

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL

PART NUMBER: RURP15120

MANUFACTURER: INTERSIL

REMARK: TC=25C

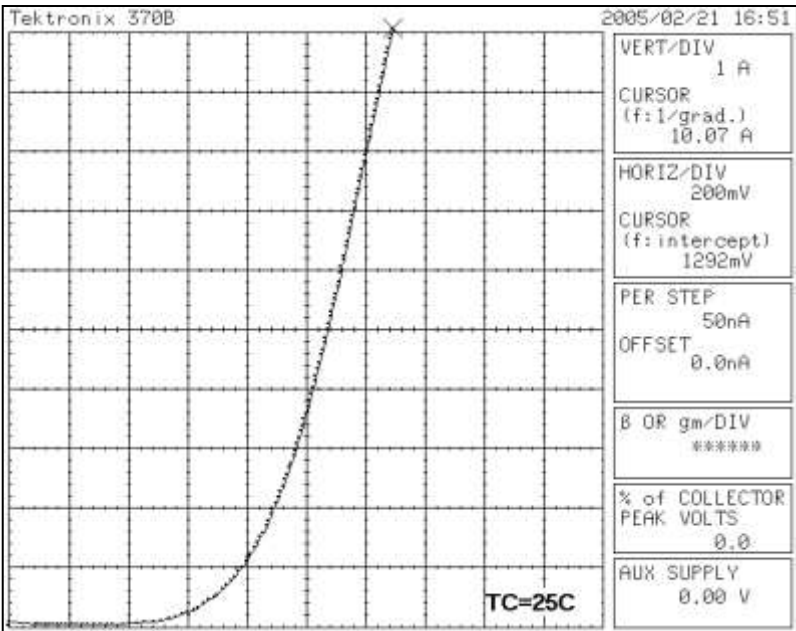


Bee Technologies Inc.

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

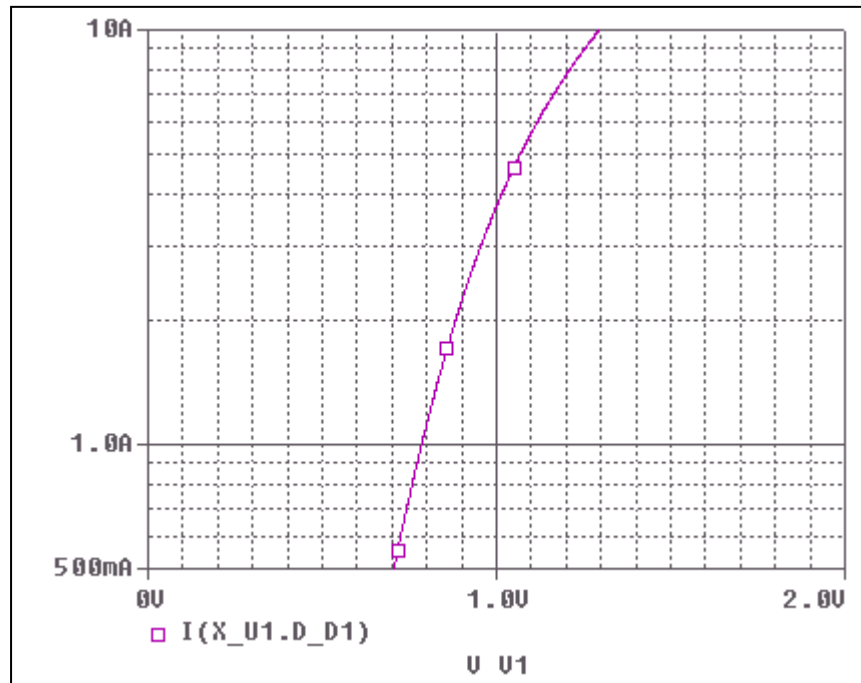
Forward Current Characteristic

Reference

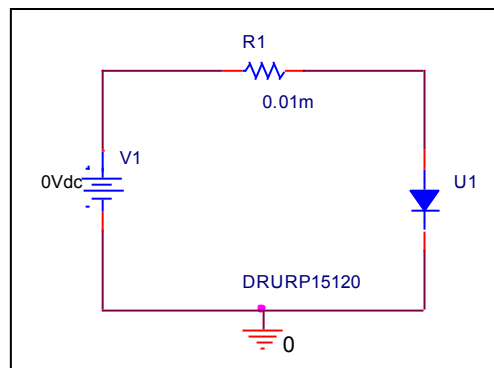


Forward Current Characteristic

Circuit Simulation Result

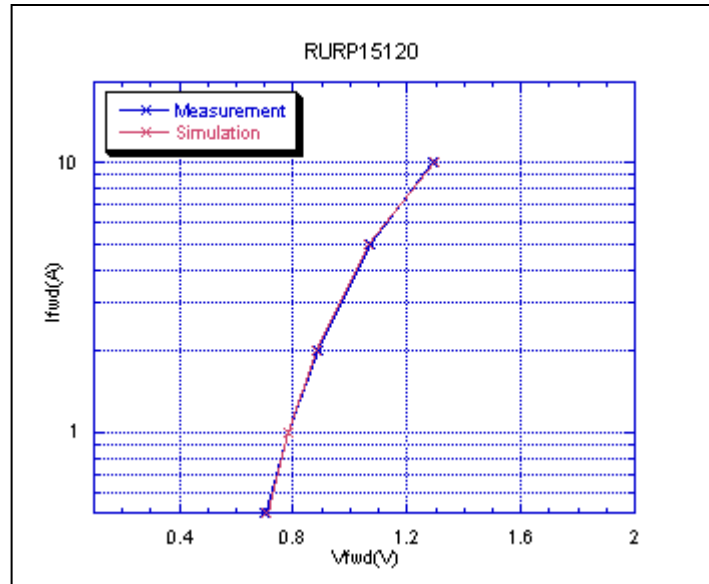


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

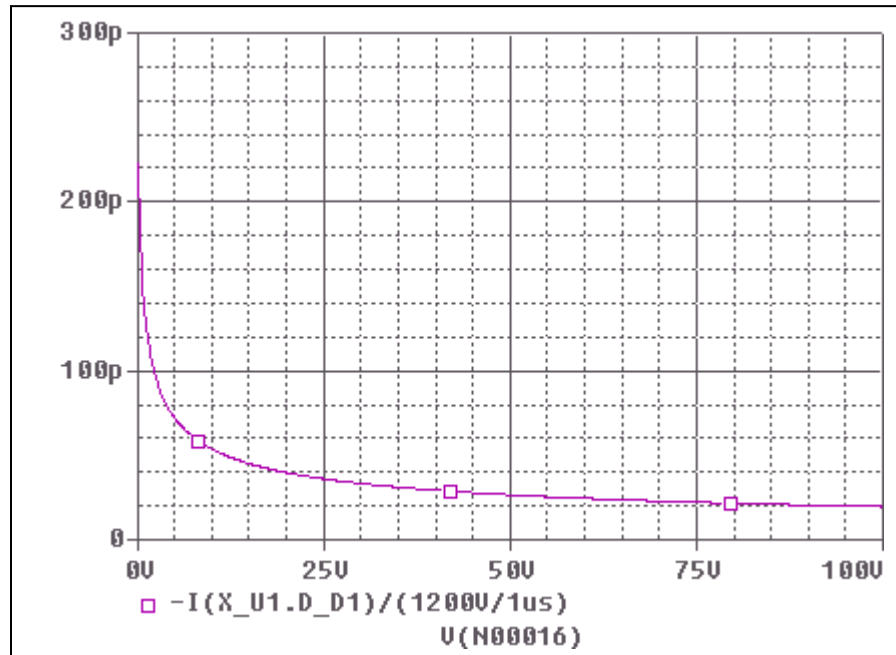


Simulation Result

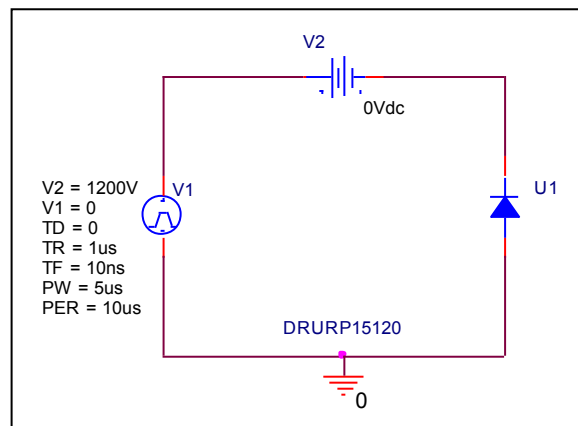
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.5	0.700	0.705	-0.71
1	0.784	0.785	-0.13
2	0.886	0.883	0.34
5	1.074	1.067	0.65
10	1.292	1.295	-0.23

Capacitance Characteristic

Circuit Simulation Result

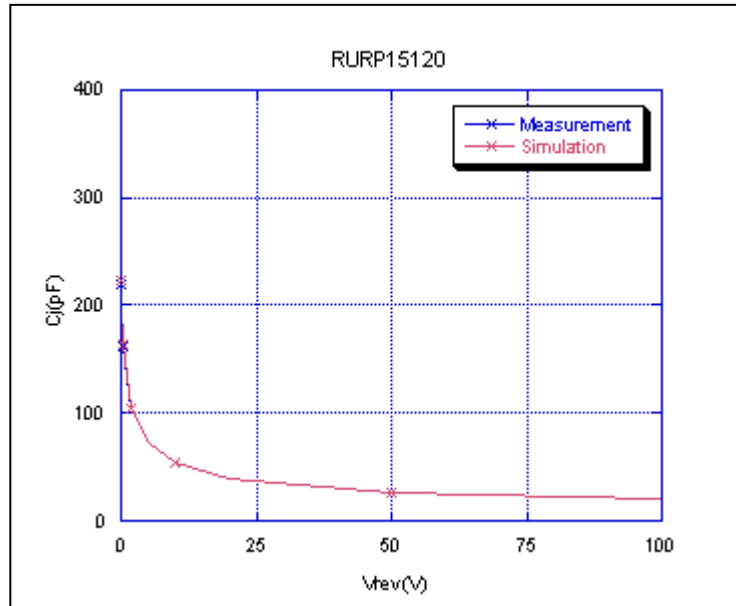


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

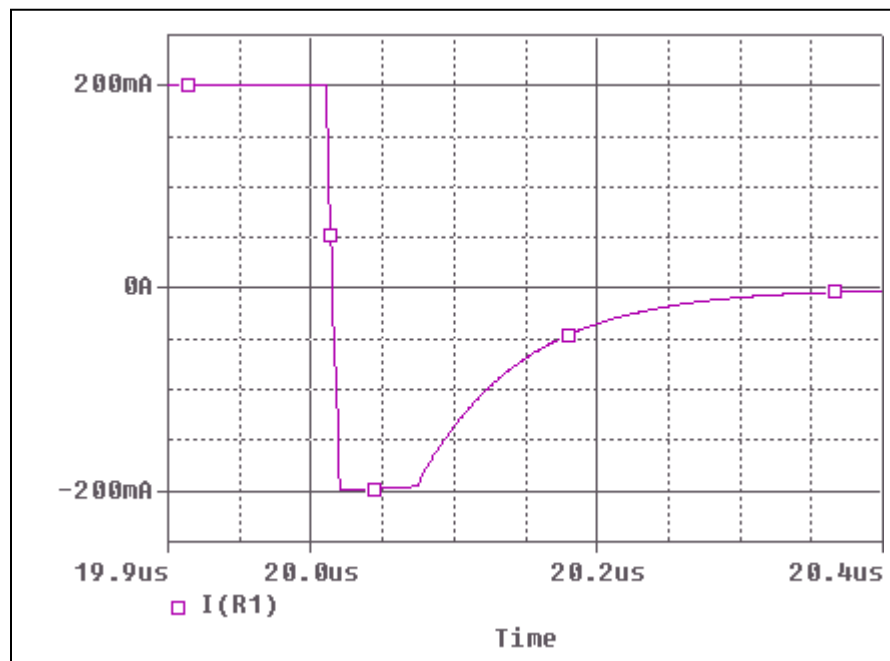


Simulation Result

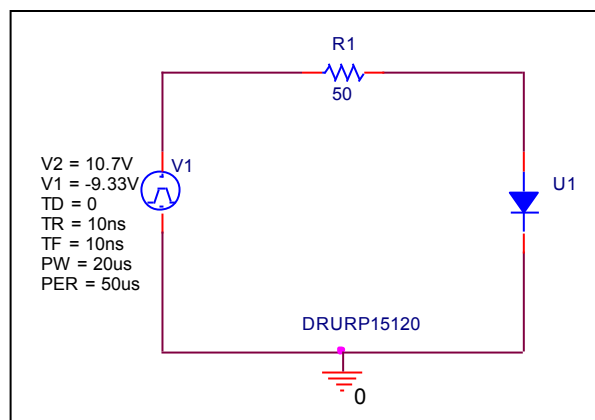
$V_{rev}(V)$	$C_j(pF)$ Measurement	$C_j(pF)$ Simulation	%Error
0	242.884	242.884	0.00
0.1	219.583	223.181	-1.64
0.2	199.711	202.107	-1.20
0.5	161.541	164.526	-1.85
1	132.401	133.622	-0.92
2	104.994	104.193	0.76
5	73.414	72.154	1.72
10	53.697	53.762	-0.12
20	39.495	39.771	-0.70
50	25.988	26.553	-2.17
100	18.950	19.516	-2.99

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

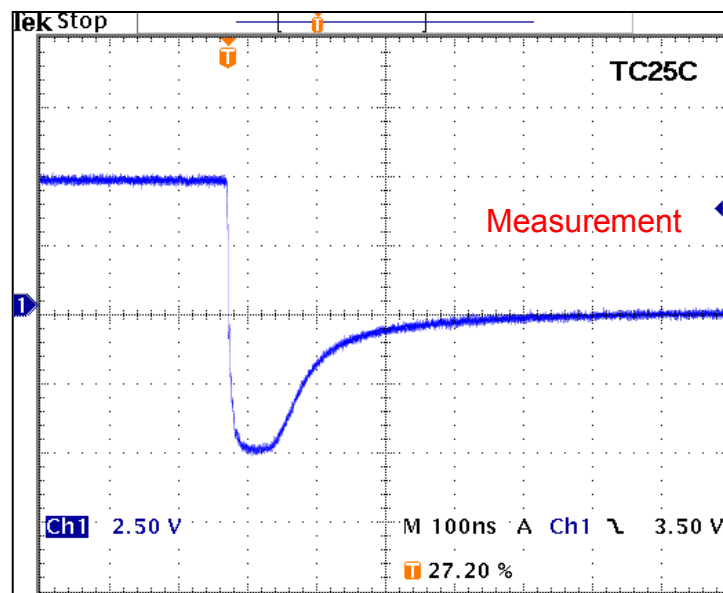


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	58.0	ns	57.8	ns	0.34
trb	168.0	ns	168.0	ns	0.00

Reverse Recovery Characteristic

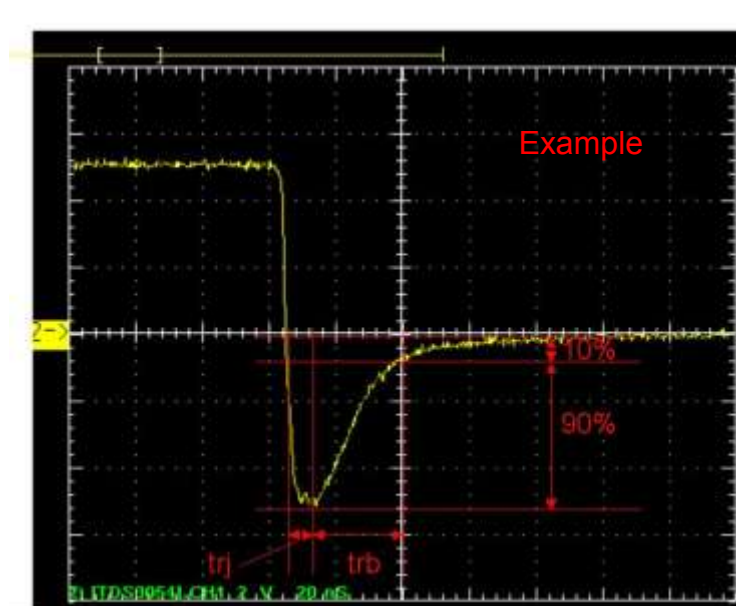
Reference



$Trj = 58(\text{ns})$

$Trb = 168(\text{ns})$

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



Relation between trj and trb