

Device Modeling Report

COMPONENTS: Silicon Carbide Schottky Diode
PART NUMBER: SCS110AG_-25c
MANUFACTURER: ROHM
REMARK: Professional Model

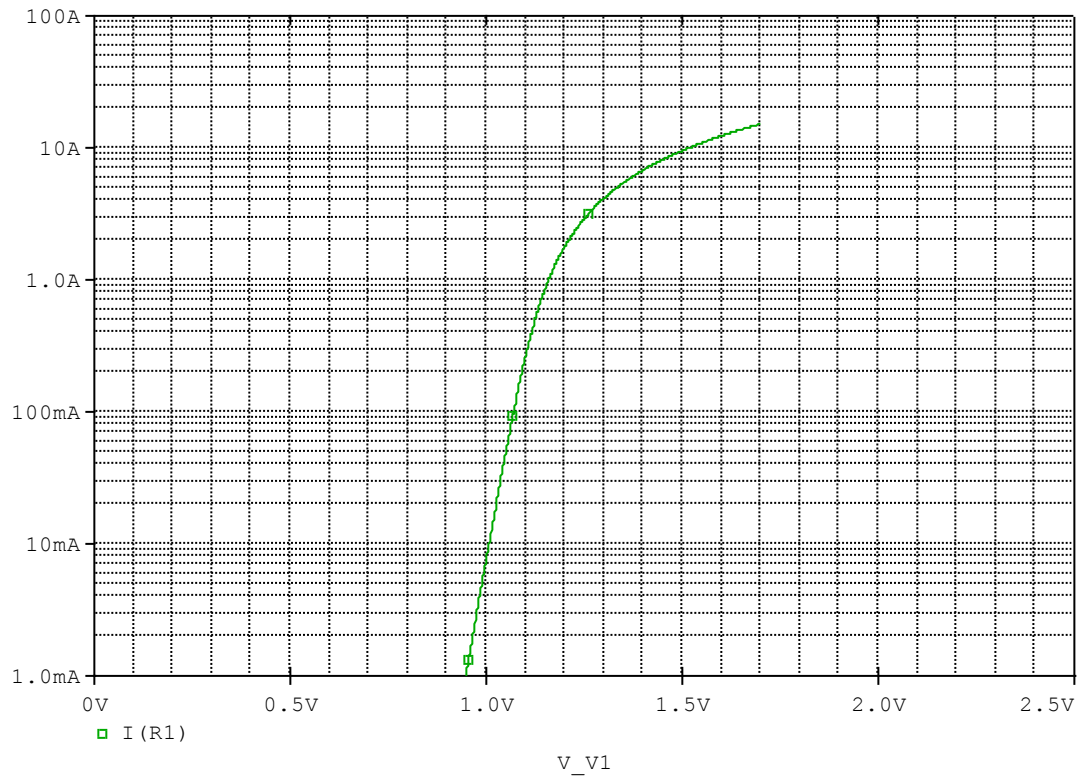


Bee Technologies Inc.

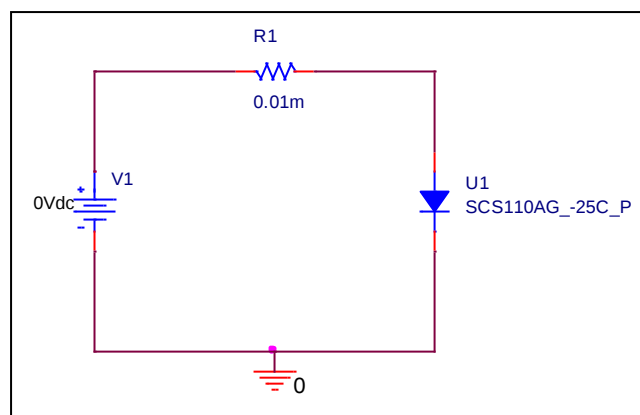
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

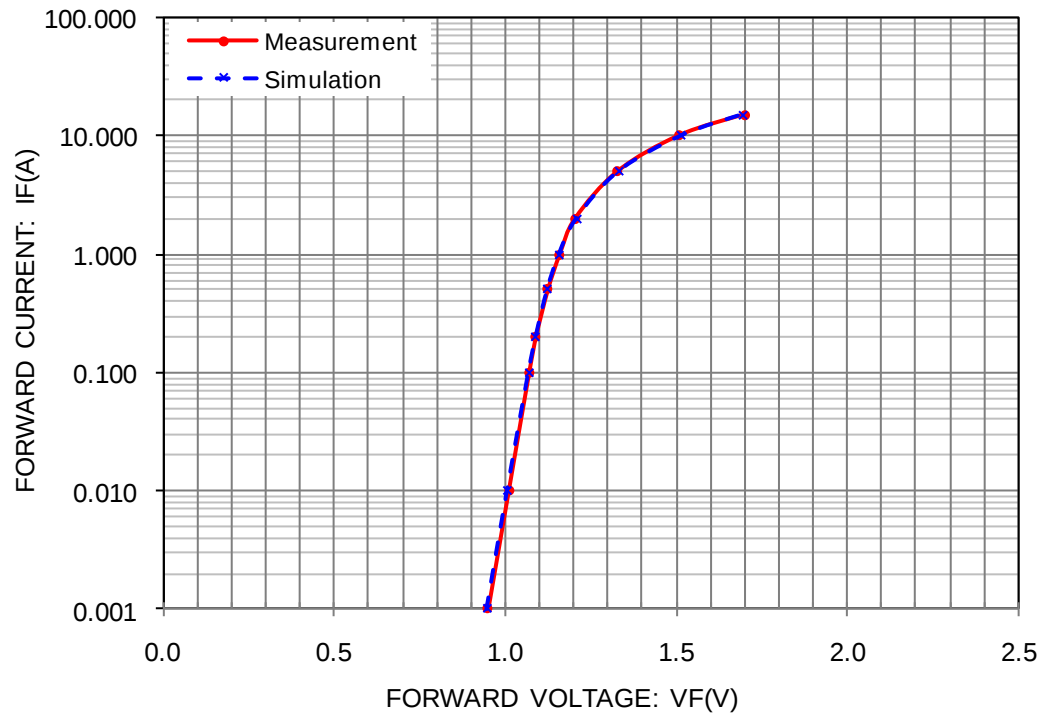


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

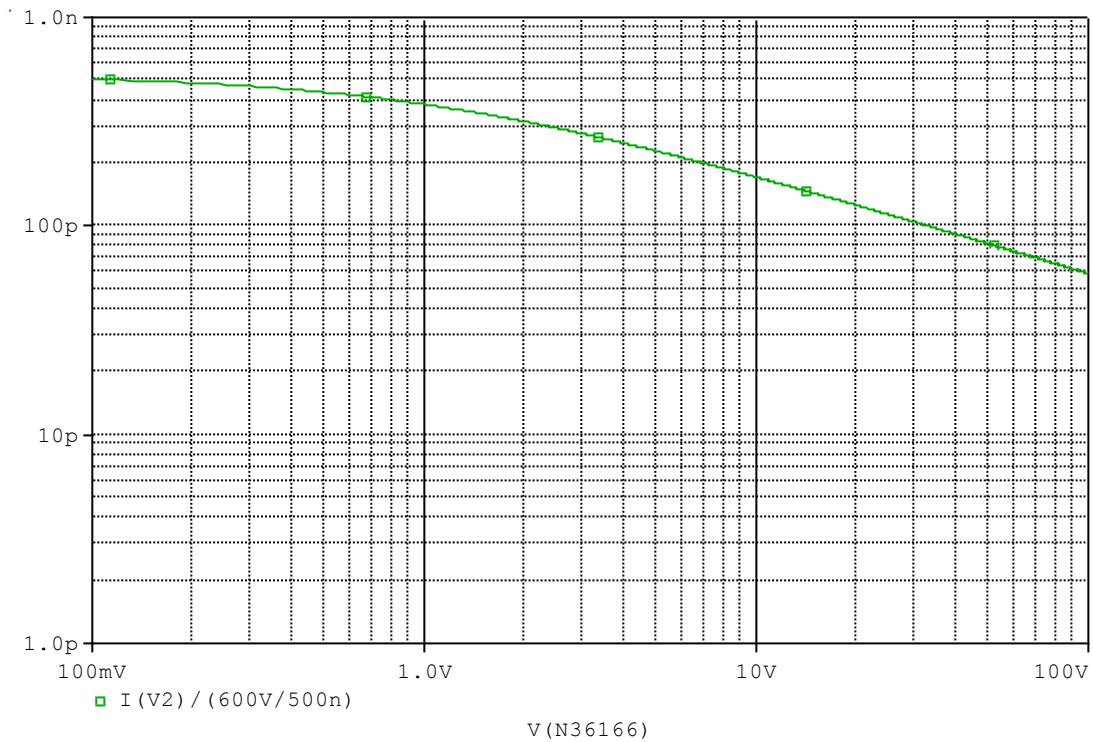


Simulation Result

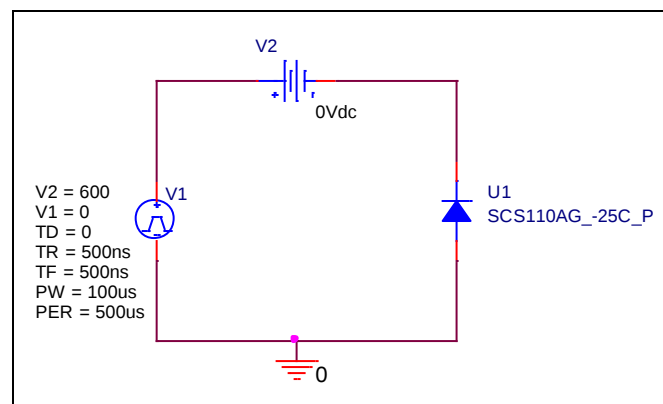
I_F (A)	V_F (V)		Error (%)
	Measurement	Simulation	
0.001	0.9500	0.9471	-0.30
0.01	1.0100	1.0070	-0.30
0.1	1.0700	1.0695	-0.05
0.2	1.0900	1.0908	0.07
0.5	1.1250	1.1244	-0.05
1	1.1600	1.1589	-0.09
2	1.2050	1.2100	0.41
5	1.3300	1.3332	0.24
10	1.5100	1.5170	0.46
15	1.7000	1.6933	-0.39

Junction Capacitance Characteristic

Circuit Simulation Result

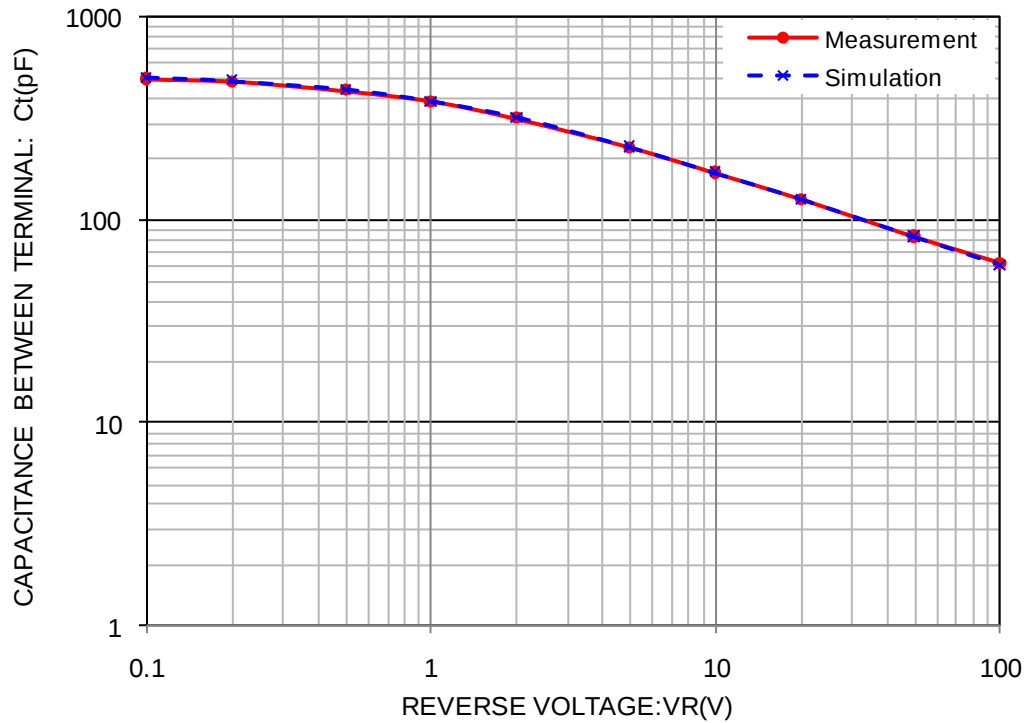


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

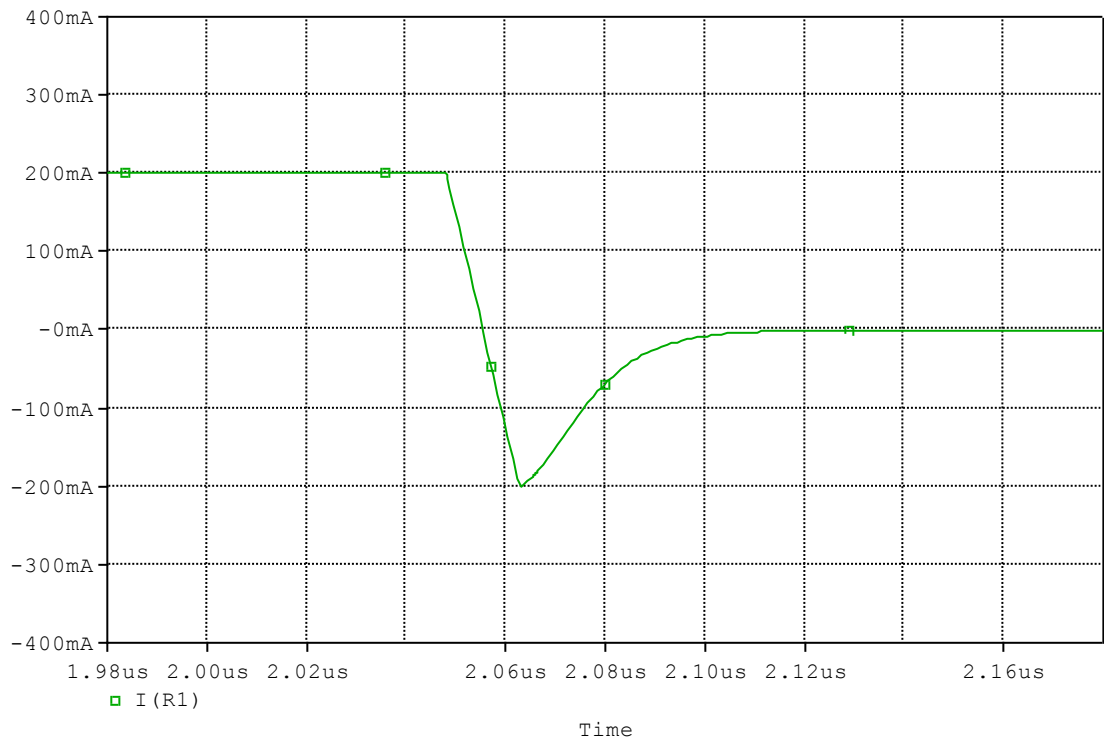


Simulation Result

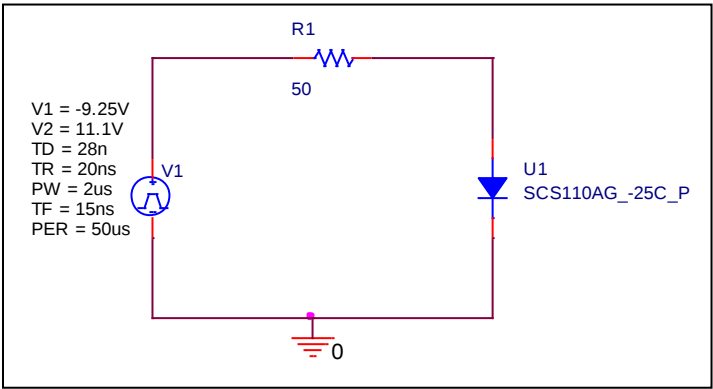
V_R (V)	C (pF)		Error (%)
	Measurement	Simulation	
0.1	495.522	500.945	1.09
0.2	478.484	484.972	1.36
0.5	432.707	437.279	1.06
1	381.755	382.943	0.31
2	315.733	317.098	0.43
5	227.287	228.635	0.59
10	170.646	171.457	0.48
20	125.176	125.891	0.57
50	82.750	82.216	-0.65
100	60.545	59.210	-2.20

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

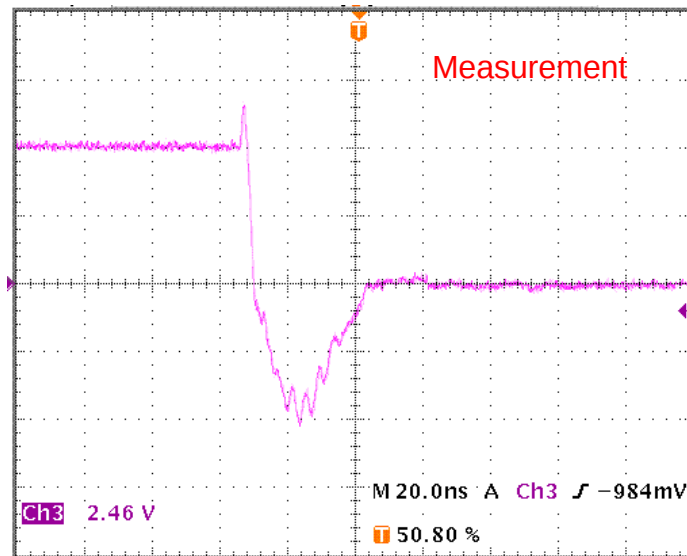


Compare Measurement vs. Simulation

		Measurement	Simulation	Error (%)
trj	ns	7.500	7.468	-0.42

Reverse Recovery Characteristic

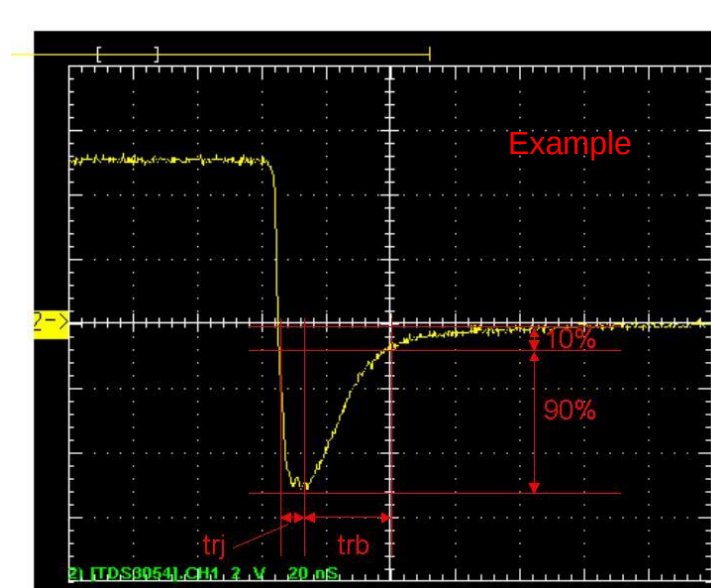
Reference



$T_{rj} = 7.5(\text{ns})$

$T_{rb} = 16.00(\text{ns})$

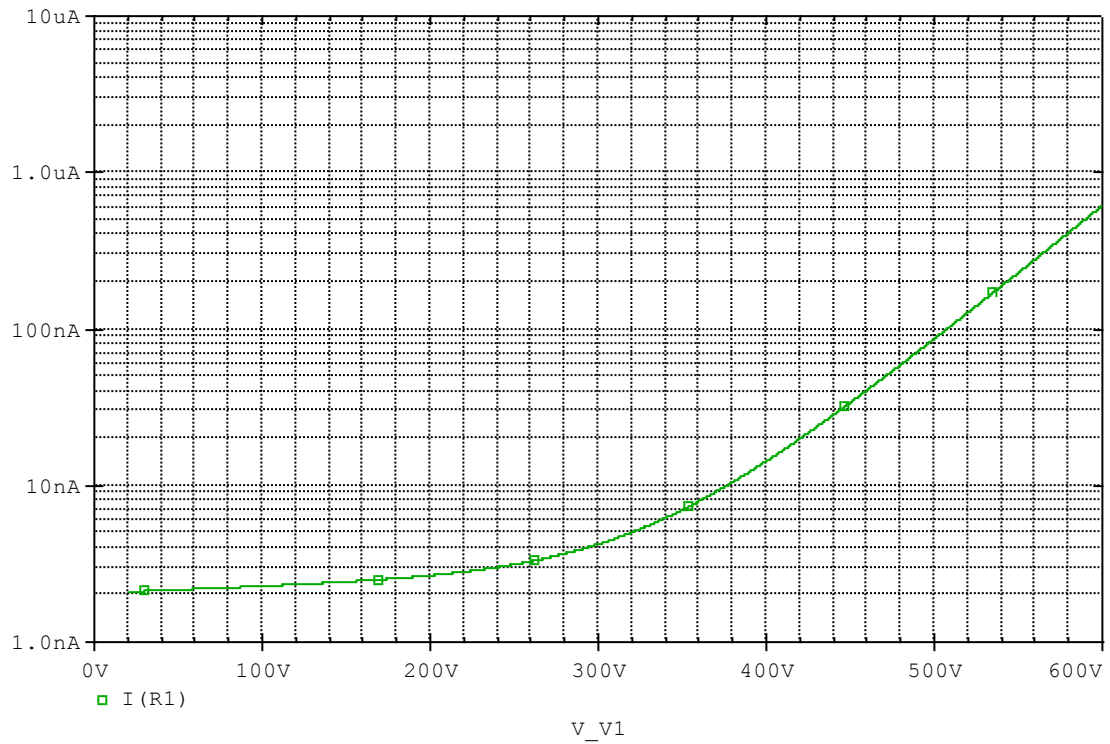
Conditions: $I_{fwd} = 0.2\text{A}$, $I_{rev} = 0.2\text{A}$, $R_l = 50\Omega$



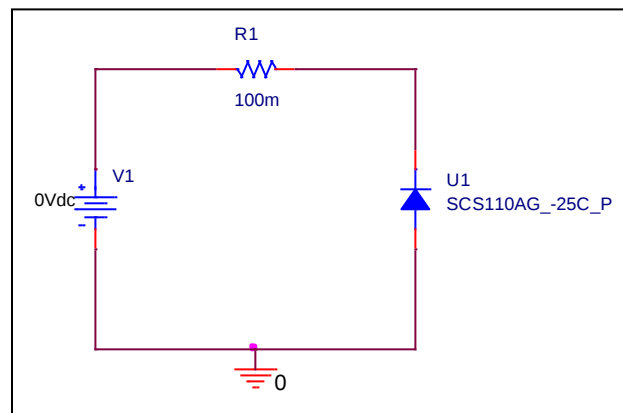
Relation between t_{rj} and t_{rb}

Reverse Characteristic

Circuit Simulation Result

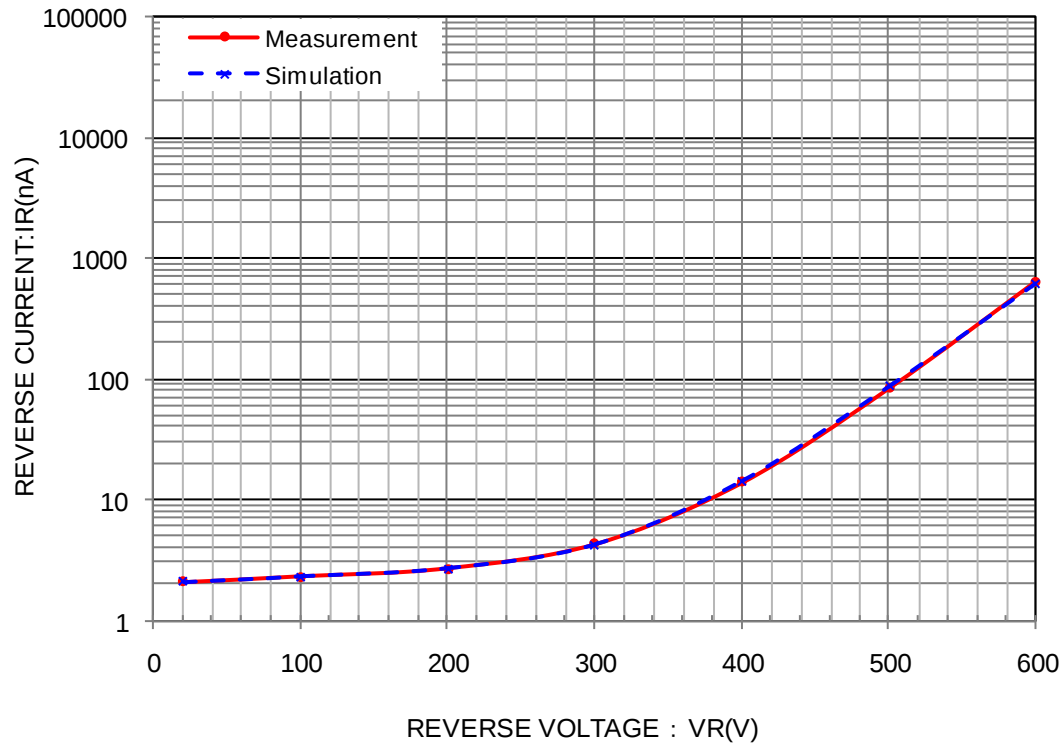


Evaluation Circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

$V_R(V)$	$I_R(nA)$		Error (%)
	Measurement	Simulation	
20	2.1000	2.0962	-0.18
100	2.3000	2.2804	-0.85
200	2.6590	2.6677	0.33
300	4.3000	4.2257	-1.73
400	14.0000	14.3290	2.35
500	83.0000	86.7290	4.49
600	640.0000	613.3040	-4.17