

Device Modeling Report

COMPONENTS:

DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL

PART NUMBER: U05GH44

MANUFACTURER: TOSHIBA

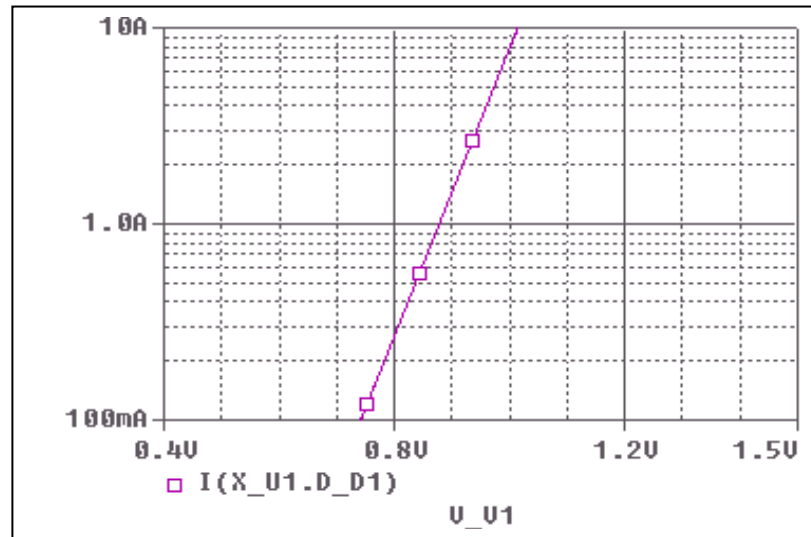


Bee Technologies Inc.

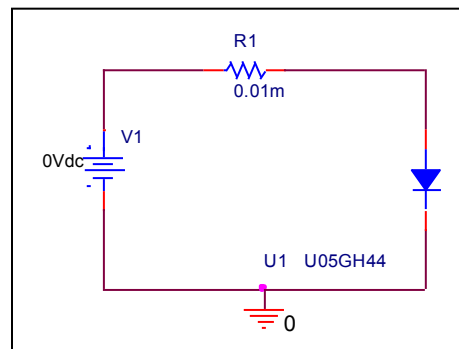
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive value)
IBV	Reverse Breakdown Current(a positive value)
TT	Transit Time
EG	Energy-band Gap

Forward Current Characteristic

Circuit Simulation Result

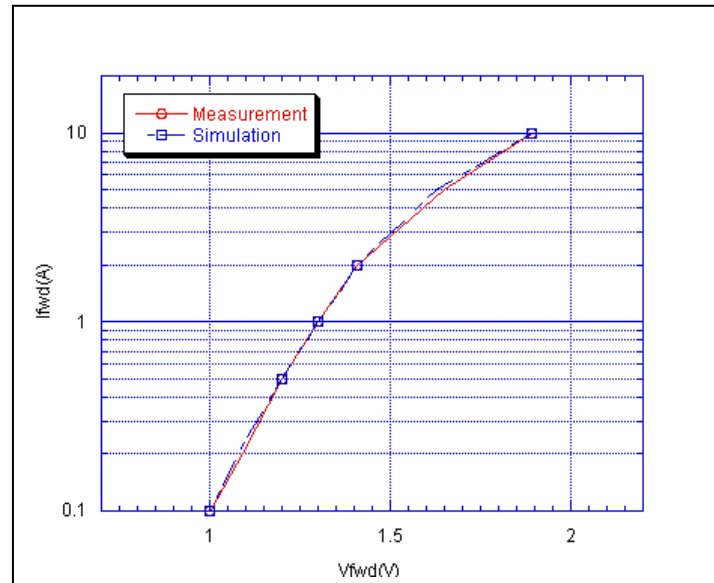


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

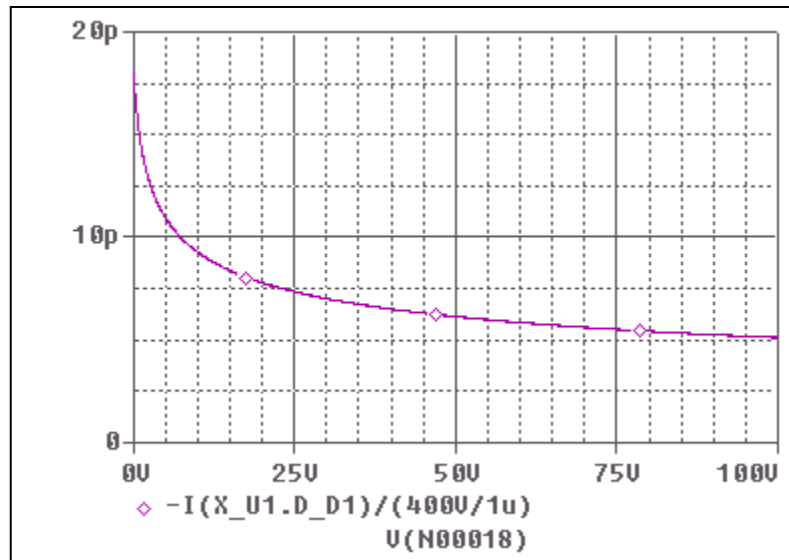


Simulation Result

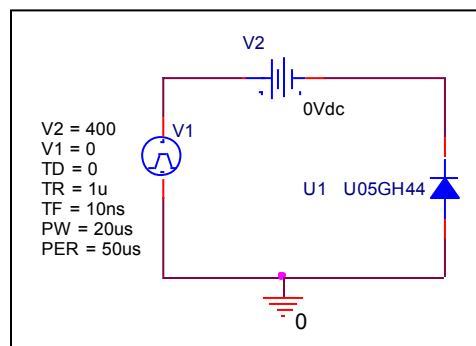
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.1	1.000	0.990	1.000
0.2	1.090	1.080	0.917
0.5	1.200	1.199	0.100
1	1.300	1.297	0.257
2	1.410	1.410	0.032
5	1.650	1.630	1.212
10	1.890	1.888	0.122

Junction Capacitance Characteristic

Circuit Simulation Result

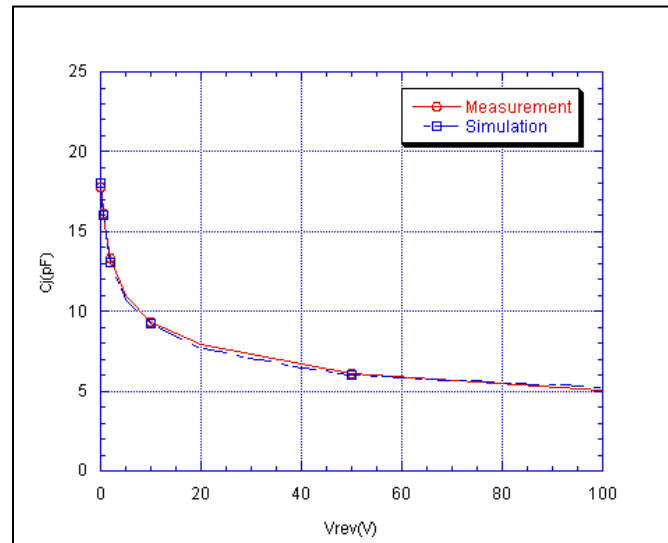


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

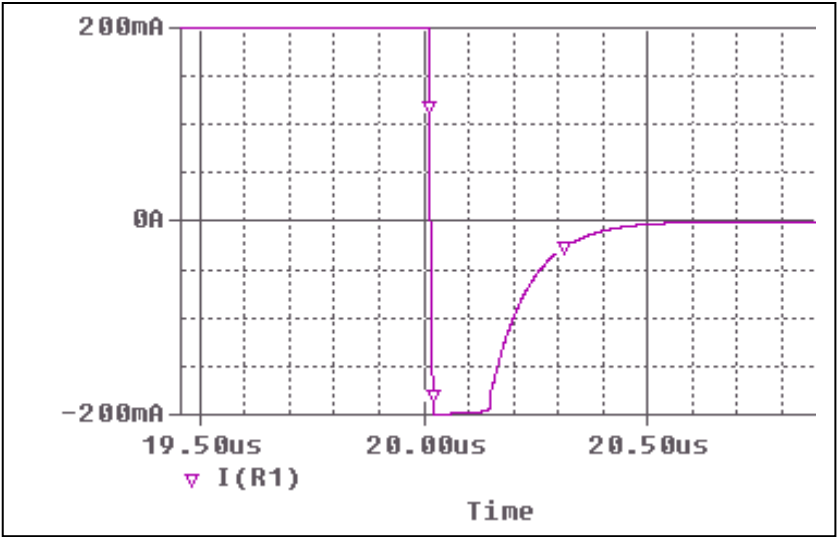


Simulation Result

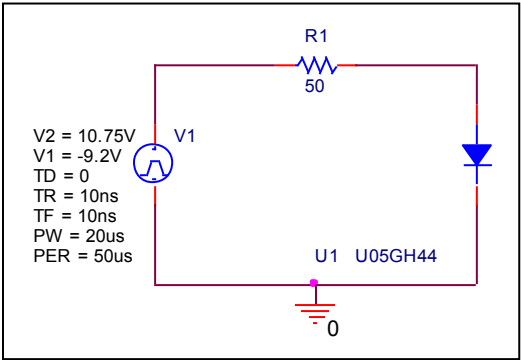
V_{rev} (V)	C_j (pF) Measurement	C_j (pF) Simulation	%Error
0	18.400	18.400	0.000
0.1	17.800	18.000	-1.124
0.2	17.300	17.200	0.578
0.5	16.100	16.000	0.621
1	14.800	14.700	0.676
2	13.300	13.100	1.504
5	11.000	10.700	2.727
10	9.300	9.200	1.075
20	7.900	7.700	2.532
50	6.100	6.050	0.820
100	5.000	5.100	-2.000

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

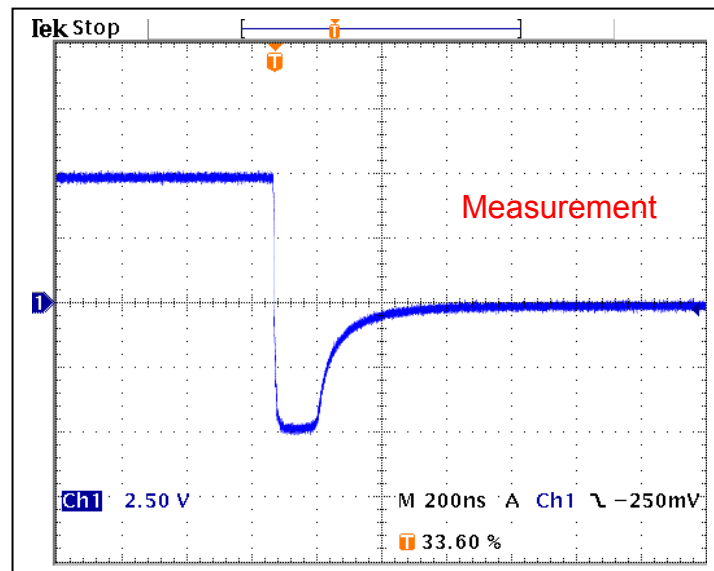


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	129.000	ns	128.300	ns	0.543
trb	196.000	ns	195.000	ns	0.510

Reverse Recovery Characteristic

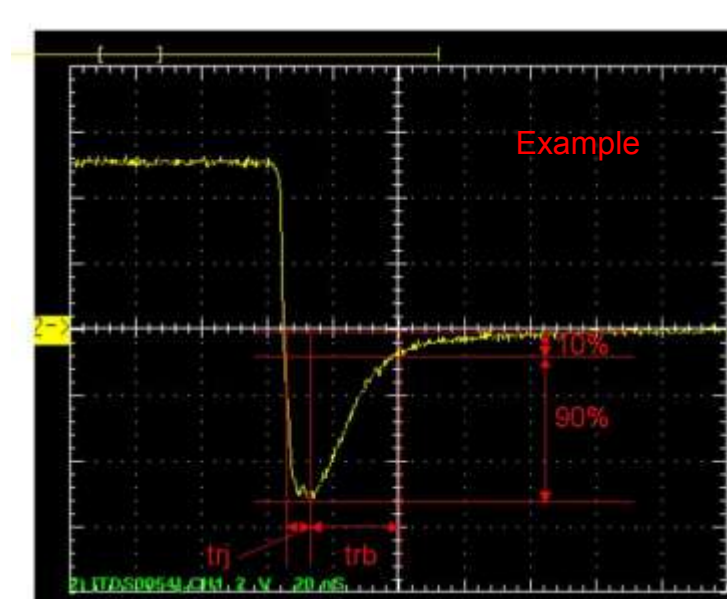
Reference



$T_{rj} = 128(\text{ns})$

$T_{rb} = 196(\text{ns})$

Conditions: $I_{fwd} = I_{rev} = 0.2(\text{A})$, $R_I = 50$



Relation between t_{rj} and t_{rb}