

# Device Modeling Report

COMPONENTS:  
DIODE/ SCHOOTKY RECTIFIER / STANDARD  
PART NUMBER: D3FSA4  
MANUFACTURER: SHINDENGEN

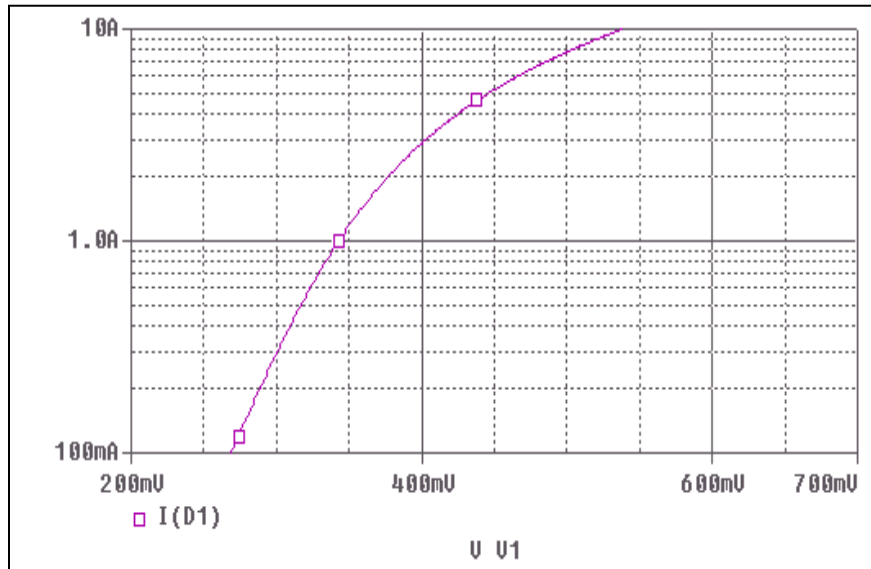


**Bee Technologies Inc.**

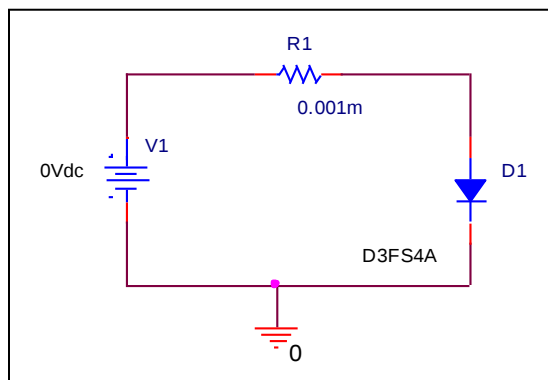
| PSpice model parameter | Model description                           |
|------------------------|---------------------------------------------|
| IS                     | Saturation Current                          |
| N                      | Emission Coefficient                        |
| RS    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

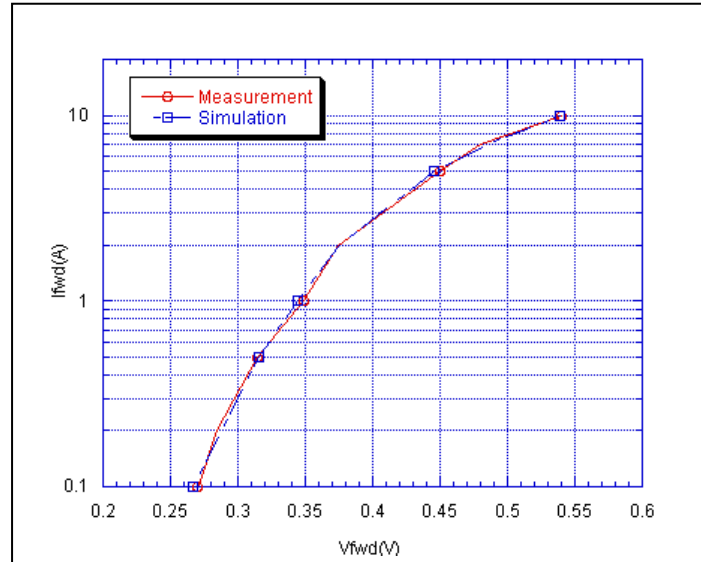


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

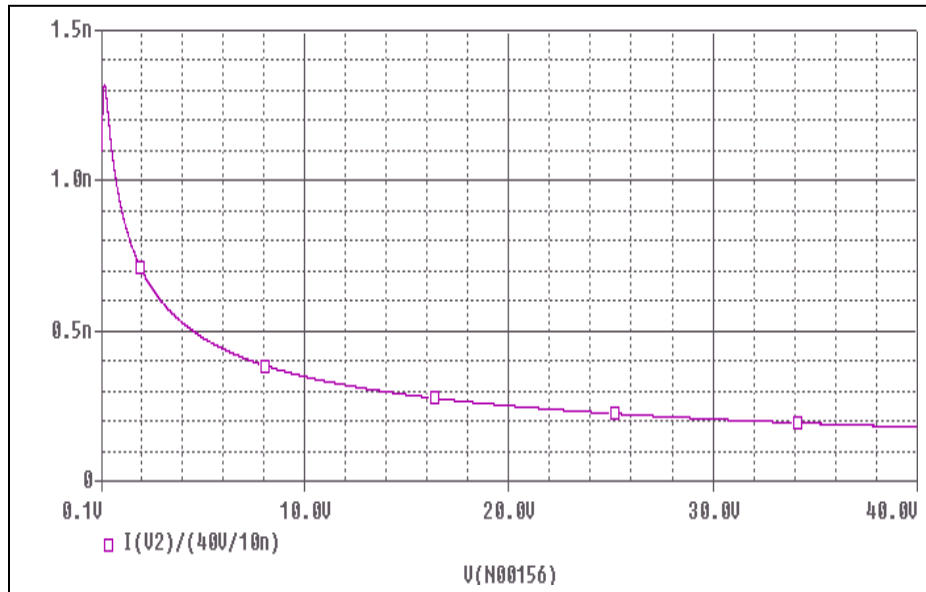


### Simulation Result

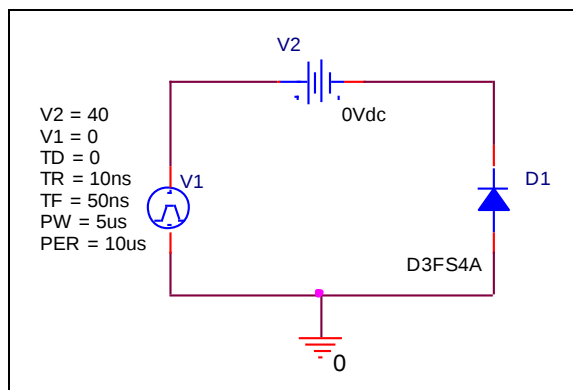
| $I_{fwd}(A)$ | $V_{fwd}(V)$<br>Measurement | $V_{fwd}(V)$<br>Simulation | %Error |
|--------------|-----------------------------|----------------------------|--------|
| 0.1          | 0.27                        | 0.27                       | -1.11  |
| 0.2          | 0.29                        | 0.29                       | 1.05   |
| 0.5          | 0.32                        | 0.32                       | 0.32   |
| 1            | 0.35                        | 0.35                       | -1.15  |
| 2            | 0.38                        | 0.38                       | 0.27   |
| 5            | 0.45                        | 0.45                       | -0.89  |
| 10           | 0.54                        | 0.54                       | -0.19  |

# Junction Capacitance Characteristic

## Circuit Simulation Result

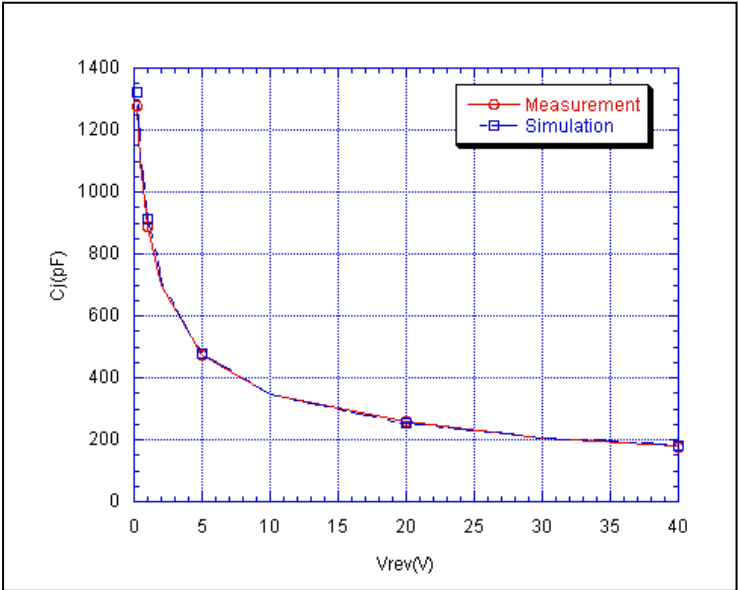


## Evaluation Circuit



# Comparison Graph

## Circuit Simulation Result



## Simulation Result

| Vrev(V) | Cj(pF)<br>Measurement | Cj(pF)<br>Simulation | %Error |
|---------|-----------------------|----------------------|--------|
| 0.2     | 1280.00               | 1321.00              | 3.20   |
| 0.5     | 1098.00               | 1123.00              | 2.28   |
| 1       | 888.00                | 914.00               | 2.93   |
| 2       | 699.00                | 707.00               | 1.14   |
| 5       | 475.00                | 479.00               | 0.84   |
| 10      | 345.00                | 346.00               | 0.29   |
| 20      | 260.00                | 252.60               | -2.85  |
| 40      | 175.000               | 180.000              | 2.86   |