

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: MB252W
MANUFACTURER: Micro Commercial Component
REMARK: TC=25C

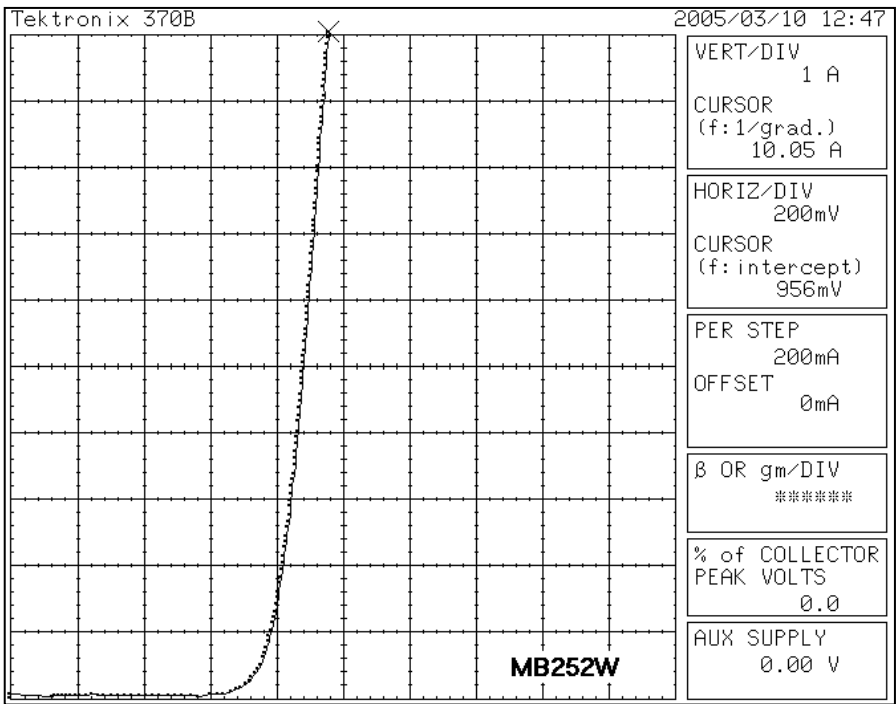


Bee Technologies Inc.

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

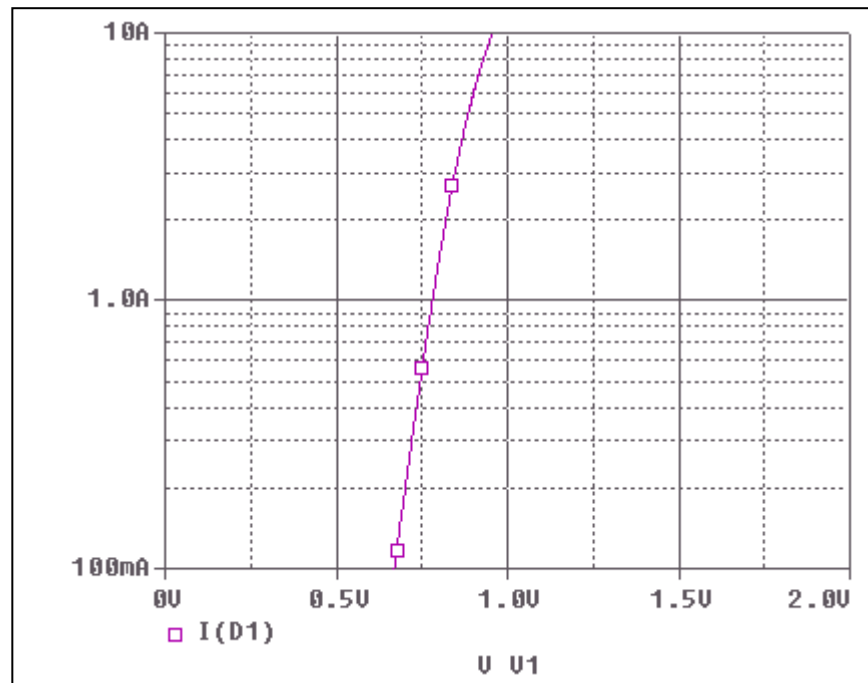
Forward Current Characteristic

Reference

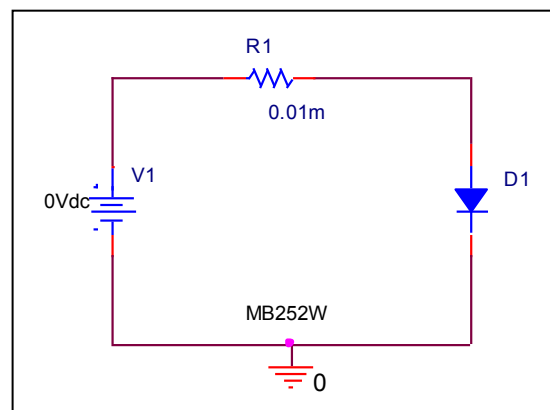


Forward Current Characteristic

Circuit Simulation Result

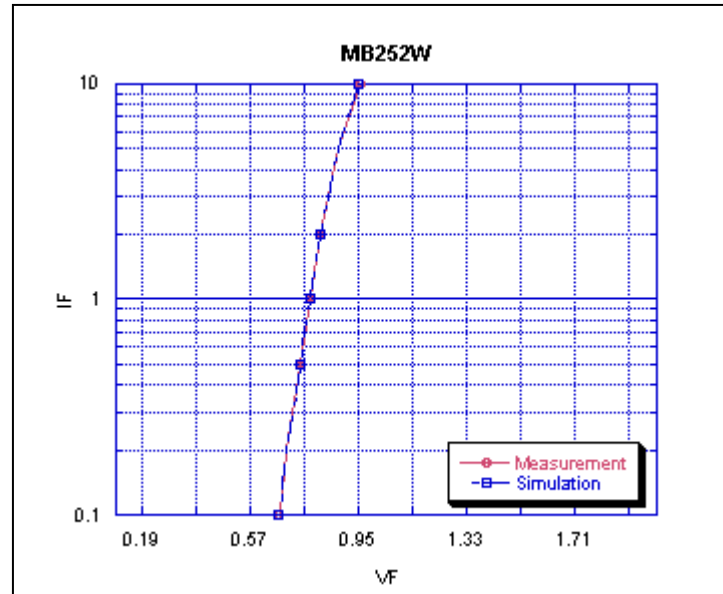


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

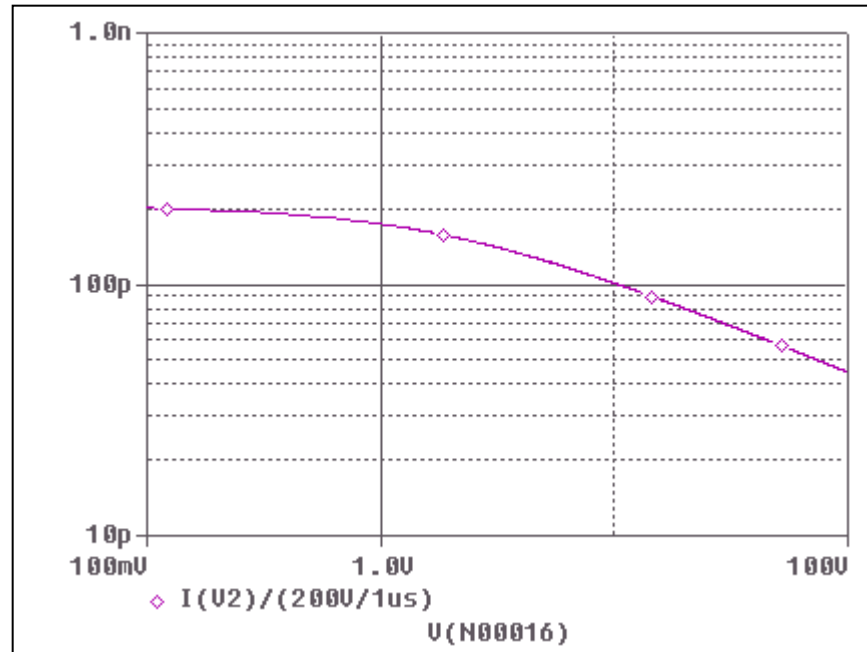


Simulation Result

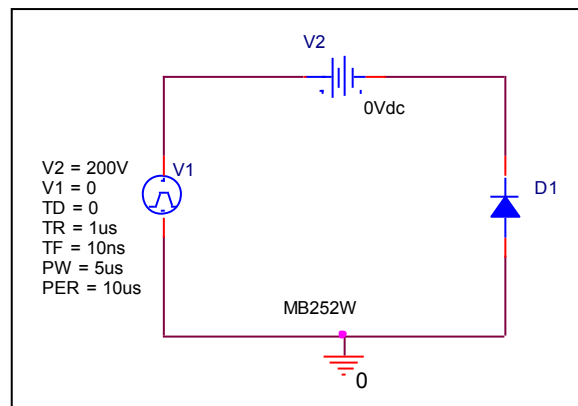
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.1	0.669	0.668	0.15
0.2	0.700	0.701	-0.14
0.5	0.745	0.745	0.00
1	0.780	0.781	-0.13
2	0.820	0.820	0.00
5	0.882	0.883	-0.11
10	0.956	0.954	0.21

Capacitance Characteristic

Circuit Simulation Result

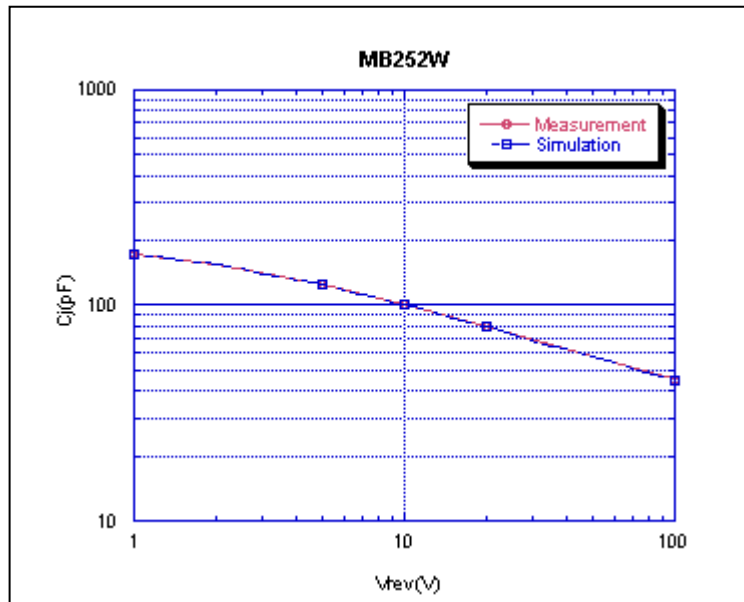


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

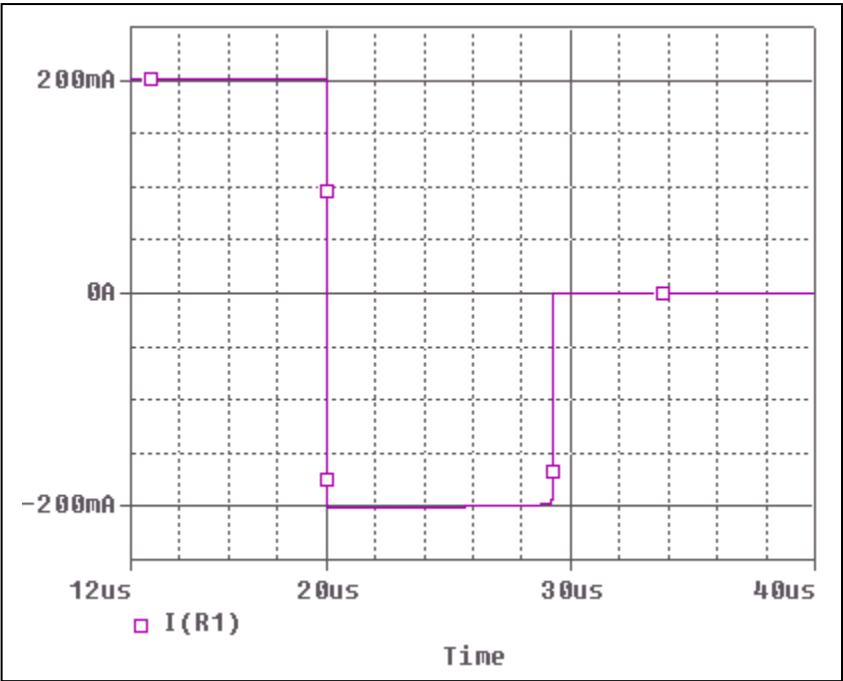


Simulation Result

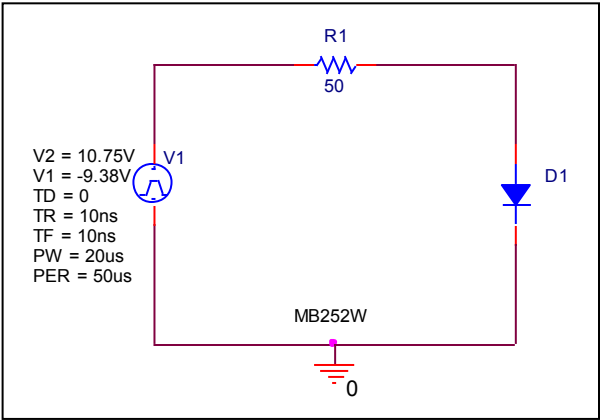
Vrev(V)	Cj(pF)		%Error
	Measurement	Simulation	
0	180.133	180.133	0.00
1	173.770	173.745	0.01
2	154.980	154.898	0.05
5	125.080	124.646	0.35
10	100.990	101.215	-0.22
20	79.414	80.074	-0.83
50	58.014	58.100	-0.15
100	45.006	44.680	0.72

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

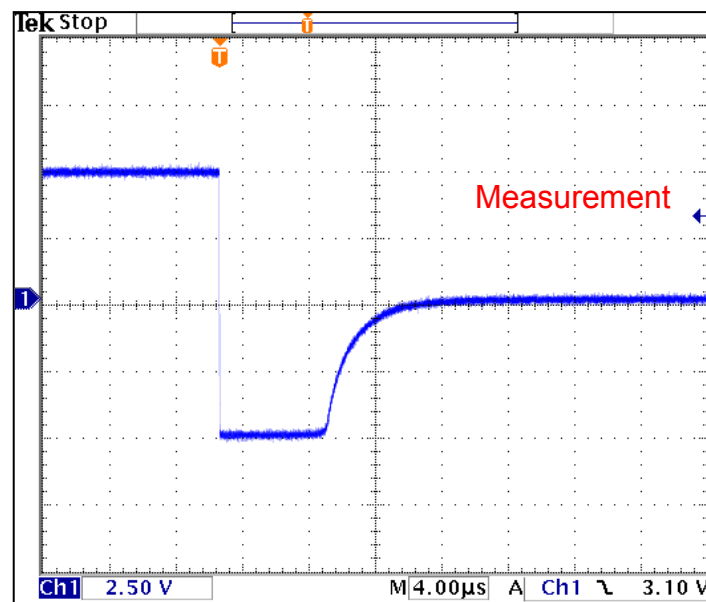


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	9.36	us	9.23	us	1.38

Reverse Recovery Characteristic

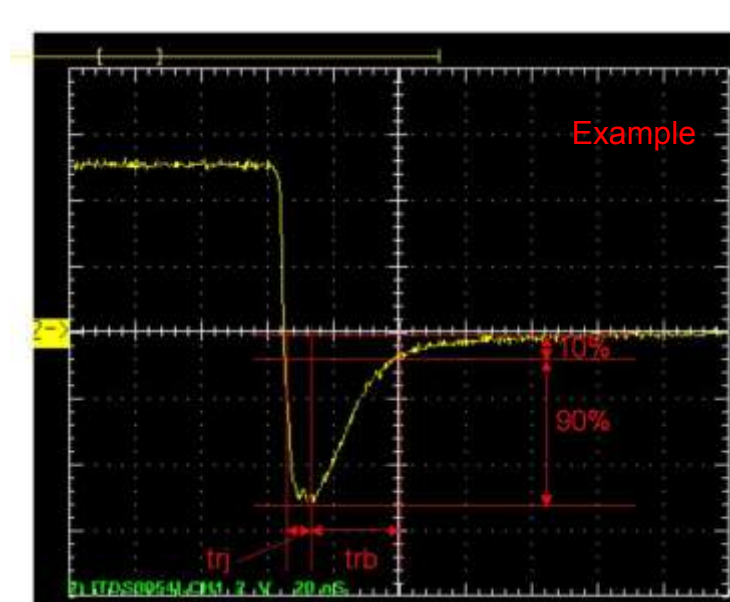
Reference



$T_{rj} = 6.08 \text{ (}\mu\text{s)}$

$T_{rb} = 3.28 \text{ (}\mu\text{s)}$

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



Relation between t_{rj} and t_{rb}