

# Device Modeling Report

COMPONENTS:  
DIODE/ GENERAL PURPOSE RECTIFIER / PROFESSIONAL  
PART NUMBER: 1SR154-400  
MANUFACTURER: ROHM  
REMARK: TC=150C

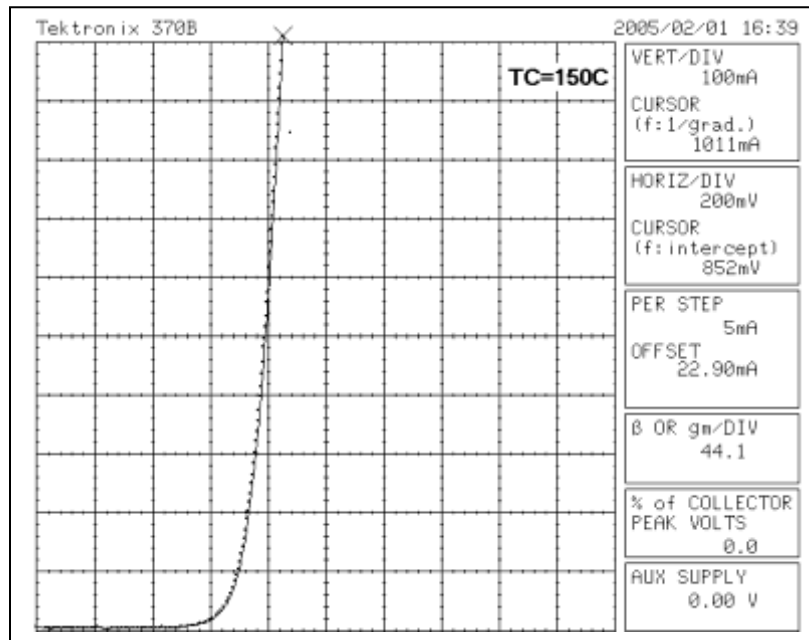


**Bee Technologies Inc.**

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

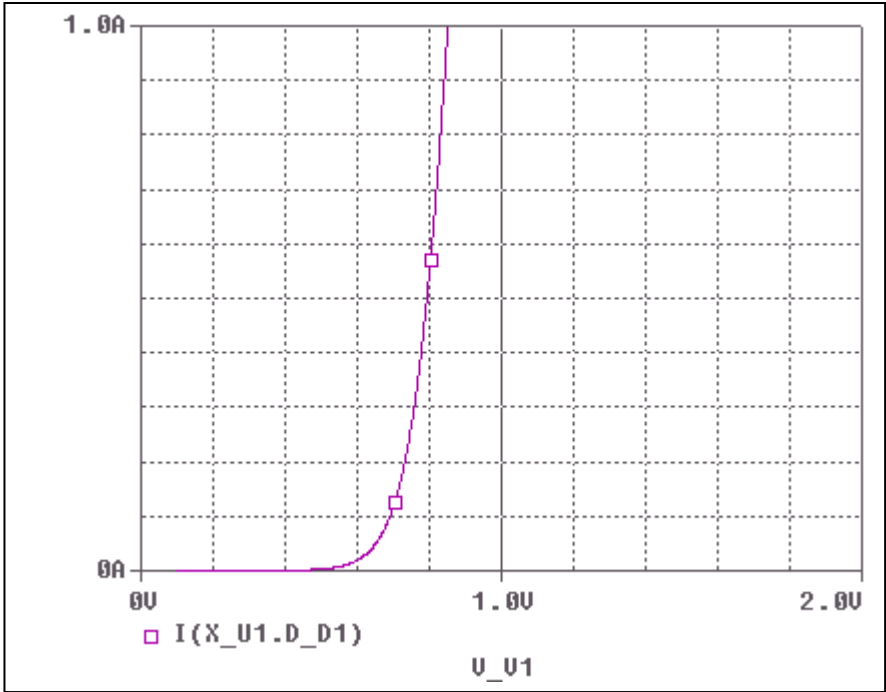
# Forward Current Characteristic

# Reference

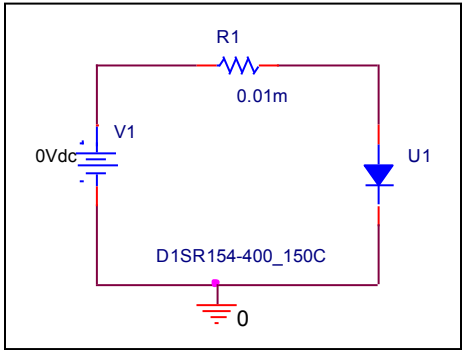


# Forward Current Characteristic

## Circuit Simulation Result

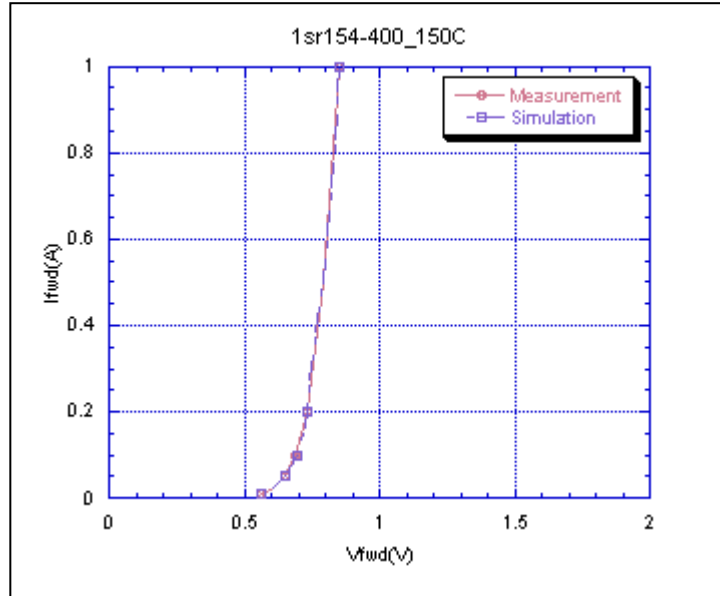


## Evaluation Circuit



# Comparison Graph

## Circuit Simulation Result

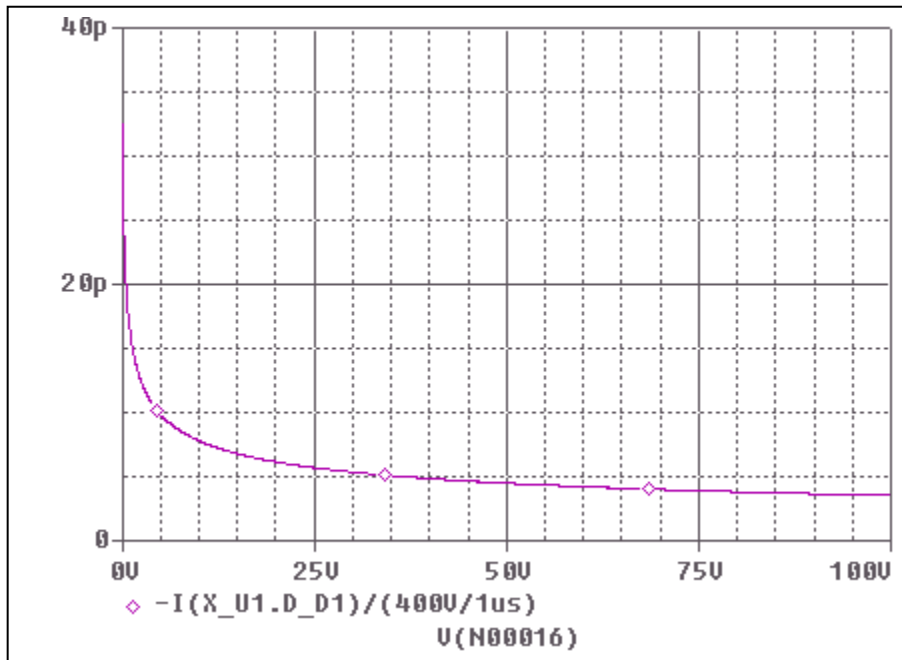


## Simulation Result

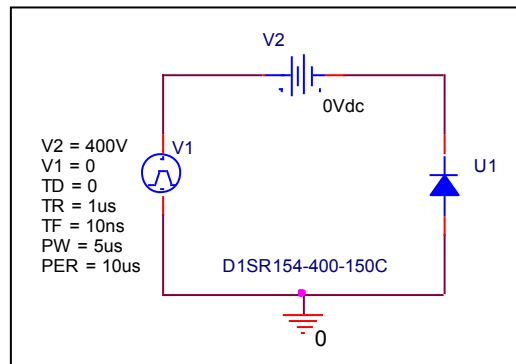
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.565	0.563	0.35
0.02	0.600	0.601	-0.17
0.05	0.650	0.651	-0.15
0.1	0.692	0.693	-0.14
0.2	0.734	0.732	0.27
0.5	0.790	0.793	-0.38
1	0.852	0.851	0.12

# Capacitance Characteristic

## Circuit Simulation Result

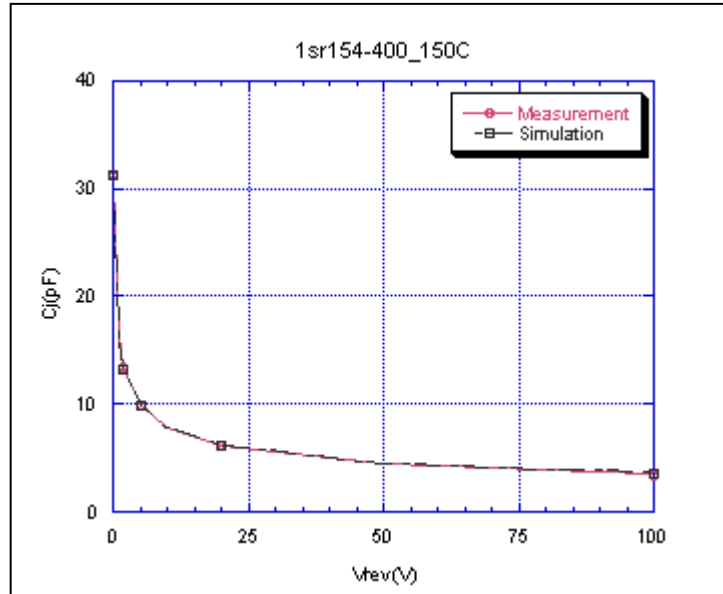


## Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

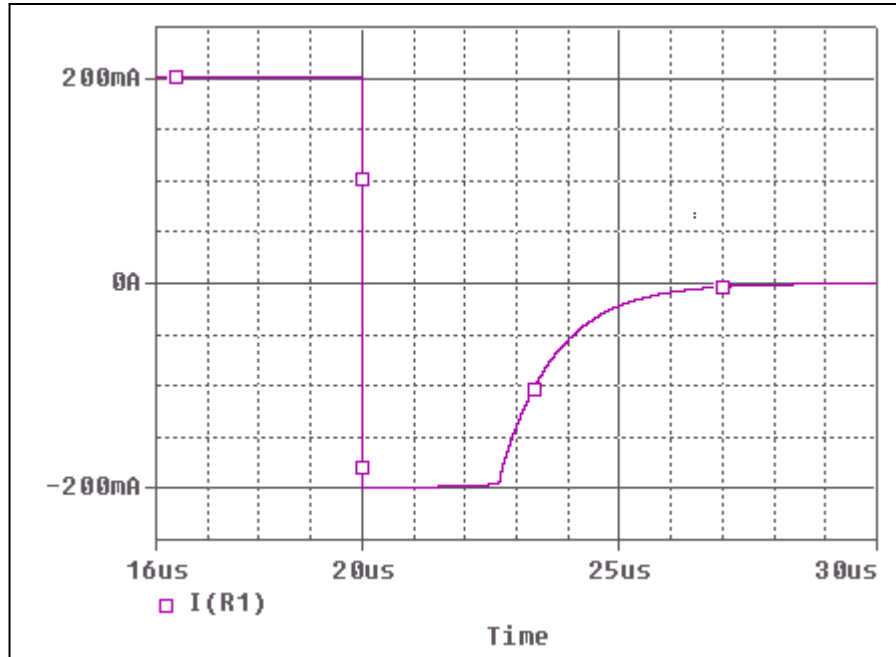


### Simulation Result

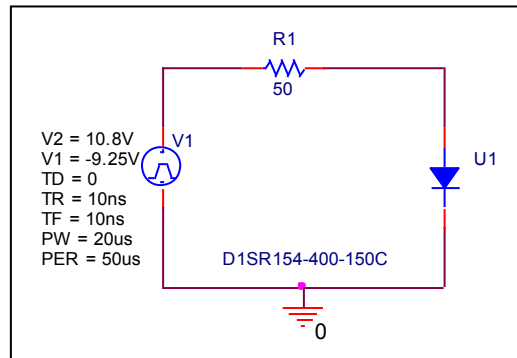
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	31.299	31.299	0.00
1	16.474	16.423	0.31
2	13.327	13.285	0.32
5	9.918	9.843	0.76
10	7.816	7.797	0.24
20	6.120	6.151	-0.51
50	4.409	4.487	-1.77
100	3.460	3.532	-2.08

# Reverse Recovery Characteristic

## Circuit Simulation Result



## Evaluation Circuit

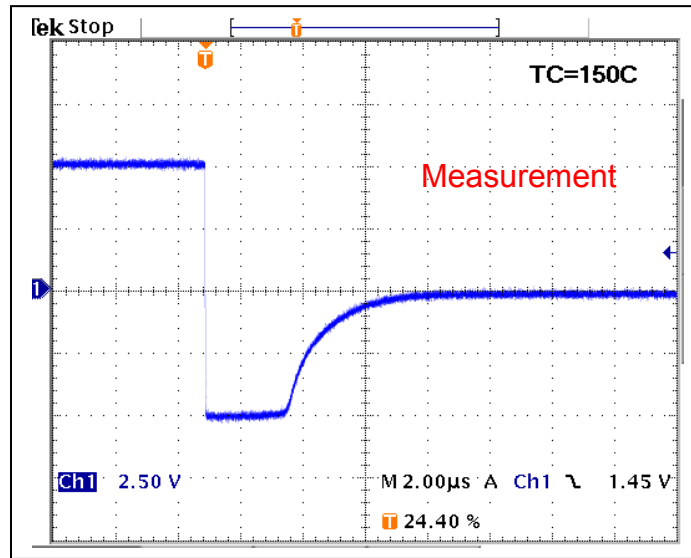


## Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trj	2.64	us	2.65	us	0.37
trb	2.44	us	2.43	us	0.40

# Reverse Recovery Characteristic

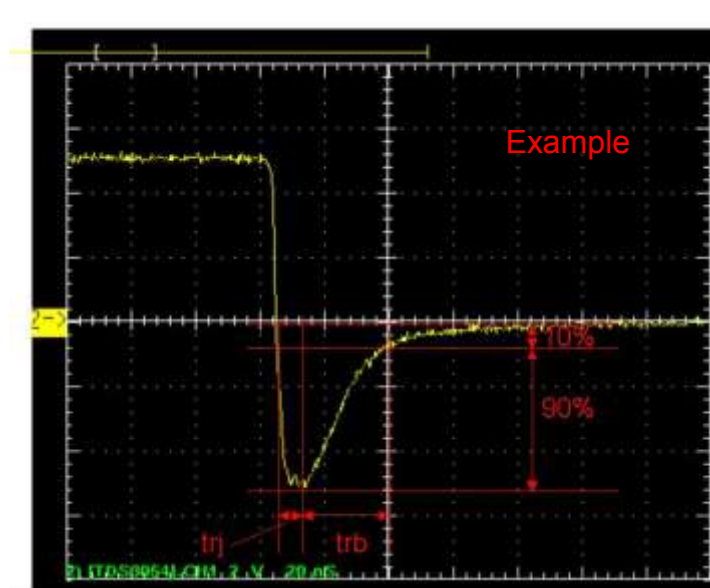
# Reference



$Trj = 2.64(\mu s)$

$Trb = 2.44(\mu s)$

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



Relation between  $trj$  and  $trb$