Device Modeling Report

COMPONENTS:
DIODE/ BRIDGE RECTIFIER/ PROFESSIONAL
PART NUMBER: KBU810
MANUFACTURER: WTE POWER SEMICONDUCTORS

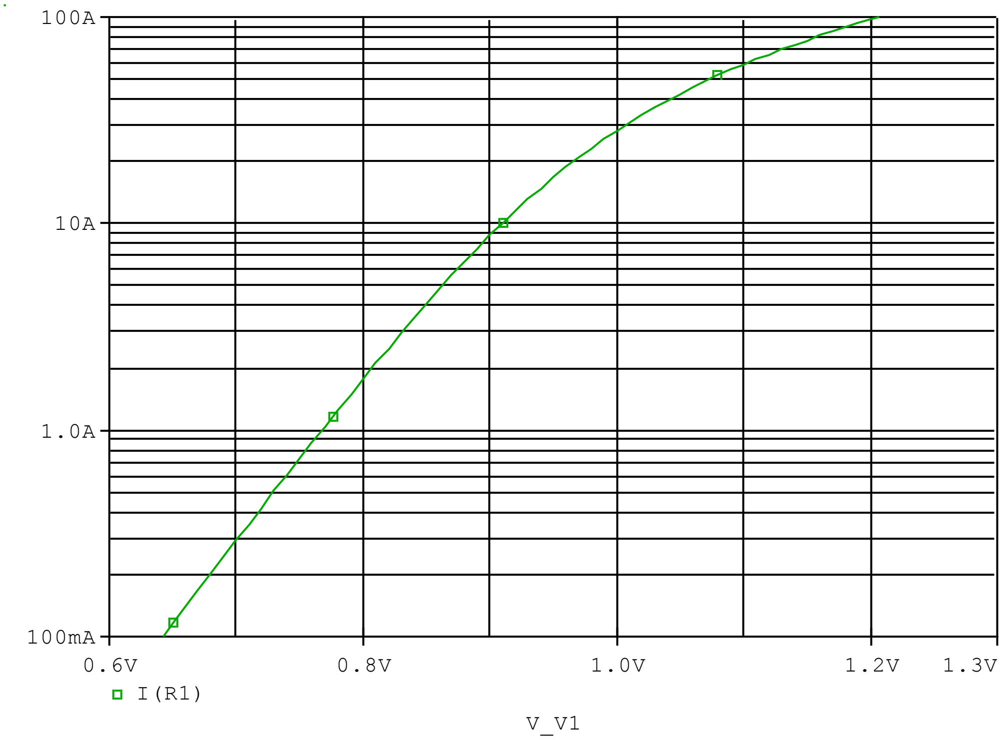
Bee Technologies Inc.

DIODE MODEL PARAMETERS

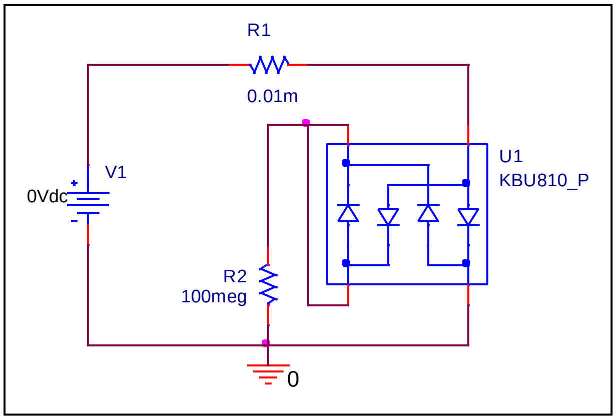
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a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

Forward Current Characteristic

Circuit Simulation Result

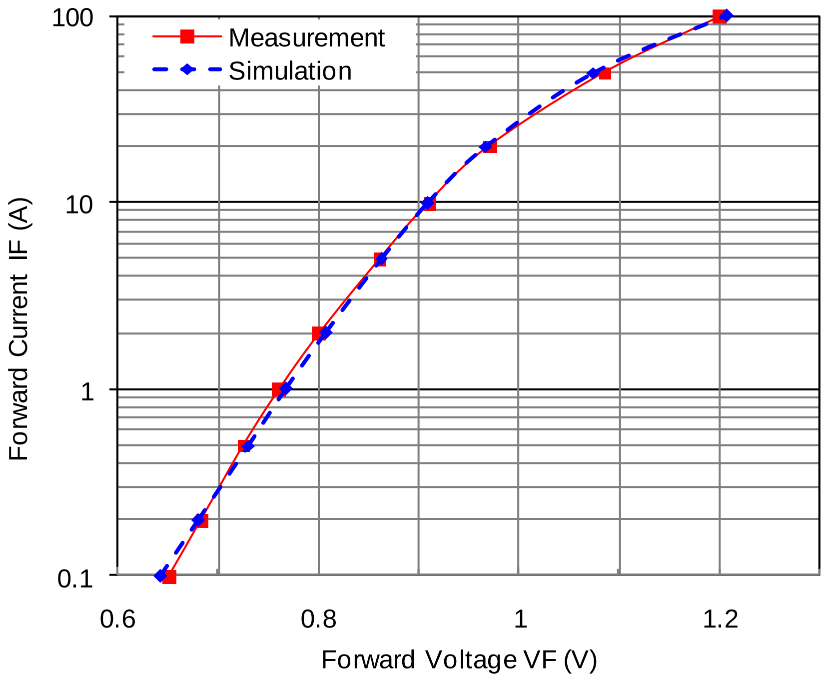


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

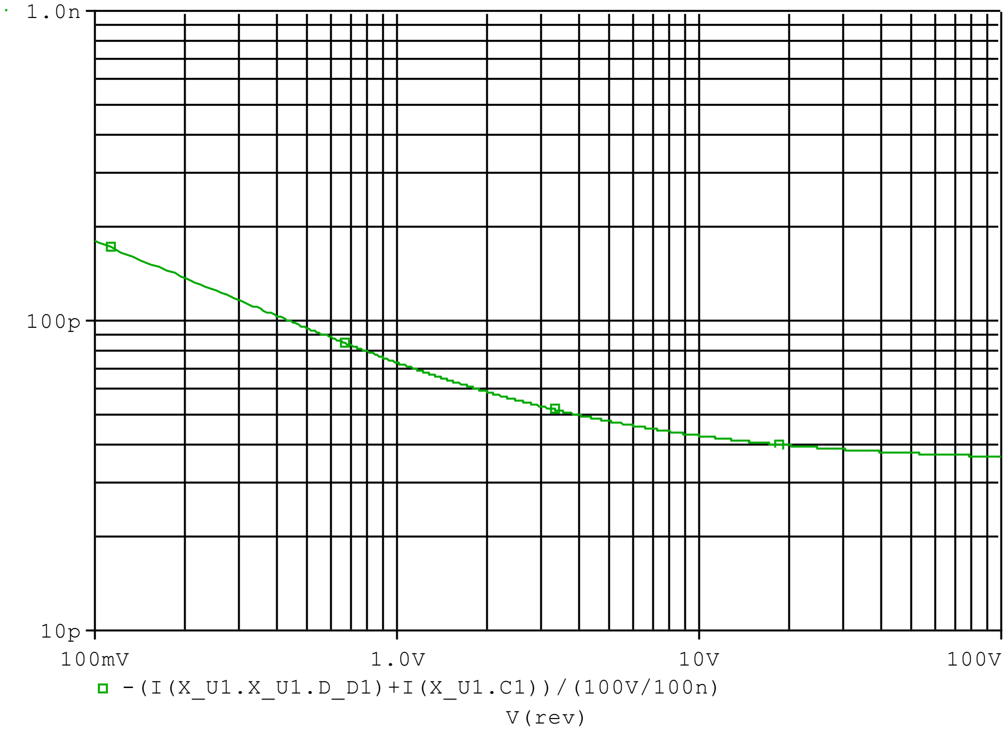


Simulation Result

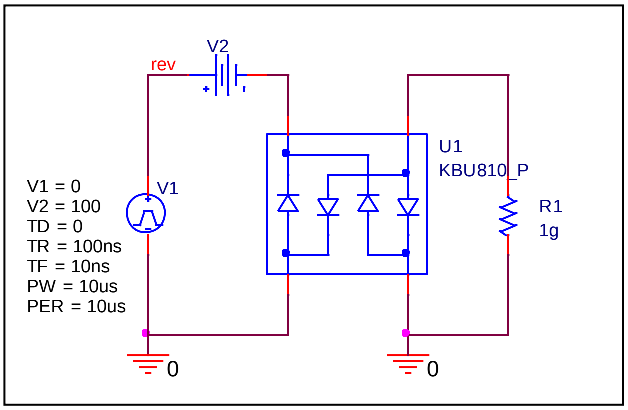
IF (A)	VF (V)		%Error
	Measurement	Simulation	
0.1	0.650	0.642	-1.28
0.2	0.683	0.679	-0.53
0.5	0.725	0.729	0.61
1.0	0.760	0.768	1.01
2.0	0.800	0.807	0.88
5.0	0.860	0.862	0.27
10.0	0.910	0.909	-0.06
20.0	0.970	0.966	-0.40
50.0	1.085	1.074	-1.06
100.0	1.200	1.208	0.63

Capacitance Characteristic

Circuit Simulation Result



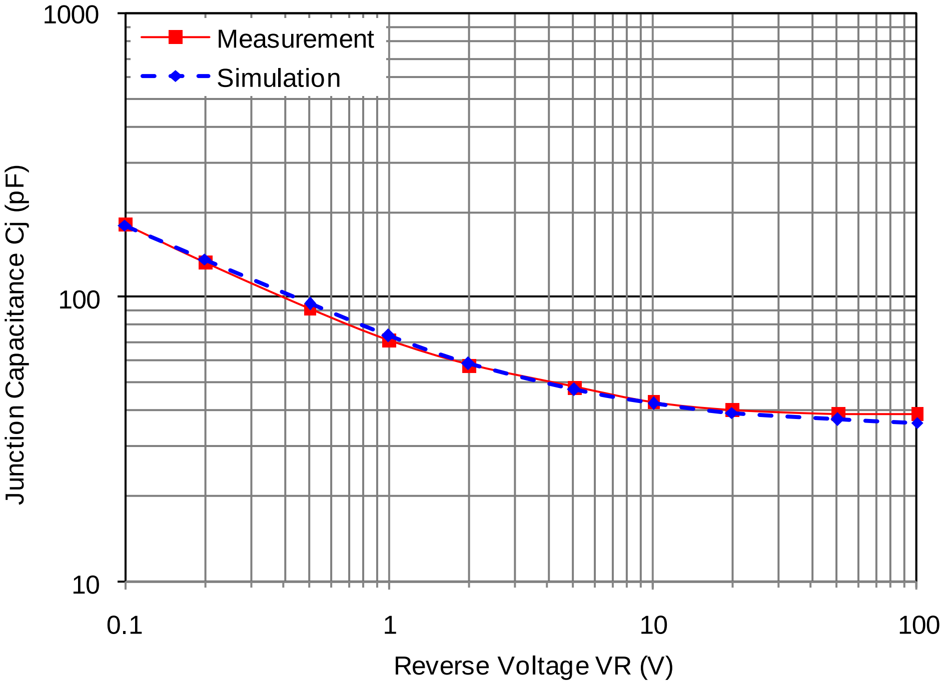
Evaluation Circuit



V1 = 0
V2 = 100
TD = 0
TR = 100ns
TF = 10ns
PW = 10us
PER = 10us

Comparison Graph

Circuit Simulation Result

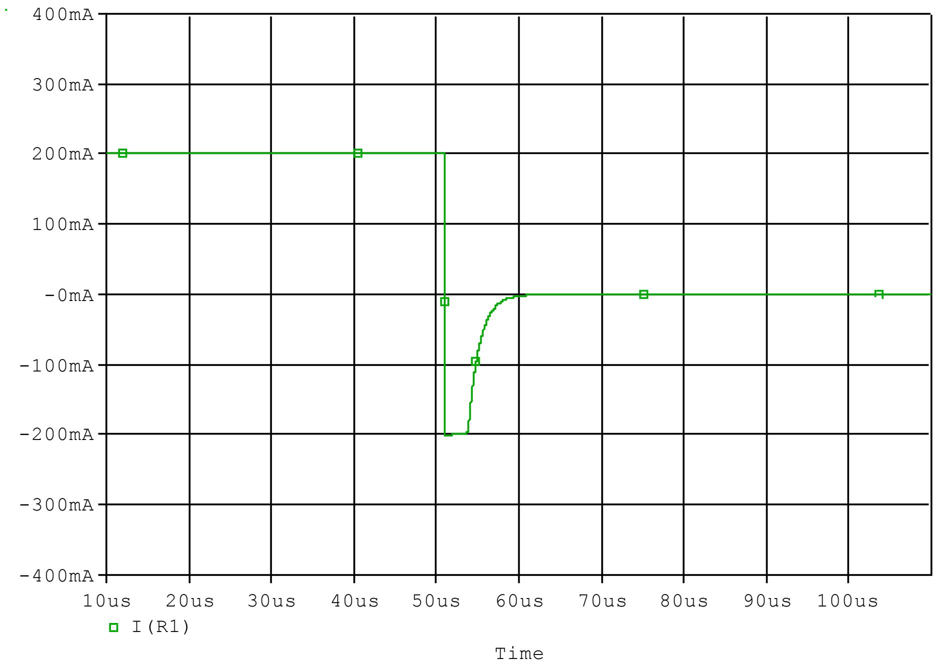


Simulation Result

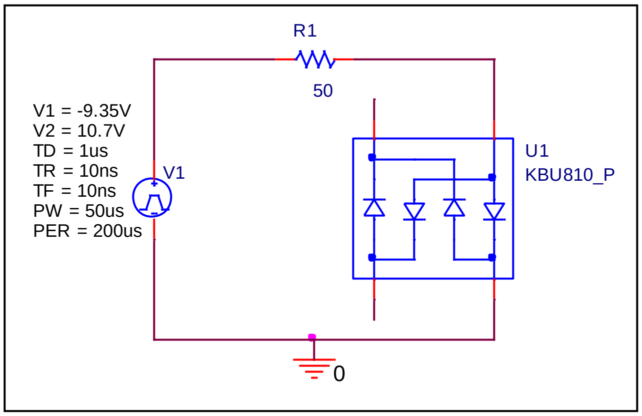
VR (V)	Cj (pF)		%Error
	Measurement	Simulation	
0.1	182.000	180.321	-0.92
0.2	133.000	136.884	2.92
0.5	91.500	94.929	3.75
1.0	71.000	73.284	3.22
2.0	58.000	58.800	1.38
5.0	48.500	47.429	-2.21
10.0	43.000	42.547	-1.05
20.0	40.500	39.563	-2.31
50.0	39.000	37.343	-4.25

Reverse Recovery Characteristic

Circuit Simulation Result



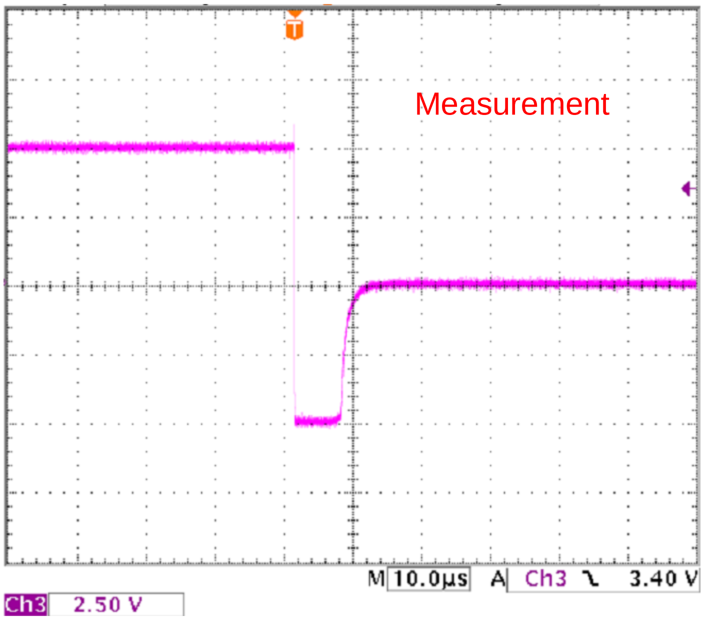
Evaluation Circuit



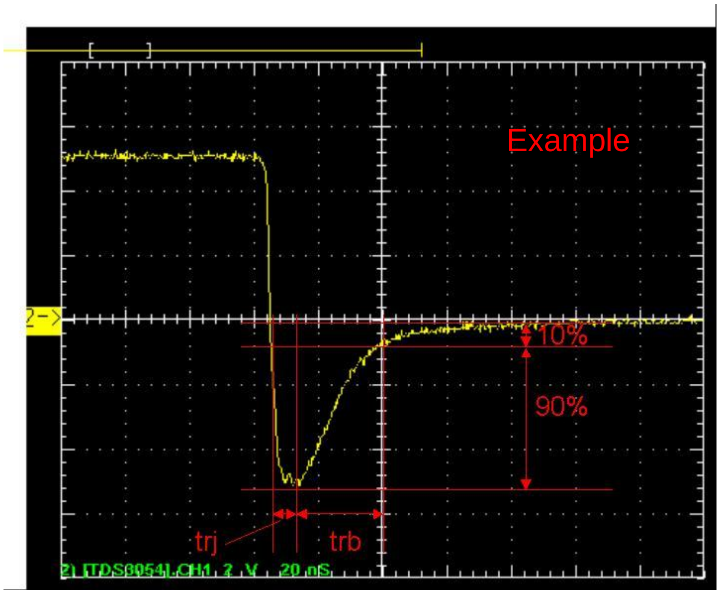
Compare Measurement vs. Simulation

		Measurement	Simulation	%Error
Trj	**us**	**2.800**	**2.757**	**-1.539**
Trb	**us**	**3.200**	**3.224**	**0.750**
Trr	**us**	**6.000**	**5.981**	**-0.318**

Reverse Recovery Characteristic



Trj = 2.80(us)
Trb= 3.20(us)
Conditions: Ifwd=0.2A,Irev=0.2A, Rl=50



Relation between trj and trb