

# Device Modeling Report

COMPONENTS:  
DIODE/ SCHOOTKY RECTIFIER / STANDARD  
PART NUMBER: CRS08  
MANUFACTURER: TOSHIBA

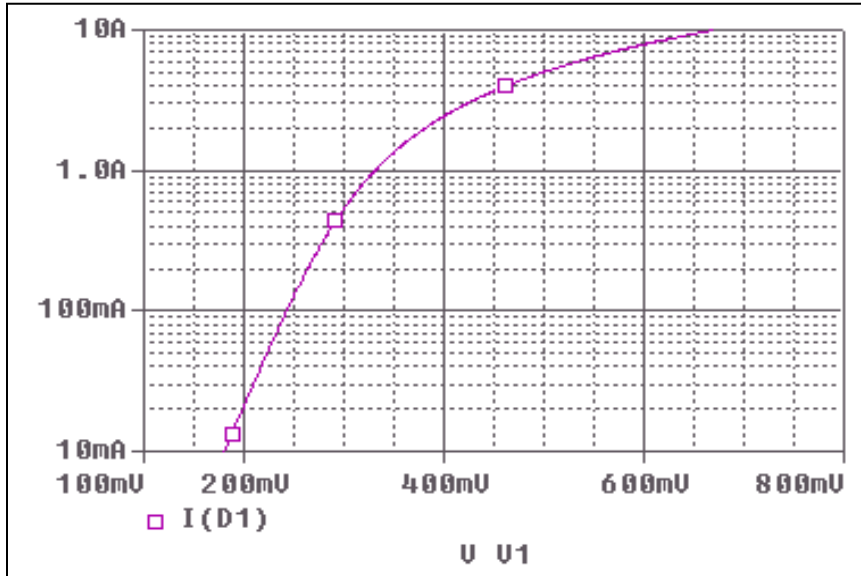


**Bee Technologies Inc.**

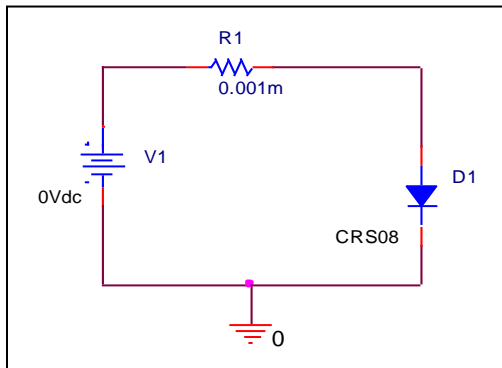
| PSpice model parameter | Model description                           |
|------------------------|---|
| IS                     | Saturation Current                          |
| N                      | Emission Coefficient                        |
| RS                     | Series Resistance      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

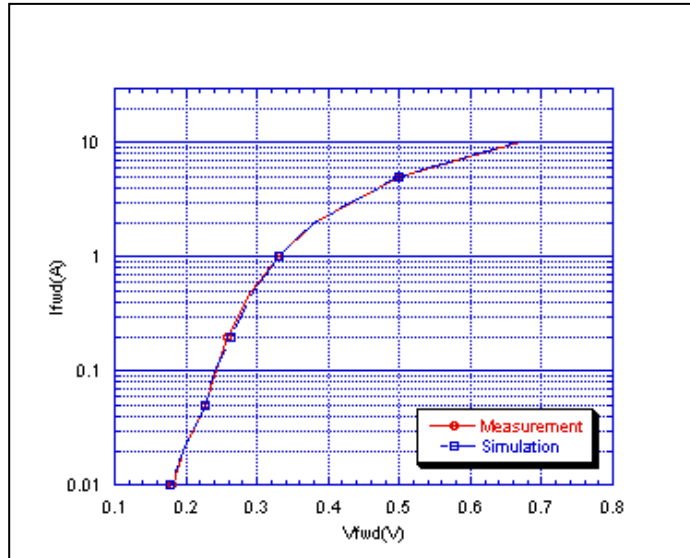


## Evaluation Circuit



# Comparison Graph

## Circuit Simulation Result

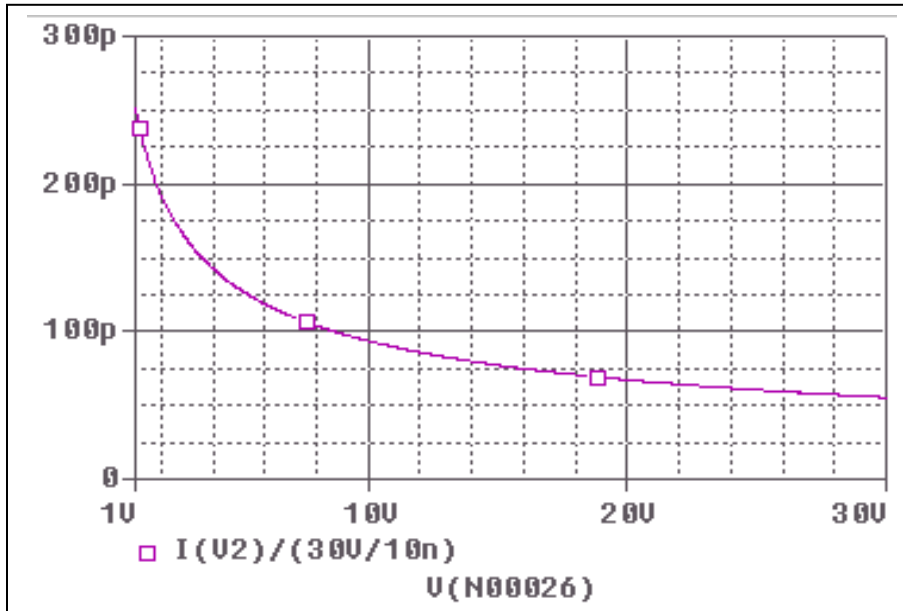


## Simulation Result

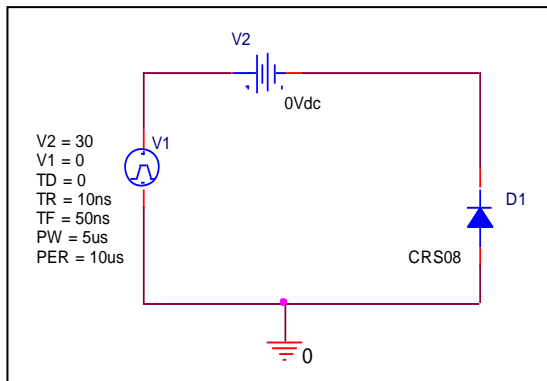
| Ifwd(A) | Vfwd(V) Measurement | Vfwd(V) Simulation | %Error |
|---------|---------------------|--------------------|--------|
| 0.01    | 0.180               | 0.179              | -0.78  |
| 0.02    | 0.195               | 0.197              | 0.97   |
| 0.05    | 0.226               | 0.227              | 0.31   |
| 0.1     | 0.243               | 0.241              | -0.78  |
| 0.2     | 0.259               | 0.262              | 1.27   |
| 0.5     | 0.293               | 0.296              | 0.92   |
| 1       | 0.330               | 0.330              | -0.03  |
| 2       | 0.380               | 0.380              | 0.05   |
| 5       | 0.500               | 0.499              | -0.16  |
| 10      | 0.670               | 0.670              | 0.03   |

# Junction Capacitance Characteristic

## Circuit Simulation Result

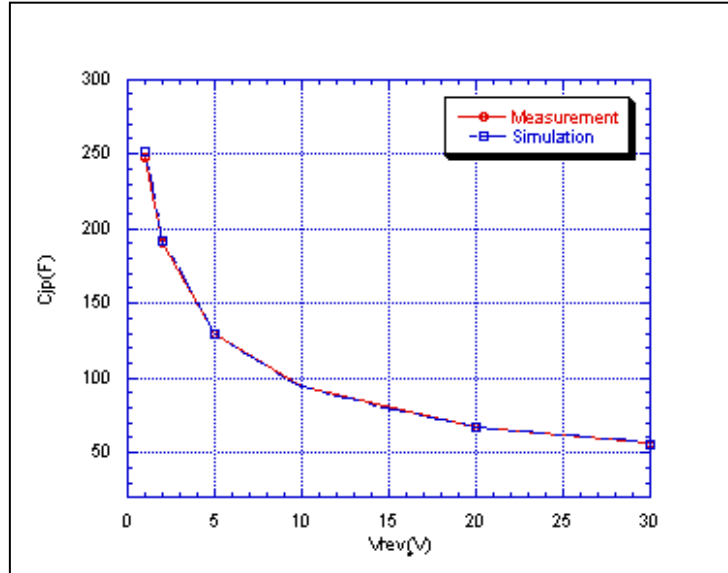


## Evaluation Circuit



# Comparison Graph

## Circuit Simulation Result



## Simulation Result

| $V_{rev}$ (V) | $C_j$ (pF)<br>Measurement | $C_j$ (pF)<br>Simulation | %Error |
|---------------|---------------------------|--------------------------|--------|
| 1             | 248.00                    | 251.30                   | 1.33   |
| 2             | 190.00                    | 192.19                   | 1.15   |
| 5             | 130.00                    | 129.13                   | -0.67  |
| 10            | 94.00                     | 93.95                    | -0.05  |
| 20            | 67.00                     | 67.71                    | 1.06   |
| 30            | 56.00                     | 55.61                    | -0.70  |