

Device Modeling Report

COMPONENTS:

DIODE/GENERAL PURPOSE RECTIFIER/PROFESSIONAL

PART NUMBER: BYW29E

MANUFACTURER: PHILIPS SEMICONDUCTORS

REMARK: TC=25C

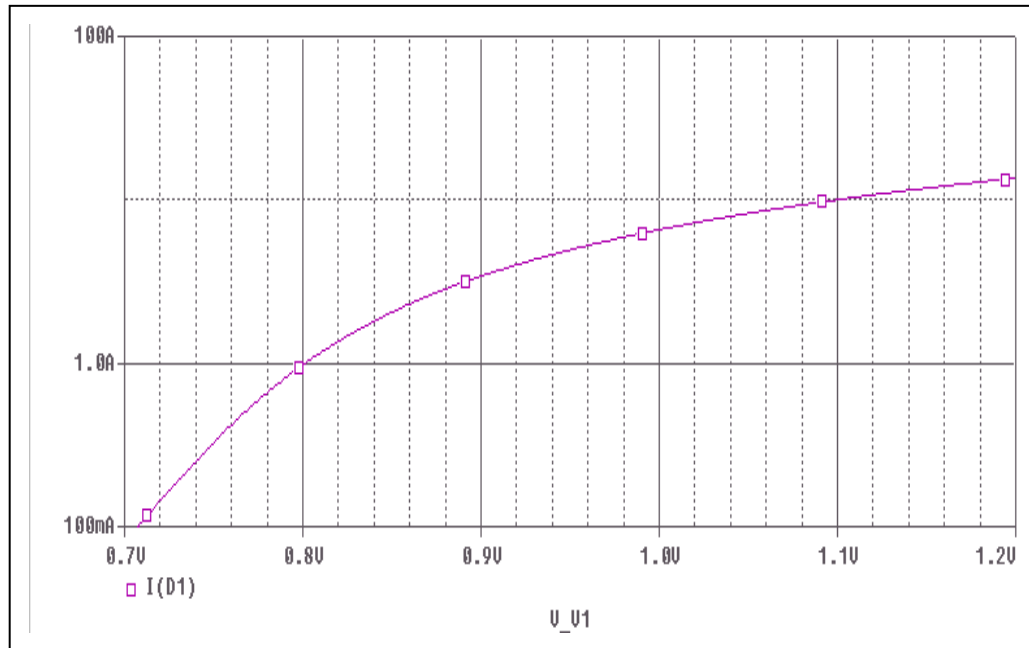


Bee Technologies Inc.

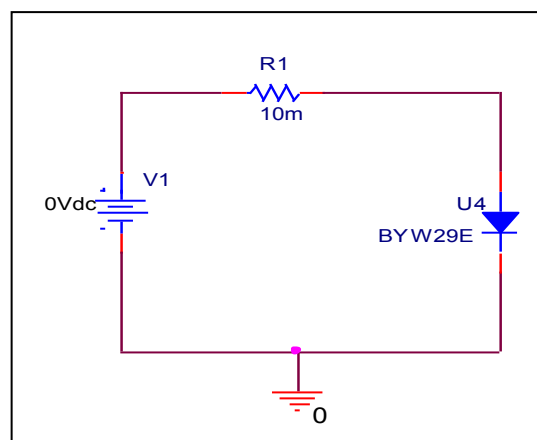
Pspice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

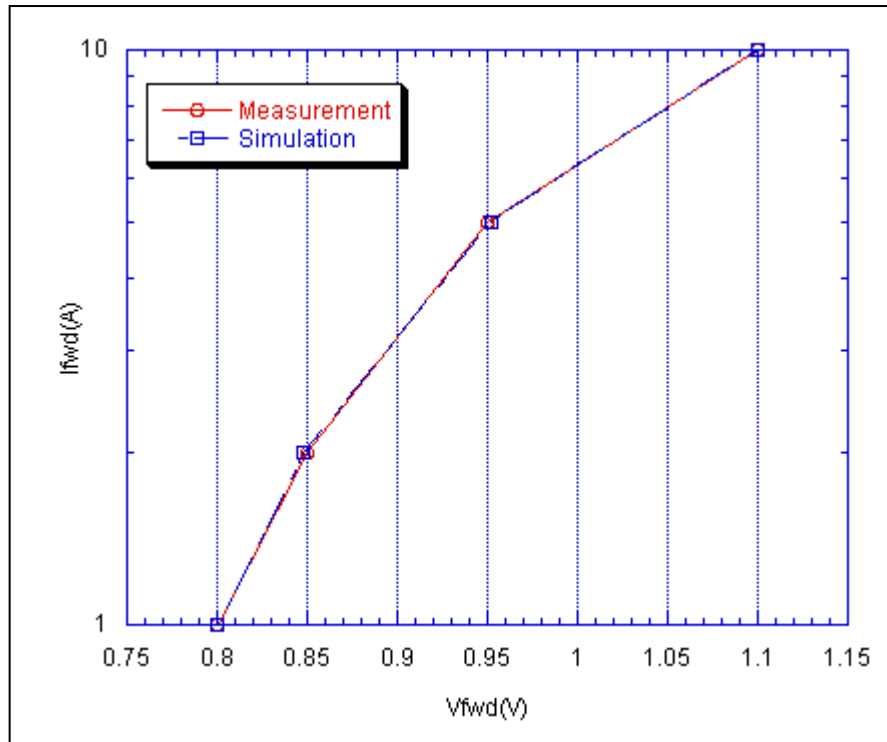


Evaluation circuit



Comparison graph

Circuit Simulation Result

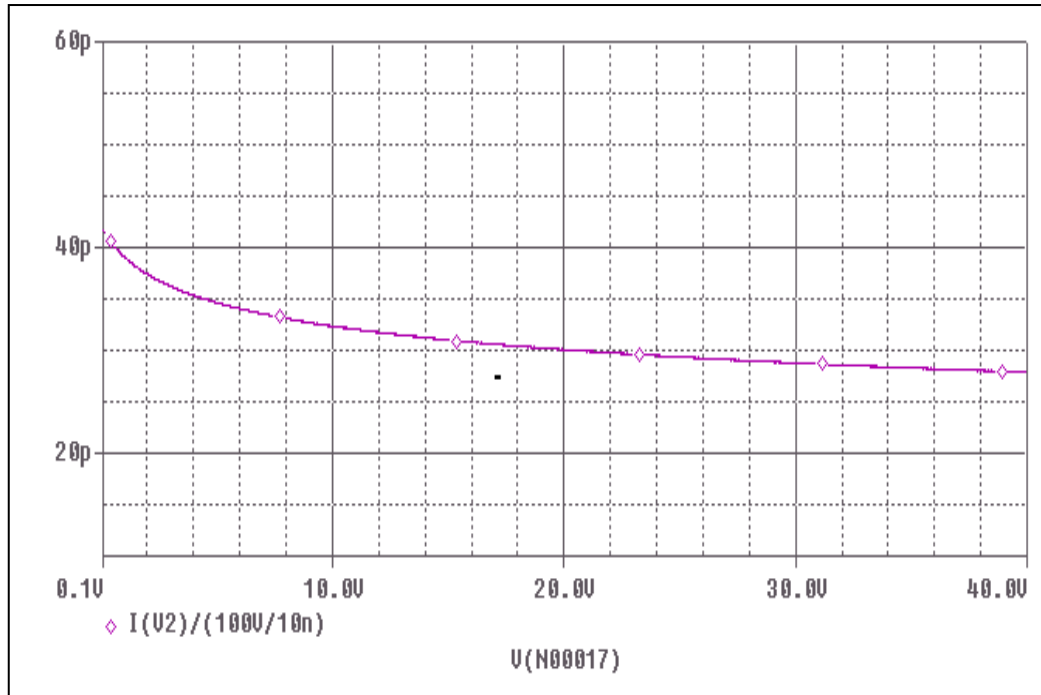


Simulation Result

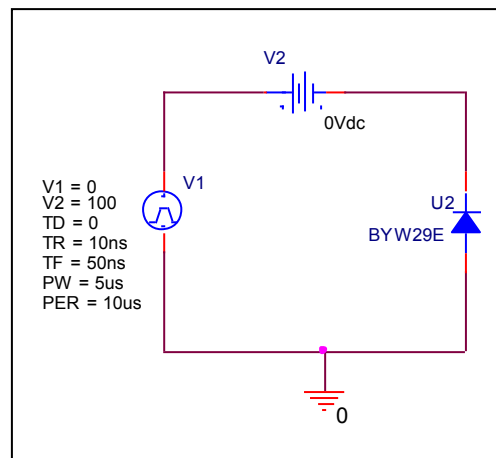
Ifwd (A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
1	0.800	0.800	0.00
2	0.850	0.848	0.24
5	0.950	0.952	-0.21
10	1.100	1.100	0.00

Junction Capacitance Characteristic

Circuit Simulation Result

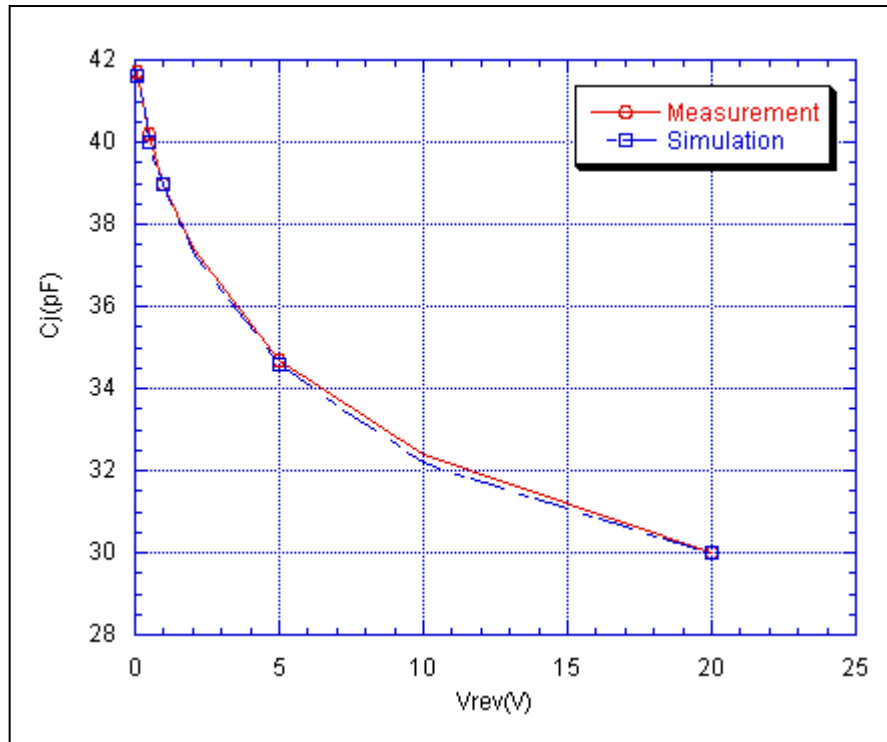


Evaluation circuit



Comparison graph

Circuit Simulation Result

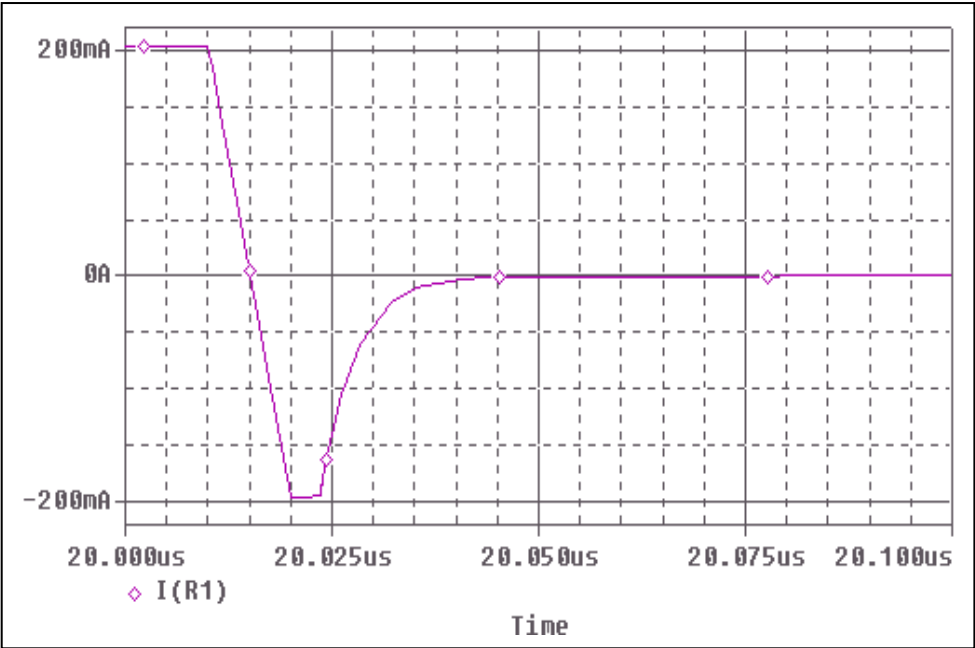


Simulation Result

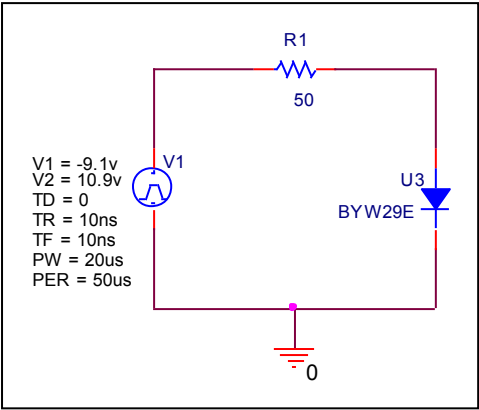
Vrev (V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0.1	41.700	41.600	0.24
0.2	41.200	41.200	0.00
0.5	40.200	40.000	0.50
1	39.000	39.000	0.00
2	37.400	37.300	0.27
5	34.700	34.600	0.29
10	32.400	32.200	0.62
20	30.000	30.000	0.00

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation circuit

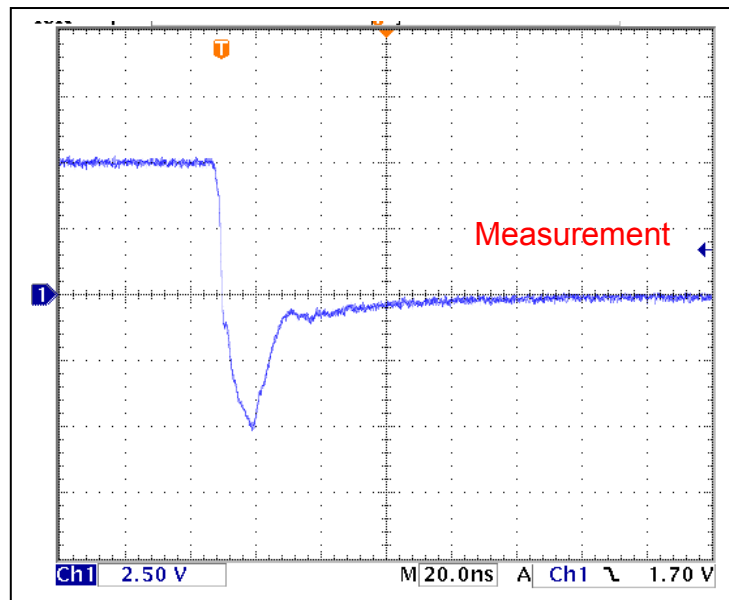


Compare Measurement vs. Simulation

	Measurement		Simulation		Error (%)
trj	8.000	ns	8.036	ns	0.45
trb	9.200	ns	9.284	ns	0.91

Reverse Recovery Characteristic

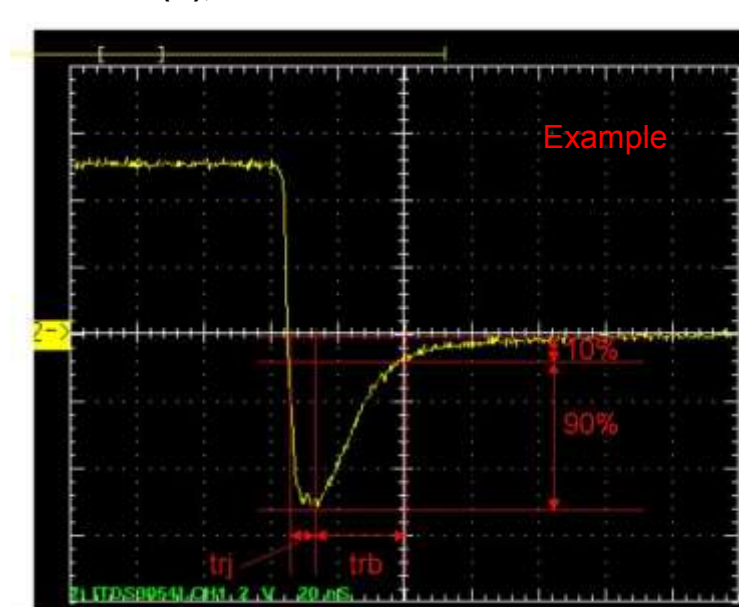
Reference



$tr_j = 8(\text{ns})$

$tr_b = 9.2(\text{ns})$

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



Relation between tr_j and tr_b