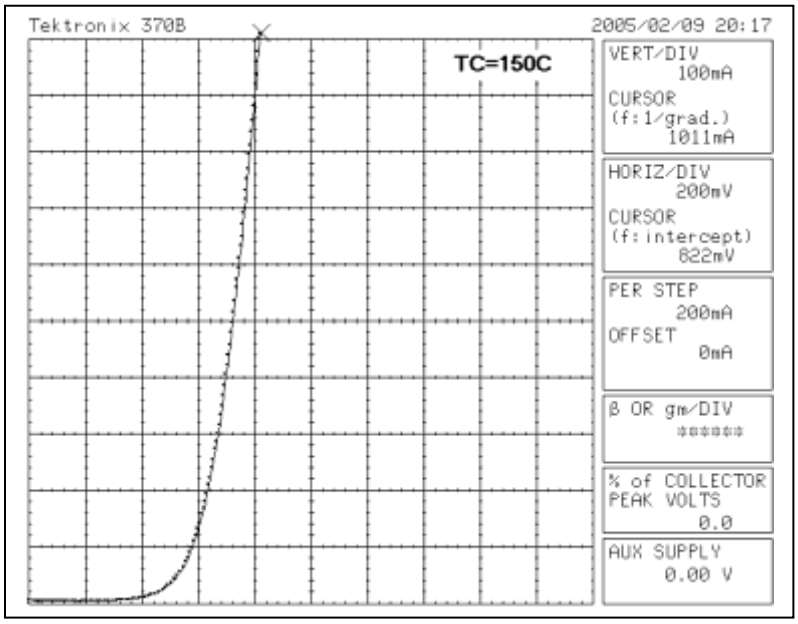
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL
PART NUMBER: 1SR159-200
MANUFACTURER: ROHM
REMARK: TC=150C

Bee Technologies Inc.

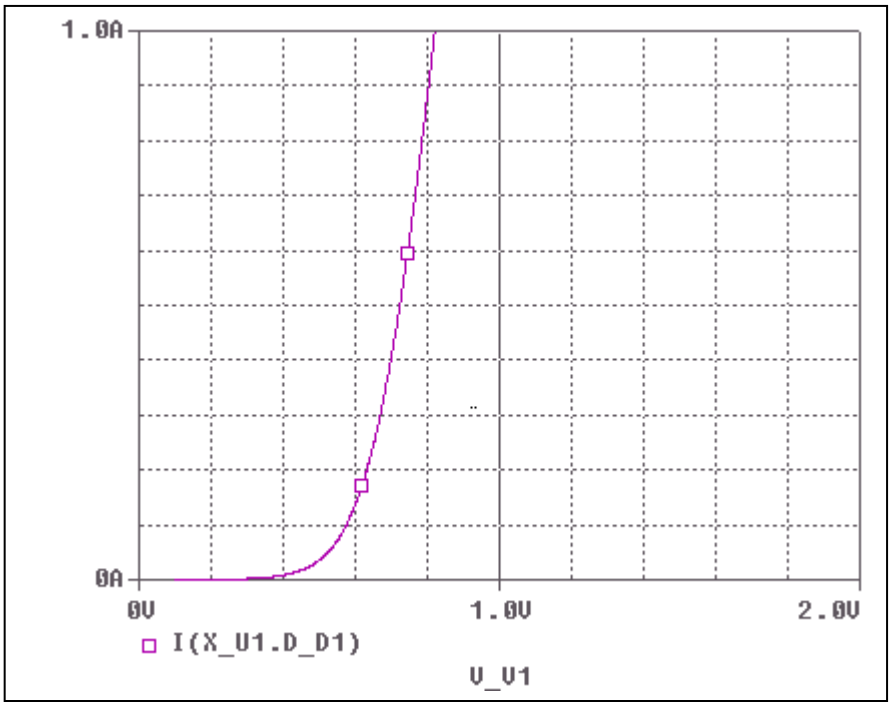
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic Reference

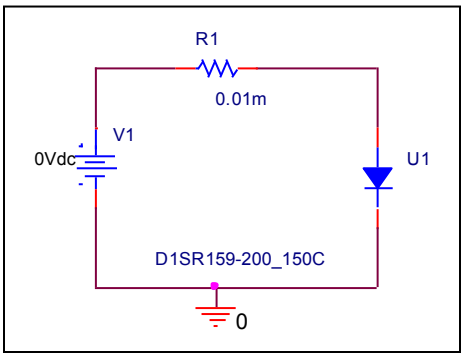


Forward Current Characteristic

Circuit Simulation Result

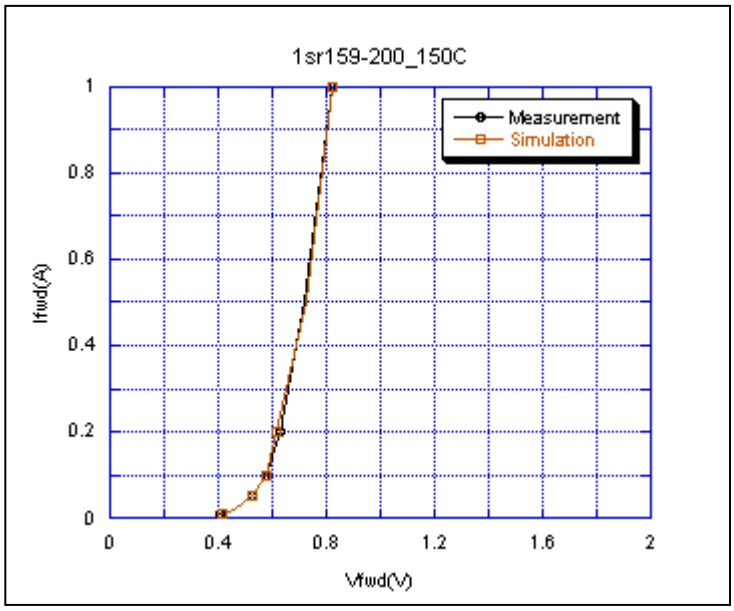


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

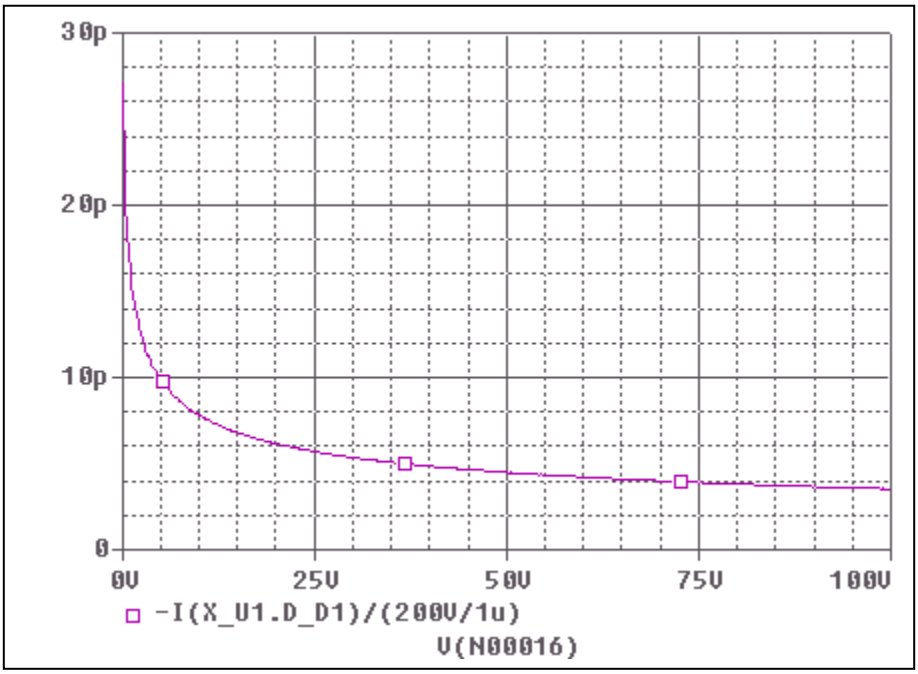


Simulation Result

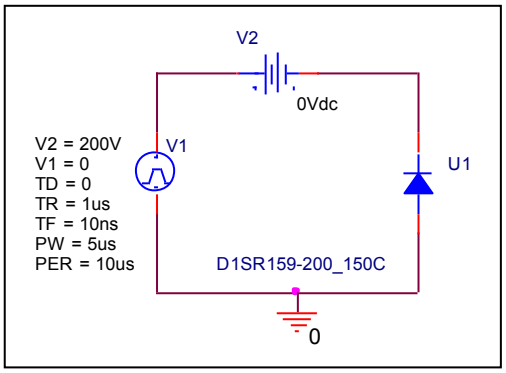
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.410	0.412	-0.49
0.02	0.460	0.459	0.22
0.05	0.526	0.523	0.57
0.1	0.578	0.575	0.52
0.2	0.630	0.613	2.70
0.5	0.720	0.723	-0.42
1	0.822	0.820	0.24

Capacitance Characteristic

Circuit Simulation Result

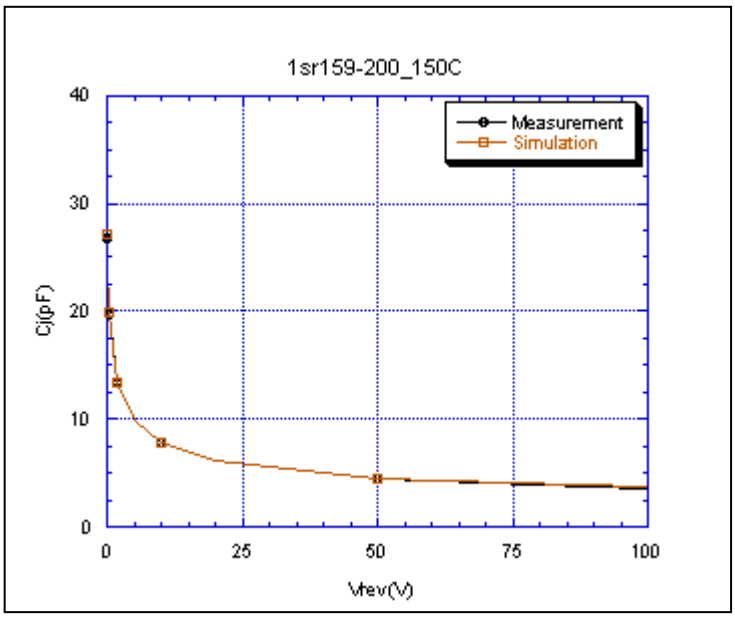


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

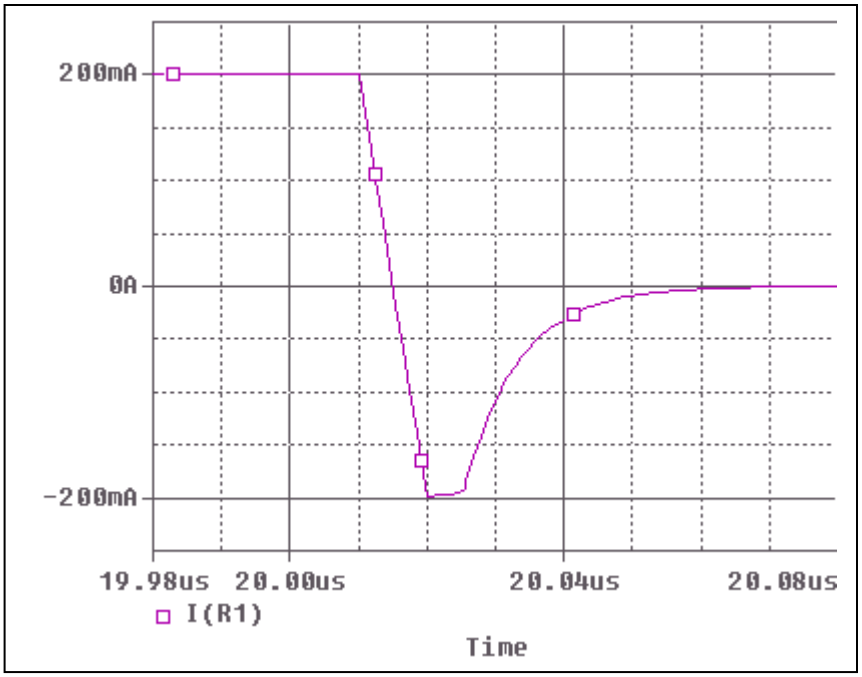


Simulation Result

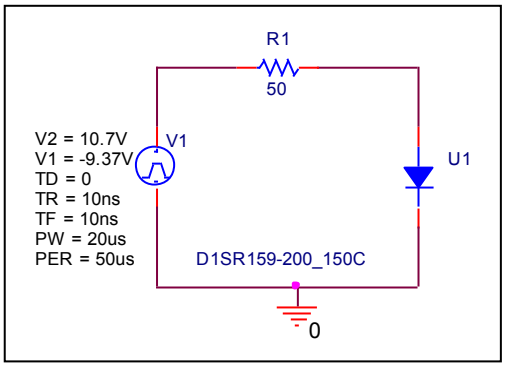
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	31.291	31.291	0.00
0.1	26.679	27.044	-1.37
0.2	24.313	24.368	-0.23
0.5	19.791	19.844	-0.27
1	16.740	16.531	1.25
2	13.327	13.308	0.14
5	9.918	9.886	0.32
10	7.816	7.812	0.05
20	6.120	6.163	-0.70
50	4.409	4.480	-1.61
100	3.460	3.530	-2.02

Reverse Recovery Characteristic

Circuit Simulation Result



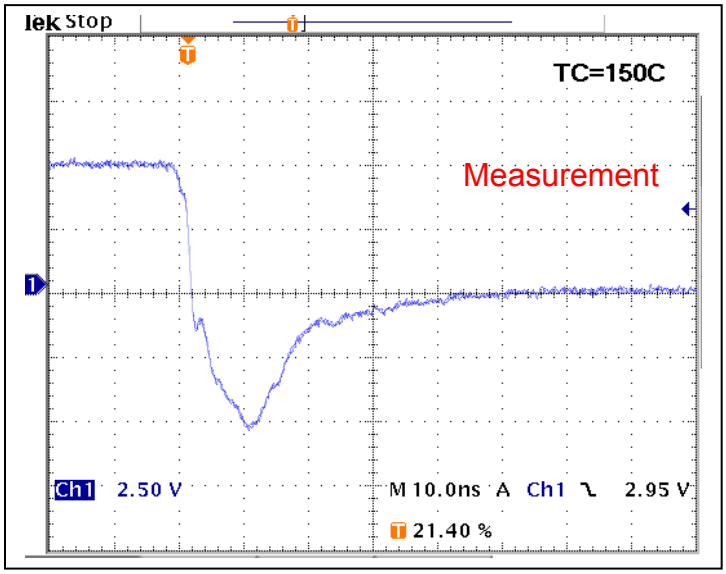
Evaluation Circuit



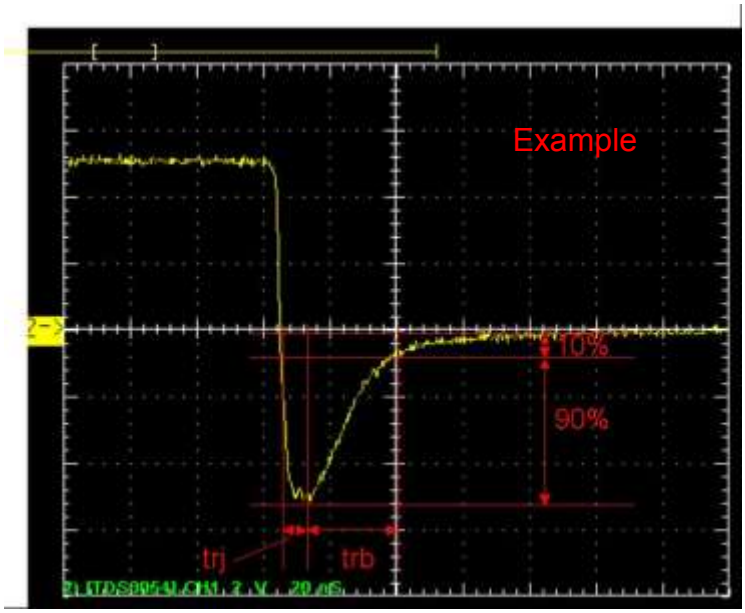
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**9.8**	**ns**	**9.7**	**ns**	**1.02**
trb	**18.2**	**ns**	**18.27**	**ns**	**0.38**

Reverse Recovery Characteristic Reference



Trj =9.8(ns)
Trb=18.2(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb