

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL
PART NUMBER: RURP15120
MANUFACTURER: INTERSIL
REMARK: TC=150C

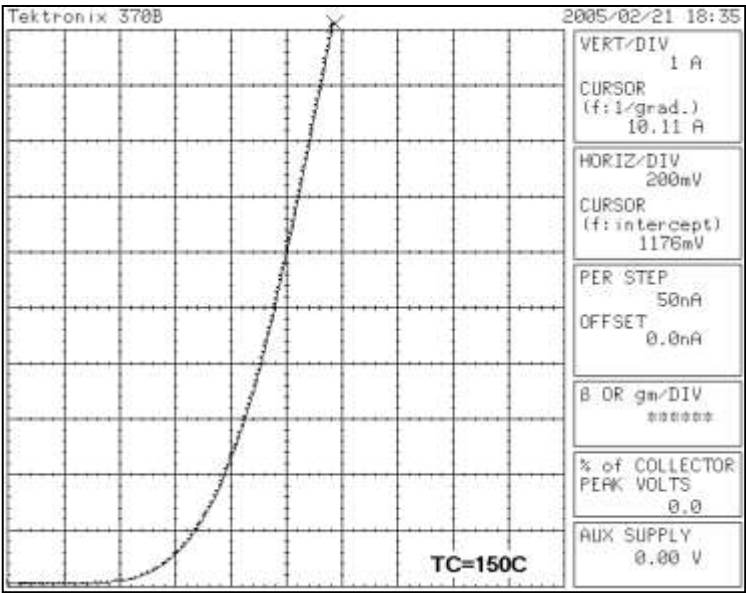


Bee Technologies Inc.

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

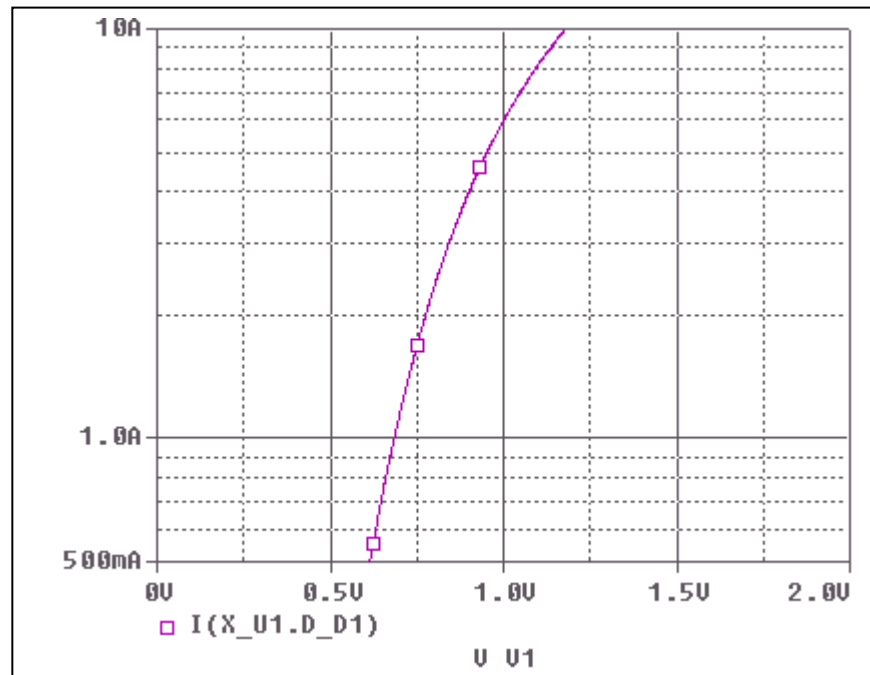
Forward Current Characteristic

Reference

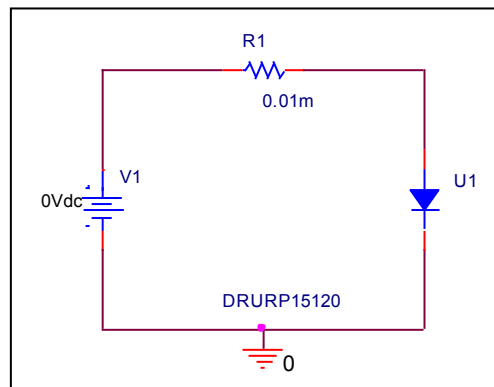


Forward Current Characteristic

Circuit Simulation Result

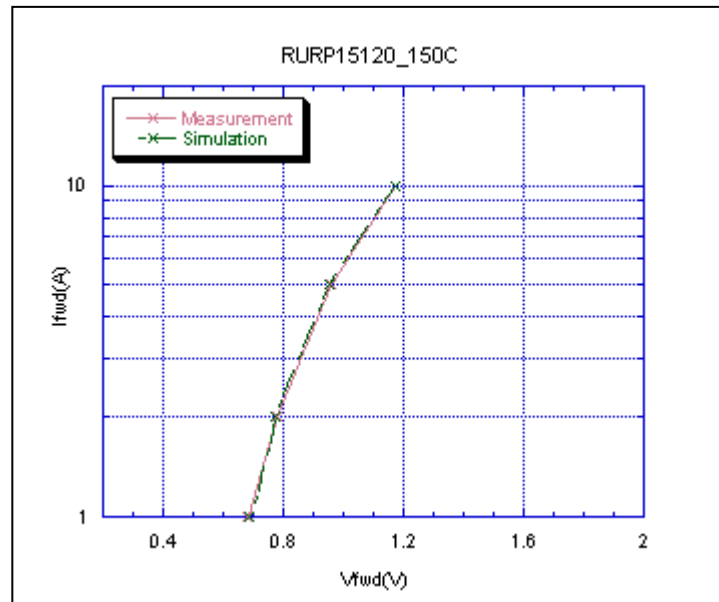


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

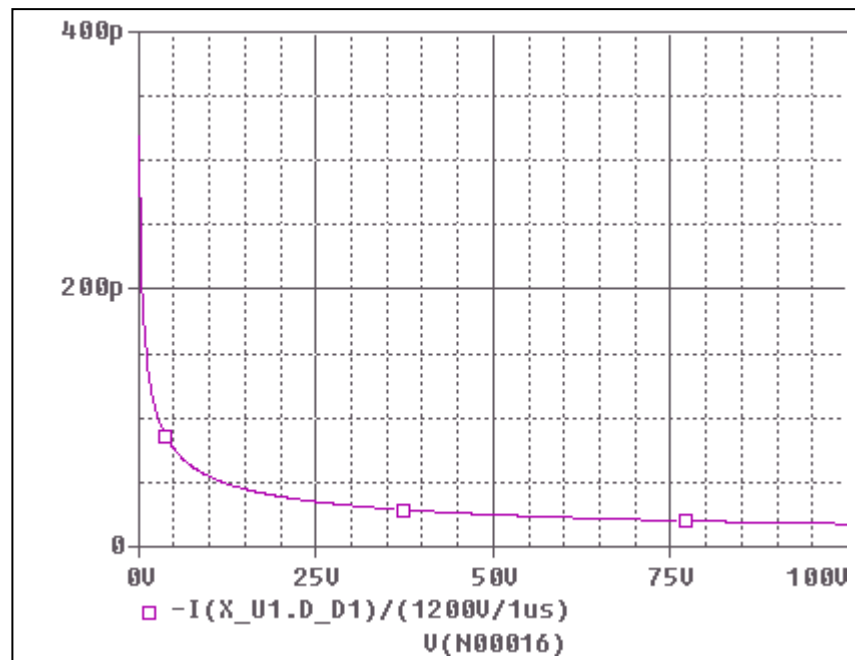


Simulation Result

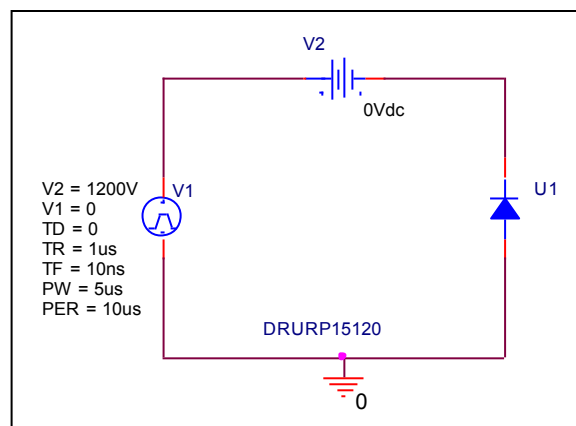
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
1	0.678	0.684	-0.88
2	0.778	0.775	0.39
5	0.958	0.954	0.42
10	1.176	1.171	0.43

Capacitance Characteristic

Circuit Simulation Result

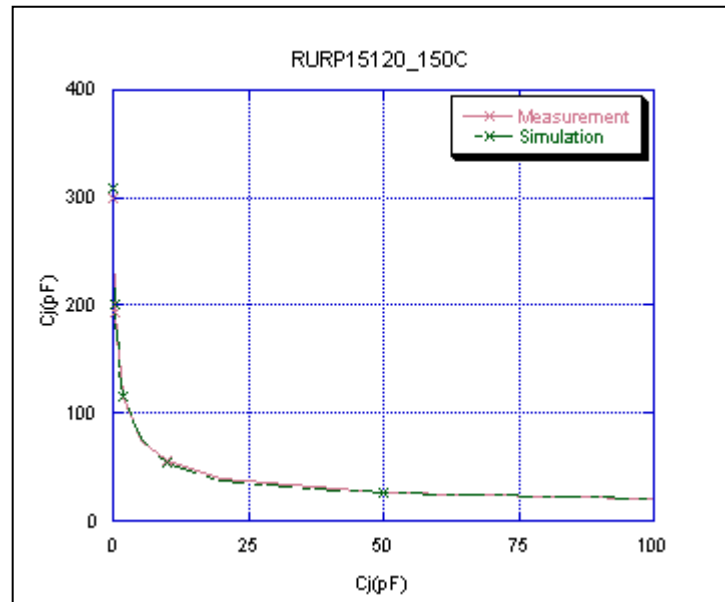


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

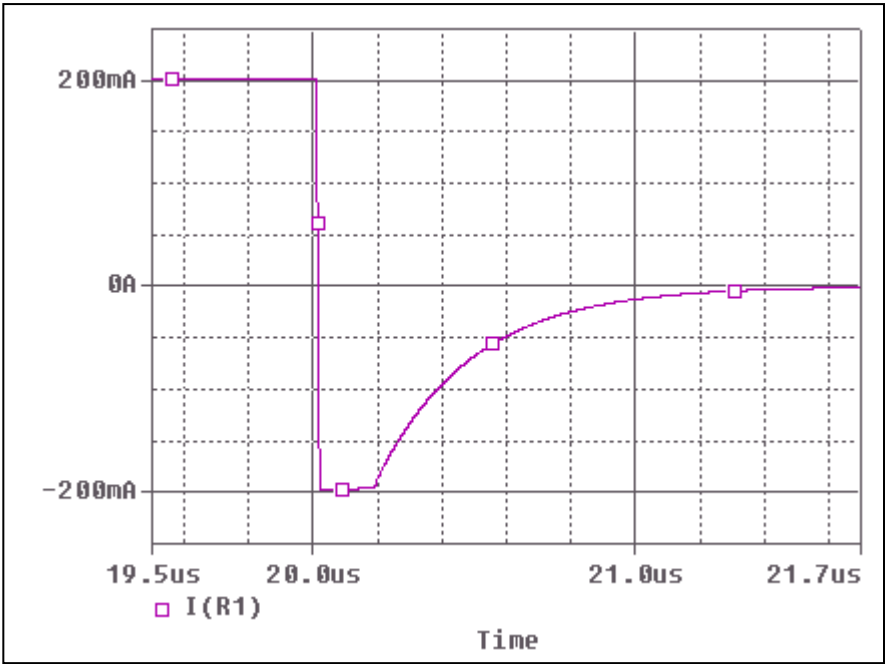


Simulation Result

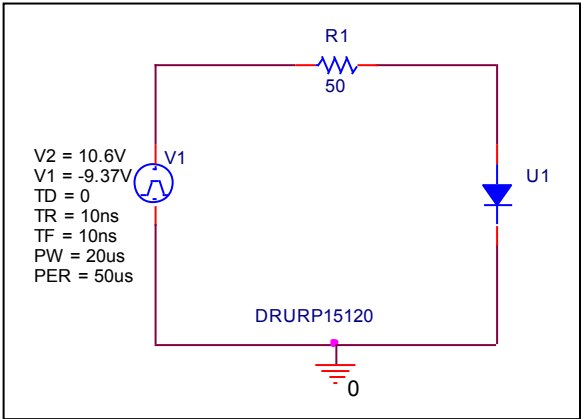
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	338.155	338.155	0.00
0.1	298.722	308.081	-3.13
0.2	264.730	270.247	-2.08
0.5	193.316	200.013	-3.46
1	153.054	155.945	-1.89
2	114.747	115.935	-1.04
5	75.477	76.030	-0.73
10	55.149	54.626	0.95
20	39.902	38.205	4.25
50	26.246	25.898	1.33
100	19.100	18.522	3.03

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

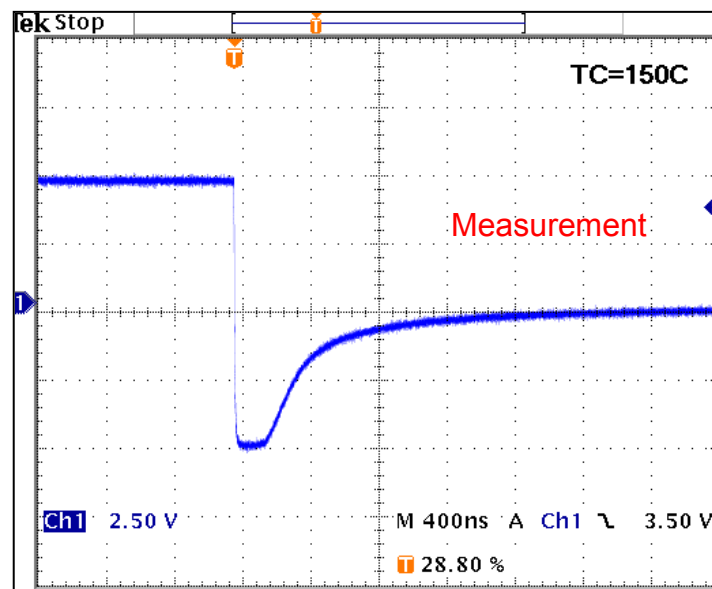


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	176.0	ns	175.0	ns	0.57
trb	672.0	ns	670.5	ns	0.22

Reverse Recovery Characteristic

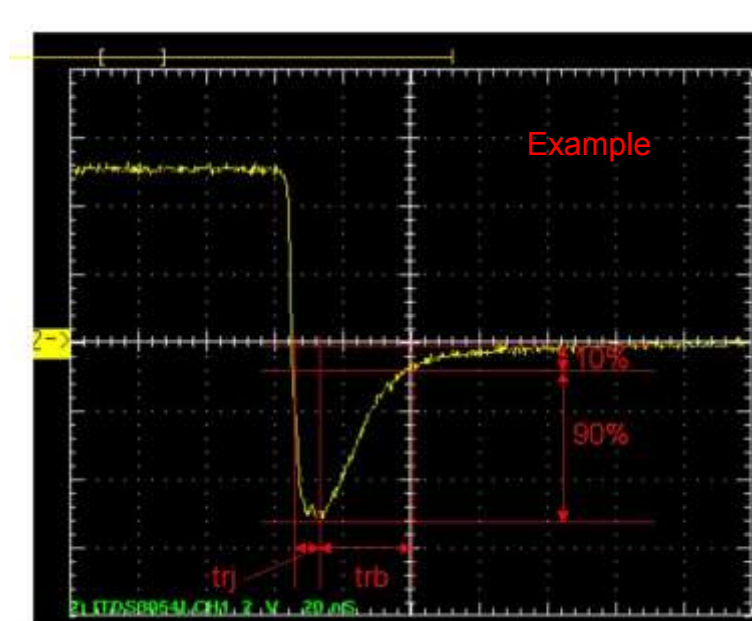
Reference



$T_{rj} = 176(\text{ns})$

$T_{rb} = 672(\text{ns})$

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



Relation between t_{rj} and t_{rb}