Device Modeling Report

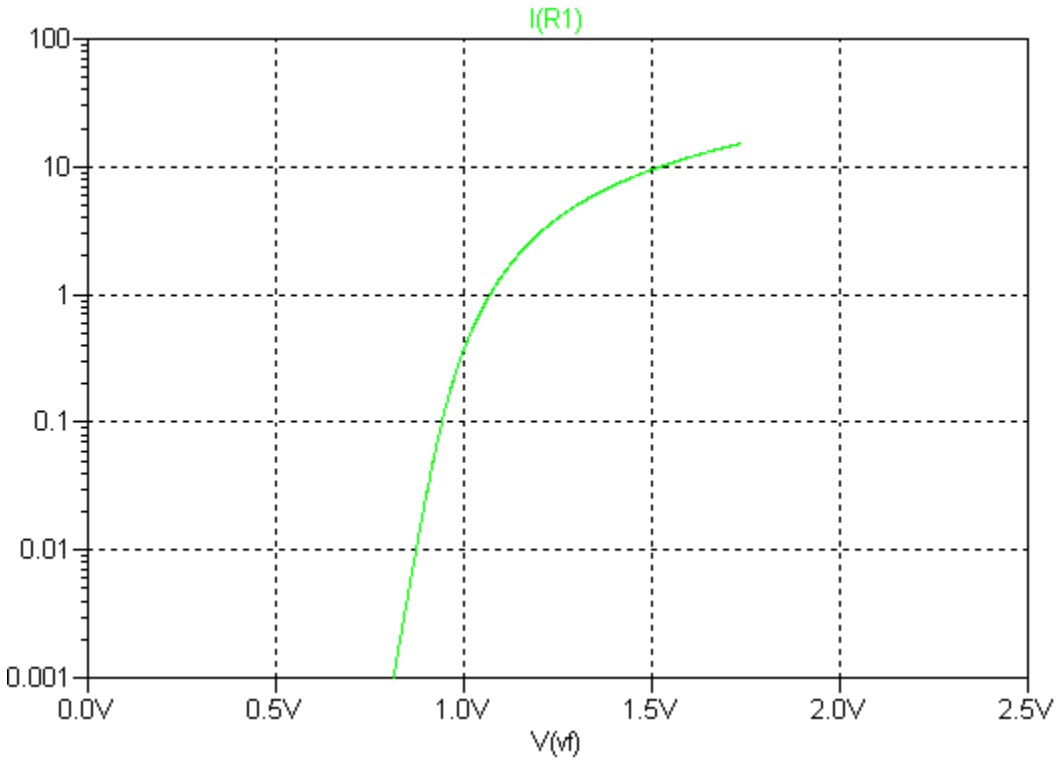
COMPONENTS: Silicon Carbide Schottky Diode
PART NUMBER: SCS110AG_75C
MANUFACTURER: ROHM
REMARK: Professional Model
REPORT:(LTspice IV)

Bee Technologies Inc.

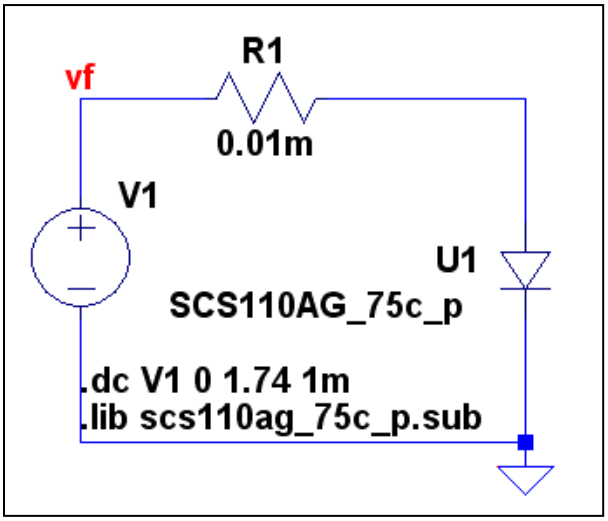
Spice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive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

Forward Current Characteristic

Circuit Simulation Result

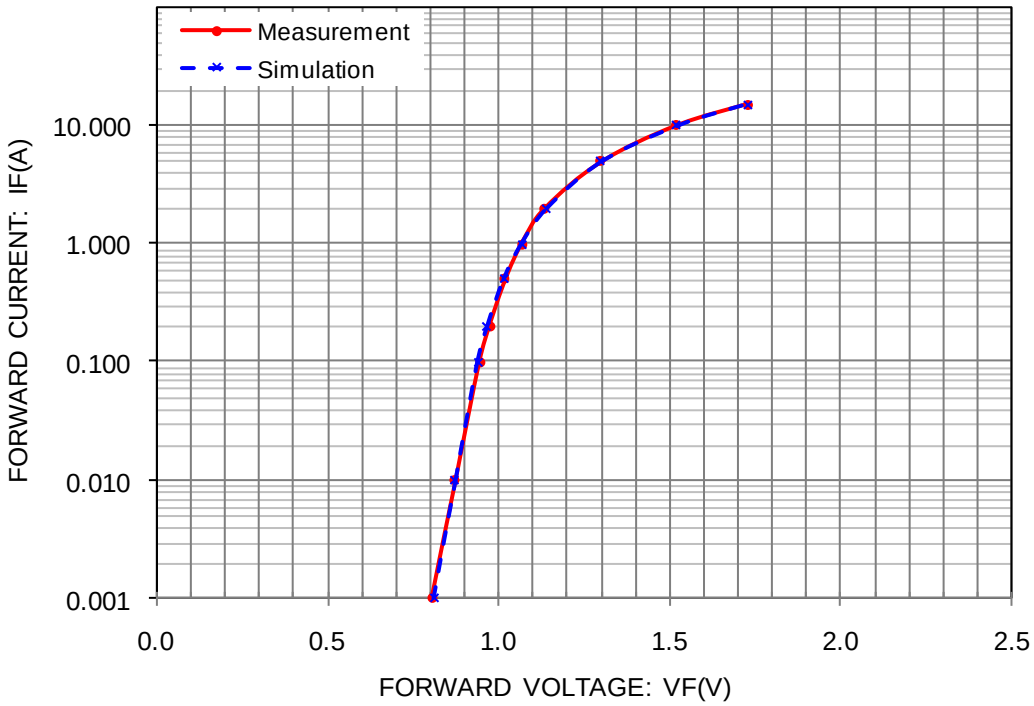


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

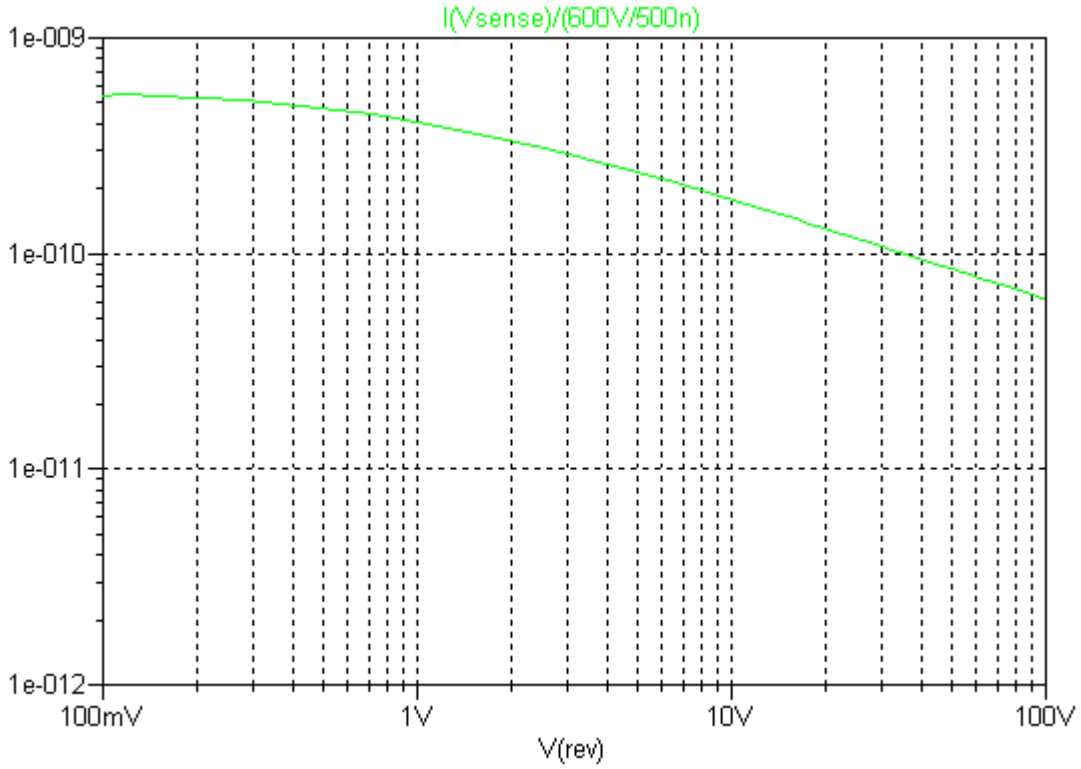


Simulation Result

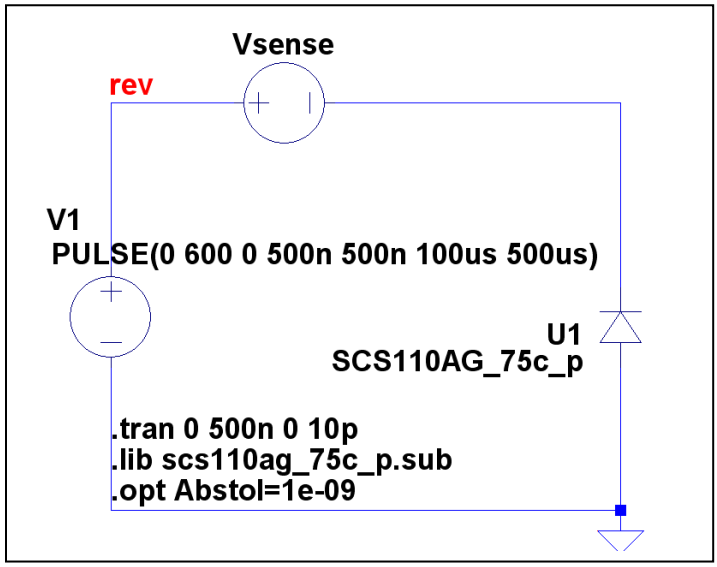
I_F(A)	V_F(V)		Error (%)
	Measurement	Simulation	
0.001	0.8050	0.8119	0.86
0.01	0.8730	0.8723	-0.08
0.1	0.9450	0.9408	-0.45
0.2	0.9750	0.9683	-0.69
0.5	1.0200	1.0174	-0.25
1	1.0700	1.0692	-0.07
2	1.1350	1.1414	0.56
5	1.3000	1.2999	-0.01
10	1.5200	1.5213	0.09
15	1.7300	1.7278	-0.13

Junction Capacitance Characteristic

Circuit Simulation Result

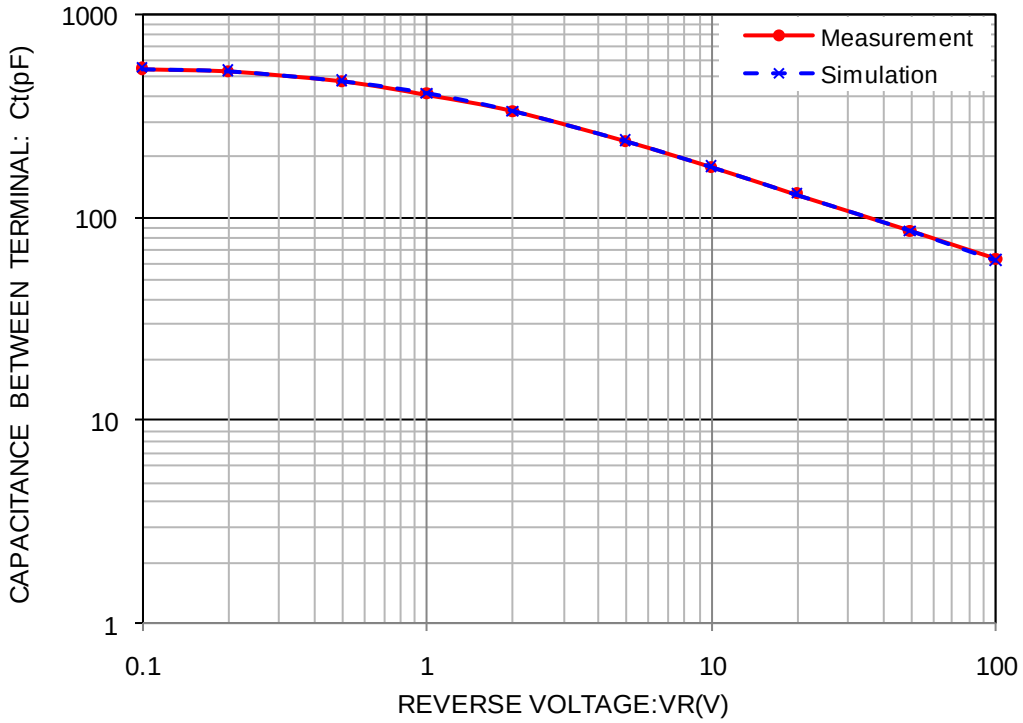


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

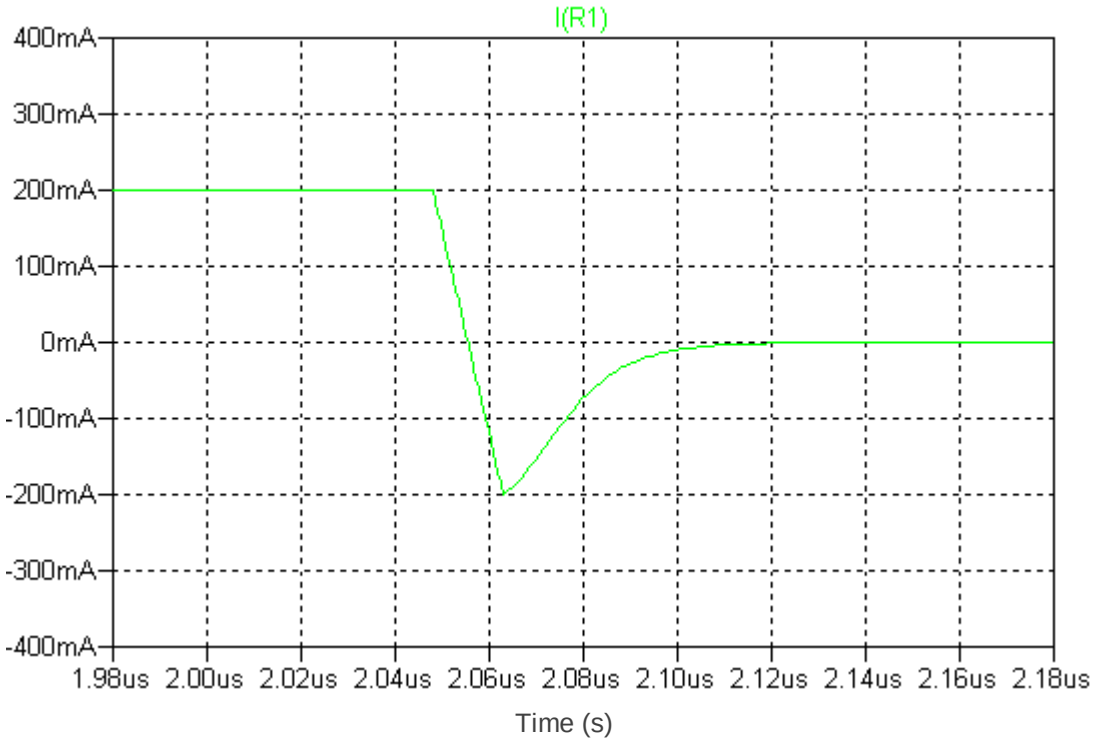


Simulation Result

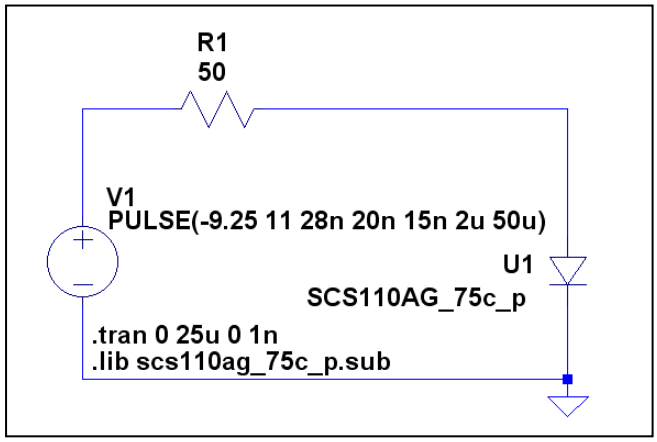
V_R(V)	C (pF)		Error (%)
	Measurement	Simulation	
0.1	542.337	544.030	0.31
0.2	522.371	529.732	1.41
0.5	465.350	471.766	1.38
1	404.500	408.068	0.88
2	333.714	334.092	0.11
5	236.672	238.254	0.67
10	177.213	177.749	0.30
20	130.504	130.397	-0.08
50	85.120	85.112	-0.01
100	62.215	61.343	-1.40

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

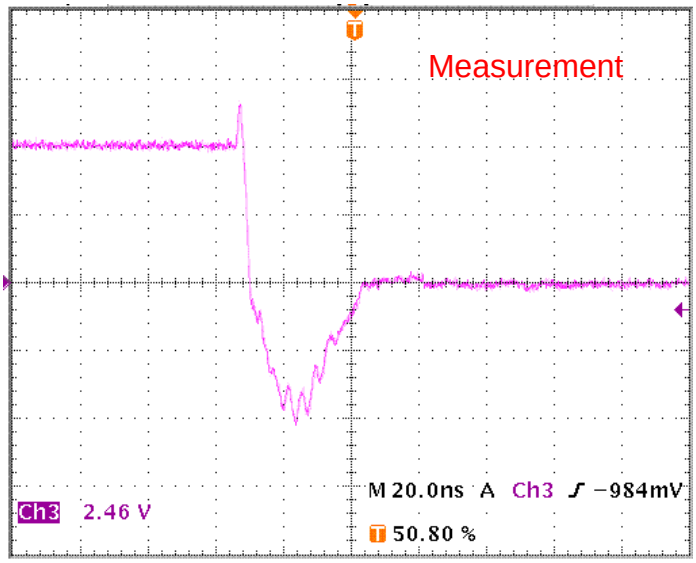


Compare Measurement vs. Simulation

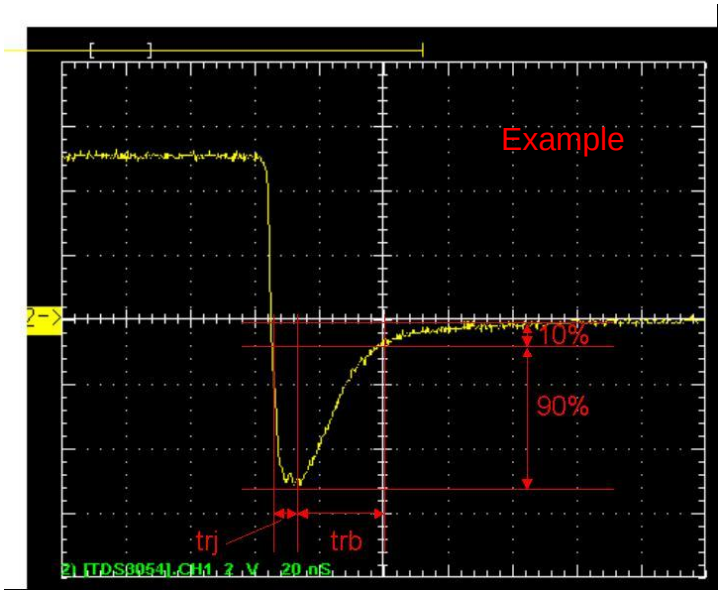
		Measurement	Simulation	Error (%)
trj	ns	7.500	7.532	0.42

Reverse Recovery Characteristic

Reference



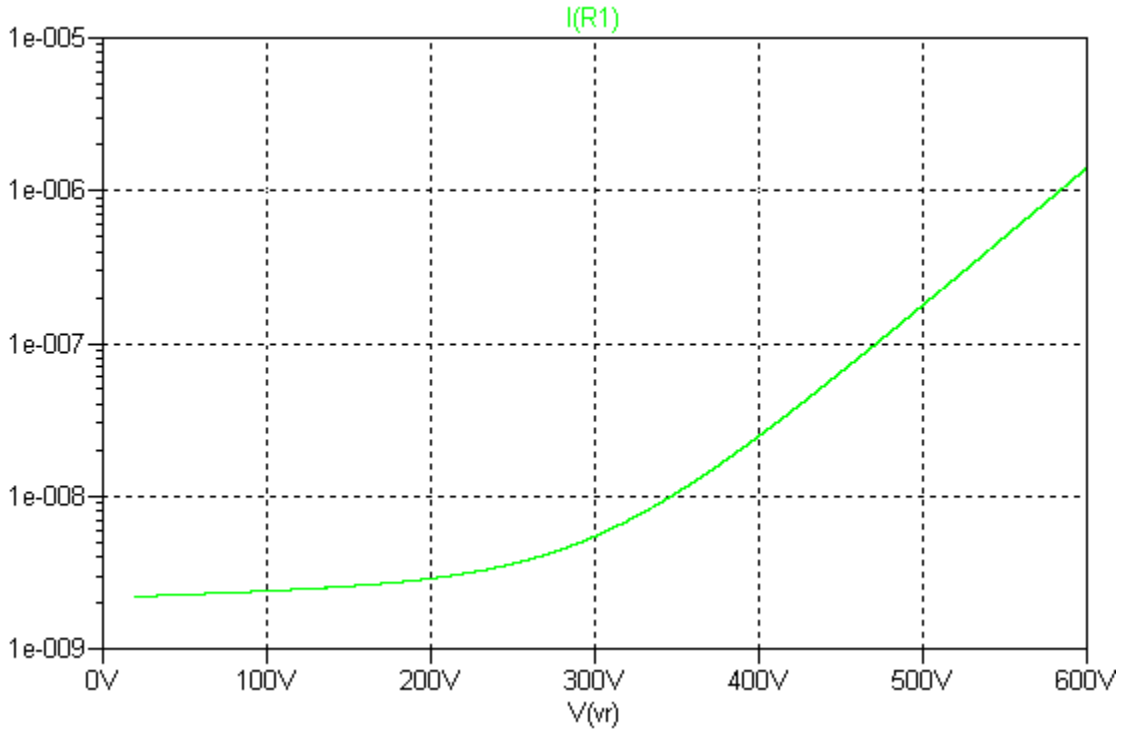
Trj =7.5(ns)
Trb=16.0(ns)
Conditions: Ifwd=0.2A, Irev=0.2A, Rl=50Ω



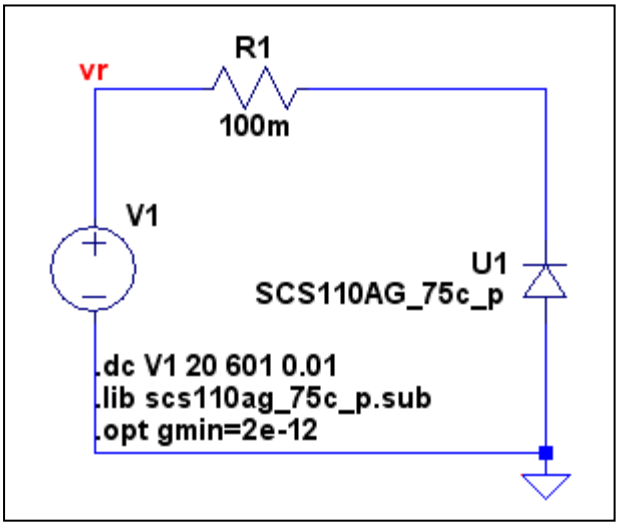
Relation between trj and trb

Reverse Characteristic

Circuit Simulation Result

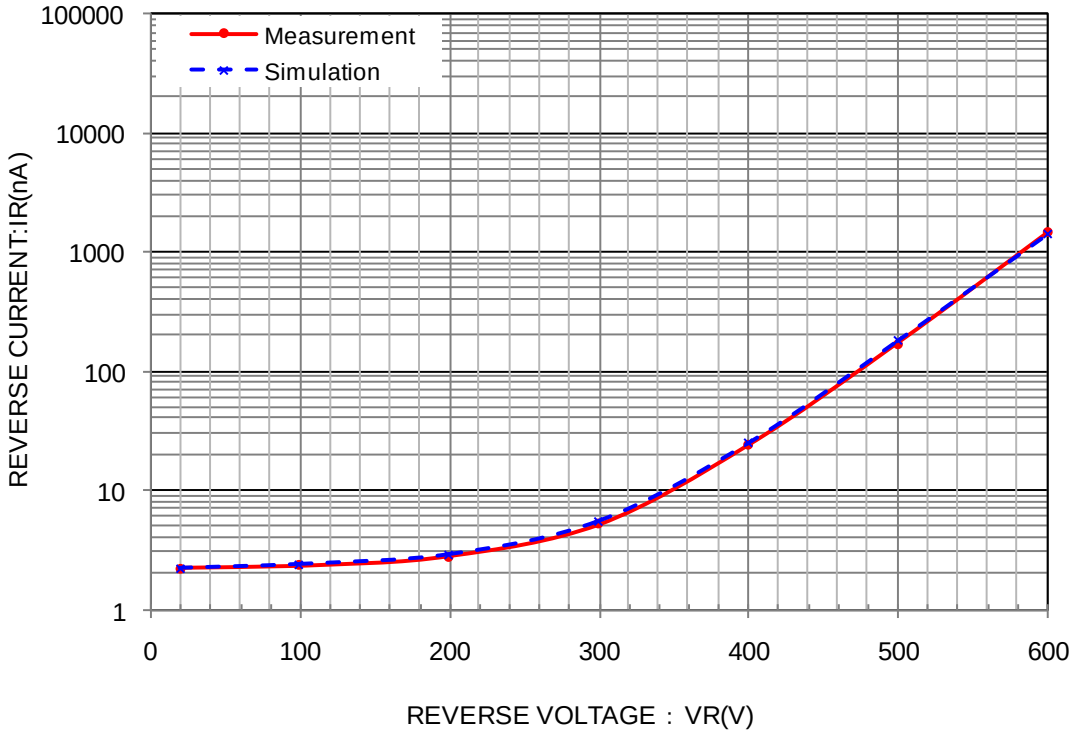


Evaluation Circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

V_R(V)	I_R(nA)		Error (%)
	Measurement	Simulation	
20	2.2000	2.1980	-0.09
100	2.3500	2.3920	1.79
200	2.7800	2.8865	3.83
300	5.2400	5.4553	4.11
400	23.7000	24.7090	4.26
500	170.0000	178.1630	4.80
600	1470.0000	1411.1000	-4.01