Device Modeling Report

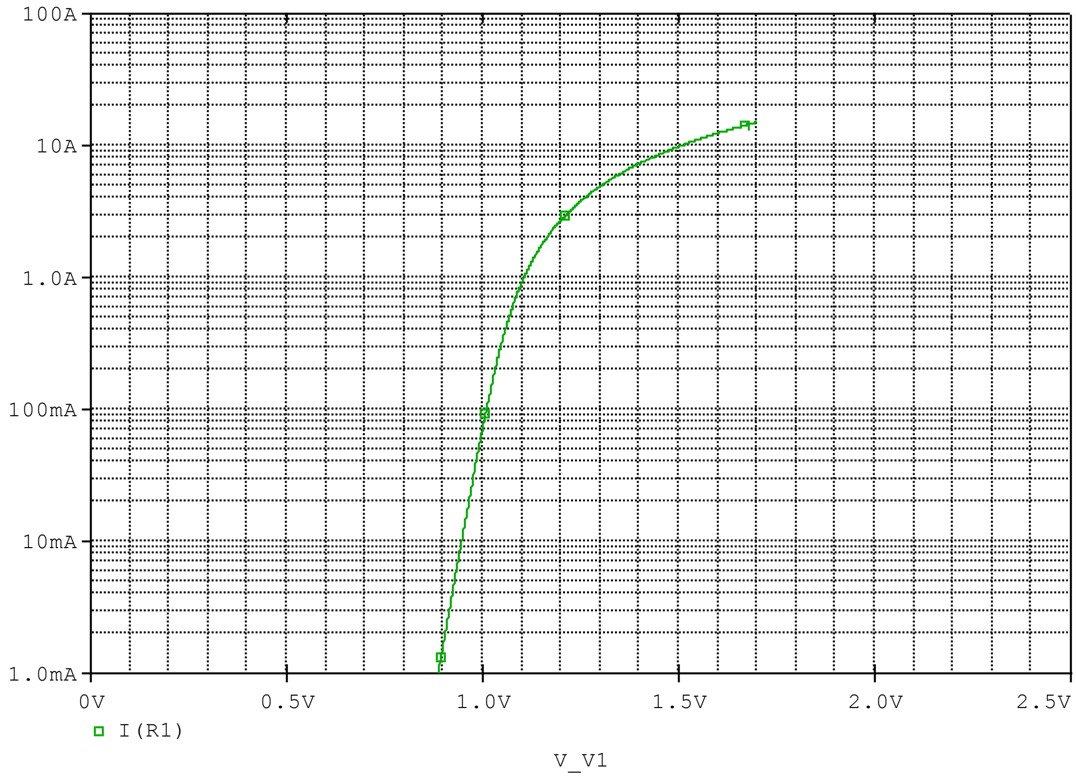
COMPONENTS: Silicon Carbide Schottky Diode
PART NUMBER: SCS110AG
MANUFACTURER: ROHM
REMARK: Standard Model

Bee Technologies Inc.

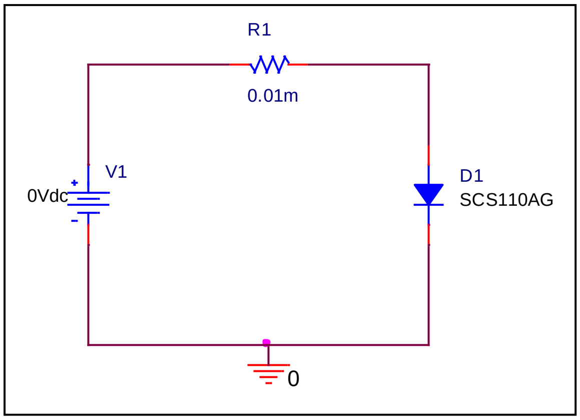
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

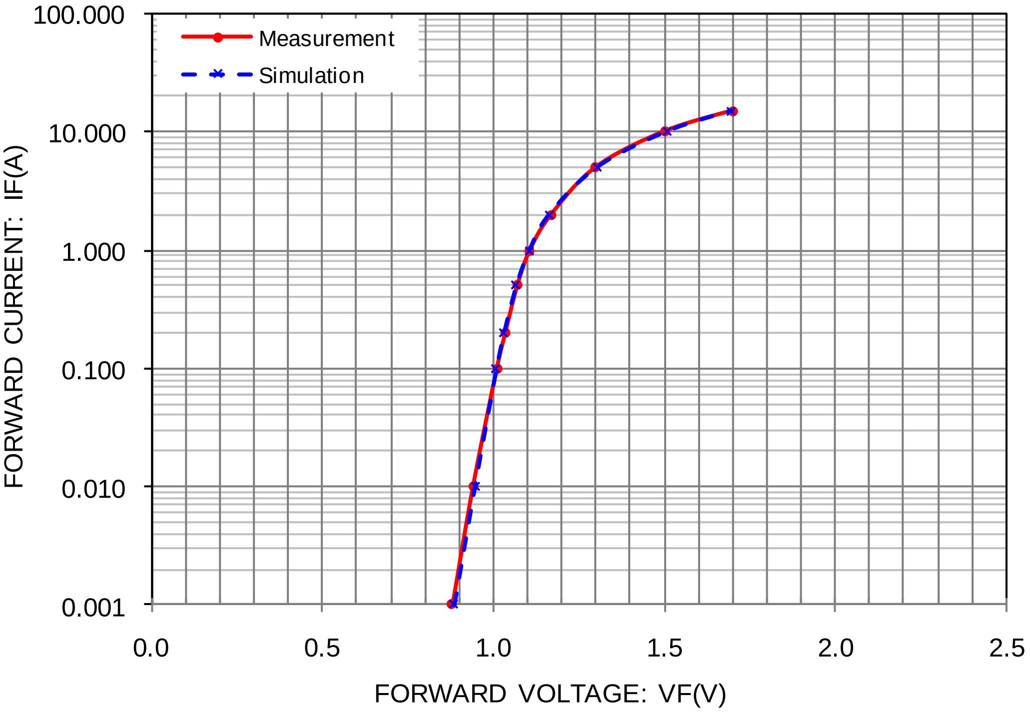


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

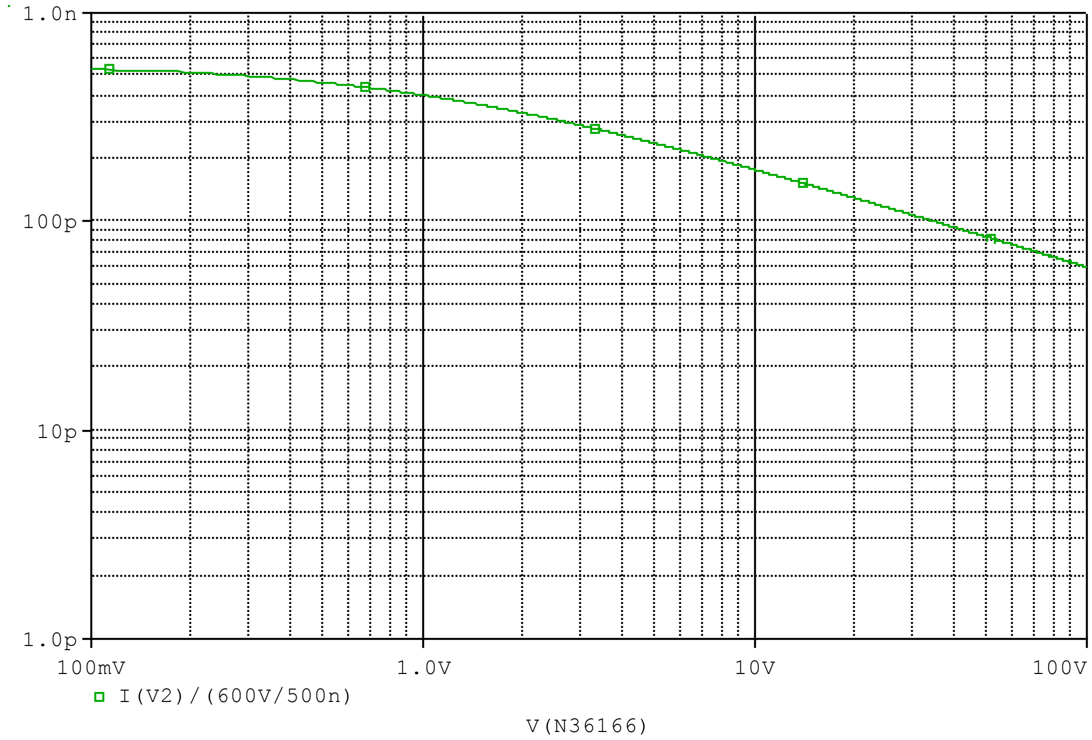


Simulation Result

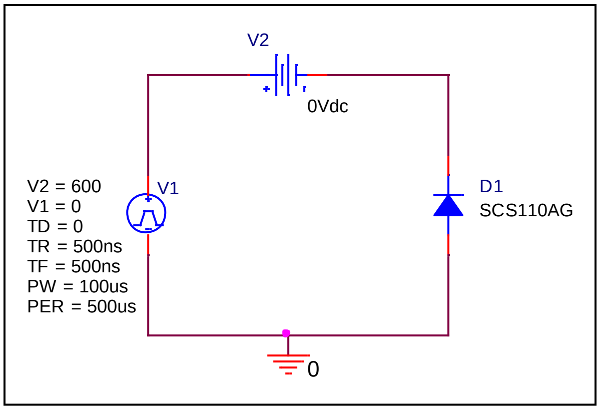
I_F(A)	V_F(V)		Error (%)
	Measurement	Simulation	
0.001	0.8800	0.8860	0.68
0.01	0.9400	0.9459	0.63
0.1	1.0100	1.0091	-0.09
0.2	1.0350	1.0311	-0.38
0.5	1.0700	1.0669	-0.29
1	1.1070	1.1050	-0.18
2	1.1700	1.1628	-0.62
5	1.3000	1.3030	0.23
10	1.5000	1.5062	0.41
15	1.7000	1.6964	-0.21

Junction Capacitance Characteristic

Circuit Simulation Result

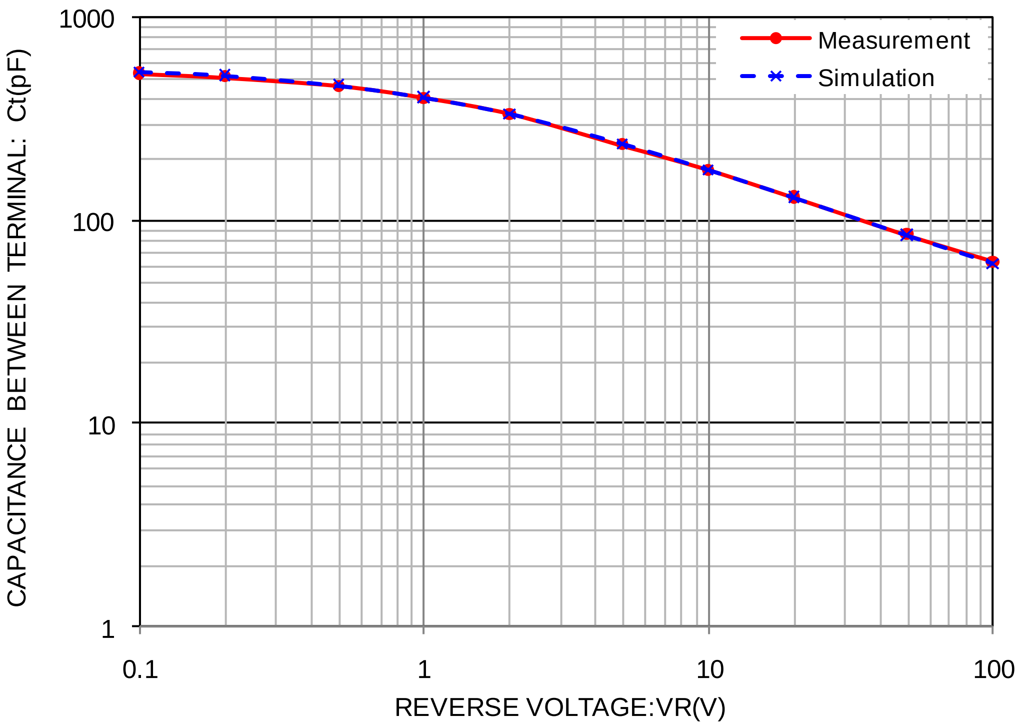


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

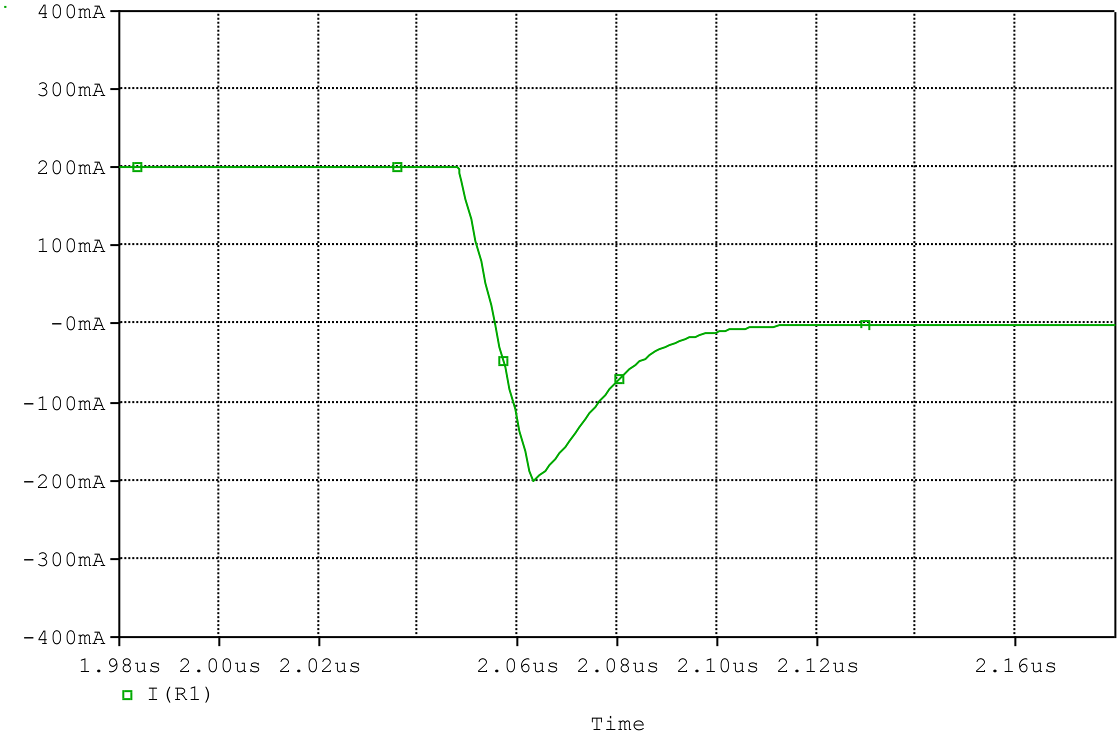


Simulation Result

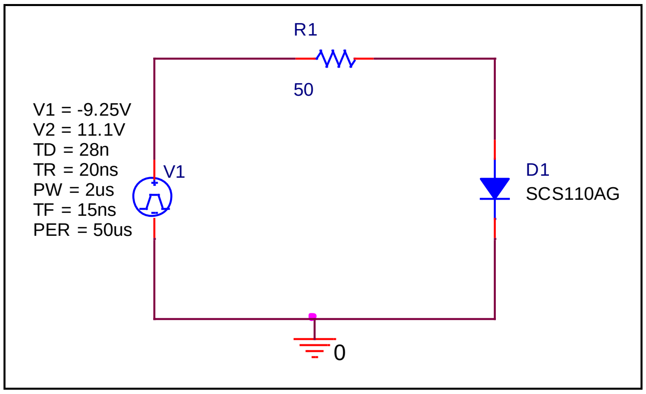
V_R(V)	C (pF)		Error (%)
	Measurement	Simulation	
0.1	530.012	533.839	0.72
0.2	507.843	517.441	1.89
0.5	458.372	463.662	1.15
1	400.824	403.313	0.62
2	331.687	331.478	-0.06
5	234.876	237.073	0.94
10	176.213	177.055	0.48
20	129.285	129.551	0.21
50	84.692	84.318	-0.44
100	62.109	60.590	-2.45

Reverse Recovery Characteristic

Circuit Simulation Result



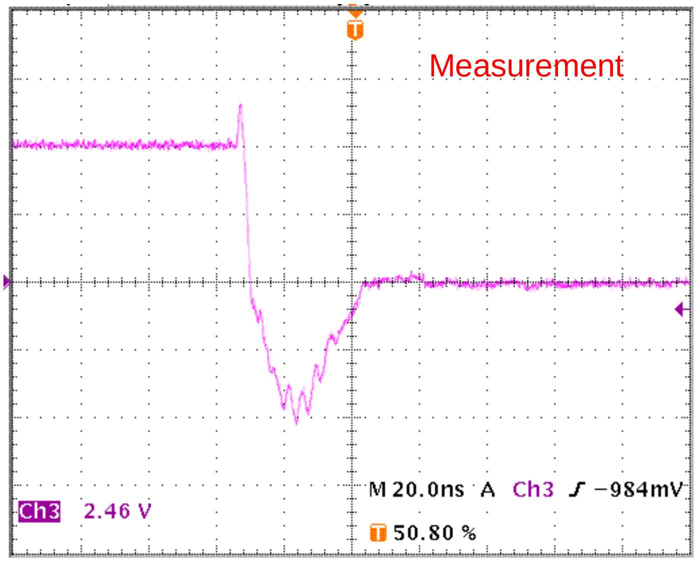
Evaluation Circuit



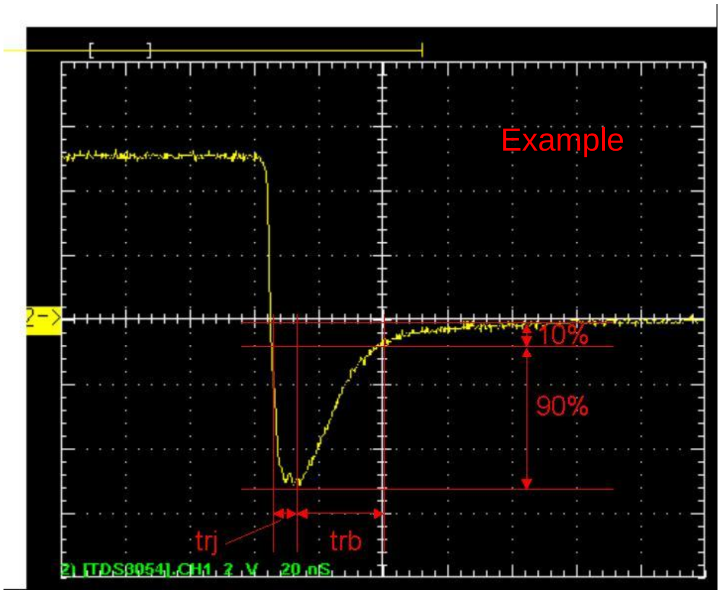
Compare Measurement vs. Simulation

		Measurement	Simulation	Error (%)
trj	ns	7.500	7.509	0.11

Reverse Recovery Characteristic



Trj =7.5(ns)
Trb=16.00(ns)
Conditions: Ifwd=0.2A, Irev=0.2A, Rl=50Ω



Relation between trj and trb