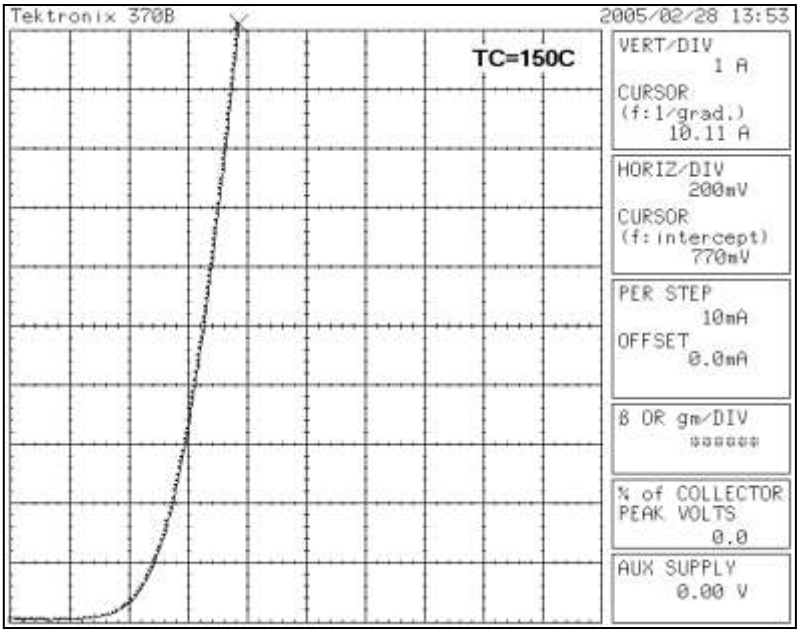
# Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: RURG5060
MANUFACTURER: INTERSIL
REMARK: TC=150C

**Bee Technologies Inc.**

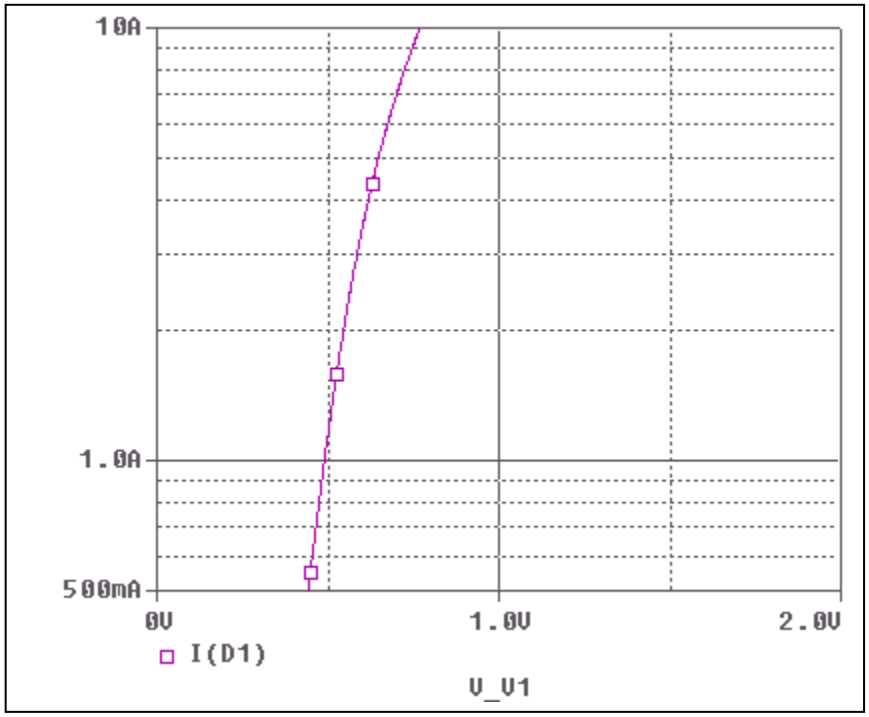
| PSpice model parameter | Model description |
|---|---|
| IS | Saturation Current |
| N | Emission Coefficient |
| RS | Series Resistance |
| IKF | High-injection Knee Current |
| CJO | Zero-bias Junction Capacitance |
| M | Junction Grading Coefficient |
| VJ | Junction Potential |
| ISR | Recombination 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 Reference

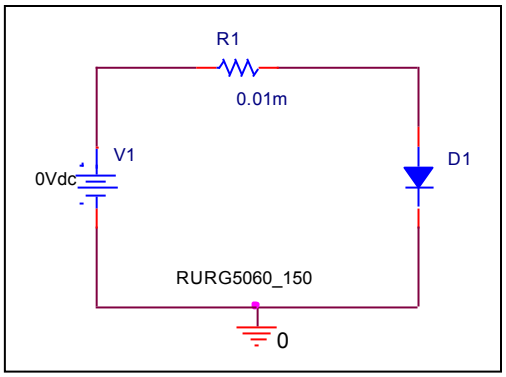


## Forward Current Characteristic

Circuit Simulation Result

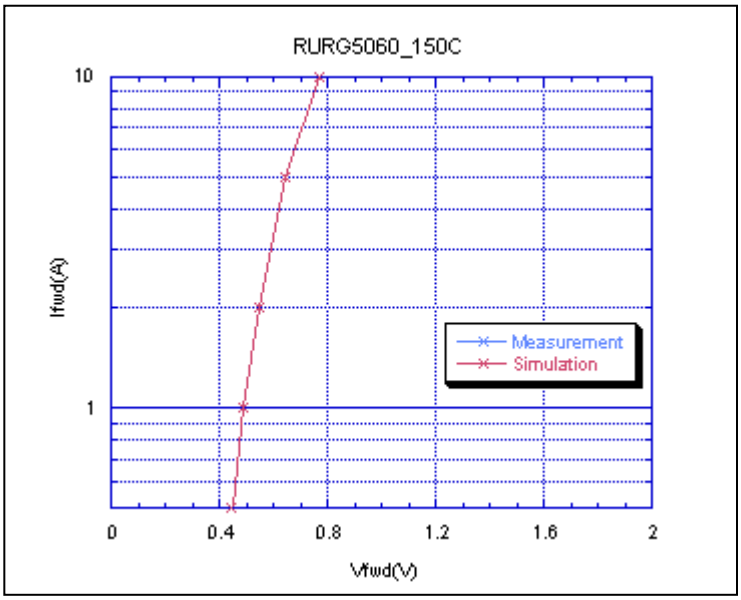



Evaluation Circuit



## Comparison Graph

Circuit Simulation Result

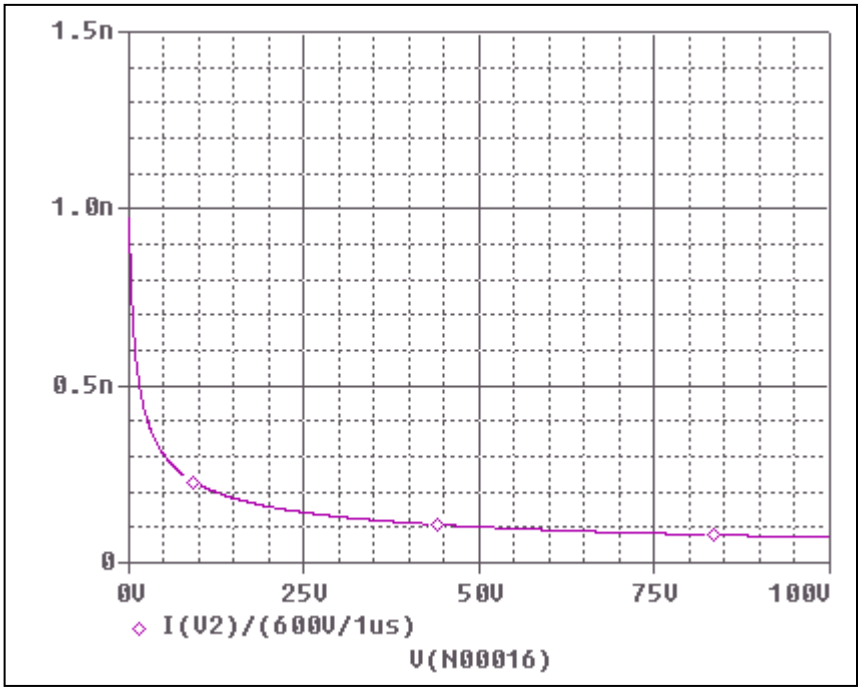



Simulation Result

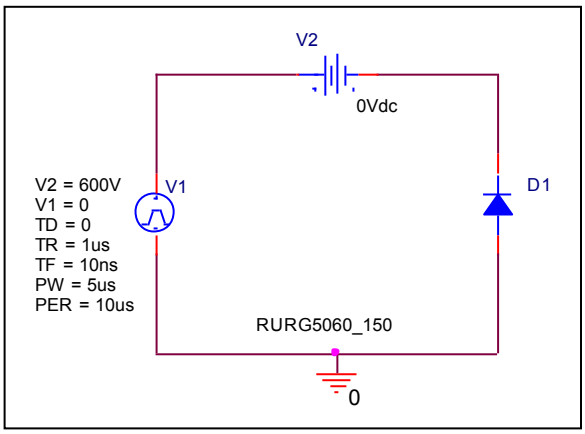
| Ifwd(A) | Vfwd(V) Measurement | Vfwd(V) Simulation | %Error |
|---|---|---|---|
| 0.5 | 0.444 | 0.443 | 0.23 |
| 1 | 0.488 | 0.489 | -0.20 |
| 2 | 0.548 | 0.547 | 0.18 |
| 5 | 0.646 | 0.647 | -0.15 |
| 10 | 0.770 | 0.771 | -0.13 |

## Capacitance Characteristic

Circuit Simulation Result

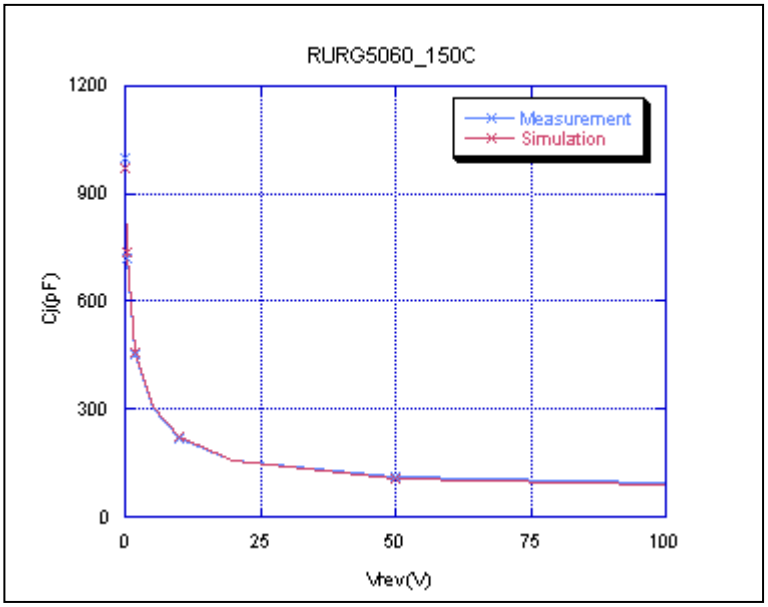



Evaluation Circuit



## Comparison Graph

Circuit Simulation Result

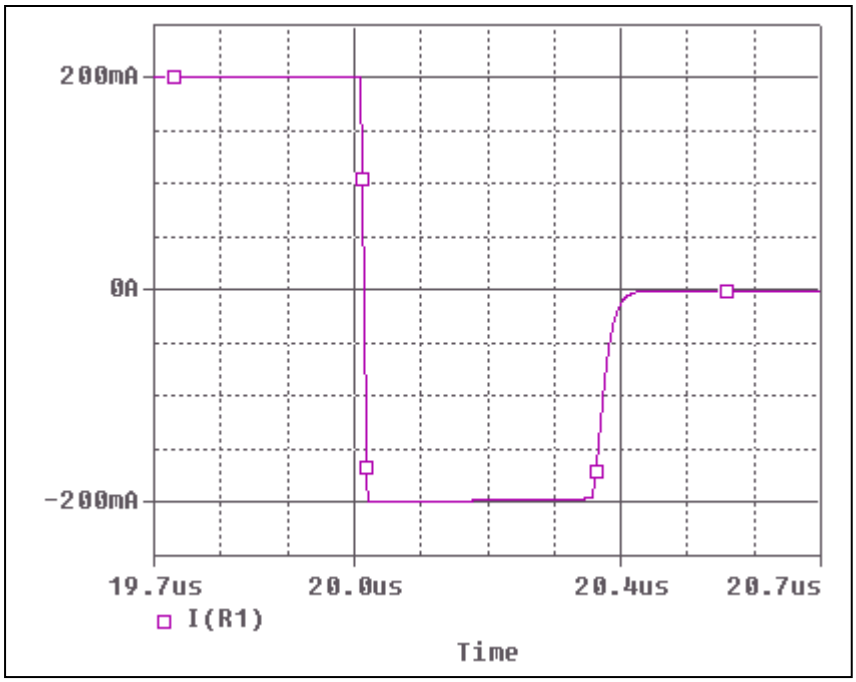



Simulation Result

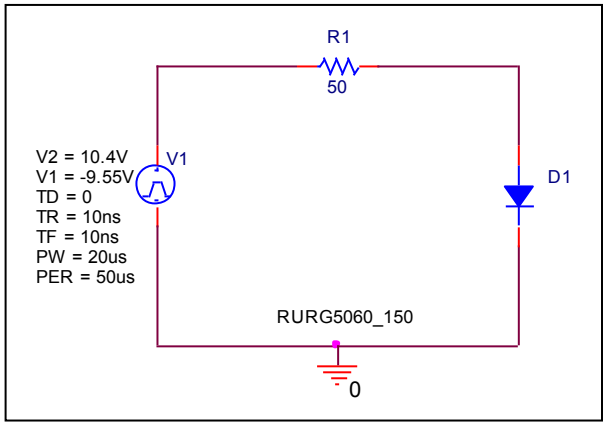
| Vrev(V) | Cj(pF) Measurement | Cj(pF) Simulation | %Error |
|---|---|---|---|
| 0 | 1024.500 | 1024.500 | 0.00 |
| 0.1 | 1000.300 | 972.127 | 2.82 |
| 0.2 | 873.719 | 891.484 | -2.03 |
| 0.5 | 716.756 | 734.007 | -2.41 |
| 1 | 591.286 | 593.228 | -0.33 |
| 2 | 450.101 | 456.899 | -1.51 |
| 5 | 299.470 | 306.362 | -2.30 |
| 10 | 220.151 | 221.603 | -0.66 |
| 20 | 155.711 | 158.498 | -1.79 |
| 50 | 110.788 | 107.342 | 3.11 |
| 100 | 90.100 | 85.854 | 4.71 |

## Reverse Recovery Characteristic

Circuit Simulation Result



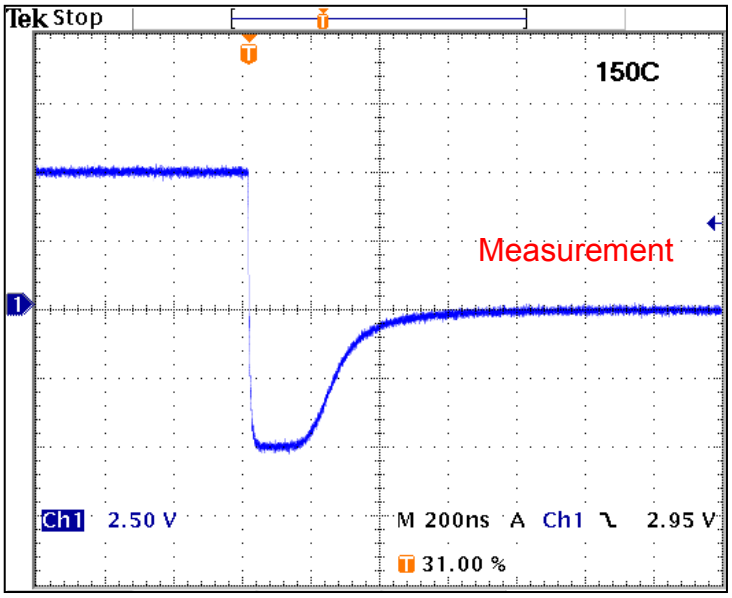

Evaluation Circuit



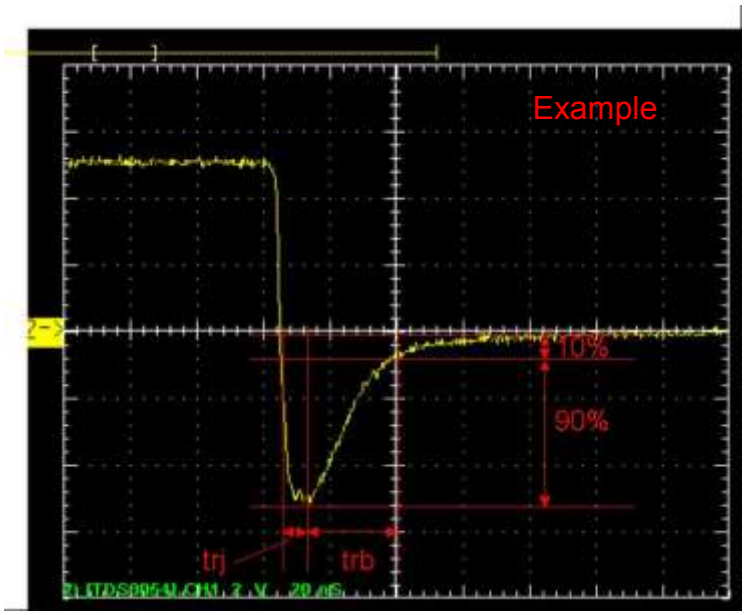

Compare Measurement vs. Simulation

| | Measurement | | Simulation | | %Error |
|---|---|---|---|---|---|
| **trr** | **380.0** | **ns** | **379.0** | **ns** | **0.263** |

## Reverse Recovery Characteristic Reference




Trj =132 (ns)
Trb= 248 (ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50




Relation between trj and trb