

# Device Modeling Report

COMPONENTS: Silicon Carbide Schottky Diode  
PART NUMBER: CSD06060G  
MANUFACTURER: Cree, Inc.  
REMARK: Professional Model

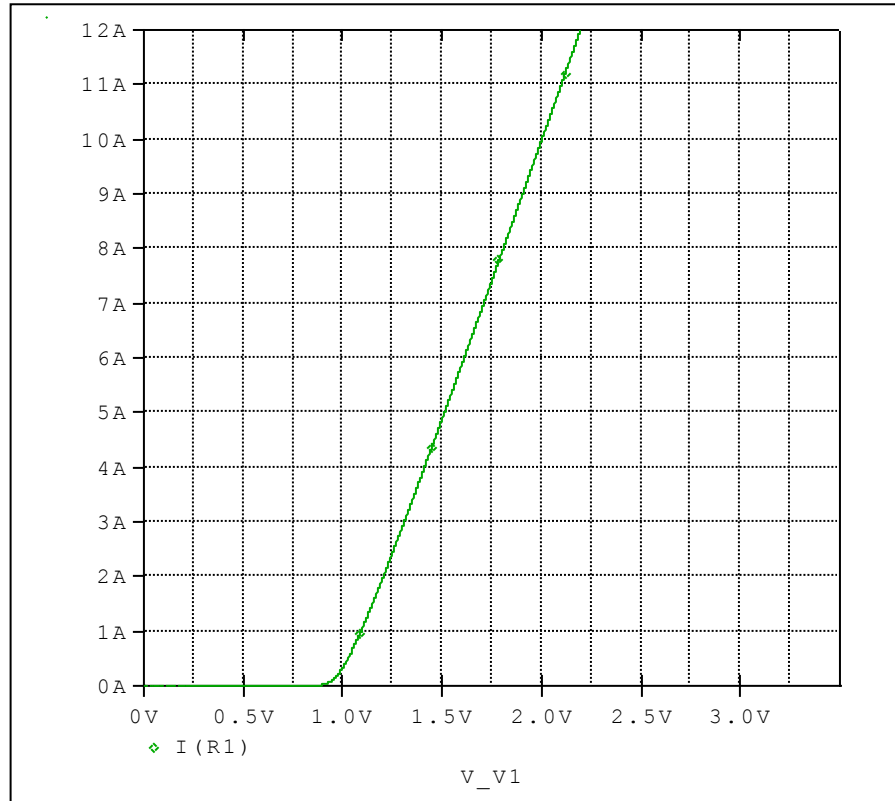


**Bee Technologies Inc.**

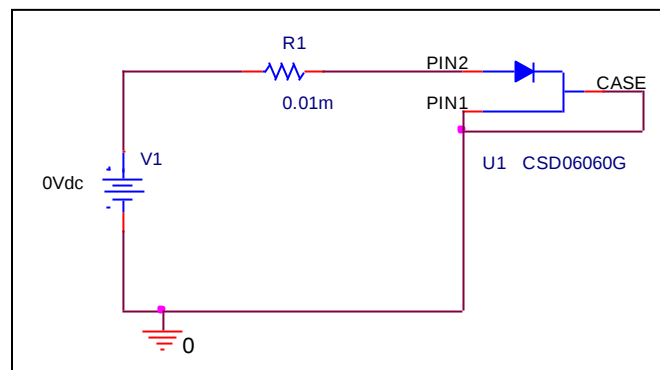
| PSpice model parameter | Model description                           |
|------------------------|---------------------------------------------|
| IS                     | Saturation Current                          |
| N                      | Emission Coefficient                        |
| RS                     | 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

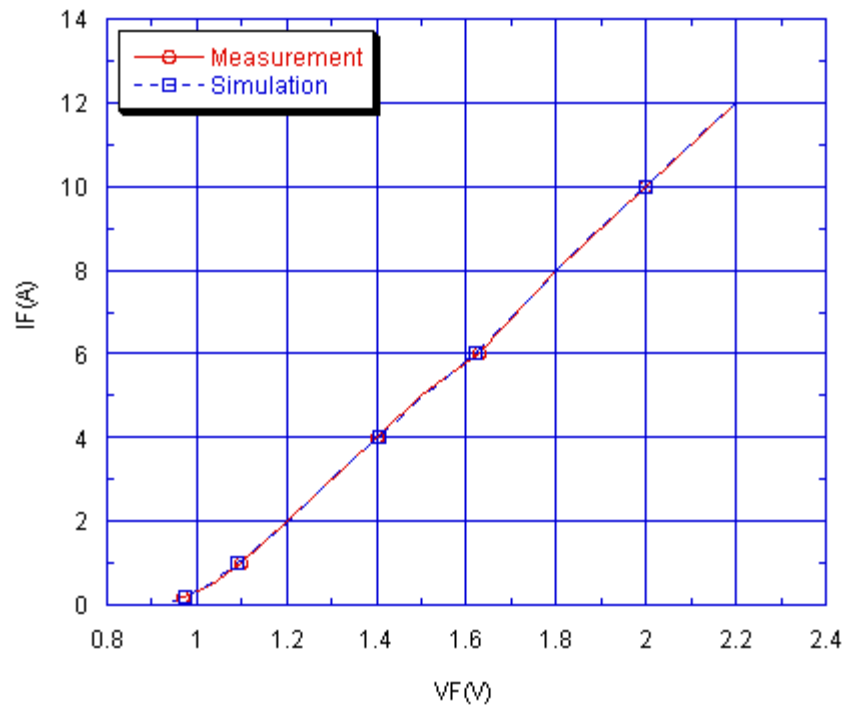


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

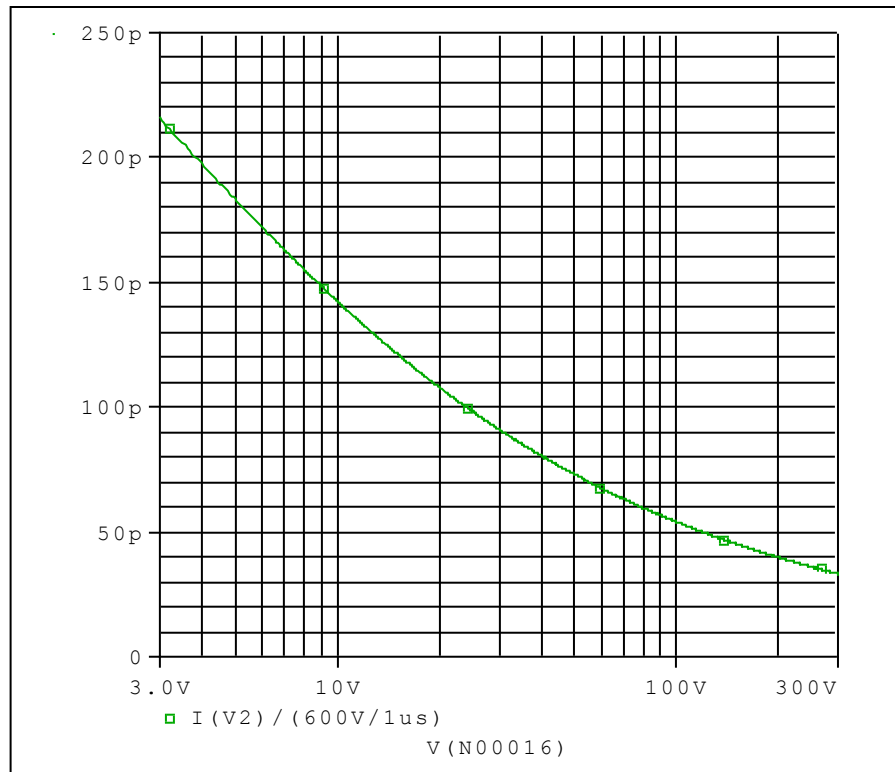


### Simulation Result

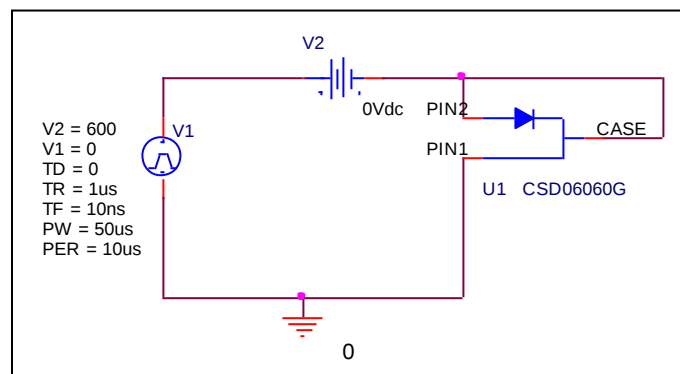
| $I_F$ (A) | $V_F$ (V)   |            | Error(%) |
|-----------|-------------|------------|----------|
|           | Measurement | Simulation |          |
| 0.1       | 0.950       | 0.947      | -0.317   |
| 0.2       | 0.970       | 0.974      | 0.411    |
| 0.5       | 1.030       | 1.026      | -0.390   |
| 1         | 1.100       | 1.091      | -0.825   |
| 2         | 1.200       | 1.204      | 0.332    |
| 5         | 1.500       | 1.511      | 0.728    |
| 10        | 2.000       | 2.000      | 0.000    |
| 12        | 2.200       | 2.199      | -0.045   |

## Junction Capacitance Characteristic

### Circuit Simulation Result

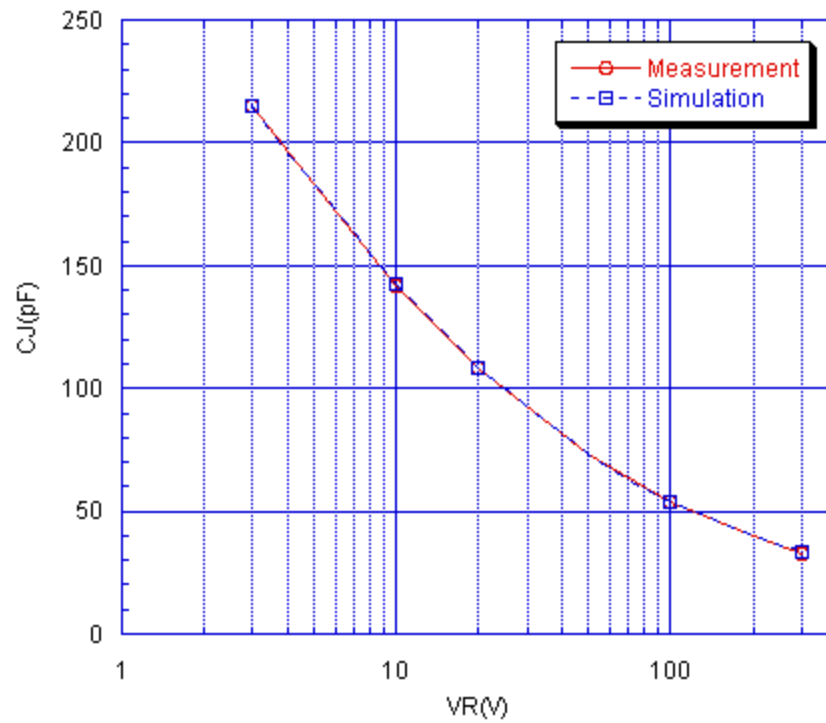


### Evaluation Circuit



## Comparison Graph

Circuit Simulation Result

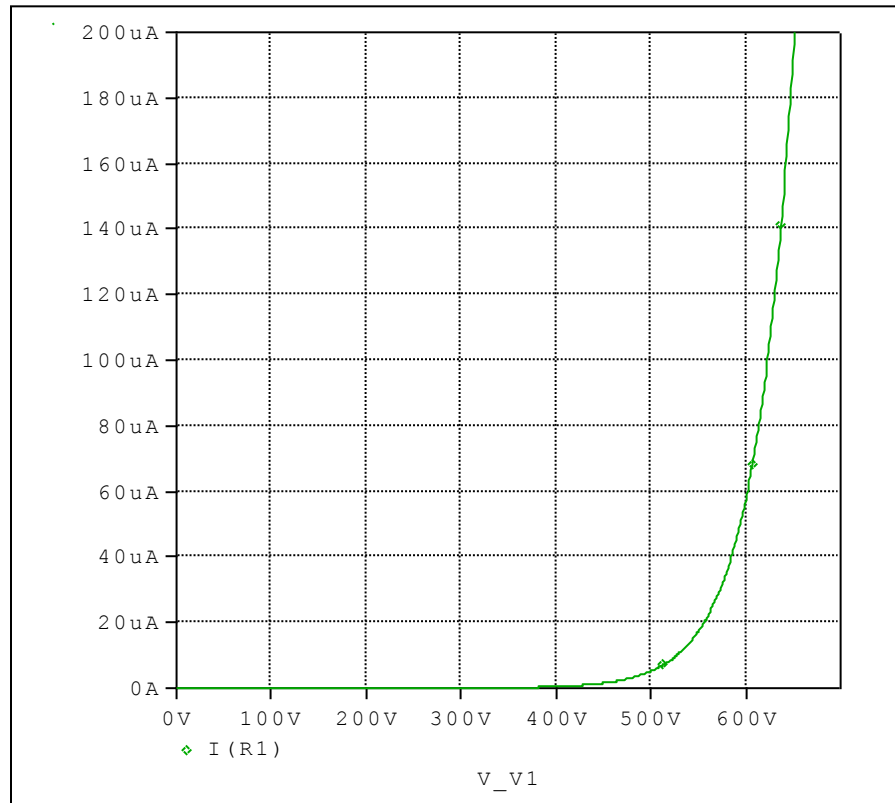


Simulation Result

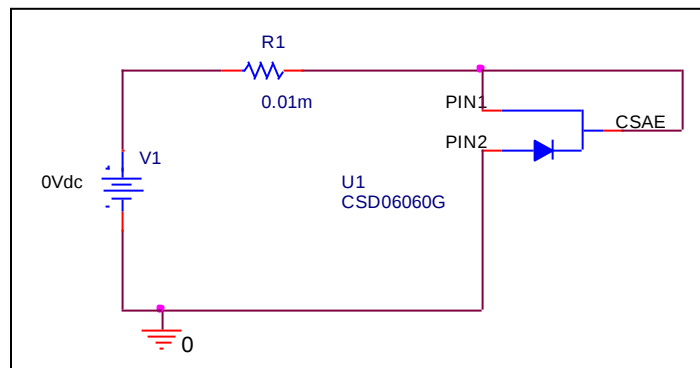
| $V_R$ (V) | $C_J$ (pF)  |            | Error(%) |
|-----------|-------------|------------|----------|
|           | Measurement | Simulation |          |
| 5         | 183.000     | 183.500    | 0.272    |
| 10        | 142.000     | 142.400    | 0.281    |
| 20        | 108.500     | 108.000    | -0.463   |
| 50        | 73.000      | 73.300     | 0.409    |
| 100       | 54.000      | 54.000     | 0.000    |
| 200       | 40.000      | 39.900     | -0.251   |
| 300       | 33.000      | 33.200     | 0.602    |

## Reverse Characteristic

### Circuit Simulation Result

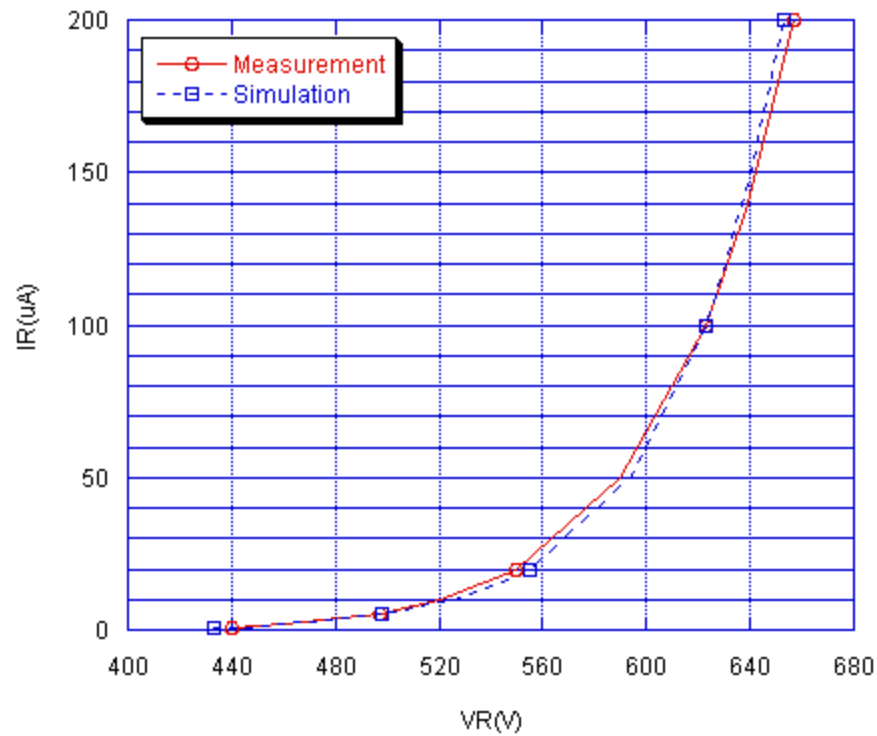


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result



### Simulation Result

| $I_R$ (uA) | $V_R$ (V)   |            | Error (%) |
|------------|-------------|------------|-----------|
|            | Measurement | Simulation |           |
| 1          | 440.000     | 433.000    | -1.617    |
| 2          | 460.000     | 460.100    | 0.022     |
| 5          | 497.000     | 498.000    | 0.201     |
| 10         | 520.000     | 526.000    | 1.141     |
| 20         | 550.000     | 556.000    | 1.079     |
| 50         | 590.000     | 594.000    | 0.673     |
| 100        | 623.000     | 623.000    | 0.000     |
| 140        | 639.000     | 637.000    | -0.314    |
| 200        | 657.000     | 651.000    | -0.922    |