

# Device Modeling Report

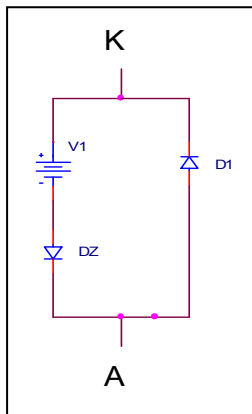
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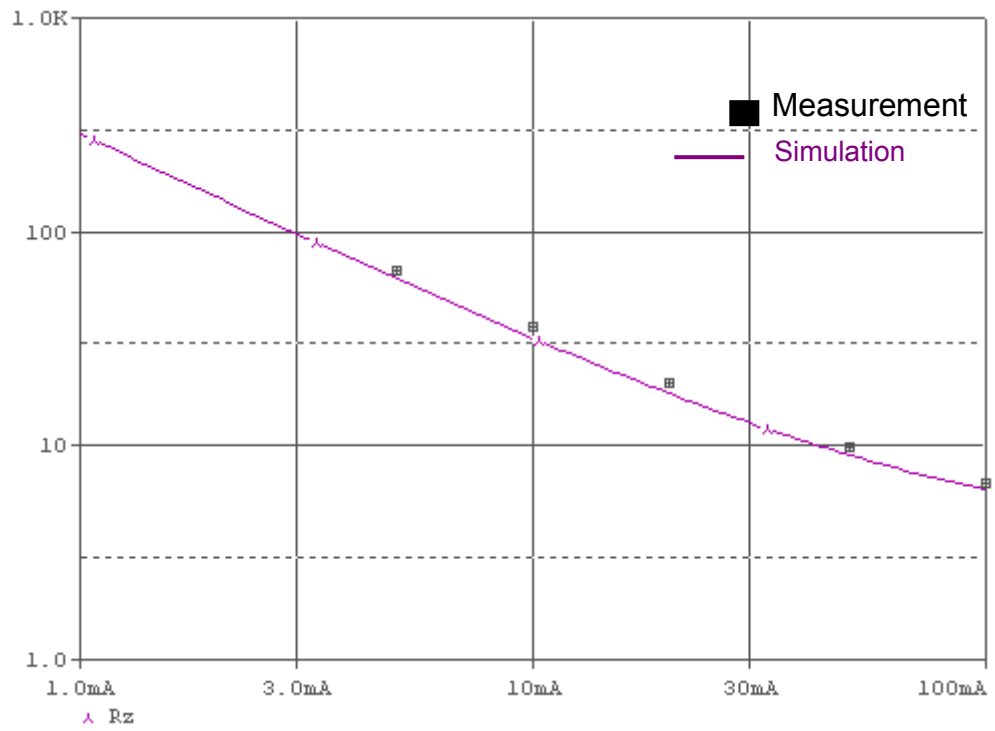
**Bee Technologies Inc.**

Pspice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
TT	Transit Time

### Equivalent circuit

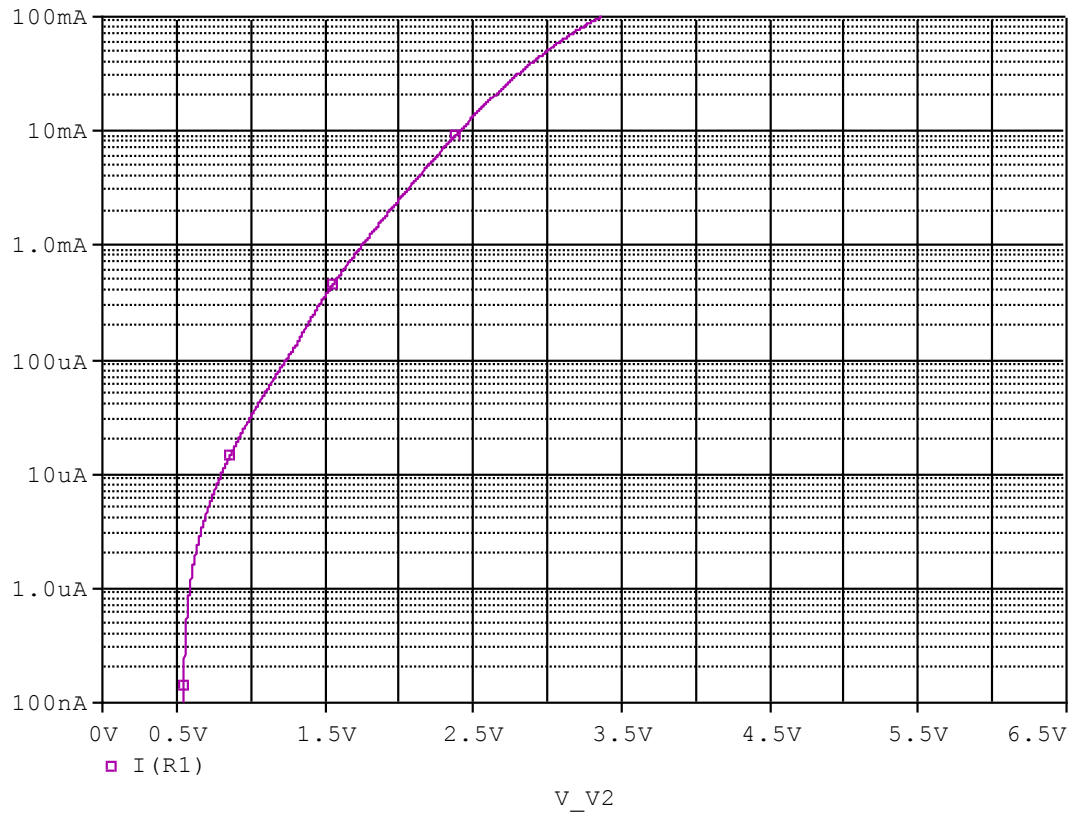


## Reverse Dynamic Impedance Characteristic

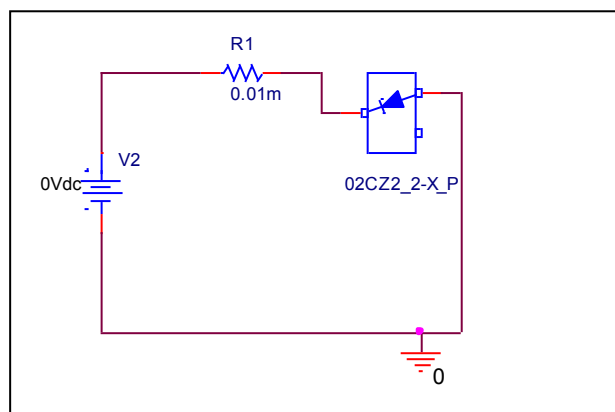


# Reverse Characteristic

## Circuit Simulation result

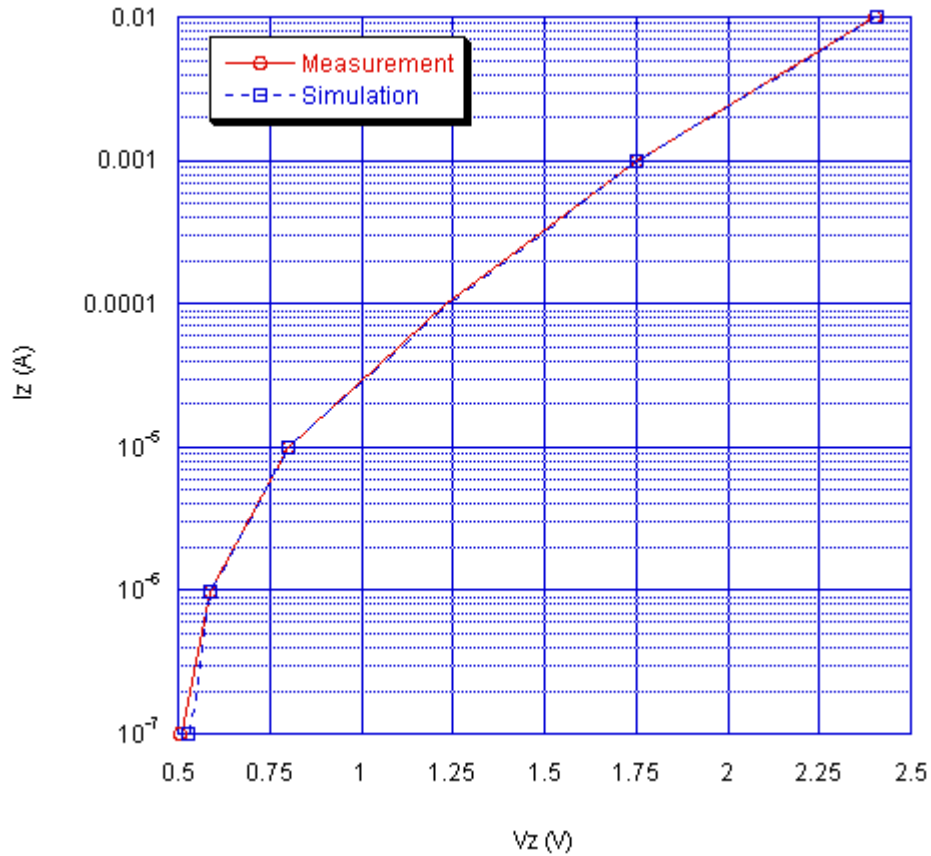


## Evaluation circuit



## Comparison Graph

### Circuit Simulation Result

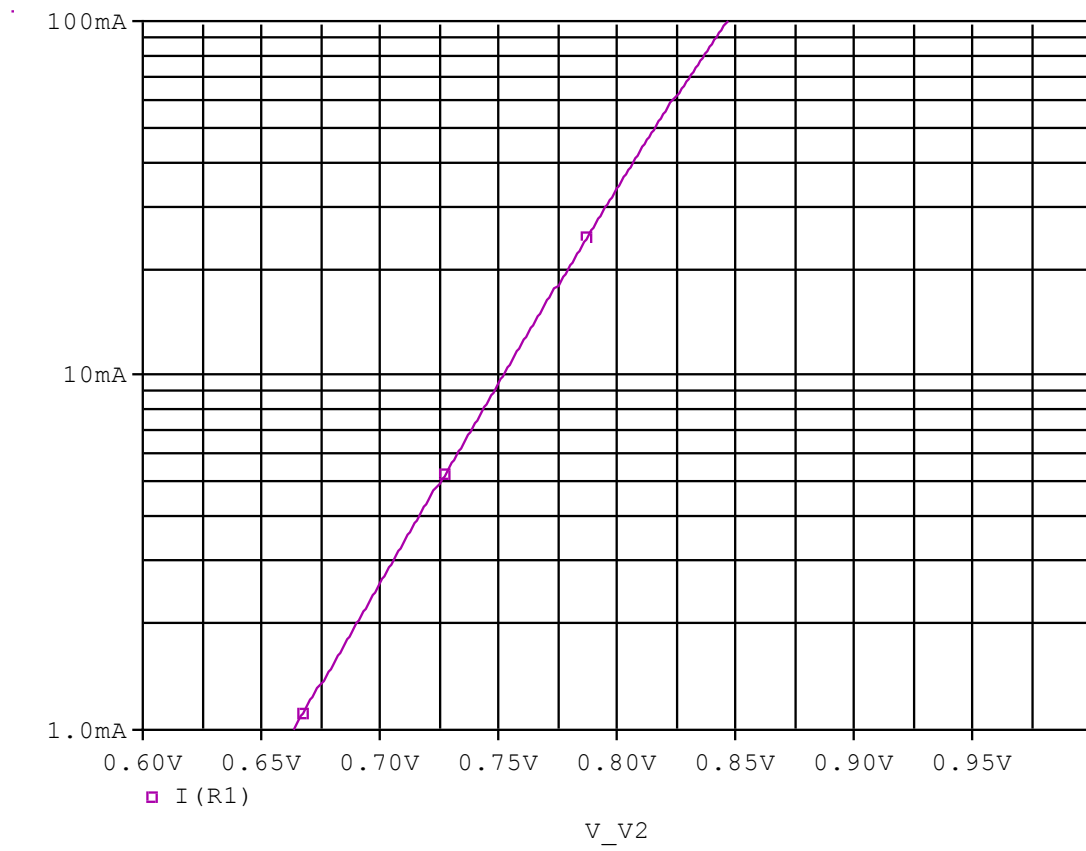


### Simulation Result

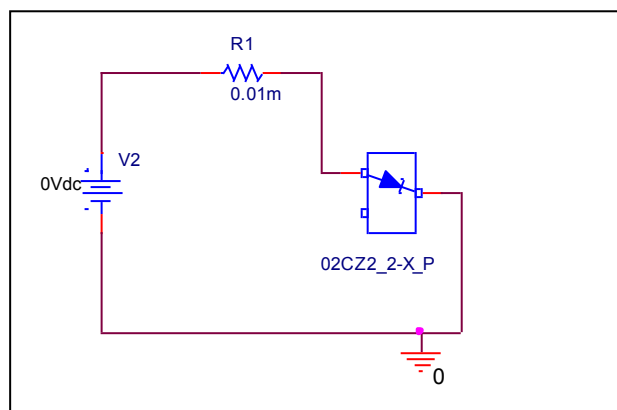
$I_z$ (A)	$V_z$ (V)		Error (%)
	Measurement	Simulation	
100n	0.505	0.530	4.950
1u	0.590	0.589	-0.116
10u	0.800	0.803	0.378
100u	1.230	1.242	0.935
1m	1.750	1.751	0.046
10m	2.400	2.409	0.367

# Forward Characteristic

## Circuit Simulation result

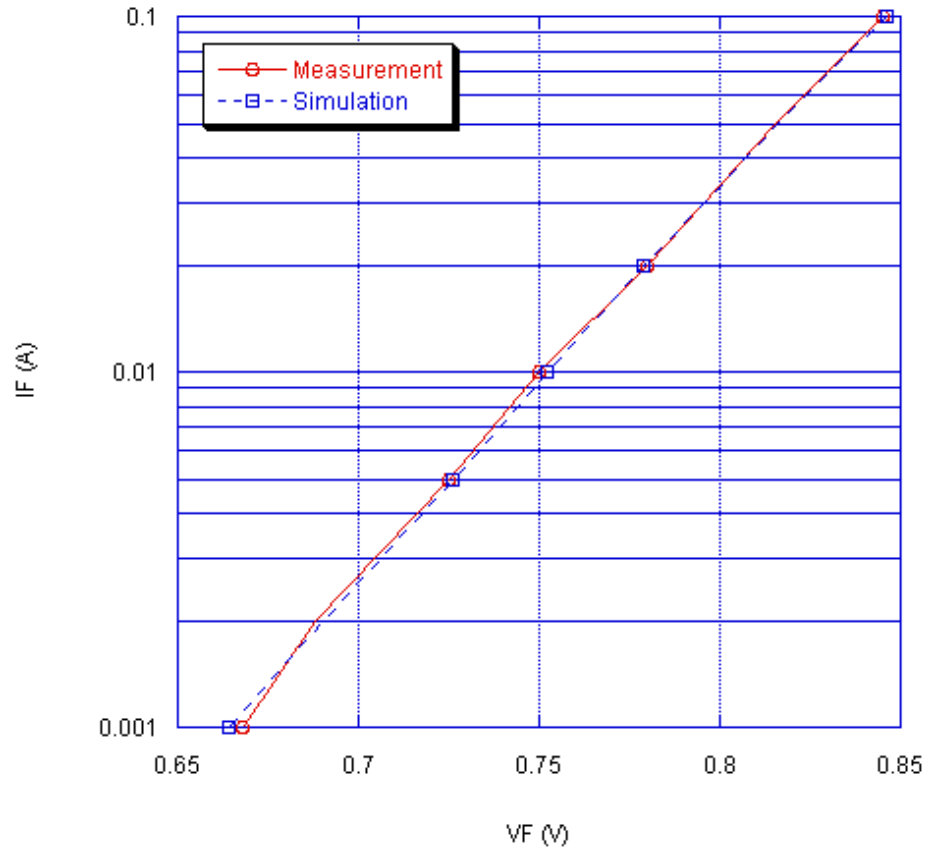


## Evaluation circuit



## Comparison Graph

### Circuit Simulation Result

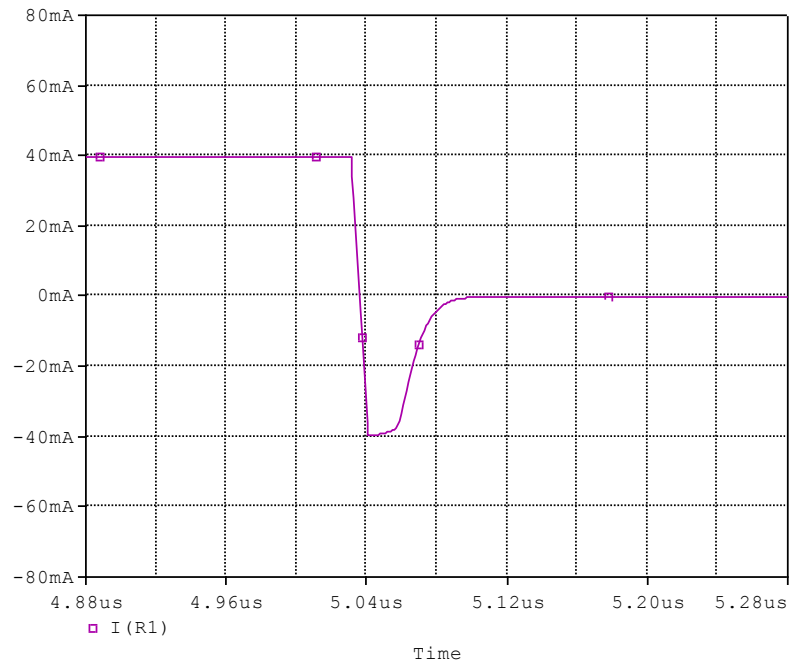


### Simulation Result

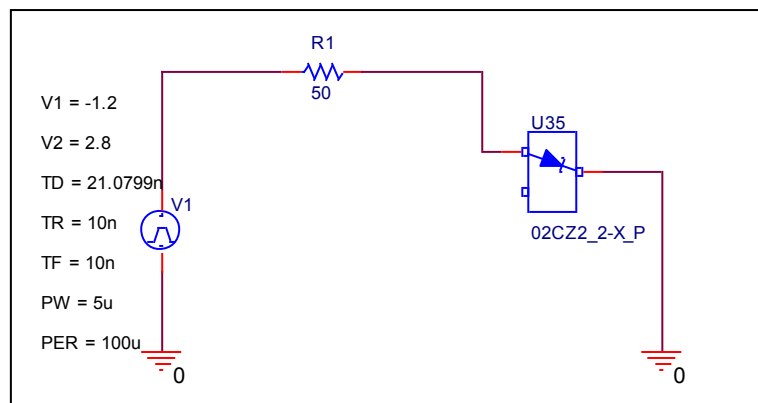
$I_F$ (A)	$V_F$ (V)		Error (%)
	Measurement	Simulation	
1m	0.668	0.664	-0.567
2m	0.688	0.690	0.392
5m	0.725	0.726	0.081
10m	0.750	0.752	0.323
20m	0.780	0.779	-0.124
50m	0.815	0.816	0.163
100m	0.845	0.846	0.171

# Reverse Recovery Characteristic

## Circuit Simulation Result



## Evaluation Circuit



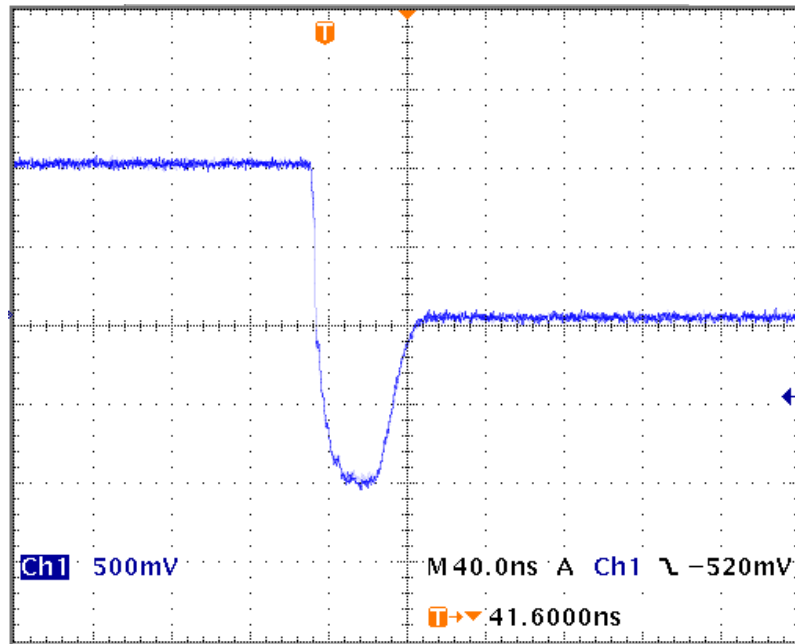
## Compare Measurement vs. Simulation

	Measurement		Simulation		Error (%)
<b>trj</b>	20.000	ns	20.076	ns	0.380
<b>trb</b>	24.000	ns	23.820	ns	-0.750
<b>trr</b>	44.000	ns	23.869	ns	-0.298

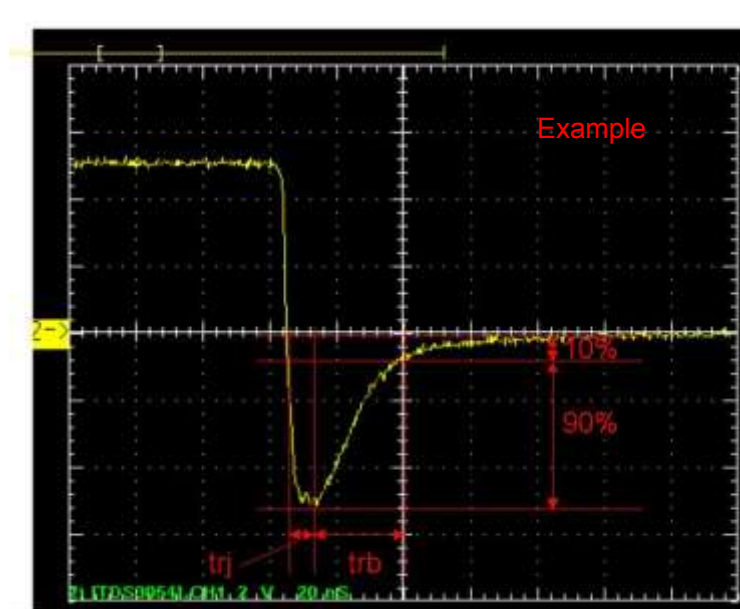


# Reverse Recovery Characteristic

# Reference



Trj=20(ns)  
Trb=24(ns)  
Conditions: Ifwd=Irev=0.04(A), RI=50



Relation between trj and trb