# Device Modeling Report

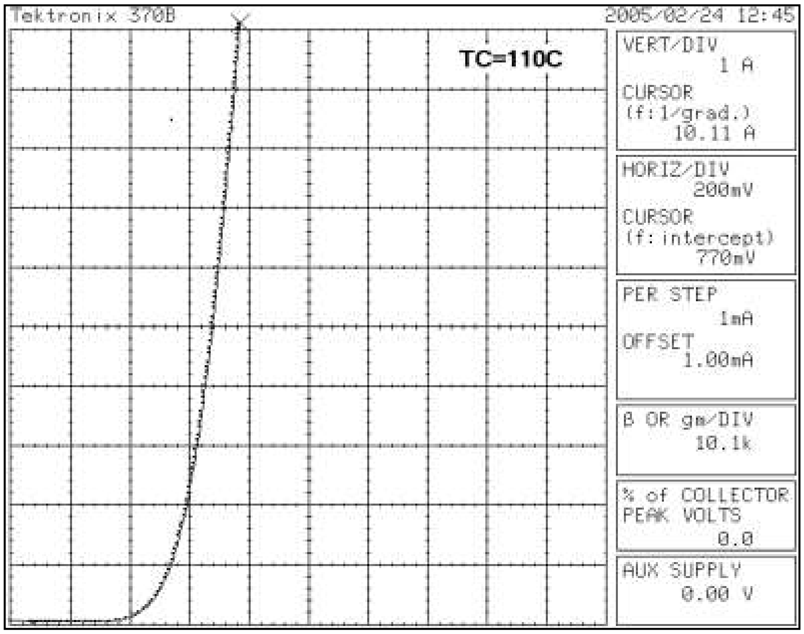
COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: RURG8060
MANUFACTURER: INTERSIL
REMARK: TC=110C

**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**



Tektronix 370B

2005/02/24 12:45

VERT/DIV
1 A

CURSOR
(f:1/grad.)
10.11 A

HORIZ/DIV
200mV

CURSOR
(f:intercept)
770mV

PER STEP
1mA

OFFSET
1.00mA

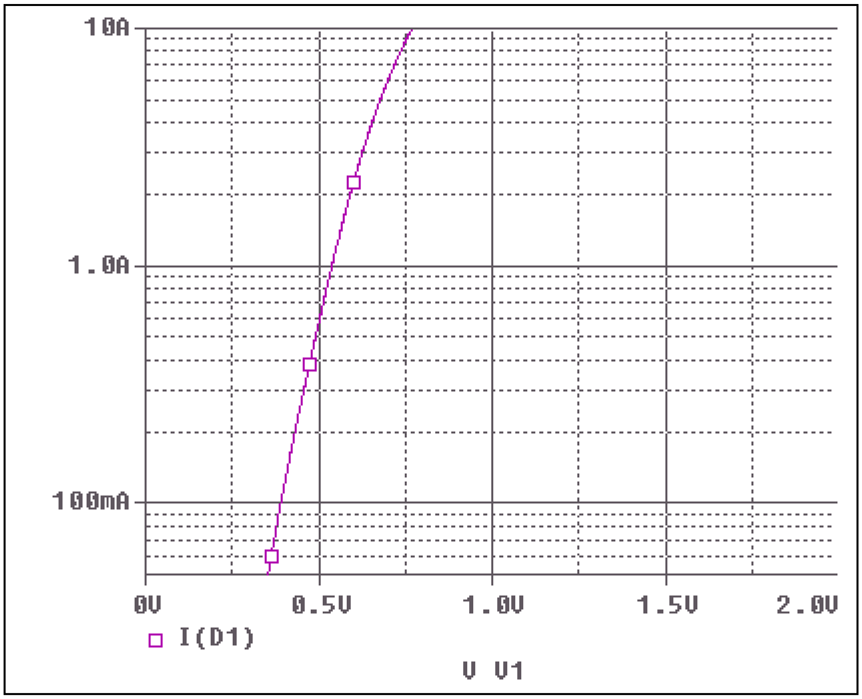
β OR gm/DIV
10.1k

% of COLLECTOR
PEAK VOLTS
0.0

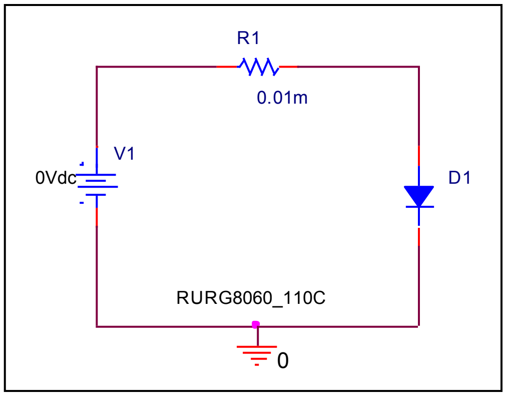
AUX SUPPLY
0.00 V

## Forward Current Characteristic

### Circuit Simulation Result

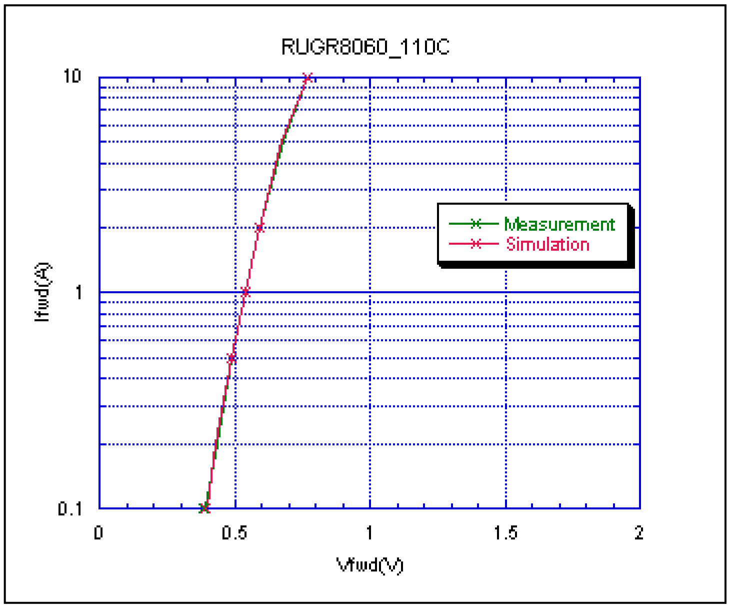


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

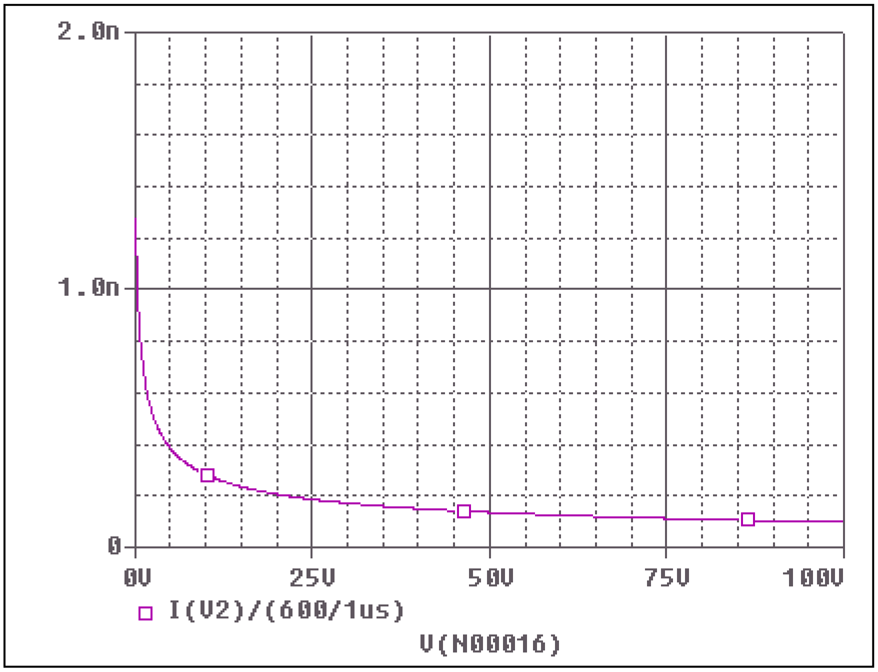


### Simulation Result

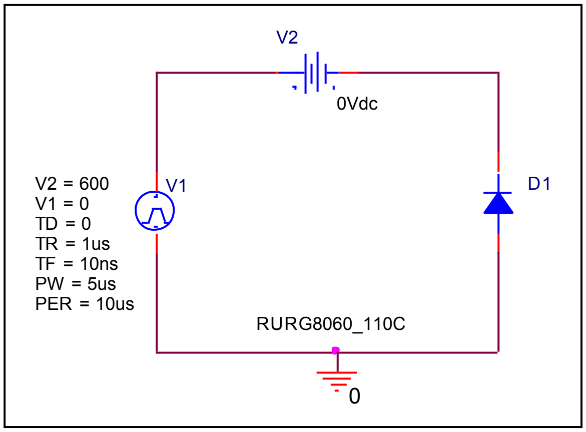
| Ifwd(A) | Vfwd(V) Measurement | Vfwd(V) Simulation | %Error |
|---|---|---|---|
| 0.1 | 0.388 | 0.391 | -0.77 |
| 0.2 | 0.434 | 0.431 | 0.69 |
| 0.5 | 0.490 | 0.491 | -0.20 |
| 1 | 0.538 | 0.538 | 0.00 |
| 2 | 0.592 | 0.590 | 0.34 |
| 5 | 0.678 | 0.677 | 0.15 |
| 10 | 0.770 | 0.770 | 0.00 |

## Capacitance Characteristic

### Circuit Simulation Result

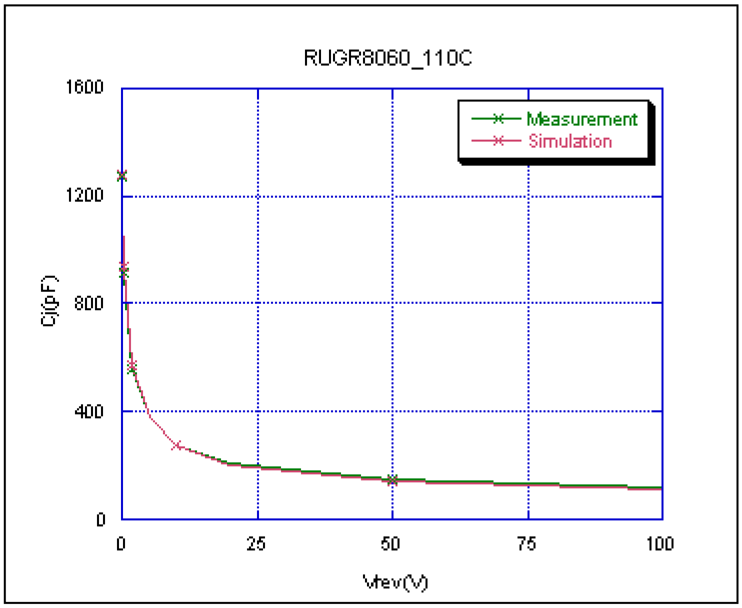


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

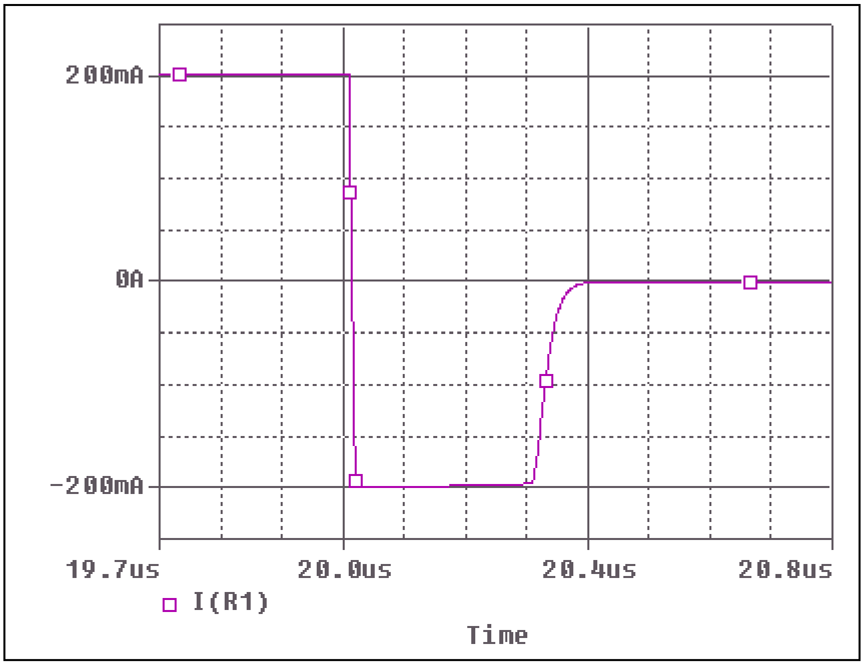


### Simulation Result

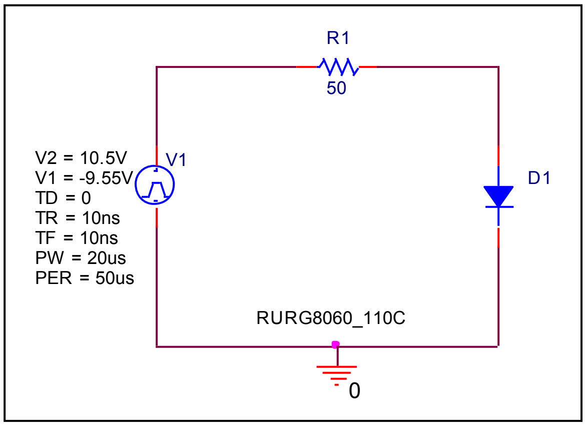
| Vrev(V) | Cj(pF) Measurement | Cj(pF) Simulation | %Error |
|---|---|---|---|
| 0 | 1403.000 | 1403.000 | 0.00 |
| 0.1 | 1273.000 | 1274.900 | -0.15 |
| 0.2 | 1146.000 | 1156.500 | -0.92 |
| 0.5 | 915.880 | 937.959 | -2.41 |
| 1 | 730.510 | 749.930 | -2.66 |
| 2 | 557.290 | 572.269 | -2.69 |
| 5 | 378.090 | 382.467 | -1.16 |
| 10 | 279.300 | 276.124 | 1.14 |
| 20 | 212.240 | 202.441 | 4.62 |
| 50 | 149.960 | 145.067 | 3.26 |
| 100 | 112.290 | 107.053 | 4.66 |

# Reverse Recovery Characteristic

## Circuit Simulation Result



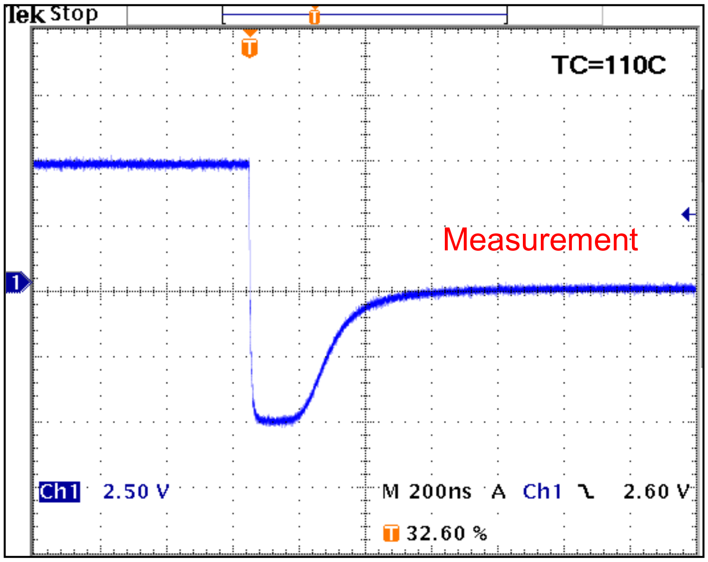
## Evaluation Circuit



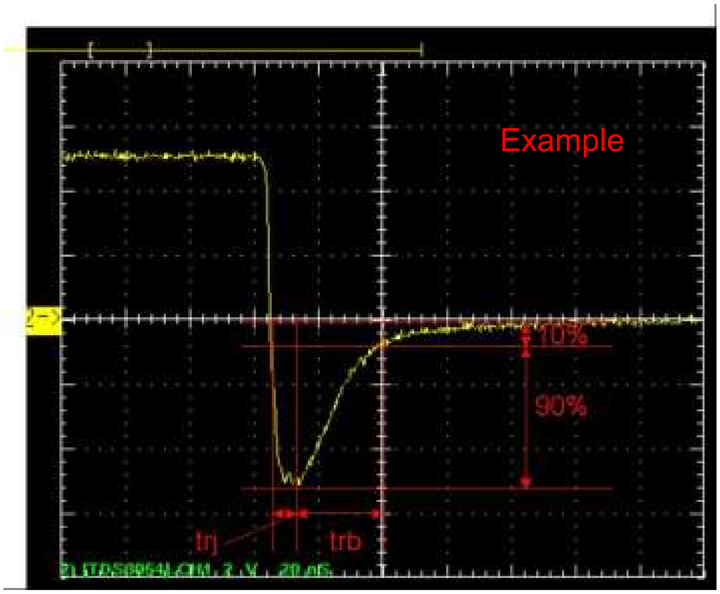
## Compare Measurement vs. Simulation

| | Measurement | | Simulation | | %Error |
|---|---|---|---|---|---|
| **trr** | **344.0** | **ns** | **342.2** | **ns** | **0.523** |

## Reverse Recovery Characteristic                    Reference



**Trj =132(ns)**
**Trb=212(ns)**
**Conditions: Ifwd=Irev=0.2(A), Rl=50**



Relation between trj and trb