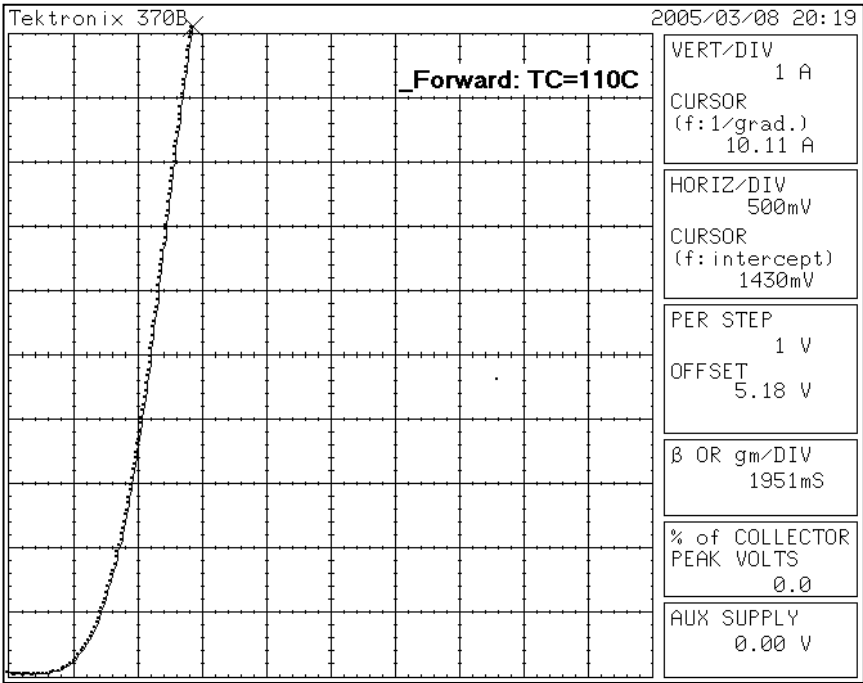


Simulation Result

I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
1	0.800	0.811	-1.38
2	0.940	0.933	0.80
5	1.200	1.193	0.63
10	1.540	1.550	-0.64

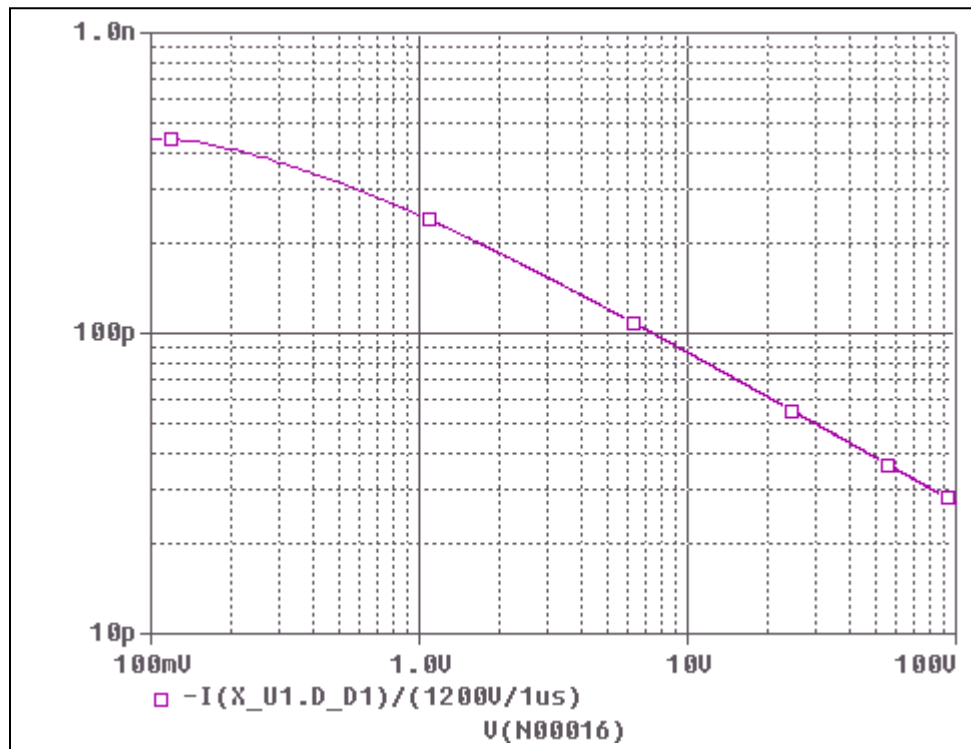
Forward Current Characteristic

Reference

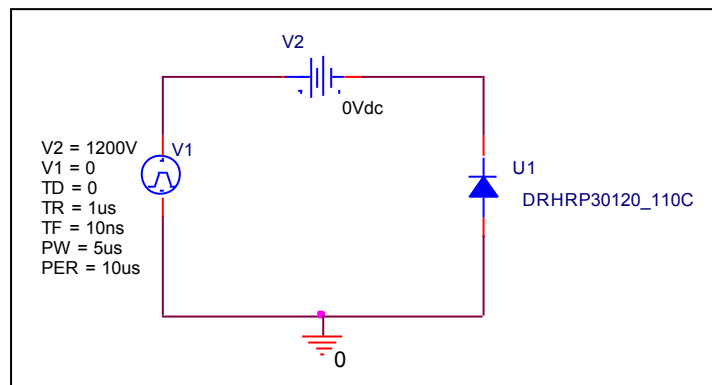


Capacitance Characteristic

Circuit Simulation Result

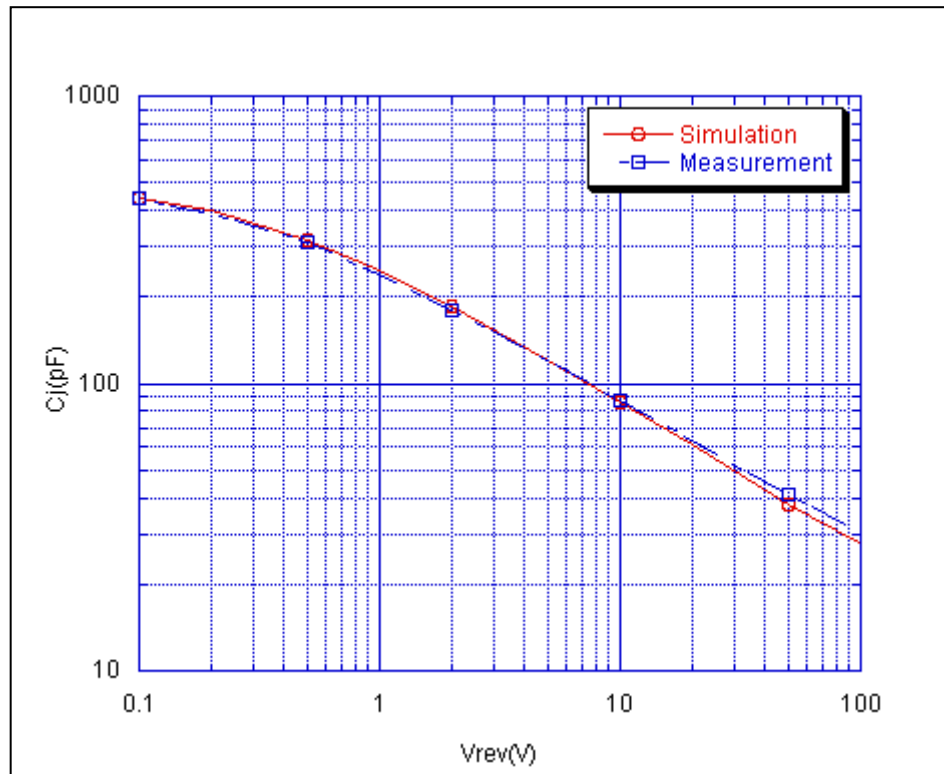


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

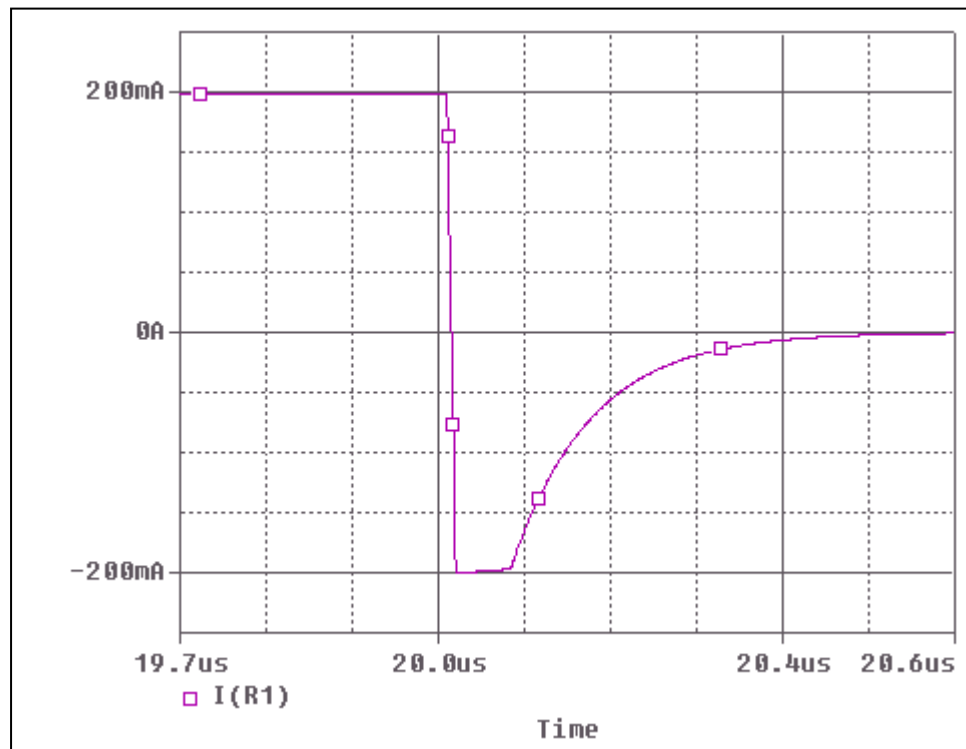


Simulation Result

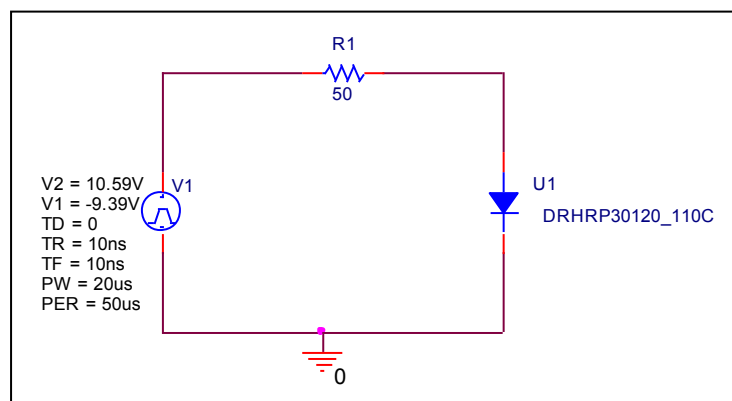
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	486.000	486.000	0.00
0.1	440.000	442.203	-0.50
0.2	390.000	401.496	-2.95
0.5	308.000	315.614	-2.47
1	240.000	246.984	-2.91
2	180.000	184.319	-2.40
5	120.000	120.395	-0.33
10	88.000	86.394	1.82
20	63.000	61.207	2.85

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

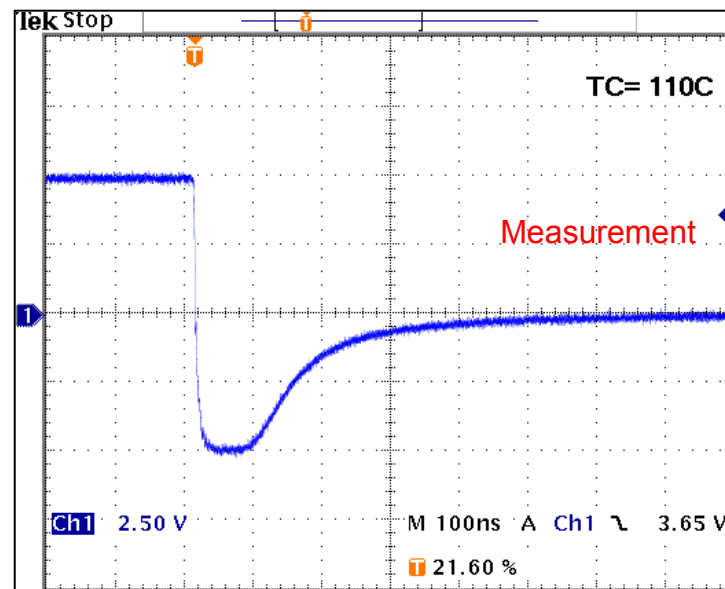


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	70.00	ns	69.66	ns	- 0.48
trb	210.00	ns	209.9	ns	- 0.04

Reverse Recovery Characteristic

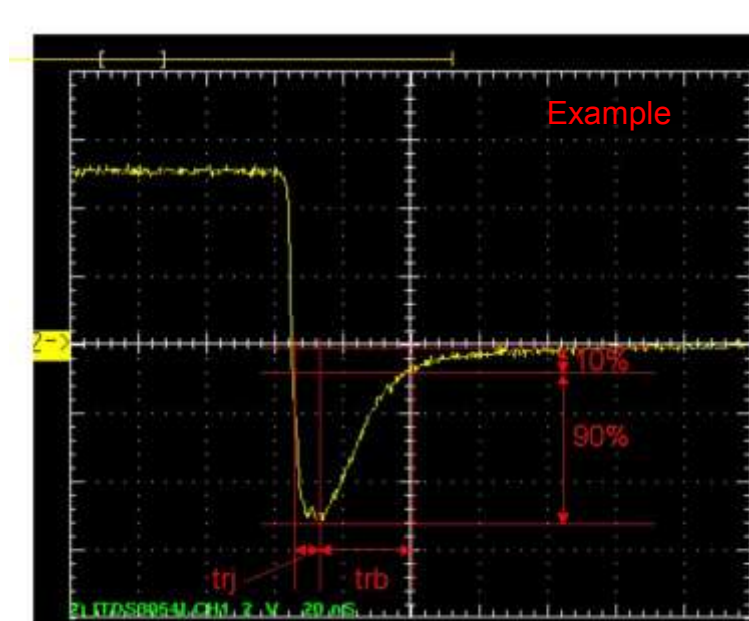
Reference



$T_{rj} = 70 \text{ (ns)}$

$T_{rb} = 210 \text{ (ns)}$

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



Relation between t_{rj} and t_{rb}