Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ PROFESSIONAL
PART NUMBER: 1N5408
MANUFACTURER: FAIRCHILD SEMICONDUCTOR

Bee Technologies Inc.

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DIODE MODEL PARAMETERS

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

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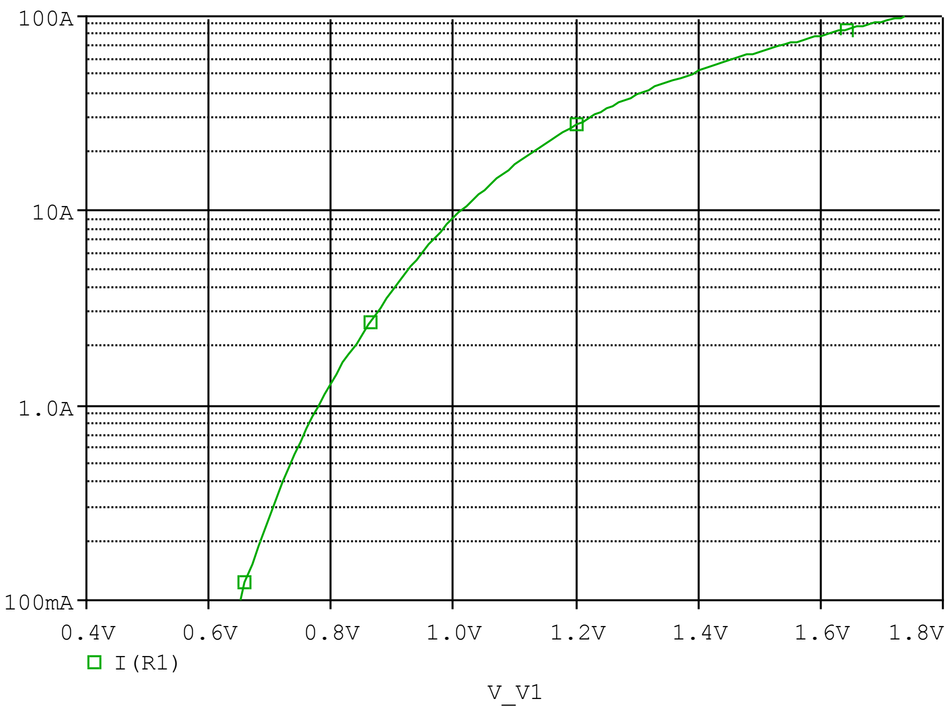
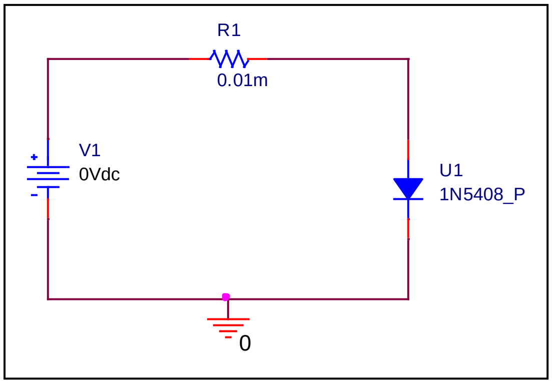
Forward Current Characteristics

Circuit Simulation Result



Evaluation Circuit



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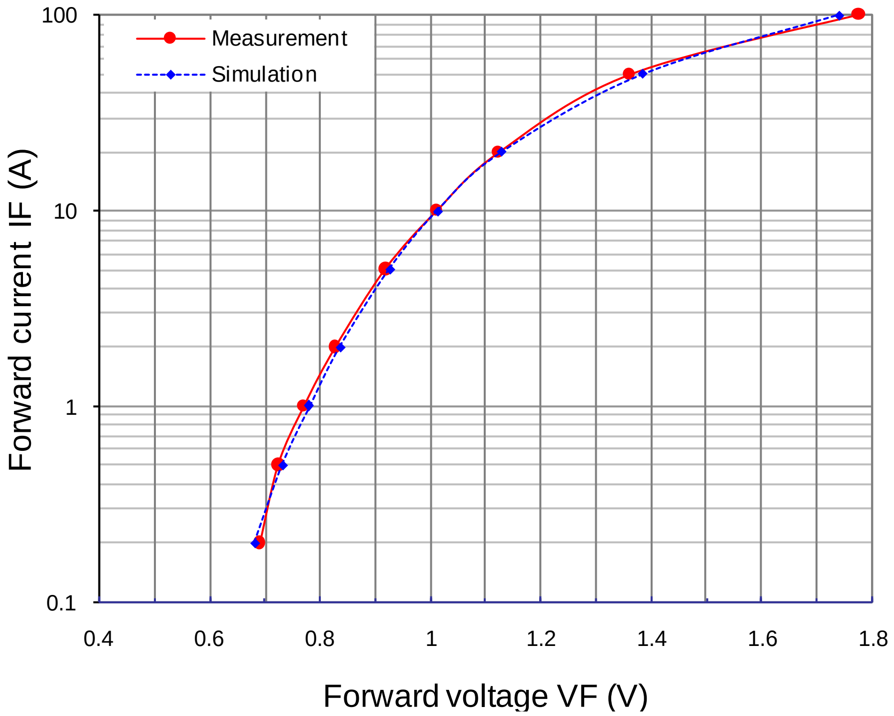
Comparison Graph

Circuit Simulation Result



Simulation Result

IF (A)	VF (V)		%Error
	Measurement	Simulation	
0.2	0.690	0.682	-1.16
0.5	0.725	0.733	1.08
1	0.770	0.780	1.29
2	0.828	0.836	1.01
5	0.920	0.927	0.71
10	1.010	1.012	0.23
20	1.123	1.128	0.48
50	1.360	1.383	1.68
100	1.775	1.739	-2.01

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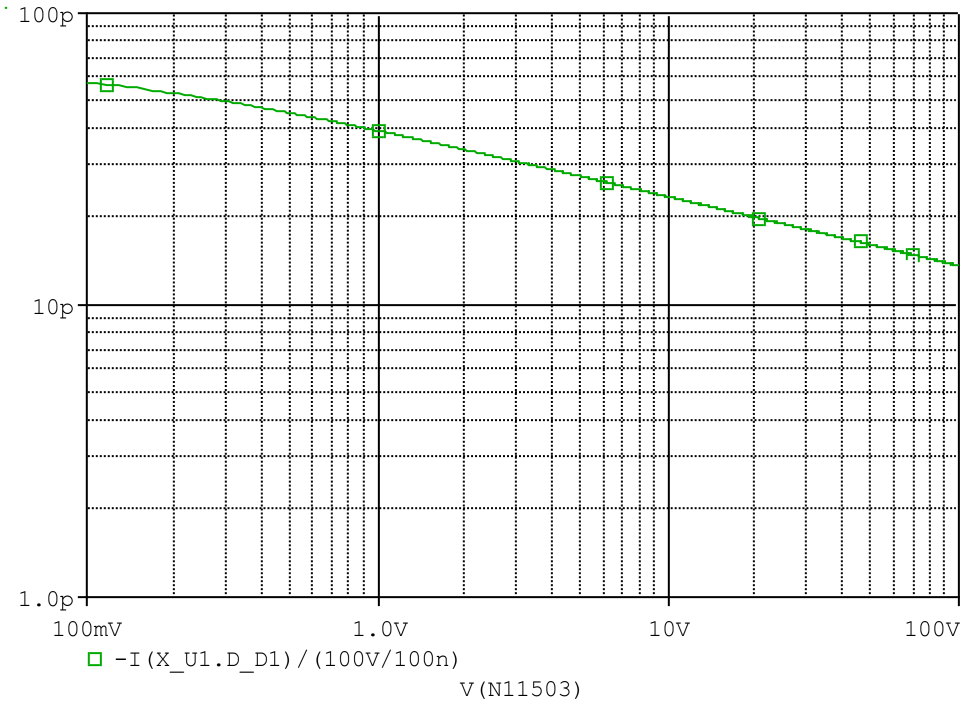
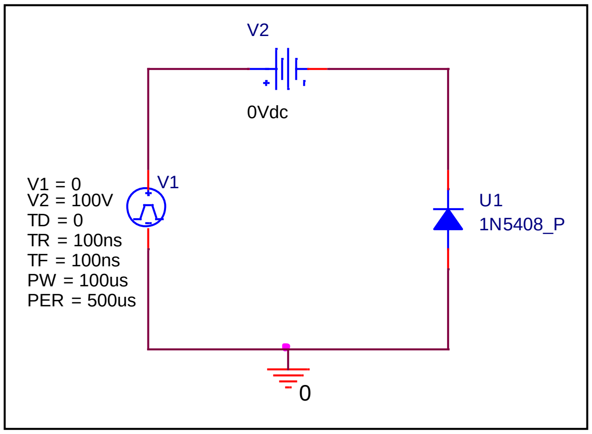
Capacitance Characteristics

Circuit Simulation Result



Evaluation Circuit



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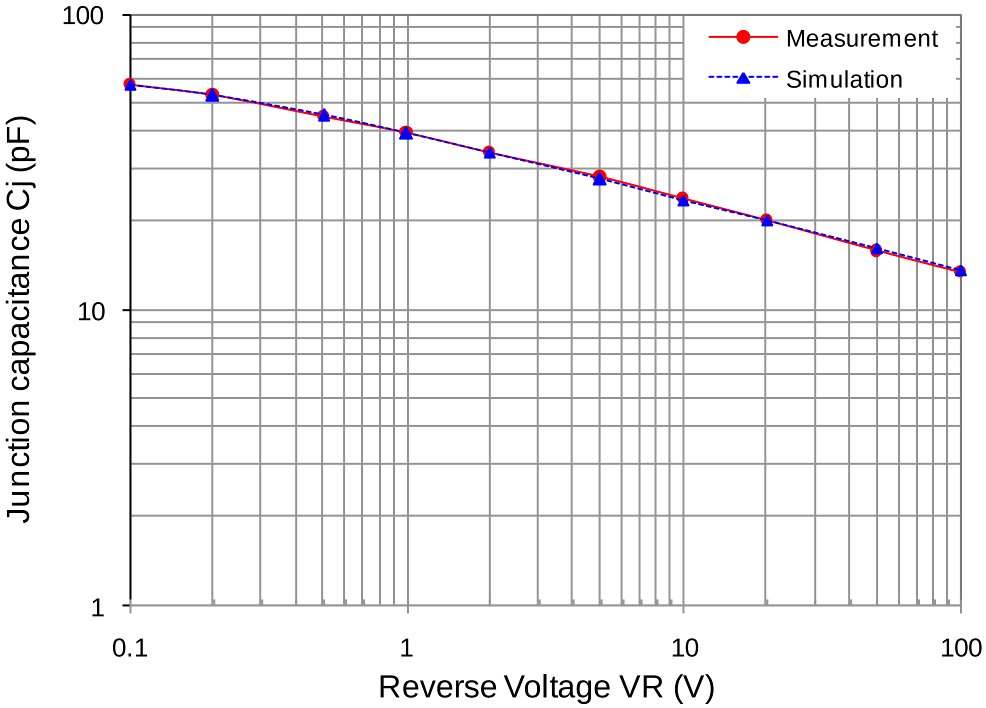
Comparison Graph

Circuit Simulation Result



Simulation Result

VR (V)	Cj (pF)		%Error
	Measurement	Simulation	
0.1	58.000	57.950	-0.09
0.2	53.000	53.082	0.15
0.5	45.000	45.500	1.11
1	39.750	39.555	-0.49
2	34.000	34.046	0.14
5	28.000	27.632	-1.31
10	23.700	23.503	-0.83
20	20.000	19.969	-0.15
50	15.750	16.081	2.10
100	13.400	13.643	1.81

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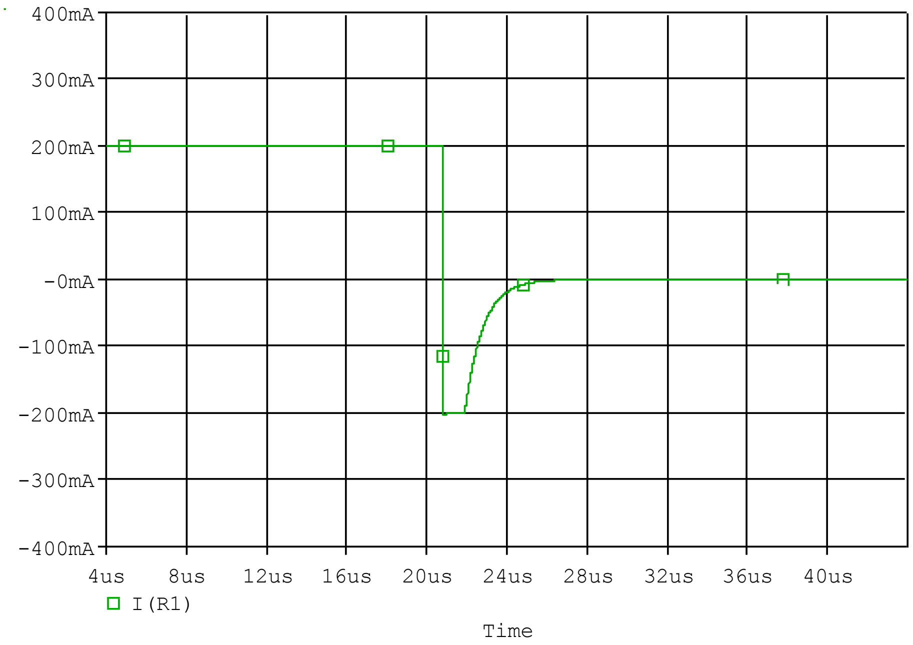
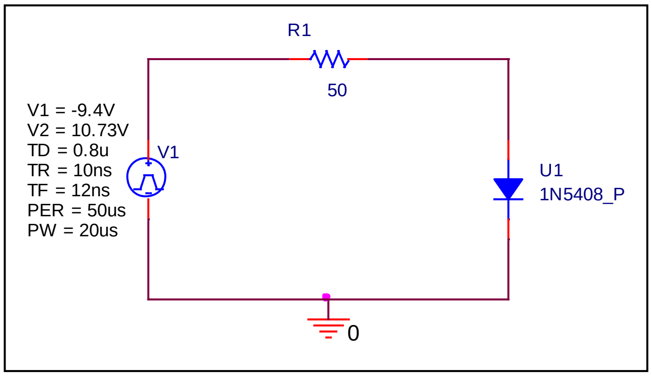
Reverse Recovery Characteristics

Circuit Simulation Result



Evaluation Circuit



Compare Measurement vs. Simulation

Parameter		Measurement	Simulation	%Error
Trj	**µs**	**1.120**	**1.114**	**-0.55**
Trb	**µs**	**2.000**	**2.020**	**1.00**
Trr	**µs**	**3.120**	**3.134**	**0.44**

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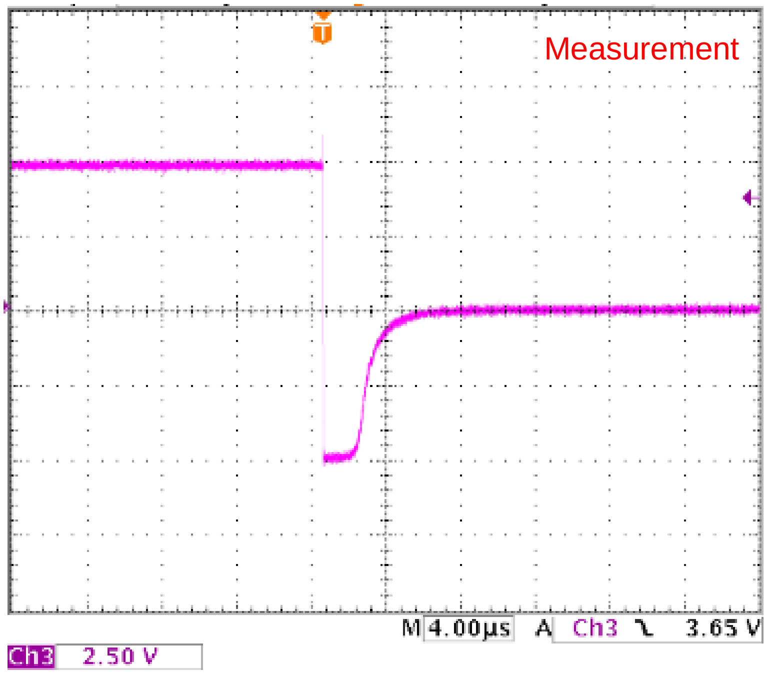
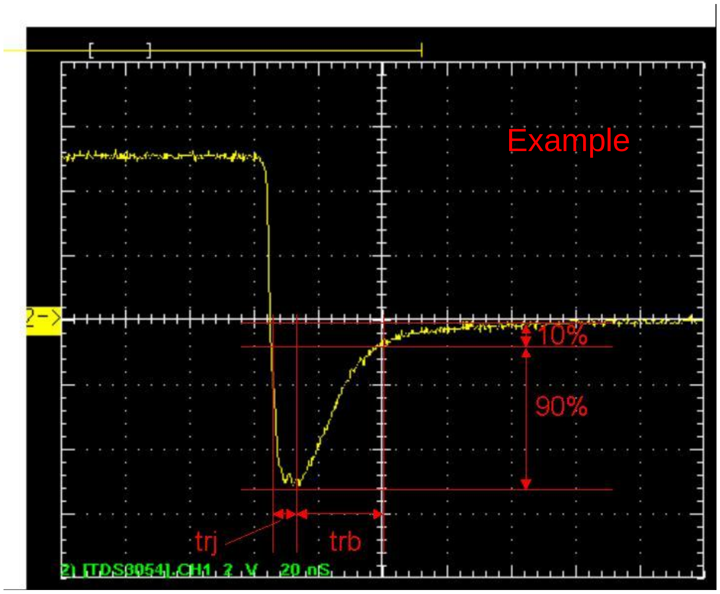
Reverse Recovery Characteristics

Reference



Trj = 1.12 (µs)
Trb= 2.00 (µs)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb

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