Device Modeling Report

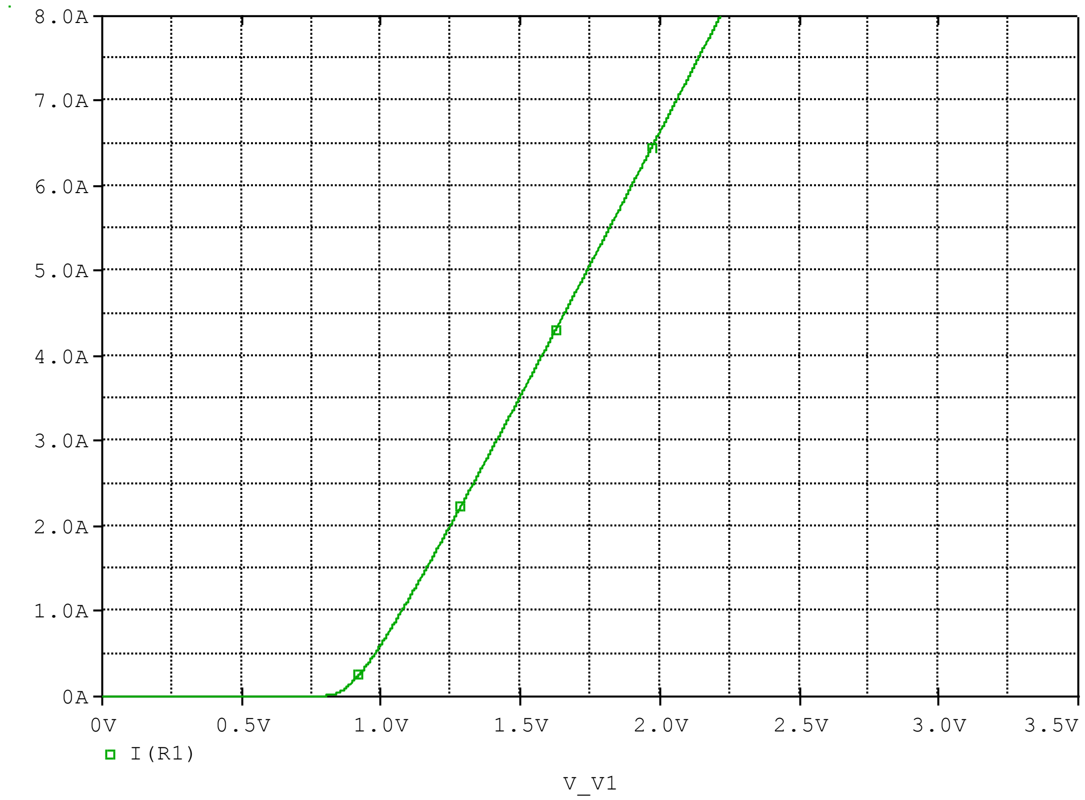
COMPONENTS: Silicon Carbide Schottky Diode
PART NUMBER: STPSC406
MANUFACTURER: STMicroelectronics
REMARK: Professional Model

Bee Technologies Inc.

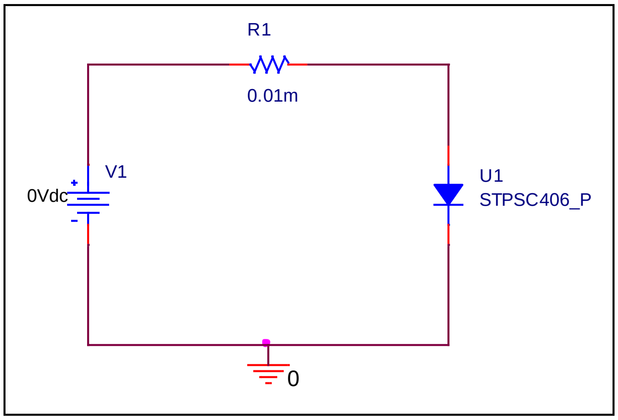
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

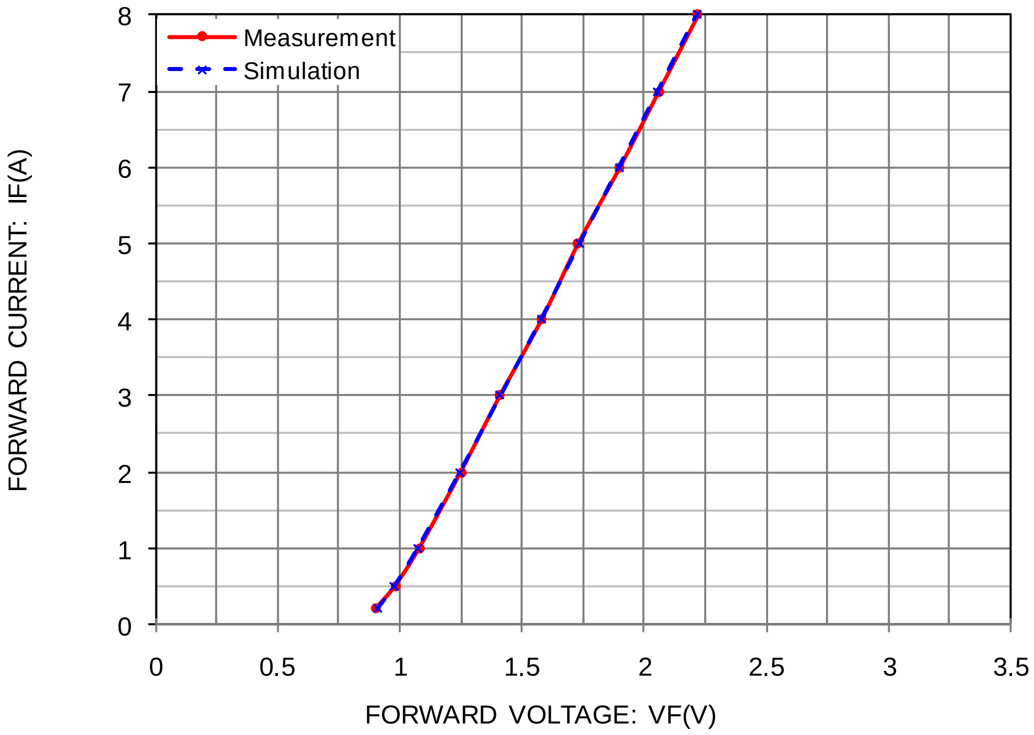


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

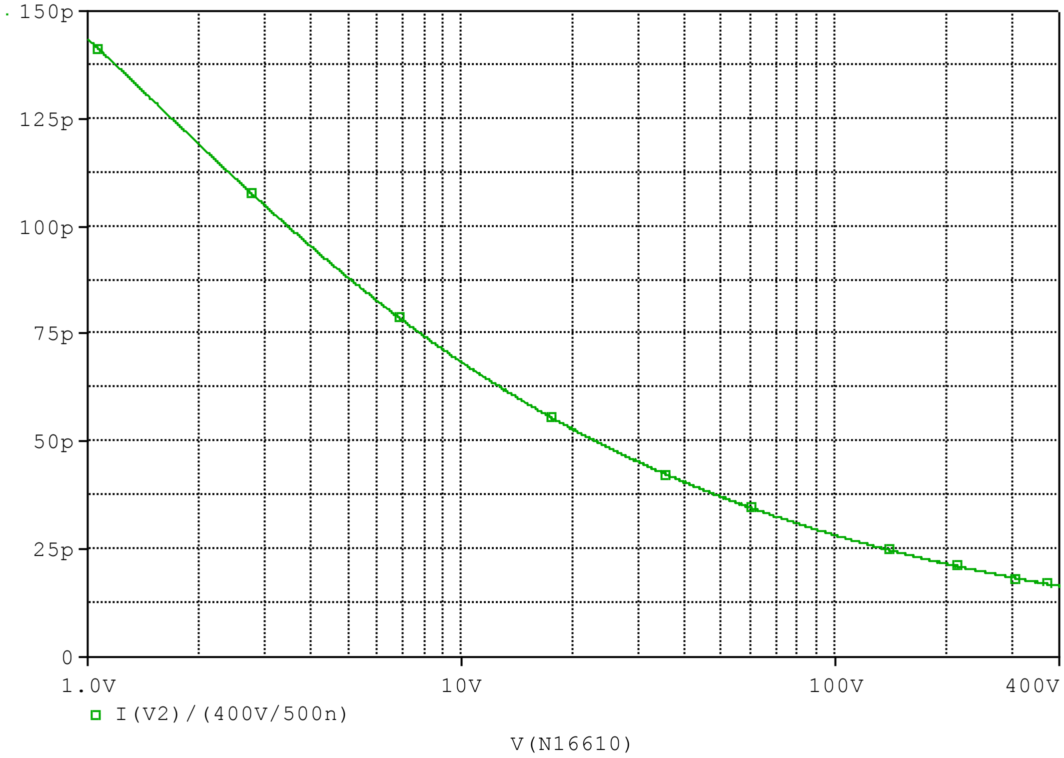


Simulation Result

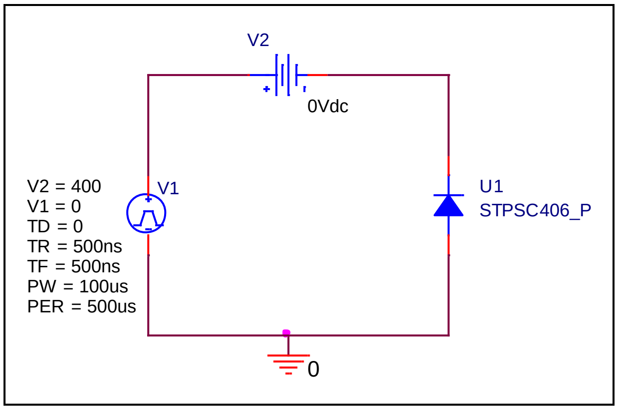
I_F(A)	V_F(V)		Error (%)
	Measurement	Simulation	
0.2	0.9000	0.9067	0.75
0.5	0.9800	0.9771	-0.29
1	1.0800	1.0729	-0.66
2	1.2500	1.2465	-0.28
3	1.4100	1.4127	0.19
4	1.5800	1.5786	-0.09
5	1.7300	1.7372	0.42
6	1.9000	1.8976	-0.13
7	2.0600	2.0573	-0.13
8	2.2200	2.2164	-0.16

Junction Capacitance Characteristic

Circuit Simulation Result

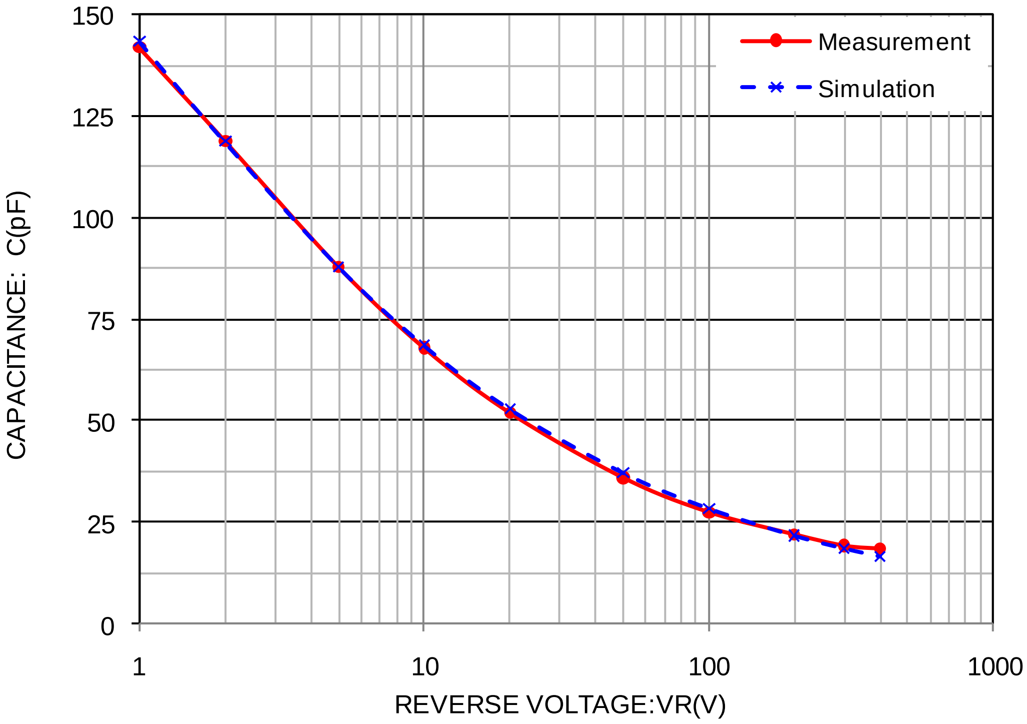


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

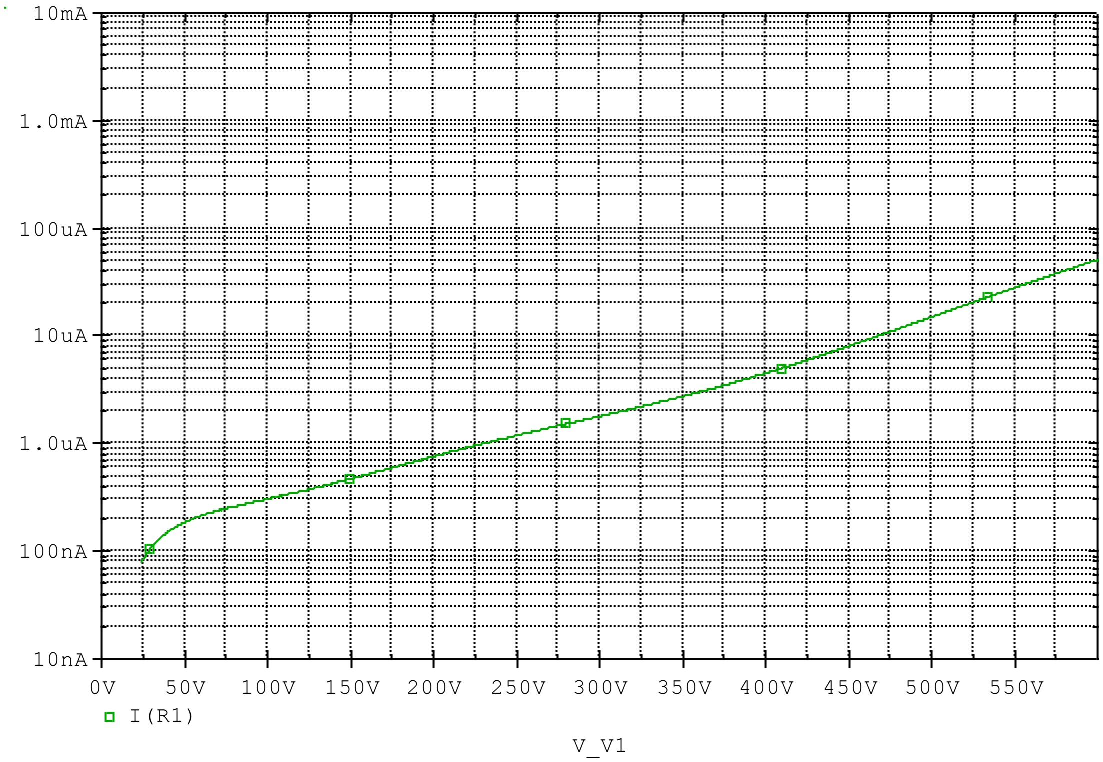


Simulation Result

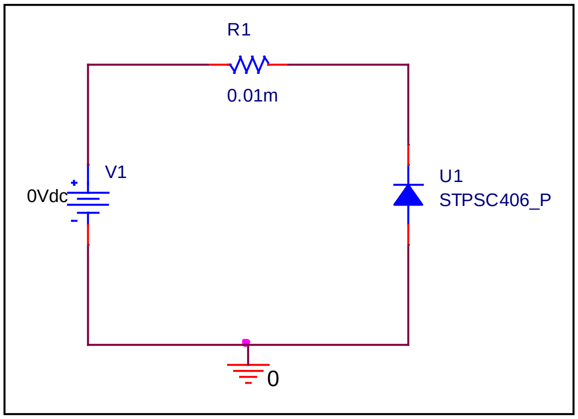
V_R(V)	C (pF)		Error (%)
	Measurement	Simulation	
1	142.000	143.511	1.06
2	119.000	118.718	-0.24
5	88.000	87.996	0.00
10	68.000	68.532	0.78
20	52.000	52.823	1.58
50	36.000	37.117	3.10
100	27.500	28.331	3.02
200	22.000	21.615	-1.75
300	19.200	18.451	-3.90

Reverse Characteristic

Circuit Simulation Result

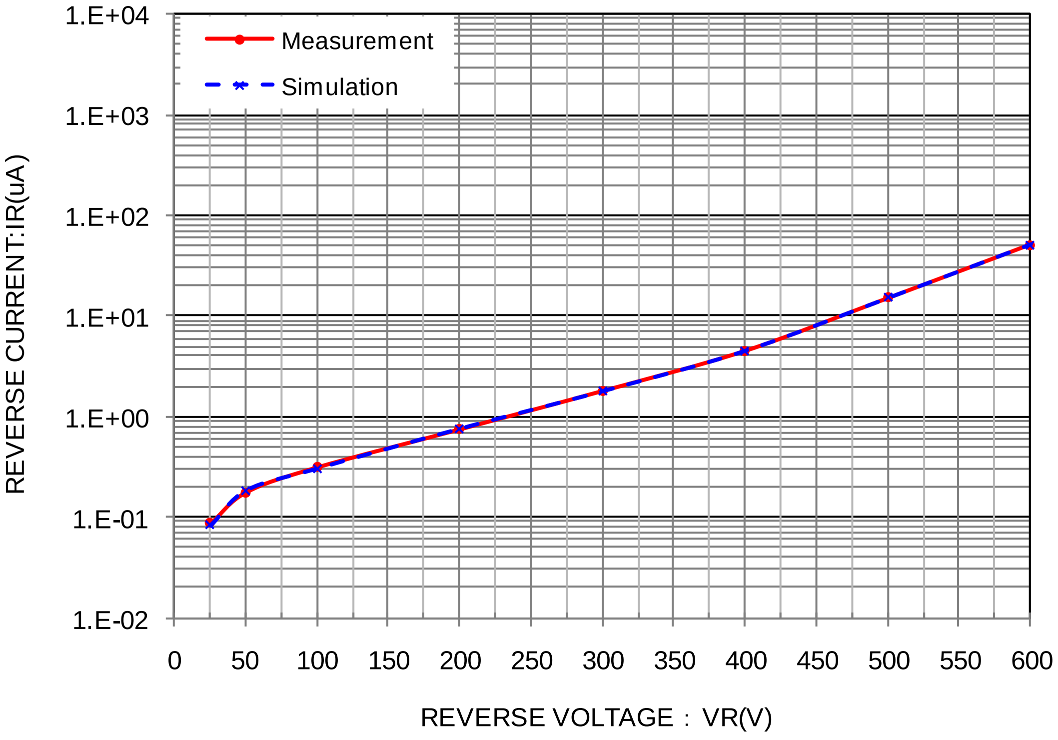


Evaluation Circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

V_R(V)	I_R(uA)		Error (%)
	Measurement	Simulation	
25	0.087	0.083	25
50	0.178	0.186	50
100	0.315	0.307	100
200	0.750	0.762	200
300	1.800	1.791	300
400	4.500	4.502	400
500	15.000	15.001	500
600	51.000	51.000	600