

# Device Modeling Report

COMPONENTS:  
DIODE/ SCHOOTKY RECTIFIER / STANDARD  
PART NUMBER: DF30PC3M  
MANUFACTURER: SHINDENGEN

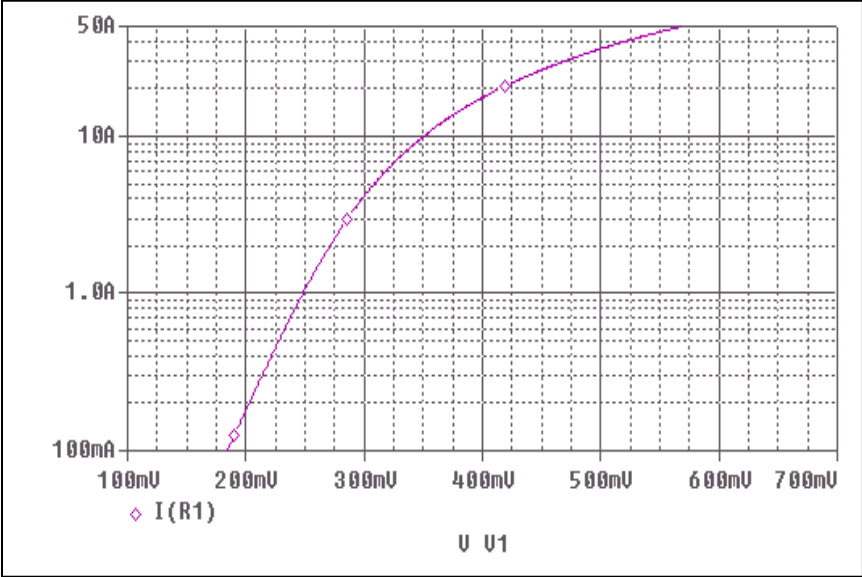


**Bee Technologies Inc.**

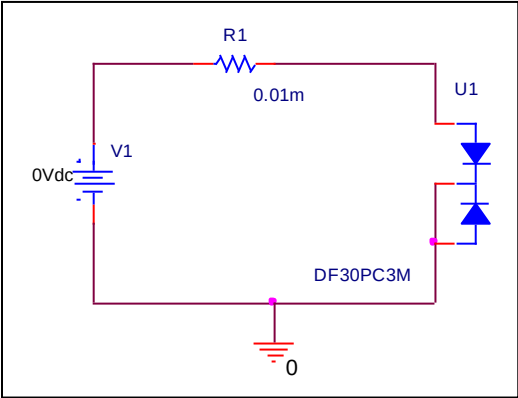
| PSpice model parameter | Model description                           |
|------------------------|---------------------------------------------|
| IS                     | Saturation Current                          |
| N                      | Emission Coefficient                        |
| RS    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

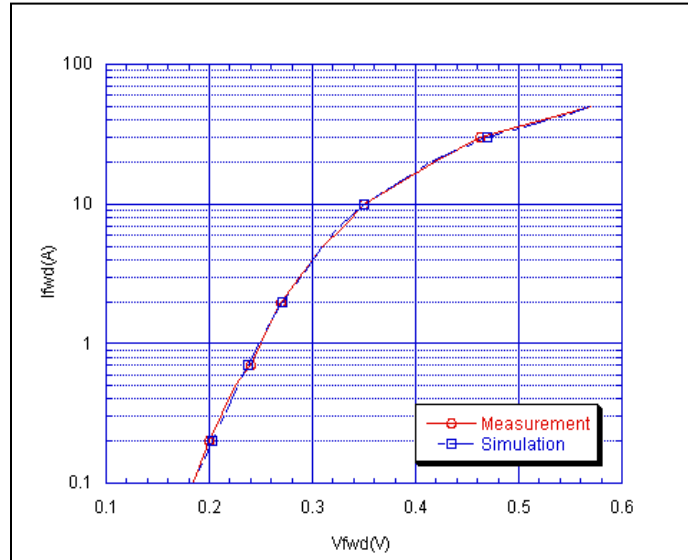


## Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

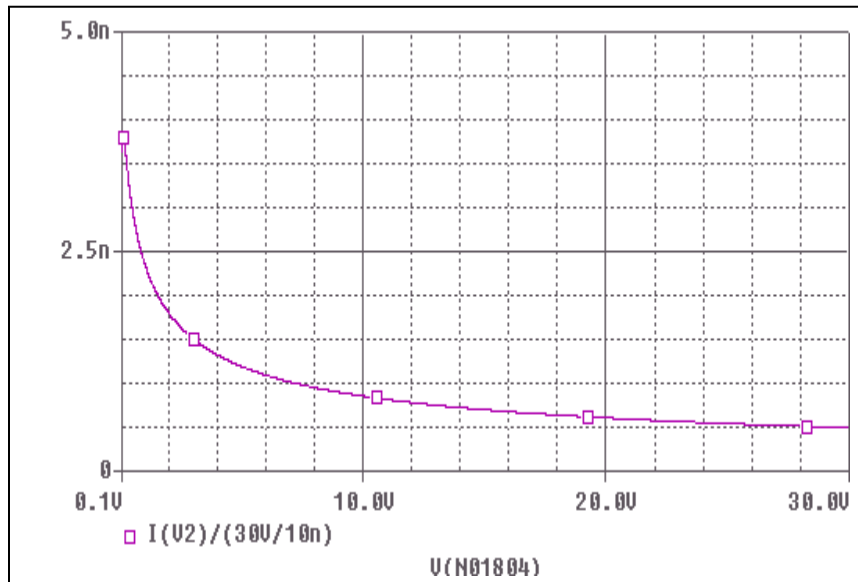


### Simulation Result

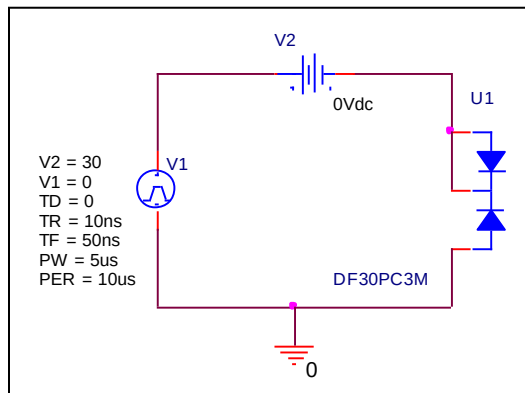
| Ifwd(A) | Vfwd(V)<br>Measurement | Vfwd(V)<br>Simulation | %Error |
|---------|------------------------|-----------------------|--------|
| 0.1     | 0.183                  | 0.184                 | 0.71   |
| 0.2     | 0.200                  | 0.203                 | 1.30   |
| 0.5     | 0.225                  | 0.228                 | 1.11   |
| 1       | 0.250                  | 0.248                 | -0.72  |
| 2       | 0.270                  | 0.271                 | 0.30   |
| 5       | 0.310                  | 0.309                 | -0.26  |
| 10      | 0.350                  | 0.350                 | 0.09   |
| 20      | 0.418                  | 0.414                 | -0.86  |
| 50      | 0.570                  | 0.568                 | -0.35  |

# Junction Capacitance Characteristic

## Circuit Simulation Result

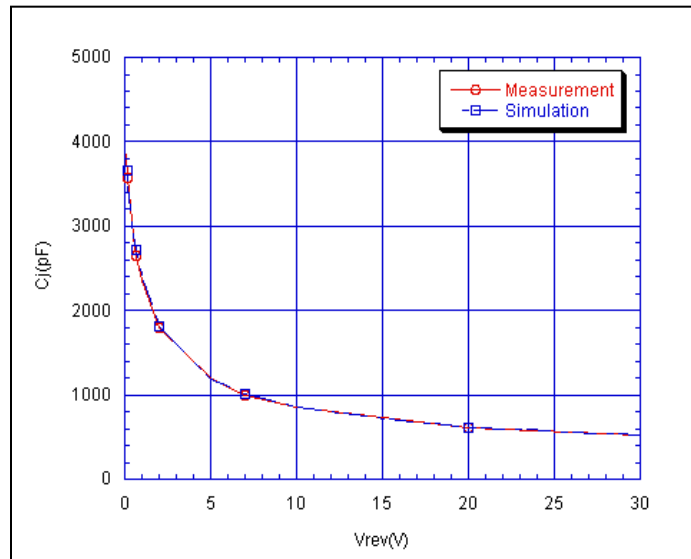


## Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result



### Simulation Result

| $V_{rev}$ (V) | $C_j$ (pF)<br>Measurement | $C_j$ (pF)<br>Simulation | %Error |
|---------------|---------------------------|--------------------------|--------|
| 0.1           | 3850.00                   | 3741.00                  | -2.83  |
| 0.2           | 3570.00                   | 3660.00                  | 2.52   |
| 0.5           | 2880.00                   | 2900.00                  | 0.69   |
| 1             | 2350.00                   | 2389.00                  | 1.66   |
| 2             | 1800.00                   | 1806.00                  | 0.33   |
| 5             | 1200.00                   | 1193.00                  | -0.58  |
| 10            | 850.00                    | 854.10                   | 0.48   |
| 20            | 605.00                    | 606.00                   | 0.17   |
| 30            | 500.00                    | 505.30                   | 1.06   |