

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL

PART NUMBER: RHRP30120

MANUFACTURER: INTERSIL

REMARK: TC=150C

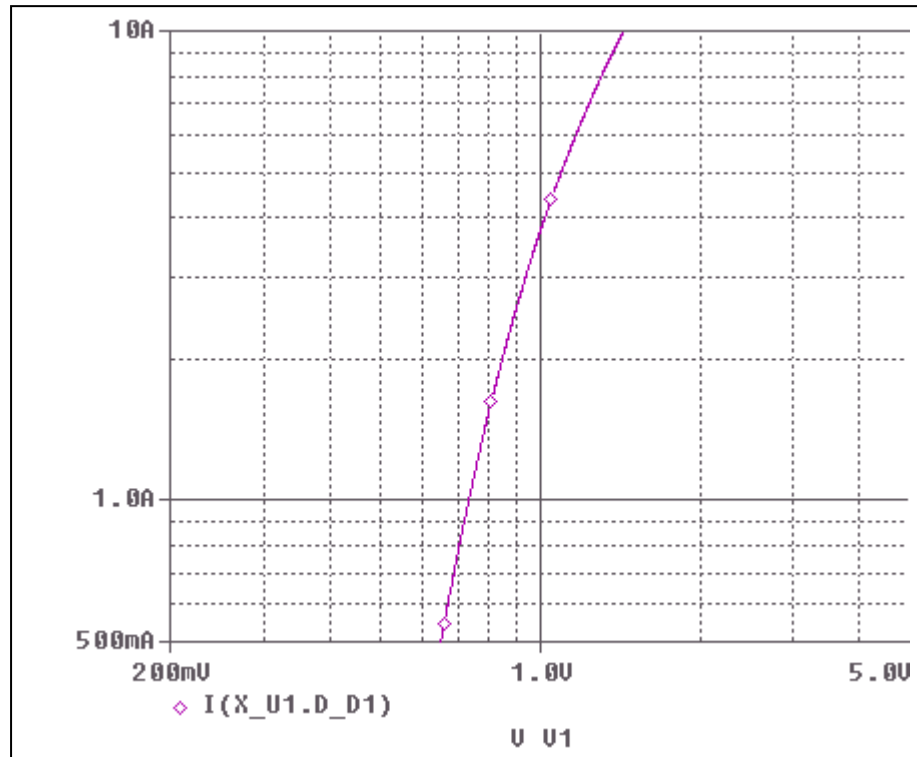


Bee Technologies Inc.

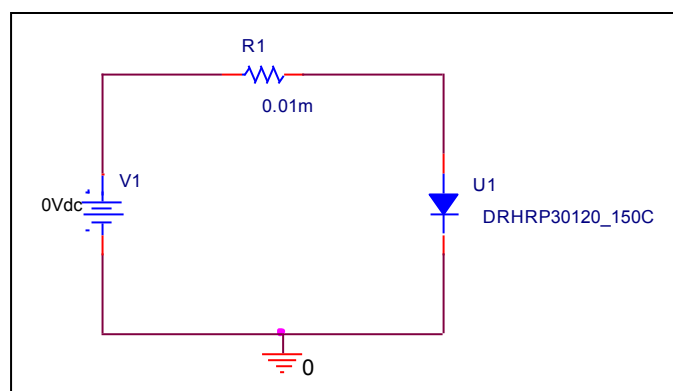
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

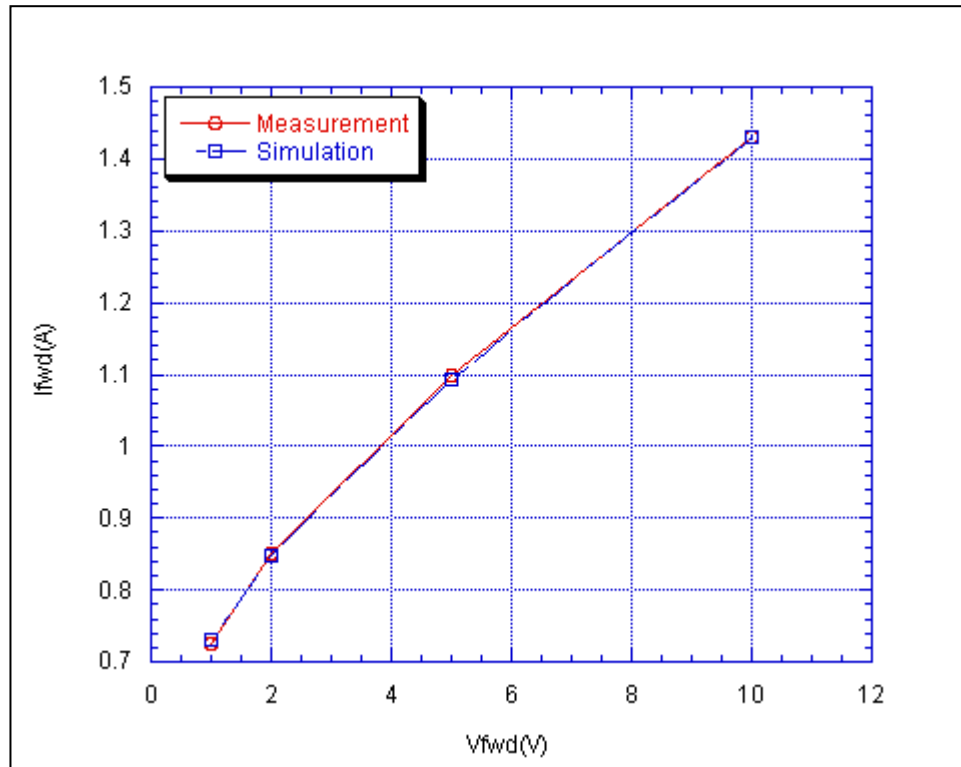


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

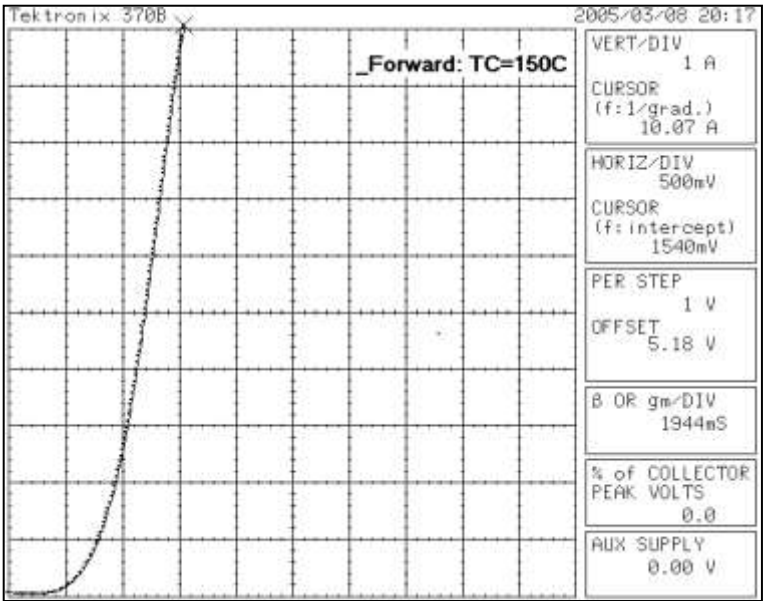


Simulation Result

I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
1	0.725	0.732	-0.97
2	0.850	0.847	0.35
5	1.100	1.093	0.64
10	1.430	1.430	0.00

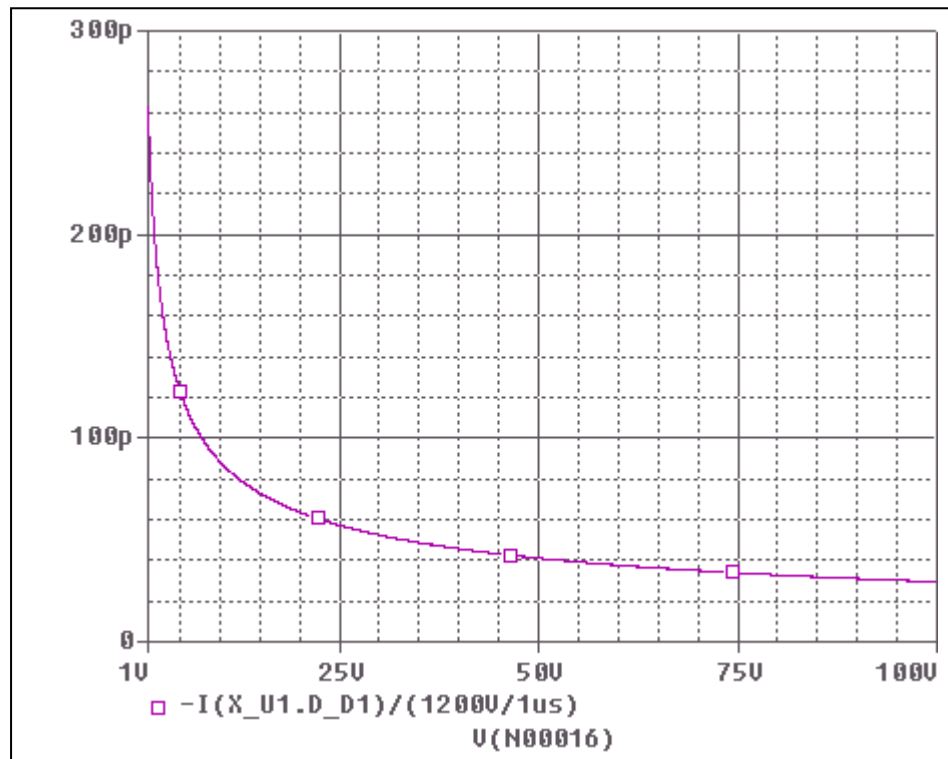
Forward Current Characteristic

Reference

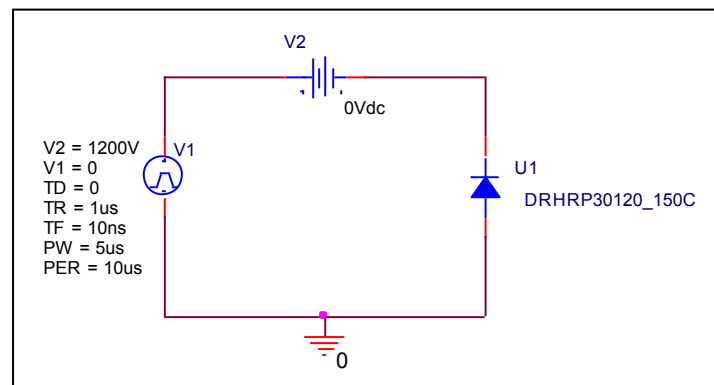


Capacitance Characteristic

Circuit Simulation Result

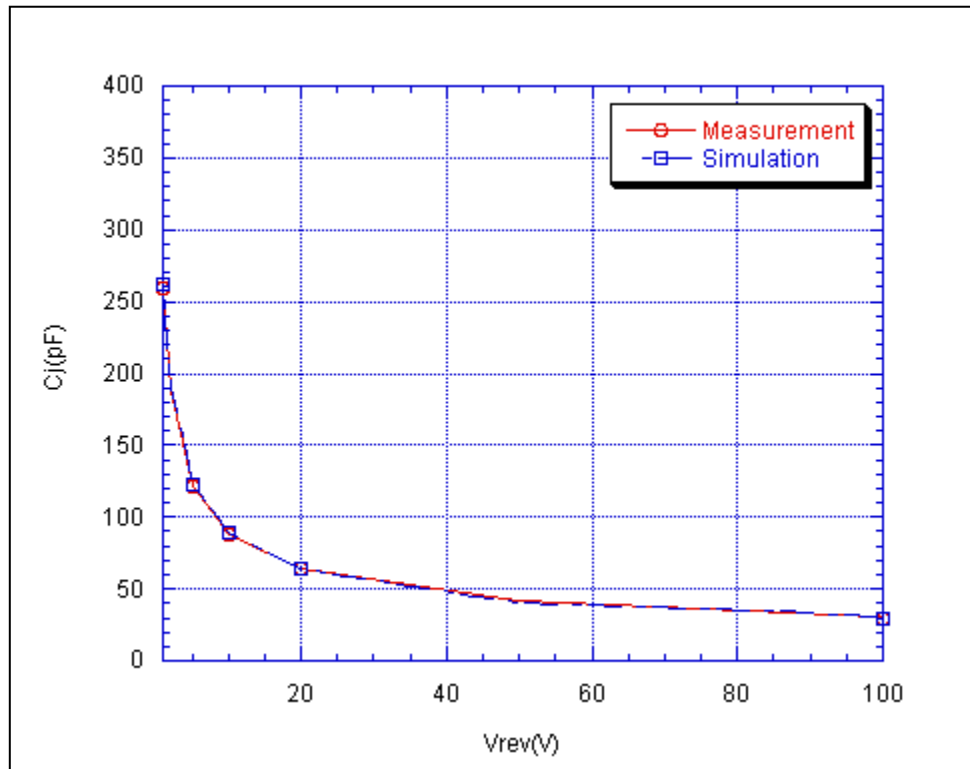


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

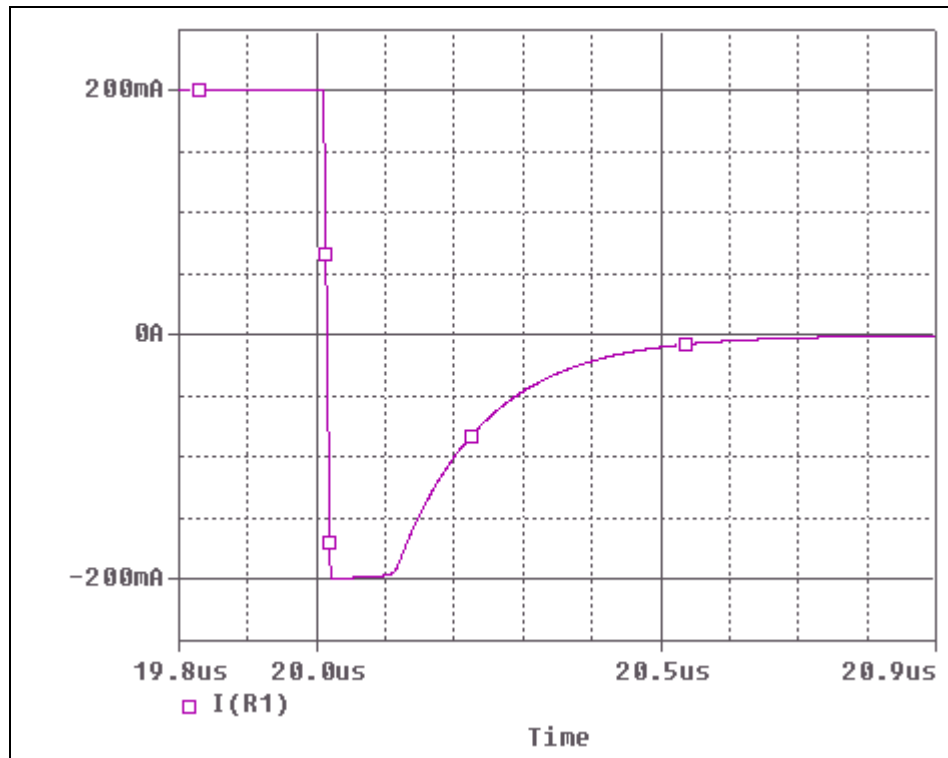


Simulation Result

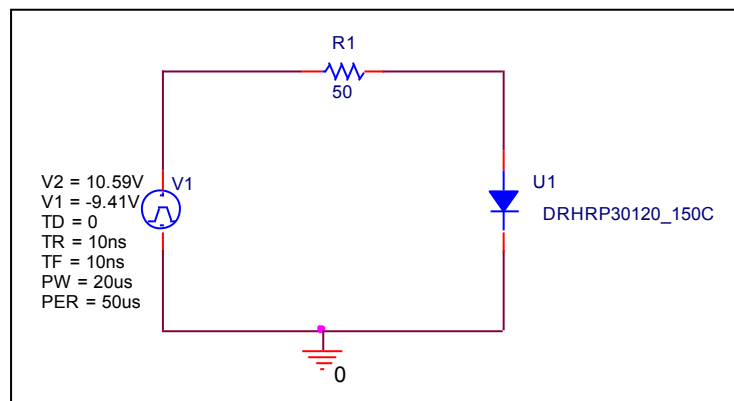
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	571.000	571.000	0.00
1	259.000	262.245	-1.25
2	188.000	189.633	-0.87
5	122.000	123.176	-0.96
10	88.000	88.609	-0.69
20	64.000	63.585	0.65
50	42.000	41.011	2.35
100	30.000	29.409	1.97

Reverse Recovery Characteristic

Circuit Simulation Result



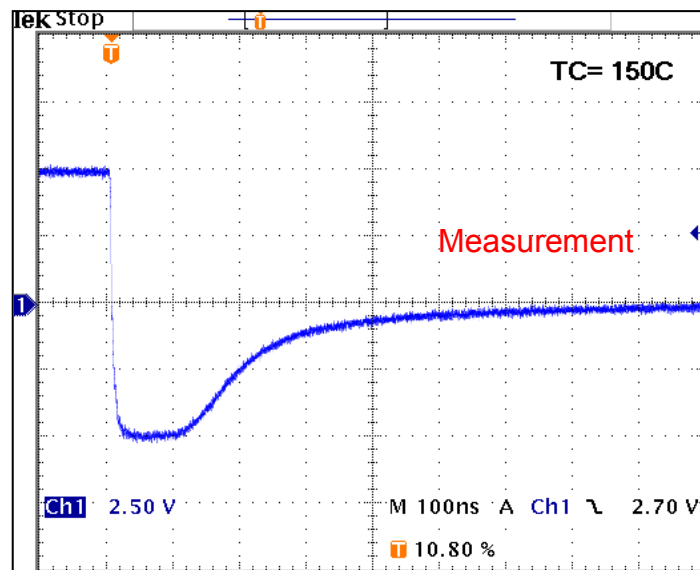
Evaluation Circuit



Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	96.00	ns	96.21	ns	0.218
trb	296.00	ns	296.14	ns	0.047

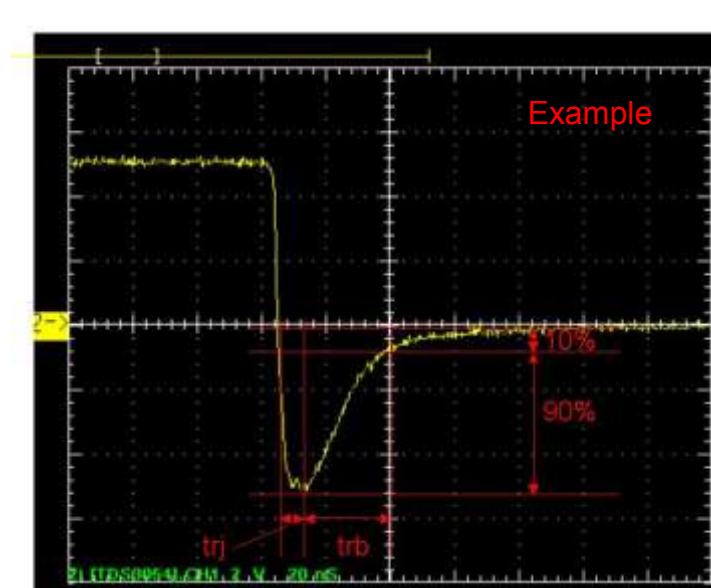
Reference



Trj =96 (ns)

Trb=296 (ns)

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



Relation between trj and trb