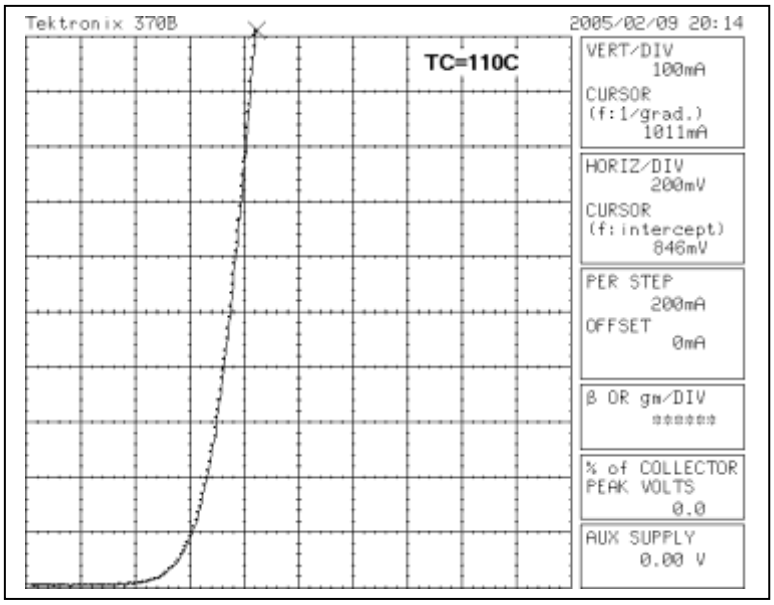
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: 1SR159-200
MANUFACTURER: ROHM
REMARK: TC=110 C

Bee Technologies Inc.

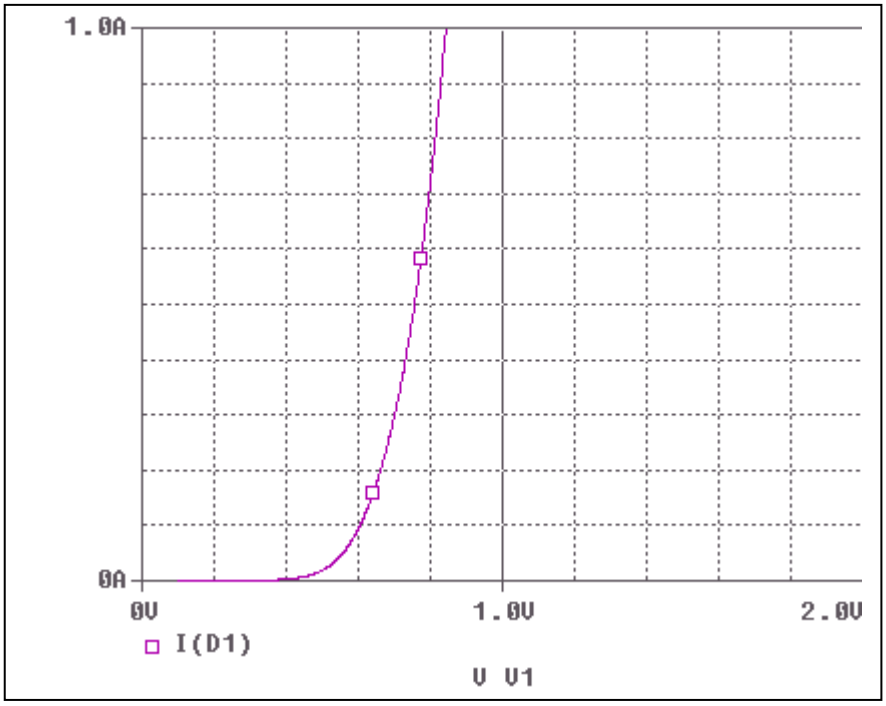
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic Reference

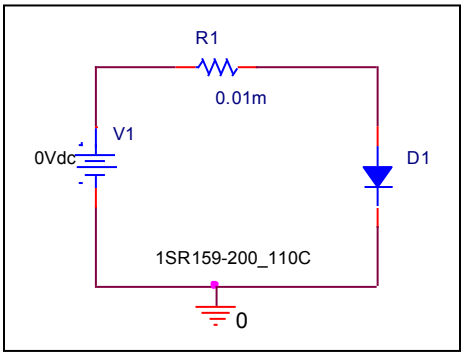


Forward Current Characteristic

Circuit Simulation Result

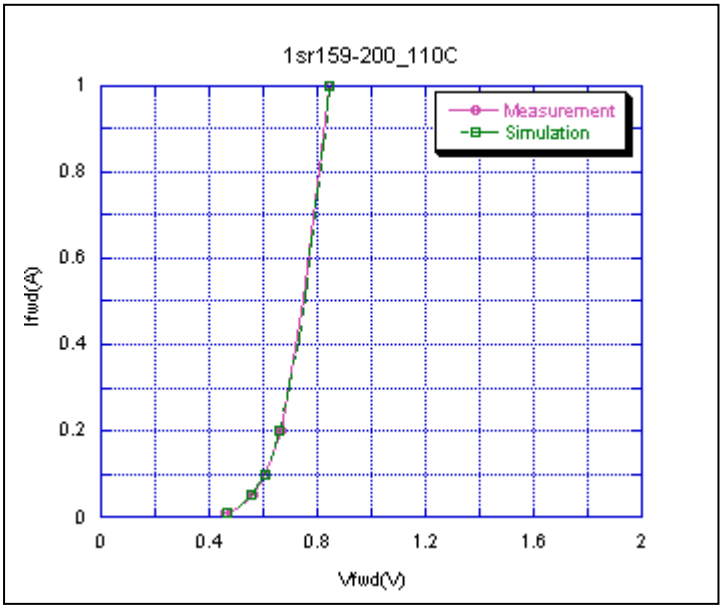


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

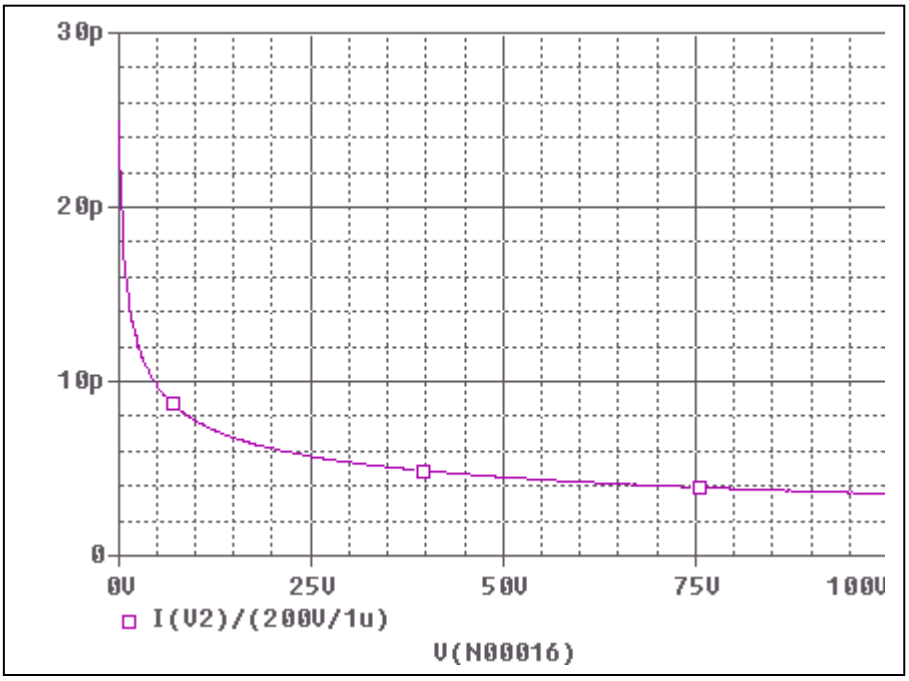


Simulation Result

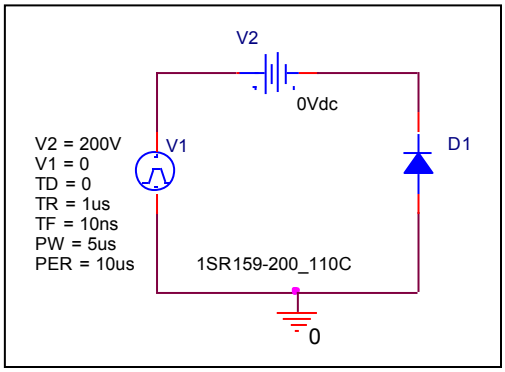
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.460	0.465	-1.09
0.02	0.500	0.503	-0.60
0.05	0.562	0.557	0.89
0.1	0.610	0.605	0.82
0.2	0.664	0.661	0.45
0.5	0.748	0.756	-1.07
1	0.846	0.843	0.35

Capacitance Characteristic

Circuit Simulation Result

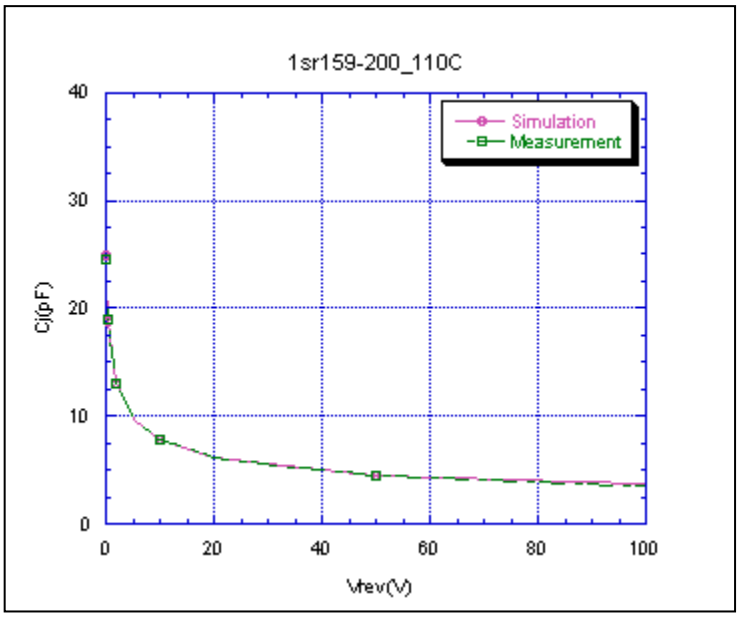


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

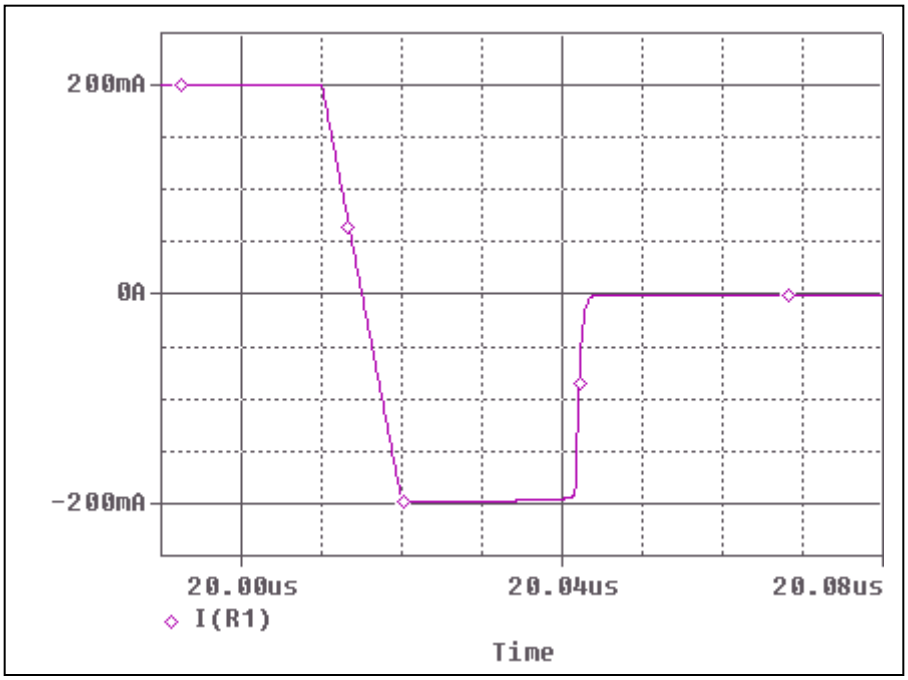


Simulation Result

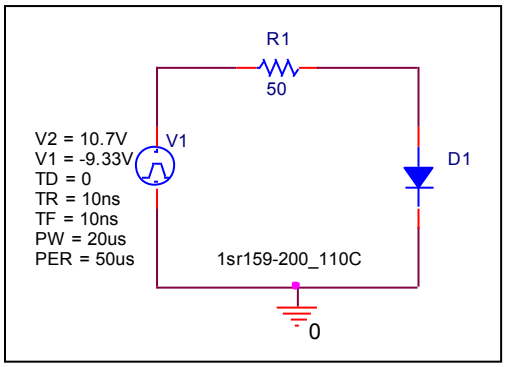
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	27.795	27.795	0.00
0.1	24.465	24.921	-1.86
0.2	22.616	22.607	0.04
0.5	18.968	18.838	0.69
1	16.038	15.952	0.54
2	13.108	13.096	0.09
5	9.874	9.773	1.02
10	7.807	7.756	0.65
20	6.115	6.159	-0.72
50	4.402	4.505	-2.34
100	3.450	3.563	-3.28

Reverse Recovery Characteristic

Circuit Simulation Result



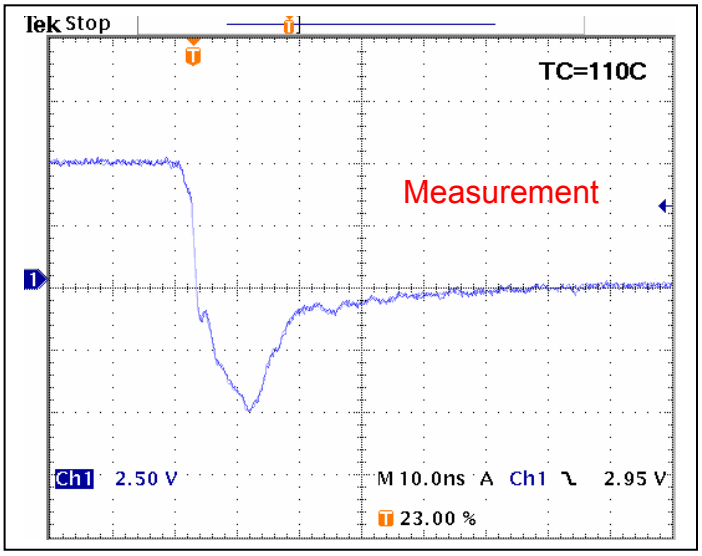
Evaluation Circuit



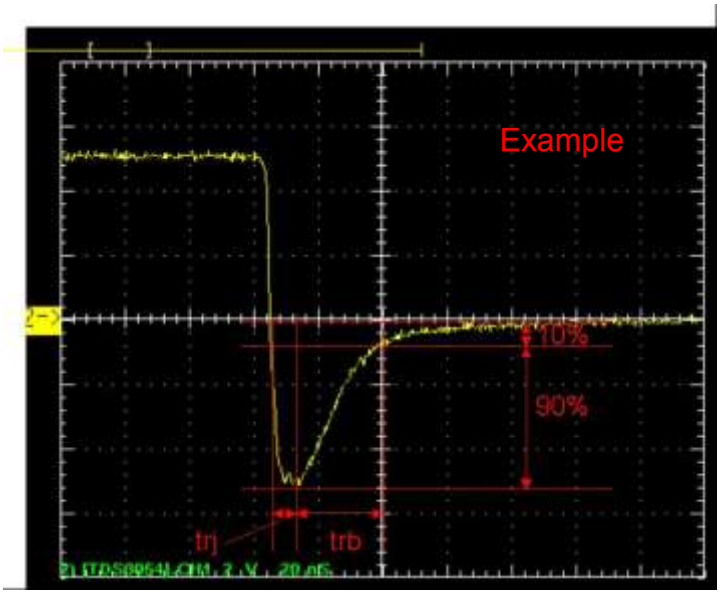
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	**26.40**	**ns**	**27.2**	**ns**	**3.03**

Reverse Recovery Characteristic Reference



Trj =8.80(ns)
Trb=17.6(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb