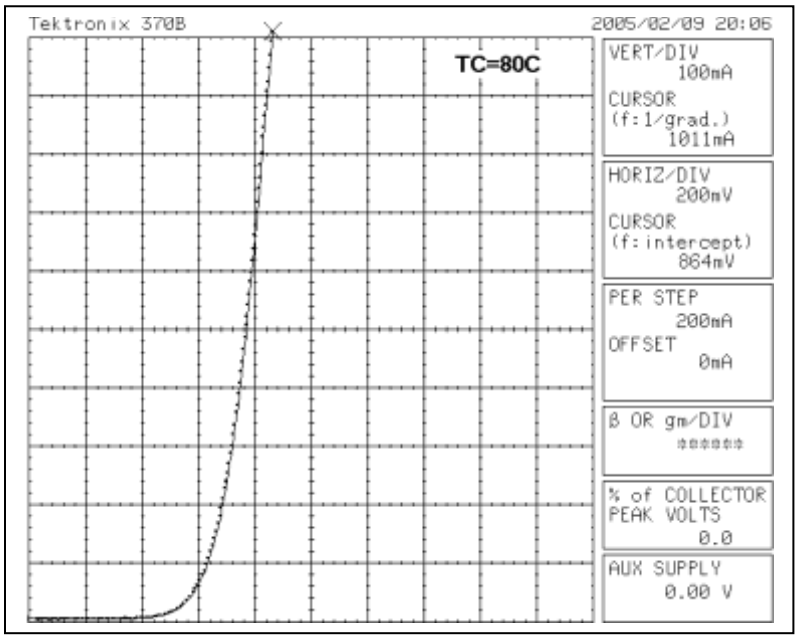
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL
PART NUMBER: 1SR159-200
MANUFACTURER: ROHM
REMARK: TC=80C

Bee Technologies Inc.

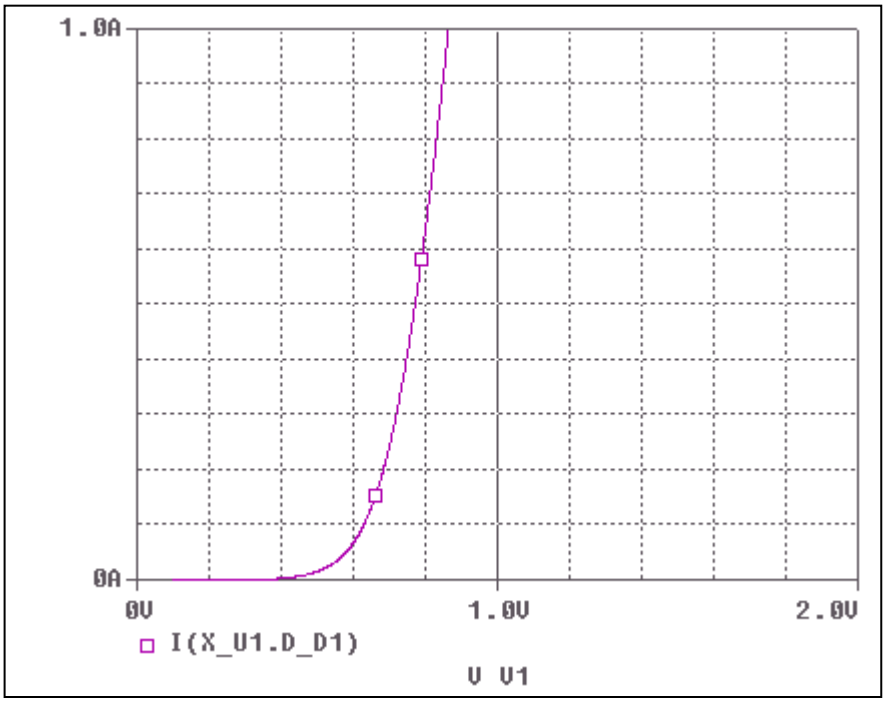
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic Reference

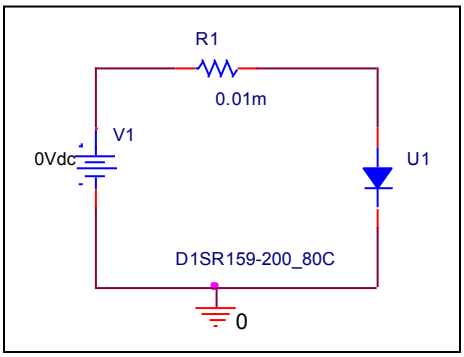


Forward Current Characteristic

Circuit Simulation Result

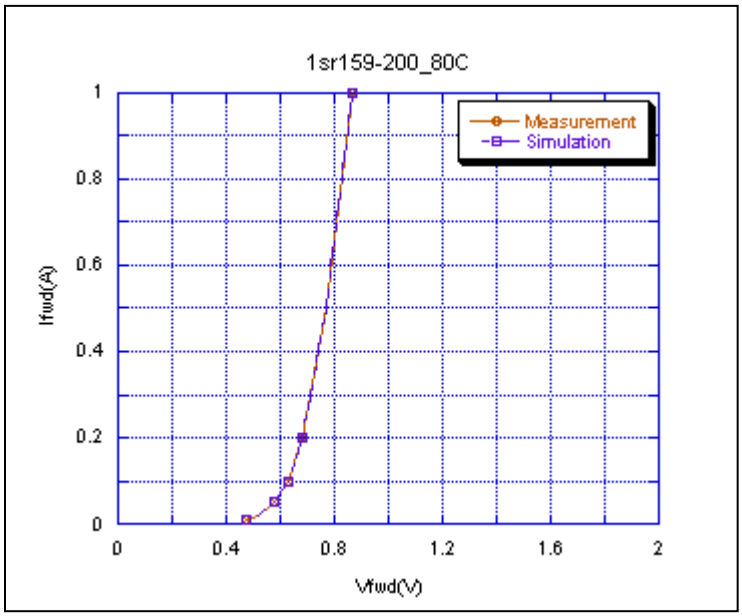


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

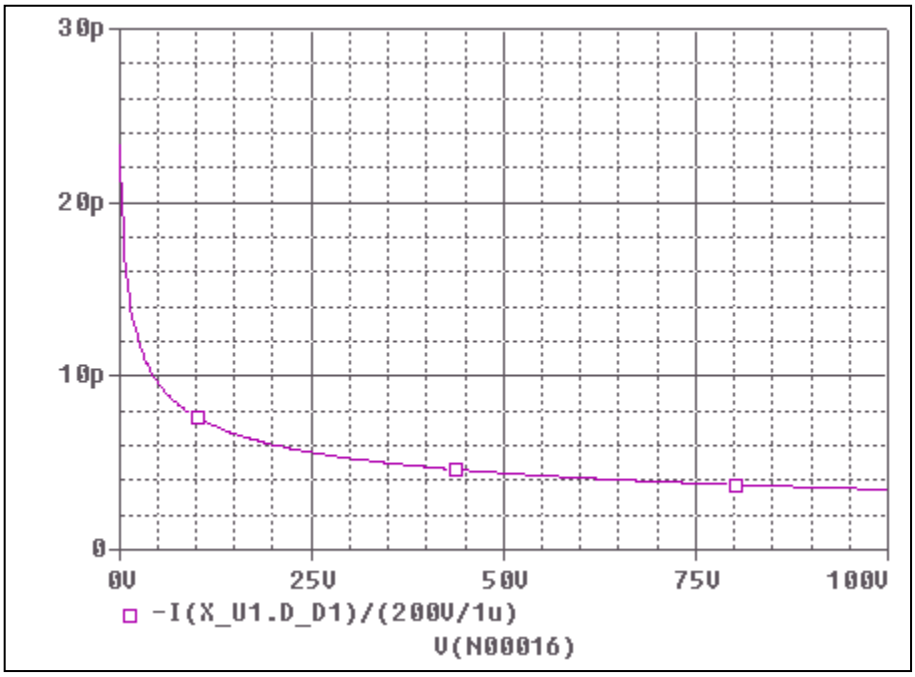


Simulation Result

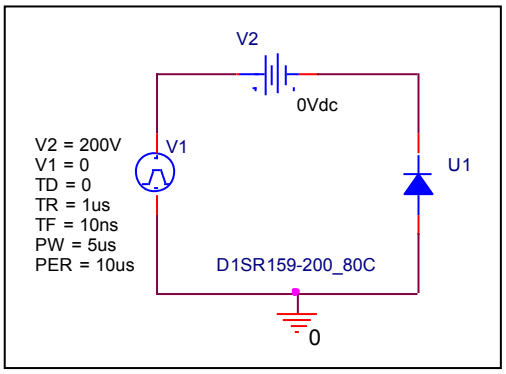
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.475	0.474	0.21
0.02	0.518	0.518	0.00
0.05	0.580	0.580	0.00
0.1	0.630	0.629	0.16
0.2	0.682	0.683	-0.15
0.5	0.772	0.771	0.13
1	0.864	0.864	0.00

Capacitance Characteristic

Circuit Simulation Result

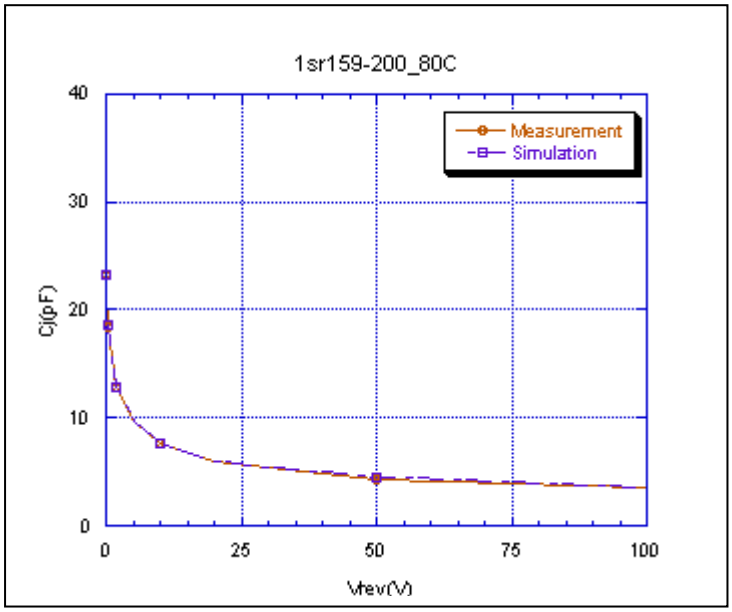


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

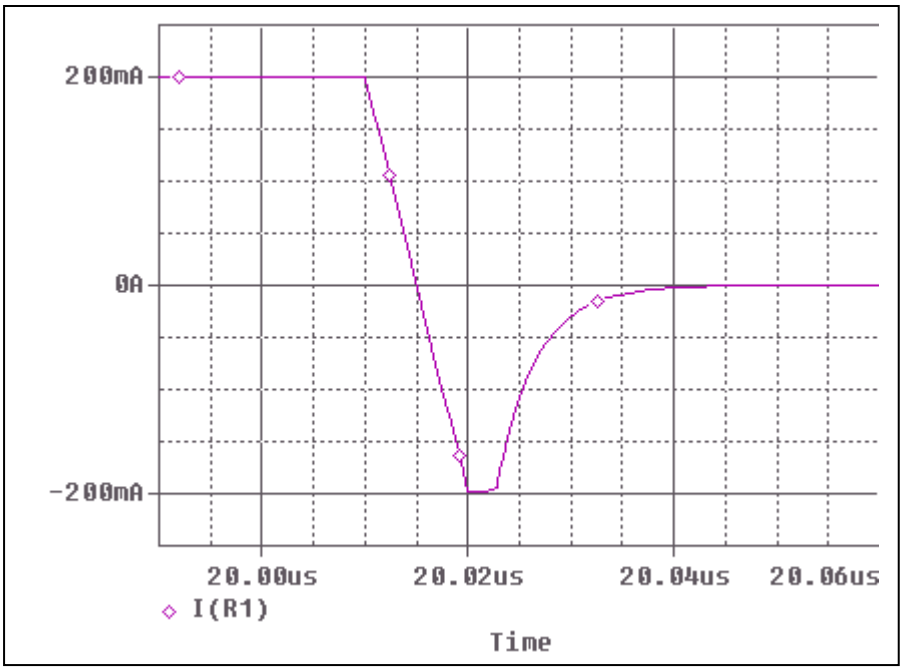


Simulation Result

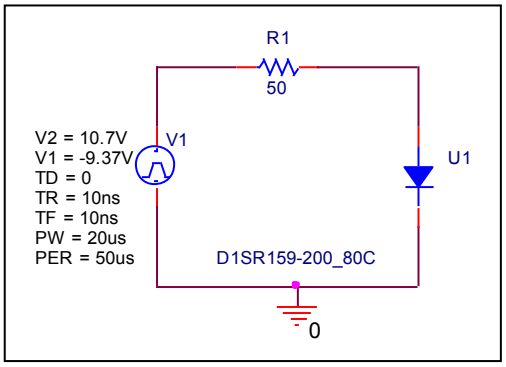
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	25.593	25.593	0.00
0.1	23.299	23.273	0.11
0.2	21.684	21.704	-0.09
0.5	18.397	18.544	-0.80
1	15.670	15.700	-0.19
2	12.888	12.820	0.53
5	9.715	9.657	0.60
10	7.701	7.637	0.83
20	6.045	6.049	-0.07
50	4.363	4.409	-1.05
100	3.429	3.469	-1.17

Reverse Recovery Characteristic

Circuit Simulation Result



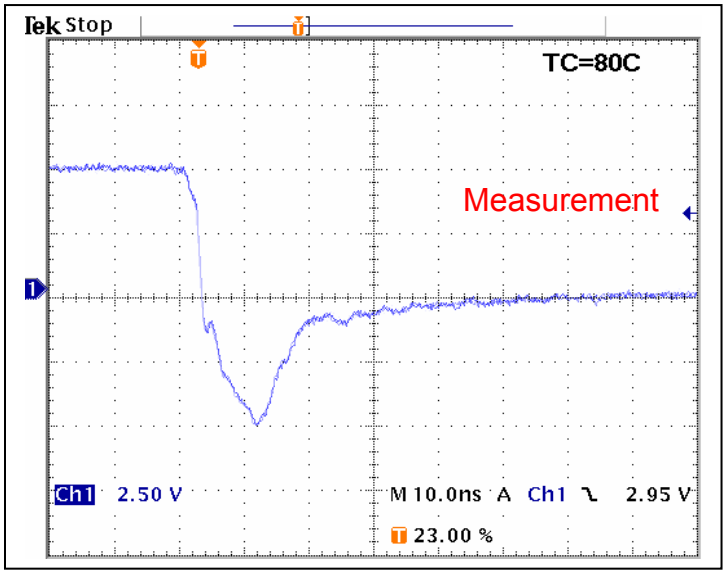
Evaluation Circuit



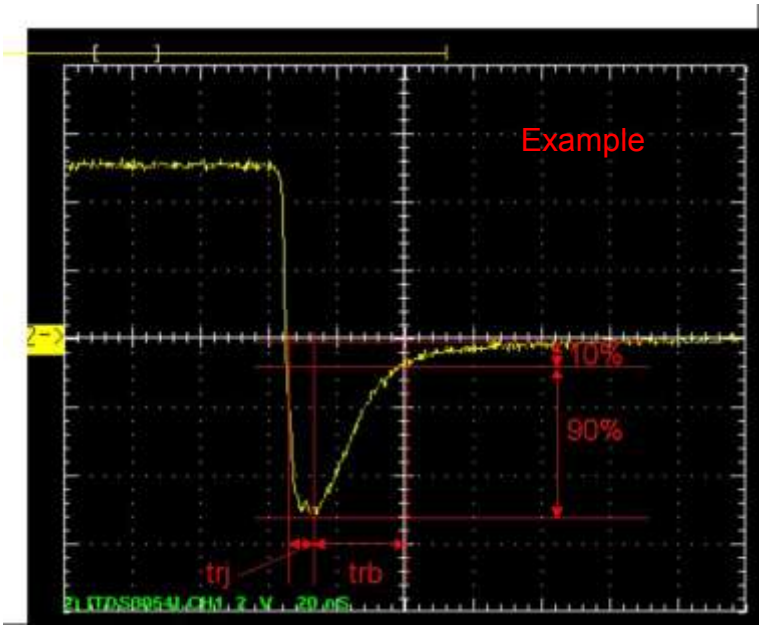
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	**7.40**	**ns**	**7.28**	**ns**	**1.62**
trb	**8.80**	**ns**	**8.71**	**ns**	**1.02**

Reverse Recovery Characteristic Reference



Trj =7.40(ns)
Trb=8.80(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb